

Format for Biennial Reports by UNESCO's Water-related Chairs on activities related to the IHP in the period (June 2016 – May 2018)

1. Basic information on the Chair

Name of the Chair		UNESCO Chair on Knowledge Systems for Integrated Water Resource Management
Name of Chair holder(s)		Prof. Dr. Tayyeb Akram
Name of Contact Person(s)		Prof. Dr. Tayyeb Akram
E-mail address		dirwah@comsats.edu.pk
Website		http://wah.comsats.edu.pk/centers/UWC.html
Mailing Address of Chair		COMSATS Institute of Information Technology Wah, GT Road, Wah Cantt. Pakistan
Telephone Number(s)		
Geographic orientation *		<input checked="" type="checkbox"/> global <input type="checkbox"/> regional
Region(s) (for regional centres)		
Year of establishment		05 February 2014
Year of renewal		Applied
Tick the focal areas relevant to your chair		
Themes Of activities during reporting period	Focal Areas ♦	<input checked="" type="checkbox"/> groundwater <input checked="" type="checkbox"/> urban water management <input checked="" type="checkbox"/> rural water management <input checked="" type="checkbox"/> arid / semi-arid zones <input type="checkbox"/> humid tropics <input type="checkbox"/> cryosphere (snow, ice, glaciers) <input checked="" type="checkbox"/> water related disasters (drought/floods) <input type="checkbox"/> Erosion/sedimentation, and landslides <input checked="" type="checkbox"/> ecohydrology/ecosystems <input type="checkbox"/> water law and policy <input checked="" type="checkbox"/> social/cultural/gender dimension of water <input checked="" type="checkbox"/> transboundary river basins/ aquifers <input type="checkbox"/> mathematical modelling <input checked="" type="checkbox"/> hydroinformatics <input checked="" type="checkbox"/> remote sensing/GIS <input checked="" type="checkbox"/> IWRM <input checked="" type="checkbox"/> Watershed processes/management <input type="checkbox"/> global and change and impact assessment <input checked="" type="checkbox"/> mathematical modelling <input checked="" type="checkbox"/> water education <input checked="" type="checkbox"/> water quality <input type="checkbox"/> nano-technology <input checked="" type="checkbox"/> waste water management/re-use <input checked="" type="checkbox"/> water/energy/food nexus <input checked="" type="checkbox"/> water systems and infrastructure <input type="checkbox"/> other: (please specify) _____
	Scope of Activities ♦	<input checked="" type="checkbox"/> vocational training <input checked="" type="checkbox"/> postgraduate education <input checked="" type="checkbox"/> continuing education <input checked="" type="checkbox"/> public outreach <input checked="" type="checkbox"/> research <input checked="" type="checkbox"/> institutional capacity-building

* check on appropriate box
 ♦ check all that apply

	<input type="checkbox"/> advising/ consulting <input type="checkbox"/> software development <input checked="" type="checkbox"/> data-sets/data-bases development <input type="checkbox"/> other: (please specify) _____
Sources of financial support ¹	CIIT Wah
Existing networks and cooperation ²	
Governance	<input checked="" type="checkbox"/> director and governing board <input type="checkbox"/> other: (please specify) _____ Link to election of board members to the IHP Intergovernmental Council (IGC) and hosting country IHP National Committee _____ Frequency of meetings: once every <u>1</u> year(s) <input checked="" type="checkbox"/> Existence of UNESCO presence at meetings
Institutional affiliation of director	
Number of staff and types of staff	total number of staff (full-time, or equivalent) : <u>03</u> number of staff who are water experts: <u>02</u> number of visiting scientists and postgraduate students: <u>00</u>
Annual turnover budget in USD	36,500

2. List the activities undertaken in the framework of IHP in the period June 2016 – April 2018 (identify the IHP themes to which the activities contribute, specify the number of male and female beneficiaries and age group i.e. 15-24 and 24 and over)

- Capacity Building of Faculty of Civil Engineering Department, CIIT-Wah, Pakistan, "Downscaling Global Climate Models for Future Projections of Climate in Pakistan" from May 2-6, 2016 in Islamabad.
- The UNESCO Water Chair at COMSATS Institute of Information Technology (CIIT) Wah organized an International Dialogue on "Role of Hydro-informatics and Integrated Water Resource Management under UN - Agenda 2030" on May 24, 2016.
- Participation in "Consultative Workshop to explore opportunities for partnership, UNESCO IHP VIII", to support and improve water security at UNESCO Islamabad (27 May, 2016)
- Participation in regional workshop "Building Resilience to Climate Change Risk and Vulnerability" 10-11 July 2017, Langkawi, Malaysia
- Participation in UNESCO sponsored Short Course on "Remote Sensing and GIS Applications in Flood Management" at the National University of Sciences & Technology (18-29 July, 2016)
- The UNESCO Chair on Knowledge Systems for Integrated Water Resource Management at COMSATS Institute of Information Technology, Wah, Pakistan organized an International Conference on "Adaptation to Climate Change- Understanding Future Water Availability" on August 01, 2016.
- International Workshop on Hydro-meteorological Data and Flood Forecasting" at Department of Civil Engineering, University of Engineering and Technology, Lahore, Pakistan (03-15 August 2016)
- 3rd International Water Conference "Water Security and Sustainable Growth" by Riphah International University, PCRWR, University of Haripur and SHFINT (23 August, 2016)

¹ please specify sources of main budgetary and extra budgetary funds to implement projects

² please write international networks, consortiums or projects that the centre is part of, or any other close links that the centre has with international organizations or programmes, which are not already mentioned above

- UNESCO Chair CIIT-Wah Pakistan actively participated in the stakeholders' consultation meeting on water resource management organized by STEDEC and CEWRE at seminar hall chemical engineering department UET Lahore on 29th August 2016.
- International conference "Asia Pacific Policy Dialogue on Water, Energy and Food Security for Poverty Alleviation in Dry land Regions" at Arid Agriculture University, Rawalpindi, Pakistan (23-25 November 2016)
- Strengthening of Capacities in Hydro-informatics and Integrated Flood Management in Pakistan- Researchers from Pakistan at Kumamoto University Japan (16-25 Jan 2017)
- World Water Day 2017, "Wastewater – the Untapped Resource", 20 March, 2017 at PCRWR, Headquarters, Islamabad
- Geneva Science Chairs conference on (5- 7 July 2017)
- International Conference of UNESCO Chair's on Mobilizing UNESCO Science Chairs for Policy Action towards the 2030 Agenda" Geneva, Switzerland (4- 11 July 2017)
- International Workshop on "Building Resilience to Climate Change Risk and Vulnerability to Meet Water Security Challenges" Langkawi, Malaysia (10- 11 July 2017)
- Attended five days training on Water Resource Management organized by Akhtar Hameed Khan, National Center for Rural Development (AHK NCRD) in Islamabad, Pakistan from December 4-8, 2017.

3. Collaboration and linkages (specify activities which involve other UNESCO chairs and/or members of the water family)

- Collaboration with UNESCO Islamabad, Pakistan and UNESCO Regional Science Bureau for Asia Pacific, Jakarta Indonesia
- Collaboration with Kumamoto University Japan (Sakura Youth Exchange Program)
- Linkages with key stakeholders in Pakistan (National and International Organization, Academia, Industry as well as Governmental and Non-Governmental Entities) i.e. PCRWR, CEWRE, FFC, PMD, NDMA, Ministry of Climate Change, CCRD, AUS-Aid etc.

4. Communication

Facebook: <https://www.facebook.com/unescochairiwrwm/>
 Website: <http://wah.comsats.edu.pk/centers/UWC.html>

5. Update on Chairs Operations

The chair is actively involved in participating different events related to water resources at international and national level. The chair also conducting seminars independently and in collaboration with Pakistan Council of Research in Water Resources.

6. Identify the main outcomes of the Chairs

The chair along a team of ten members including graduate students of different universities of Pakistan went to Kumamoto University Japan using the platform of UNESCO Water Chair for capacity building in Hydro-informatics.

The chair is member of IHP and in working with Capital Normal University and Pakistan Council of Research in Water Resources in water related research activities.

The chair is involved with Pakistan Metrological Department KPK for weather forecasting.

7. Future activities that will contribute directly to IHP and/or to WWAP Activities in the framework of the SDGs (identify the SDG (target if possible) for which each activity contributes)

- Postgraduate Teaching Programme in IWRM at CIIT Wah, Pakistan

- Short-Term Training – Green Economy and Environmental Sustainability
- Scholarship through the provision of Master and PhD scholarship on Trans-boundary Water and Sustainable Development
- Institutional development through collaboration with the UNESCO IHP to deliver interactive learning, tools, knowledge sharing and professional water internships
- Industry – Academia Linkage by establishing Hydrology, Hydraulics and Surveying Laboratories
- Research – through the publications of the UNESCO Chair, project team and partners

8. Annexes

Major Activities on UNESCO Chair Knowledge Systems for Integrated Water Resource Management from 2016–2018



United Nations
Educational, Scientific and
Cultural Organization



- UNESCO Chair on Knowledge Systems
for Integrated Water Resources Management
- COMSATS-CIIT, Wah, Pakistan

UNESCO CHAIR ON KNOWLEDGE SYSTEMS FOR INTEGRATED WATER RESOURCE MANAGEMENT CIIT-WAH PAKISTAN

MAJOR ACTIVITIES

2016-2018

International Workshop organized by UNESCO and PMD on “Standardizing Flood Forecasting and Warning Approaches in Trans-boundary Catchments” (April 13, 2016)

Prof. Dr. Tayyeb Akram, Director CIIT-Wah, Dr. Asma Younas, Principal Scientific Officer, UNESCO Chair on Knowledge Systems for IWRM, Dr. Tamkeen Fatima Jafri, Assistant professor Management Sciences Department participated in the International workshop organized by UNESCO and PMD on “Standardizing Flood Forecasting and Warning Approaches in Trans-boundary Catchments” at Lahore.

A detailed introduction of the UNESCO Water Chair, its mandate, mission, achievements, current activities and future plans were presented by Dr. Asma. The experts from Irrigation Departments of Pakistan, Professors from distinguished universities in Pakistan and Japan appreciated this initiative and intended to extend their support to UNESCO Water Chair for the achievement of its mandate.

Capacity Building of Faculty of Civil Engineering Department, CIIT-Wah, Pakistan (May 02, 2016)

UNESCO Chair on Knowledge Systems for IWRM nominated Lecturer, Ms. Sumera Fahmi Khan of Civil Engineering Department to attend a training workshop titled “Downscaling Global Climate Models for Future Projections of Climate in Pakistan” from May 2-6, 2016 in Islamabad. The workshop was organized by Pakistan Metrological Department (PMD) in collaboration with the Regional Integrated Multi-Hazard Early-Warning System (RIMES), Thailand.

The training workshop aimed to enhance the capacity of young professionals on improved techniques for climate change assessment including selection of General Circulation Models (GCMs), Bias Correction, Downscaling of the corrected output. The training involves user capacity building for application, as well as generation of future climate projections over Pakistan.

International Dialogue on “Role of Hydro-informatics and Integrated Water Resource Management under UN - Agenda 2030” (May 24, 2016)

The UNESCO Water Chair at COMSATS Institute of Information Technology (CIIT) Wah organized an International Dialogue on “Role of Hydro-informatics and Integrated Water Resource Management under UN - Agenda 2030” on May 24, 2016. The experts emphasized on the importance of water and sustainable development as envisaged in United Nations Agenda 2030 and UNESCO Actions in

the Asia Pacific Region. The importance of multi-sectorial integration and nexus of poverty-water-energy-food security and climate change were identified as essentials to ensure sustainable integrated water resource management, sanitation goal and target areas with potential tools and methods for monitoring progress and indicators as well as the means of implementation.

The international dialogue was attended by representatives from UNESCO Water Research Center CIIT-Abbottabad, national experts of ground water and International experts from Australia, Philippines, Malaysia, Korea and Indonesia. The students actively participated in the dialogue and appreciated that there should be more such forums where they can learn about the latest developments from the experts.

Consultative Workshop to explore opportunities for partnership, UNESCO IHP VIII, to support and improve water security at UNESCO Islamabad (27 May, 2016)

UNESCO Water Chair CIIT-Wah, Pakistan was invited by UNESCO Islamabad to participate in the consultative meeting to explore the opportunities for achieving the UN Agenda 2030 goal for improvement of water security situation in the country through collaborative approach. The meeting was attended by representatives of ADB, WB, NUST, Lead Pakistan and UNDP.

UNESCO sponsored Short Course on “Remote Sensing and GIS Applications in Flood Management” at the National University of Sciences & Technology (18-29 July, 2016)

UNESCO Water Chair CIIT-Wah participated in UNESCO sponsored short course on RS/GIS Applications in Flood Management. The objective of the capacity building and training program was to enhance and strengthen the capacities of organizations dealing with early warning and flood management in Pakistan in utilizing geo-information, and applying spatial tools and techniques to support flood management. More specifically, the course aims to introduce the topic of GIS and remote sensing with practical applications and familiarize them with GIS and RS data management skills and knowledge for flood management. The key objectives of the short course were to introduce the participants to the concepts, approaches and framework of remote sensing and geographic information system (GIS), to familiarize and demonstrate the techniques used in geographic information system for flood management and to inculcate the issues and framework of remote sensing and GIS techniques for flood management in Pakistan.

International Conference on “Adaptation to Climate Change- Understanding Future Water Availability” (August 01, 2016)

The UNESCO Chair on Knowledge Systems for Integrated Water Resources Management at COMSATS Institute of Information Technology, Wah Campus, Pakistan organized an International Conference on “Adaptation to Climate Change- Understanding Future Water Availability” on August 01, 2016. This international event focused on improved incorporation of information about current climate variability into water-related management, to assist adaptation to longer-term climate change impacts.

The technical session was chaired by Dr. Shahbaz Khan and experts from Pakistan i.e. Dr. Manzoor Soomro, President, ECOSF, Islamabad; Dr. Muhammad Ashraf, Chairman, PCRWR, Prof. Dr. Rai Niaz, VC AAUR, Rawalpindi; Dr. Manzoor, A. Malik, Director, PCRWR, Mr. Hazrat Mir, Chief Meteorologist NDMC, PMD, Islamabad; Mr. Alamgir Khan, Head Flood Cell, FFC, Prof. Dr. Hamza Gabriel, NUST, Islamabad; Prof. Dr. Kamran Akhtar, NUST, Dr. Aftab Sadiq, Principal Wah Engg College, Dr. Ad Khan, PCRWR, Syed Muhammad Raza Shah, UNESCO, Pakistan; Mr. Junaid Naseem, UNESCO, Pakistan; Prof. Dr. Abdul Razzaq Ghumman, UET, Taxila; Dr. Sajjad Haider, NUST, Dr. Muhammad Munir Ahmad, Director CAEWRI, NARC, Islamabad; Prof. Dr. Khalid Riaz, Dean Management Sciences Department. CIIT-Islamabad; Ambassador Fauzia Nasreen, CIIT-Islamabad; actively participated in the discussion. The event was successful in bringing all the key stakeholders related to water and climate change in Pakistan on one platform. The students also actively participated and asked questions to the experts, 5 best questions were given prizes.

International Workshop on Hydro-meteorological Data and Flood Forecasting" at Department of Civil Engineering, University of Engineering and Technology, Lahore, Pakistan (03-15 August 2016)

Dr. Asma Younas, PSO, UNESCO Water Chair was invited to participate in the international workshop and training at UET Lahore organized by UNESCO in collaboration with UET Lahore. The conference and training was attended by experts from Afghanistan as well. The training comprised of AWS demonstration, working principle, components and data collection explained to the Afghan Delegation, Representatives from WAPDA, NESPAK, FFD, Irrigation Departments and

Universities by Prof. Dr. Noor at Civil Engineering Department, UET Lahore. Furthermore, GIS/RS techniques for hydrological modeling were also explained by the experts.

3rd International Water Conference "Water Security and Sustainable Growth" by Riphah International University, PCRWR, University of Haripur and SHFINT (23 August, 2016)

Dr. Asma Younas, PSO, UNESCO Water Chair CIIT-Wah, Pakistan participated in 3rd International Conference on Water Security and Sustainable Growth organized by Riphah International University in collaboration with PCRWR, University of Haripur and SHFINT. This international conference was inaugurated by the Federal Minister for Planning and Development, Dr. Ahsan Iqbal. Inaugural session was also attended by the ambassadors of Bosnia and Palestine. The participants of the conference hailed from different national and international organizations including EvK2-CNR (Italian based committee for technological research in mountain areas), IFPRI (International Food Policy Research Institute), PSSP (Pakistan Strategy Support Program), US Agency for International Development, SHFINT (Saving Humanity Foundation International), and RIPP (Riphah Institute of Public Policy). University of Haripur and CIIT (Abbottabad and Wah Campuses) were the only academic institutes represented in the conference.

Stakeholders Consultation Meeting on Water Resource Management at UET Lahore (29 August, 2016)

UNESCO Chair CIIT-Wah Pakistan actively participated in the stakeholders' consultation meeting on water resource management organized by STEDEC and CEWRE at seminar hall chemical engineering department UET Lahore on 29th August 2016. The event was inaugurated by Federal Minister for Science and Technology, Mr. Rana Tanveer Hussain. Participants were from various organizations, including COMSATS, PCRWR, Pakistan Meteorological Department, Flood Forecasting Division, UET Taxila, UET Peshawar and NUST. The meeting was very fruitful regarding the linkage between industry, academia and all the stakeholders bringing to one platform for consultation on water policy, conservation and integrated water resource management in the country.

Workshop on "National Synthesis on Promoting Ecological and Eco-hydrological Solutions for Sustainable Water Management" at Bogor, Indonesia (12-17 November, 2016)

Dr. Asma Younas, Principal Scientific Officer, UNESCO Chair on Knowledge Systems for Integrated Water Resources Management (IWRM), CIIT-Wah Campus

participated in the Workshop on “National Synthesis on Promoting Ecological and Eco-hydrological Solutions for Sustainable Water Management” at Bogor, Indonesia.

International conference "Asia Pacific Policy Dialogue on Water, Energy and Food Security for Poverty Alleviation in Dry land Regions" at Arid Agriculture University, Rawalpindi, Pakistan (23-25 November 2016)

UNESCO Water Chair COMSATS was represented in the international dialogue and Strategic Water Planning-International Experiences and Practices at Arid Agricultural University Rawalpindi, Pakistan. The conference provided a good opportunity to showcase CIIT as one of the leading institutes of Pakistan in front of a multinational and multidisciplinary audience. At the end of the conference the representative of COMSATS UNESCO Water Chair was awarded with the certificates to acknowledge their contribution.

Strengthening of Capacities in Hydro-informatics and Integrated Flood Management in Pakistan- Researchers from Pakistan at Kumamoto University Japan (16-25 Jan 2017)

Japan Science and Technology Agency (JST) annually offer “Japan-Asia Youth Exchange Program in Science” (SAKURA Exchange Program in Science). This program aims to promote exchanges between young Asian researchers and Japanese researchers in fields of science and technology through the close collaboration of industry-academia-government by facilitating short-term visits of competent Asian youths to Japan for studying and experiencing cutting-edge Japanese technology. This year, for the first time, this program is being offered in Pakistan.

A team of ten members including UNESCO chair, faculty members and graduate students from different universities of Pakistan went to Kumamoto University Japan using the platform of UNESCO Water Chair for capacity building in Hydro-informatics. The training visit was organized under the Sakura Science Program of Japan Science and Technology Agency (JST) through UNESCO Water Chair on Hydro-informatics for Integrated Water Resources Management in collaboration with Kumamoto University, UNESCO Regional Science Bureau for Asia and the Pacific. The visit program focused on “Strengthening of Capacities in Hydro-informatics and Integrated Flood Management in Pakistan” and included Interactive Sessions, Lectures, Workshop, Field, Lab and Industrial Visits.

UNESCO Chairs Conference on “Mobilizing UNESCO Science Chairs for Policy Action towards the 2030 Agenda” (04 - 11 July 2017)

Prof. Dr. Tayyeb Akram, UNESCO Water Chair COMSATS participated in the International Conference of UNESCO Chair’s on “Mobilizing UNESCO Science Chairs for Policy Action towards the 2030 Agenda”, organized by the UNESCO – Division of Science Policy and Capacity-Building Sector for Natural Sciences with the cooperation of the Swiss Federal Department of Foreign Affairs, held at Geneva, Switzerland. 112 member representatives of 86 UNESCO Chairs and Networks in Natural Sciences, out of the 172 existing, participated in the Conference. The conference aimed to strengthen the UNESCO Chair’s collaboration towards implementation of the 2030 Agenda and its Sustainable Development Goals. During, the declaration signatory ceremony of “The Geneva Actions on Human Water Security” was held at University of Geneva in which more than 50 people from 20 different countries participated.

International Workshop on “Building Resilience to Climate Change Risk and Vulnerability to Meet Water Security Challenges” Langkawi, Malaysia (10-11 July 2017)

The two-day workshop sponsored by UNESCO was attended by 38 participants from a total of 12 countries in Asia Pacific (Australia, Indonesia, Iran, Japan, Malaysia, Nepal, Pakistan, People’s Republic of China, Philippines) and Africa (Namibia, Nigeria, Sudan). The workshop brought together policy makers, UNESCO Chairs, Authorities in HELP river basin in Asia Pacific and Africa, IHP Malaysia local partners, as well as experts, universities and other stakeholder.

The overall objective of the workshop is to improve understands the climate change impact on water resources and water-related disasters, and in this regards upscale existing local approaches in IWRM for water security in order to strengthen Asia-Africa Cooperation. During, a presentation was given by Dr. Asma Younas regarding the role of COMSATS, UNESCO Water Chair, in Knowledge Systems for Integrated Water Resources Management and water related activities of COMSATS Institute of Information Technology.

Project Partners’ Meeting Strategic Strengthening of Flood Warning and Management Capacity of Pakistan-Phase, UN Conference Room, Serena Business Complex, Islamabad (31 July 2017)

UNESCO Islamabad invited Dr. Asma Younas, Principal Scientific Officer, UNESCO Chair on Knowledge Systems for Integrated Water Resources Management, CIIT-

Wah Campus to a project progress review meeting of UNESCO's Flood Management Project, organized at UN Conference Room, Serena, Pakistan. All participants briefly discussed the progress, challenges faced, future plans and their role and responsibilities.

UNESCO Chair platform facilitation to Civil Engineering Undergraduate Students at CIIT Wah Campus

UNESCO Chair supervised a final year undergraduate student's project titled "Diagnostic Hydrological Analysis of River Jehlum" of BS Civil Engineering programme in Fall 2017 semester. One graduating student secured admission in MSc Flood Risk Management at UNESCO IHE Delft Institute for Water Education, using UNESCO Chair platform.

Participation in International Conference at NUST

UNESCO Chair participated in UNESCO International Conference on "Water Processing for Sustainable Development", held at National University of Sciences and Technology (NUST), Islamabad, Pakistan, 1-2 August, 2017.

Meeting at PCRWR on Groundwater Management

UNESCO Chair participated in Sub-Regional Experts Meeting on Groundwater Management, 3-4 August, 2017 at Pakistan Council of Research in Water Resources (PCRWR), Islamabad, Pakistan.

Training on Water Resource Management

Core member of UNESCO Water Chair attended five days training on Water Resource Management in Pakistan organized by Akhtar Hameed Khan, National Center for Rural Development (AHK NCRD) Islamabad, Pakistan from December 4-8, 2017. The training covered following areas related to water resource management:

- a) Overview of water resources in Pakistan
- b) Water Resources Management
- c) Rain water Harvesting, Drip Irrigation
- d) Water logging and Salinity