



U.S.-Pakistan Center for Advanced Studies in Water
Mehran University of Engineering & Technology
Jamshoro, Sindh, Pakistan

2022 Volume I

Newsletter

Eco-Innovation for Sustainable Industrial Growth

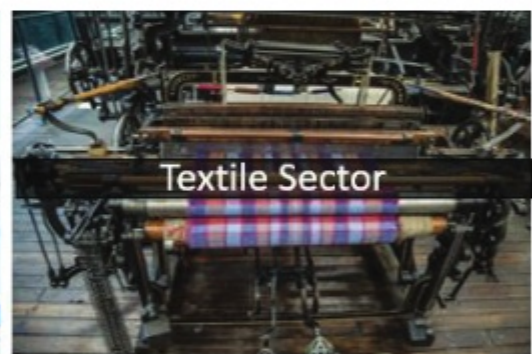
Principal Investigator: Prof. Dr. Zubair Ahmed



Food Sector



Chemical/Pharma Sector



Textile Sector



Automobile & Allied Sector



Steel Sector



Marble Sector

US-Pakistan Center for Advanced Studies in Water (USPCASW) has initiated a research project on Eco-innovations in the industrial facilities of SITE. The project is funded by Higher Education Commission (HEC) Pakistan. Prof. Dr. Zubair Ahmed, Mehran University of Engineering and Technology, Jamshoro, is the principal investigator (PI) of the proposed research. Prof. Dr. Jinhui Li, Tsinghua University, China, is an academic partner from China.

PREFACE

US-Pakistan Center for Advanced Studies in Water (USPCASW) has initiated a research project on Eco-innovations in the industrial facilities of SITE. The project is funded by Higher Education Commission (HEC) Pakistan. Prof. Dr. Zubair Ahmed, Mehran University of Engineering and Technology, Jamshoro, is the principal investigator (PI) of the proposed research. Prof. Dr. Jinhui Li, Tsinghua University, China, is an academic partner from China.

The proposed research will investigate eco-innovations within the major industrial sectors by analyzing production technologies associated wastewater reducing/elimination measures and innovative wastewater treatment technologies. The proposed research aims to develop a policy framework for adopting the eco-innovation approach. The objectives of the research are:

- (1) To examine existing environmental measures in major industrial sectors.
- (2) To develop new eco-innovation options.
- (3) To develop a plan for the management of underlying factors creating challenges in the adoption of eco-innovation strategies.

In a broader aspect, the proposed research will widen the door of industrial-academia collaborations in terms of technological development for sustainable growth. It will promote an eco-innovation strategy within existing industries. Policy framework protocols will be prepared for Eco-goals (eco-innovation goals) to be implemented in different industrial sectors.

Specifically, the study will identify the gaps within the industries and develop new environmental options, including technology advancement, process modifications, and waste reduction techniques, which are environmentally sustainable and economically feasible.

CONSULTATION WITH INDUSTRIAL ASSOCIATIONS & EXPERTS

Project Launch Seminar



On 25th February 2022, the project launch seminar was held at Sindh Industrial and Trade Estate (S.I.T.E.), Karachi. The seminar aimed to disseminate project information and engage the industrial partners in adopting and promoting eco-innovation strategies in their respective businesses. This seminar served as an opportunity for making the executive committee and members of industries of the S.I.T.E. association understand the project's scope, objectives, and outcomes.

The seminar was attended by Dr. Zubair Ahmed (Project Principal Investigator), Dr. Rasool Bux Mahar (Director, U.S.P.C.A.S.W., M.U.E.T. Jamshoro, Project Co-Principal Investigator), and Dr. Naveed Ahmed (Project Co-Principal Investigator) and about 20 participants of the SITE association including the executive committee and member industries.

Mr. Muhammad Kamran Arbi (Vice President SITE Association) welcomed the participants by delivering a welcome speech. Dr. Rasool Bux Mahar (Director, U.S.P.C.A.S.W., M.U.E.T. Jamshoro, Project Co-Principal Investigator) briefed participants about U.S.P.C.A.S.W., and its achievement after that Dr. Zubair Ahmed (Project Principal Investigator) delivered a detailed presentation on project objectives.

After the seminar's successful completion, Mr. Saud Mehmood (Senior Vice President SITE Association) gave a vote of thanks. He also assured the project team of continuous collaboration and participation of the members of industries of the SITE Association throughout the project execution.

Stakeholder Consultative Meeting with Steel Industry Executives

On April 20, 2022, the project team met Mr. Zueb Sale Salemwala and Shakir Ali Bhaiji, key project stakeholders from the Steel sector, to enhance academia-industry collaboration. During the meeting, Dr Zubair Ahmed briefed them about the project and discussed the influence of project activities on the steel sector. Also, the environmental issues of the steel sector were discussed. Mr. Zueb Sale Salemwala



informed Dr Zubair Ahmed about eco-innovations in his industry, such as using solar plants, recovering zinc dust and reusing water. He emphasized the heavy energy consumption in steel industries, highlighting it as the most significant problem of the steel sector. Zueb Sale Salemwala and the project team shook hands and agreed to create an industry-academia collaboration. Zueb Sale Salemwala assured the project team of his continuous support throughout the project.

Meeting with Steel Industry Expert

On May 18, 2022, the project team met Mr. Amir Rasool, a key stakeholder from the Steel sector, to enhance academia-industry collaboration. During the meeting, Dr Zubair Ahmed briefed Mr. Amir Rasool about the project and discussed the influence of project activities on the steel sector. Also, the environmental issues of the steel sector and possible sustainable solutions were discussed. Mr. Amir Rasool informed Dr. Zubair Ahmed about eco-innovations in his industry, such as the use of solar energy and recovery of phosphorus slag from waste and particular reasons for not controlling emissions generated from the blast furnace. Dr.



Zubair Ahmed assured Mr. Amir Rasool his full technical support in dealing with environmental problems. Mr. Amir Rasool and the project team shook hands and agreed to create an industry-academia collaboration. Mr. Rasool also welcomed the project team to initiate project activities in his industry and assured them of his continuous support throughout the project.

Meeting with Food Industry Expert

May 18, 2022, the project team met with Mr. Muslim S. Mohamedi, a key stakeholder from food sector, to



enhance academia-industry collaboration. The project team met. During the meeting Dr. Zubair Ahmed briefed the project and the discussed the influence of project activities on food sector. During the meeting, the environmental issues of food sector and possible sustainable solutions were also brought under discussion. Mr. Muslim S. Mohamedi and the project team shook hands and agreed

to create industry academia collaboration. Mr. Mohamedi also welcomes the projects team to initiate project activites in his industry and assured for continuous support throughout the project.



Project Team



Prof. Dr. Zubair Ahmed | Principal Investigator

Dr. Zubair Ahmed has more than 30 years of teaching, research, and consulting experience. Currently, he is working as a Professor and Head of the Department of Environmental Engineering and Sciences at the US – Pakistan Center for Advanced Studies in Water, Mehran UET Jamshoro. Dr. Ahmed also taught at Sejong University (Seoul, South Korea), Hallym University (Cheoachun, South Korea), Universiti Teknologi (Malaysia), King Abdul Aziz University (Jeddah, Saudi Arabia), Western University (Canada) and University of Utah (USA). He taught different environmental subjects, including Physical, Chemical, and Biological Processes, Waste Water Treatment and Design, Advanced water and Wastewater Treatment design, and Water Reuse. Dr. Zubair's research interest is in biological wastewater treatment, particularly in the application of membrane bioreactors for nutrient removal, biofouling, microbial community structure in sludges, anaerobic digestion of waste, and the fate of emerging pollutants in MBRs. He has been involved in several national and international environmental projects, including the implementation of cleaner production technologies in textile industries, techno-economic studies of wastewater treatment plants, environmental impact assessments and environmental audits of industrial units, pilot plant studies for domestic/industrial wastewater treatment using innovative processes such as sulfur-based autotrophic denitrification & up-flow anaerobic sludge blanket process. His primary research interest is in biological wastewater treatment, particularly in the application of membrane bioreactors for nutrient removal, biofouling, microbial community structure in sludges, anaerobic digestion of waste, and the fate of emerging pollutants in MBRs.



Prof. Dr. Rasool Bux Mahar | Co-Principal Investigator

Meritorious Professor/ Director, in the U.S.-Pakistan Center for Advanced Studies in Water at Mehran University of Engineering and Technology, Jamshoro, and also as Chief Editor of Mehran University Research Journal of Engineering & Technology. He did Ph.D. from Tsinghua University, Beijing, China, and a Post Doctorate from the University of Utah, USA. He has more than 25 years of teaching and research experience. Dr. Mahar published more than 100 research papers in International Repute Journals and presented more than 50 papers at National and International conferences and symposiums. Dr. Mahar has supervised 12 PhDs and more than 100 master's students. He has remained as a Co-director/ HoD of the Environmental Engineering Department, in the Institute of Environmental Engineering & Management; Mehran University. Worked as a Project Coordinator/P.I in various research projects funded by various donors, i.e. Pak (HEC) & US(S&T), HEC, DFID, TEARFUND, & UNEP, etc. He worked as Principle Investigator in Heinrich Böll Stiftung (German foundation). He worked on bio-energy especially converting organic waste into energy. He conducted various Environmental Impact Assessments (EIAs) for

rehabilitation of canals, minors, and distributaries, which includes Baseline survey, identification of environmental issues and their mitigation measures, formulation of Environmental Management Plan (EMP); Environmental Scoping and Screening Reports (ESSR) of various projects.



Dr. Asmatullah | Policy Expert

Dr. Asmat Ullah is currently working as Assistant Professor in the US – Pakistan Centre for Advanced Studies in Water (USPCASW) at Mehran University of Engineering and Technology (MUET), Jamshoro, Pakistan. He is an environmental and resource economist with scientific and professional interests in crosscutting issues, including life cycle assessment, circular economy, sustainable consumption and production, farming and natural resource sustainability, contemporary discourse analysis, regional institutional analysis, contextual analysis, regional policy analysis, environment, and society, and participatory irrigation management. He has more than ten years of working experience in various national and international organizations. He was involved in different research projects related to sustainable consumption and production, circular economy, water resources management, agriculture, food security, and agricultural water productivity.



Dr. Naveed Ahmed | Co-Principal Investigator

Dr. Naveed Ahmed has a Ph.D. degree in Biological Environment from Kangwon National University, South Korea with around 3 years of postdoctoral research experience in South Korea. Most of his work is published in peer-reviewed articles in prestigious scientific journals. His research interests include biosensor development, toxicity assessment, sulfur-oxidizing bacteria, struvite recovery from swine wastewater, anaerobic digestion, and sulfur-utilized denitrification of groundwater.



Dr. Tanveer Ahmed Gadhi | Technical Expert

Dr. Tanveer Ahmed Gadhi has a doctorate in Chemical Engineering with distinction from Politecnico di Torino (POLITO), Italy, and currently working as an Assistant Professor in US. Pakistan Center for Advanced Studies in Water, Mehran University of Engineering and Technology, Jamshoro. His doctorate work was related to the design and development of photocatalytic nanomaterials and their application in wastewater treatment. He has remained as visiting scholar at the University of Utah, USA, the University of Ontario, Institute of Technology (UOIT), Oshawa, Canada, the UNIVERSIDAD NACIONAL AUTONOMA DE MEXICO (UNAM), Mexico. He has five years of working experience in the leading textile industry in Pakistan, with added expertise on the conservation of industrial water, energy and chemicals, and environmental sustainability. He has published various research papers in reputed international and national journals and is the author of two book chapters in international books and led several industrial projects related to environmental management, wastewater treatment, recycling, and reuse. He is also collaborating with Surface Chemistry of Material Group-DISAT-POLITO, on the research and development of nanomaterials to treat emerging contaminants and water-borne pathogens.



Mr. Bahadur Ali
Research Assistant



Mr. Suresh Kumar
Research Assistant



Mr. Hamza Sarwar
Research Assistant



Mr. Sajjad Anwar Memon
MS Scholar



Mr. Adeel Ahmed
MS Scholar

Contact



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+92 334 3833220, +92 333 3666427, +92 313 306290



zahmed.uspcasw@faculty.muet.edu.pk



**U.S.-Pakistan Center for Advanced
Studies in Water**
Mehran University of Engineering and
Technology, Jamshoro, 76062,
Sindh, Pakistan.