Project Title: Effective Water Management and Reuse in Textile Industry

Duration: 01 June 2018 to 31 August 2019

Background

US-Pakistan Center for Advanced Studies in Water has collaborated with Al-Rahim Textile Industries (ATI) through the USAID funded research project, for wastewater treatment and reuse: approaching zero water discharge in textile wet-processing. The textile wet-processes are water intensive and generate large amount of wastewater, while the available conventional treatment of textile wastewater is only related to partial treatment of the water i.e. up to acceptable limits and further discharge without employing any practical reuse of the treated wastewater. The aimed project focused to address the adoption of effective water management system within textile processes to improve water-use efficiency and further the effective treatment of the wastewater and reuse of the reclaimed water in textile processes. The USPCAS-W and ATI has jointly organized and managed this project for the development and implementation of the water management system and wastewater treatment to ensure steady water supply for their processes and to support conservation of water resources.

Scope

In Pakistan, textile sector has been neglected in terms of managing its water consumption and wastewater discharge. Therefore, the project will highlight the considerations in making certain policy for managing and mitigating the water consumption and reuse in textile sector, further to conserve water resources and to provide steady supply for continuous productivity and developing economy of Pakistan.

Targets and Approach

The main targets are to explore the possibilities by which the water consumption could be effectively managed and conserved at source and further to develop the wastewater treatment techniques by which the quality and amount of the reclaimed water could be improved for the effective reuse in textile processes; an effective approach towards zero water discharge. In order to achieve these targets, each process at ATI is analyzed for water requirements and adjusting the actual water consumption accordingly. Moreover, to develop best operating practices of effluent treatment and high production of reclaimed water, each process generated wastewater characteristics is analyzed in relation with the mixed effluent wastewater characteristics, to manage operation of effluent treatment plant accordingly. During project activities the capacity building and training of involved assistants and MS scholars from USPCAS-W and technical staff of ATI is done for sustainable adoption of water management system, effective operation of effluent treatment plant and water reuse. Moreover, a novel lab-scale prototype was developed and deployed at ATI, for the treatment of saline/brackish water, rejected from the RO membrane, in which biochar adsorption was introduced within distillation to maximize distillation efficiency and to control separated salts.

Expected Outcomes:

- The project aimed to develop potential guidelines for textile sector, in progressing on efficient management of water use and reuse of treated water in textile processes.
- The aimed project will help to sustain the economic growth of textile sector with the steady water availability and further the empowerment of employees including females; as the females are main working force of textile stitching and garment sections.
- Value addition to existing knowledge with highlights on the challenges and potential solution for effective water management and reuse in textile sector.
- The project is aimed at contributing towards achieving the two SDG-6 targets:
  6.3: Improving water quality, wastewater treatment and safe reuse.
  6.4: Substantial increase in water-use efficiency.
  6.6: Protect and restore water-related ecosystem.

Project Team:

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