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US-Pakistan Centers for Advanced Studies in Water MUET Jamshoro

16th Quarterly Progress Report
July – September 2018

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MUET, Jamshoro

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LIST OF ACRONYMS

ACIAR	Australian Center for International Agricultural Research
CAS	Center for Advanced Studies
CAS-W	Center for Advanced Studies in Water
EnvEng	Environmental Engineering
GCISC	Global Change Impact Studies Centre
HEC	Higher Education Commission
HID	Hydraulics, Irrigation, and Drainage Engineering
ICARDA	International Center for Agricultural Research in the Dry Areas
IWRM	Integrated Water Resources Management
M&E	Monitoring & Evaluation
MS	Masters of Science
MSF	Mission Strategic Framework
MUET	Mehran University of Engineering and Technology
NRPU	National Research Program for Universities
NRSP	National Rural Support Program
NUST	National University of Science & Technology
OIG	Office of the Inspector General
PCRWR	Pakistan Council for Research and Water Resources
Ph.D.	Doctor of Philosophy
PI	Principal Investigator
Rs.	Rupees
SDGs	Sustainable Development Goals
UEPL	United Energy Private Limited.
USA	United States of America
USAID	United States Agency for International Development
USPCAS-W	U.S.-Pakistan Center for Advanced Studies in Water
UU	University of Utah
WaSH	Water, Sanitation, and Health
WRC	Women Resource Center

EXECUTIVE SUMMARY

This report presents the activities done by the center during the reporting period which contribute towards achieving its targets and sustainability. This also gives the plan for the next quarter and update on minimum mandatory results to be achieved as per cooperative agreement during the project period.

USAID Deputy Mission Director for Sindh & Balochistan Mr. John Smith-Sreen accompanied with USAID Deputy Office Director Michael Hryshchyshyn visited center held meetings with faculty, PMU staff, and the Vice Chancellor. During the visit, USAID officials interacted with CAS-W students who recently completed their exchange program at USA universities. They learned about their academic experience and impressions about life in the United States. They also praised the higher education collaboration between Mehran and Utah Universities as an important component of USAID's overall water investments in Pakistan.

A diploma course titled "Flood Forecasting and Hazard Management" for officials/engineers of Sindh Irrigation Department, Government of Sindh was initiated last year in November. In August 2018 the diploma course was concluded, and the certificate distribution ceremony was arranged which was attended by Justice Retired Amir Hani Muslim, Chairman of the Supreme Court-mandated Commission on Water and Sanitation of Sindh. Honorable Justice appreciated the efforts taken by the MUET Water Center serving as a nucleus and a laboratory to facilitate the adoption of necessary measures in the translation of water Sustainable Development Goal (SDG). The diploma course included seven training modules which were designed by the experts of USPCAS-W MUET and the University of Utah, USA. Prof. Dr. Sajjad Ahmad, University of Nevada – Las Vegas, Dr. Steve Burain, University of Utah, Dr. Arjumand Zaidi, Dr. Kamran Ansari, Mr. Waqas Ahmed and Mr. Babar Naeem of MUET and other experts from SUPARCO delivered the course as resource persons.

Second Young Researchers' National Conference on Water and Environment (NCWE-18) was held on 2-3 August 2018. Vice Chancellor MUET Dr. Mohammad Aslam Uqaili inaugurated the conference. This young researchers' national conference is one of the nice initiatives taken by the Center last year, and it will be continued in the coming years. The aim of the conference was to provide an ideal academic platform to young researchers and scholars from all over the country to present, share and exchange their latest findings of water and environment-related research work. Senator Nisar A. Memon was the chief guest in the closing ceremony of the conference.

University of Utah's training mission visited center under the theme of "Sustaining Processes and Practices of USPCASW". The mission emphasized upon advancing processes and practices in curriculum reform, research, governance, and sustainability of USPCASW. Alongside; mission also did focused training on irrigation & drainage field measurement and remote sensing research to address salinity management and conducted targeted training in epidemiologic research design and methods. The mission team was comprised of Dr. Steve Burian, Dr. Sajjad Ahmad, Dr. Aslam Chaudhry, Dr. Josh Garn, Dr. Jeff Ullman, Dr. Jim VanDerslice, and Dr. Mercedes Ward, A.J. Brown and Dr. Jose Chavez.

So far; the center has awarded 30 research grants in three rounds. Five projects of 1st round have already been completed, and the results have been disseminated through seminars and publication of reports. It is worth mentioning here that the center has been successful in fetching external funds through 14 projects from different national and international organizations amounting Rs. 130 million. All these projects also include industry-academia

collaboration and client-driven projects along with seed grants to different academic institutes of the country.

The center continued its academic and graduate training activities. All on-going batches appeared in their final exams of respective semesters and were promoted to the next semester. New batch (Fall 2018) was admitted in which 86 students were given provisional admission and 76 students actually enrolled them in the four MS programs. At the end of the reporting period, 70 students continued with their studies and 6 students could not continue. As a whole center's active enrollment stand as 259; including 88 females and 32 alumni.

In August, a group of 9 persons; including 1 faculty, 2 lab staff and 6 students returned back after successfully completing their summer exchange training program at the University of Utah and Colorado State University USA. With this total cohort number of exchange training beneficiaries stands as 109 including 34 women. 25 students also successfully completed their 4-6 week summer internship at a different organization.

The center organized a dialogue on the subject "Water and Women – Does the Water Sector Development have a gender?" in collaboration with the Center for Social Change (CSC) on 15th August 2018. A panel discussion was organized which was chaired by Chairperson Sindh Human Rights Commission Justice (Rtd.) Majida Rizvi. The panelists included; Ms. Afia Salam – Environment Journalist, Ms. Zofeen T. Ebrahim – Pakistan Editor for The Third Pole, Ms. Sanaa Baxamoosa – General Manager Hisaar Foundation and Advocate Ali Palh – Director Rights Pakistan.

During the reporting period experts from the field including; Dr. Hassan Abbas, a renowned hydrologist and international water expert and Dr. Zeeshan Khatri, Professor at Department of Textile Engineering, Mehran University of Engineering and Technology delivered graduate seminars on water-related issues.

MSF Indicators Tracking Sheet

Ref #	MSF Indicator	LoP Target	Achievement				Total
			2015	2016	2017	2018	
4b.	Percentage of graduates from USG-supported workforce development or tertiary education programs reporting themselves as employed	80%	The data is to be collected by USAID's 3 rd party contractor and reported by USAID.				
4.1.2a.	Number of individuals from underserved and/or disadvantaged groups accessing workforce development or tertiary education programs	250	50	46	56	59+70 =129	281
4.1.2b.	Number of students receiving a US-funded scholarship to attend Pakistani institutions of higher education	250	50	46	55	59+70 =129	280
4.2b.	Number of U.S.-host country joint development research projects	10	-	3	Since Q3 2017, UU is reporting on this indicator.		
4.2.3a.	Number of host-country individuals who completed USG-funded short-term training or exchange programs involving higher education institutions	250	6	25	Since Q3 2017, UU is reporting on this indicator.		

4.2.3b.	Number of USG funded tertiary education and workforce development programs that include experiential and/or applied learning opportunities	4	3	1	-	-	4
4.2.3c.	Number of academic research initiatives whose findings have been replicated, applied or taken to market	50	-	-	-	-	-
4.3b.	Percentage of employers expressing satisfaction with USG supported graduates	-	The data is to be collected by USAID's 3 rd party contractor and reported by USAID.				
4.3c.	Percentage of stakeholders expressing satisfaction with research at USG supported universities	-	The data is to be collected by USAID's 3 rd party contractor and reported by USAID.				

PERFORMANCE MANAGEMENT PLAN UPDATE: PERFORMANCE AGAINST INDICATORS AND MILESTONES

1. COMPONENT I: GOVERNANCE OF USPCAS-W

The focus of this component is two-fold: i) to support MUET through its partner American university to provide technical assistance and capacity building as it deems necessary to enable MUET to lead implementation of the CAS in Water and ii) to develop governance structures within MUET with clearly defined roles and responsibilities to allow for institutionalization and sustainability of the CAS in addressing water-related issues and challenges.

1.1 Project Management

Project Management Unit (PMU) continued its operations actively and held planning and review meetings on a regular basis for efficient project implementation. It also maintained close liaison with Utah University and USAID, held regular interaction with them for the smooth functioning of the program. In this connection; formal meetings were arranged with UU teams, faculty and staff to obtain feedback on various ongoing activities and planning of new initiatives.

1.2 Reporting

During the reporting period center submitted Quarterly Progress Report and other customized reports to AOR, as and when required. As usual, the center also updated the quarterly data in the Pakinfo.

1.3 3rd Party Evaluation

USAID conducted 3rd party evaluation of the project through MSI for which MSI team comprised of Mr. William Kieran Peter (Team Lead), Mr. Ayub Qutb (Sector Specialist), Dr. Hina Qazmi (Sector Specialist), Mr. Umer Yar (Researcher), and Mr. Junaid Ashraf (Researcher) visited center from 16 – 25 April 2018 and held different activities for the purpose. The MSI team met with faculty, students, and management of the center along with various stakeholders and partners of the program. Subsequently; on 11th June, MSI once again visited the center and conducted a data validation workshop. Final report of the 3rd party evaluation is awaited.

1.4 OIG Program Audit

OIG audit team comprised of Mr. Benjamin Owusu, Mr. David Clark, USAID Islamabad visited the center for two days on 2 – 3 May 2018. The audit team visited the building, verified the lab equipment and held meetings with faculty, PMU staff, and students of the center. Report of OIG audit is yet awaited.

1.5 AOR's Meeting with Students

A group of students departed to Utah for the exchange program on 15th August 2018. Prior to their departure, Mr. Hafeezullah Samo, AOR USAID met with students and congratulated them. He appreciated hard work of the students and congratulated them on their selection for the exchange training program. He explained that the exchange program is not merely learning academic courses but it also paves the way for socio-cultural activities and exploring

the wonders of America. Alongside; the exchange program also serves as the great opportunity for networking with other students from different parts of the world.



1.6 Review of Governance and Sustainability Plan

This meeting reviewed progress on two issues; i) implementation status of the governance matrix – finalized in January 2018 and ii) finalization of a sustainability plan. The purpose of the meeting was to have an honest debate on the implementation challenges and their solutions. One by one action point of the governance matrix was reviewed, and actions agreed. The meeting also reviewed the progress made in revising the sustainability plan.

1.7 Faculty Performance Evaluation Process

This short-term training was aimed at creating a transparent faculty evaluation process. Dr. Mike Barber and Dr. Jeff Ullman shared their insights and experiences with processes related to Retention, Promotion, and Tenure at U.S. universities. PMU staff worked with Dr. Barber and Dr. Ullman to refine and document faculty evaluation processes and develop clear and transparent tools and practices.

2. COMPONENT II: CURRICULUM REFORM

Curriculum reform is one of the main components of the project to enhance the quality of the curriculum to a world-class level while making it compatible with the market needs. Since the beginning of the project, University of Utah and MUET faculty and management have been very keen to introduce such market-oriented programs which shall attract all the stakeholders and create a market for the graduates. This involved a range of initiatives, reviews, inquiries, renewed debates and practicalities of the curriculum both at MUET and University of Utah. After detailed deliberations within specific working groups on course development involving faculty of both MUET and UU, curricula have been finalized for all Masters and Ph.D. programs namely; i) Hydraulics, Irrigation, and Drainage (HID), ii) Integrated Water Resources Management (IWRM), iii) Environmental Engineering (EnvEng) and Water Sanitation & Health Sciences (WaSH) Programs. However; this is an on-going activity and is periodically reviewed for the improvement of the curriculum. As a whole under all the four streams of MS and Ph.D. program, the center has introduced and reformed 32 courses.

The center also plans to carry out a market needs assessment survey aimed at assessing the alignment of present curricula with market/industry needs and make necessary improvements. Few consulting firms have submitted the proposals for this study which are under review.

During the reporting period, the UU team along with the center's faculty discussed the recommendations made by the UU team with regard to reform the overall curriculum of the

center for all four-degree programs. After detailed deliberations, it was agreed that the revised curriculum would be implemented from fall 2018 session.

2.1 Market Needs Assessment

The center has awarded a research project for conducting a market needs assessment to assess the alignment of CAS-W curriculum and research agenda with the market/industry needs. The project has been awarded to Ipsos – a consulting firm based in Islamabad.

Last quarter, the Ipsos team led by Mr. Hasan A. Rizvi – the lead consultant visited center and discussed the project objectives and the methodology with the PMU staff. Ipsos almost completed its field work including 25 Key Informants Interviews.

During the reporting period, in order to validate the primary data, Ipsos conducted two workshops; one at Islamabad and the other in Karachi. The center received the draft final report of the study and reviewed it. The detailed comments have been communicated to Ipsos for their consideration. The final report, after incorporating the comments, is awaited.

2.2 Consultative Meeting on Curriculum Improvement

During the UU mission in July 2018, UU team held a meeting with all faculty of the center and discussed the revisions in the curriculum, proposed during the last UU mission. The meeting discussed the Curriculum Adaptation Action Plan and its follow-up mechanism. Alongside, the meeting also discussed the processes for assessment of program outcomes.

3. COMPONENT III: HIGH QUALITY APPLIED RESEARCH

Developing and implementing a self-sustaining applied research program in water is one of the key objectives of CAS-W. This component aims to resolve the sustainable water management challenges & issues that affect the lives of people and impede economic growth. A detailed research agenda has been developed through a consultative process at various levels with water experts, academicians, policy makers, and other relevant stakeholders. Under this program, research grants are being awarded from time to time. The research grants are awarded on a competitive and merit basis. The preference is given to those projects which are to promote water-related applied research that meets the needs of the industry and community hence contributing to resolving the water challenges of Pakistan.

The center also plans to carry out a market needs assessment survey aimed at assessing the alignment of present research agenda with market/industry needs and make necessary improvements.

3.1 Research Grants

Update on 1st Round of Grants

Under the 1st call of proposals, six projects, amounting Rs. 14 million were awarded. During the reporting period, the status of the six grant projects stands as under;

S #	Title of Project	Name of PI	Lead Institution	Status/Remarks
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1	Assessment of Environmental Degradation of Manchar Lake	Engr. Zamir Ahmed Soomro	PCRWR	Completed.
2	Decision Support System for Water Resources Planning and Management	Mr. Waqas Ahmed	USPCAS-W	Completed.
3	Climate Change: Assessing Impact of Seawater Intrusion on Soil, Water & Environment in Indus delta using GIS & Remote Sensing	Dr. Altaf Siyal	USPCAS-W	Completed.
4	Managing Uncertainties in Projected Impacts of Climate Change on Precipitation Patterns in the Indus Basin, Pakistan	Mr. Ghulam Hussain Dars	USPCAS-W	Completed.
5	Water Conservation and Mitigation of Arsenic in Rice through Sprinkler Irrigation System	Dr. Abida Farooqi	Dept. of Environ. Science, QAU Islamabad	On-going and delayed. Completion date: July 2018
6	Identification of Antibiotic-Resistant Bacteria in Different Source of water in Hyderabad City and its surroundings	Dr. R B Mahar	USPCAS-W	Completed

Update on 2nd Round of Grants

Under the 2nd call of proposals, seven projects were awarded grants amounting Rs. 20.6 million. The update is given as under;

S #	Title of Project	Name of PI	Lead Institution	Status/Remarks
1	Changing Climate in Pakistan: Food Security and Water Management Implications	Mr. G. H. Dars	USPCAS-W, MUET	On-going. The project is extended for 6 months up to 6th January 2019
2	Assessing the Effectiveness of Linear Anionic Polyacrylamide (LA-PAM) to Reduce Seepage Losses in Unlined Canals	Dr. Munir Babar	USPCAS-W, MUET	On-going. Completion in October 2018
3	Crop Water Productivity Assessment of Major Cropping Systems in Sindh and Punjab	Dr. Asmatullah	USPCASW, MUET	On-going. Completion in November 2018
4	Keenjhar Lake Water Quality Assessment and Valuing Ecosystems Services (KL-WAVES)	Ms. Uzma Imran	USPCAS-W, MUET	On-going. The project is extended for 4 months up to November 6, 2018
5	Monitoring Seawater Intrusion in the Indus Delta for Climate Change Adaptation	Dr. Ashfaq Shaikh	PCRWR, Islamabad	Delayed. Completion in June 2018
6	Assessment of water, sanitation and hygiene services in primary schools of Sindh, addressing Sustainable Development Goal -6	Dr. Jameel Soomro	USPCAS-W, MUET	On-going
7	Redefining/Reclassifying Agro-Ecological Zones of Pakistan Using Field and Satellite Data	Dr. Altaf Siyal	USPCAS-W, MUET	On-going

Update on 3rd Round of Grants

Under 3rd call, 17 projects including 2 on industry-academia collaboration and 2 client-driven projects were awarded.

The detail and the status of these projects are given as under;

S. #	Title of Project	Name of PI and Institution	Status
1	Assessing the relevance of CAS-W program outputs to Sector/Industry needs – Market Needs Assessment	Abdul Sattar Babar; Ipsos, Pakistan	Agreement signed and the project started on 1 st Apr and will be completed in Aug 2018.
2	Treatment and reuse of wastewater of fish processing industry	Prof. Dr. Zubair Ahmed; USPCAS-W, MUET	Agreement signed and the project started on 1 st Apr and will be completed in Mar 2019.
3	An Integrated Development Plan for the Barani Areas of the Punjab Province (Barani-2 Report)	Dr. Arjumand Zaidi; USPCAS-W, MUET, and ABAD	Agreement signed and the project started on 1 st Jun and will be completed in Sept 2019.
4	Governance and Civic Capacity for the Provision of Drinking Water in Urban Sindh	Maha Ahmed; National University of Science and Technology	Agreement signed and the project started on 1 st Jun and will be completed in Jan 2019.
5	Isolation and Characterization of Antimicrobial Resistant Water Contaminant and Bacteriophage Remedy to Improve Water Quality	Dr. Ayaz Ahmed, Dr. Panjwani Center For Molecular Medicine and Drug Research (PCMD)	Agreement signed and the project started on 1 st June and will be completed in Nov 2019.
6	2D Materials Design and Discovery in Water Treatment	Ghulam Mustafa; ICCBS, University of Karachi	Agreement signed and the project started on 1 st Jun and will be completed in Jul 2019.
7	Simulation Modeling and Analysis of Household Water Consumption in Pakistan using Hybrid Approach	Dr. Imran Mahmood; National University of Science and Technology	Agreement signed and the project started on 1 st Jun and will be completed in May 2019.
8	Assessment of sediment pollution in a diverse (Goi Nala) catchment of River Jhelum, Azad Jammu, and Kashmir	Dr. Mohsin Zafar; The University of Poonch Rawalakot	Agreement signed and the project started on 1 st Jun and will be completed in Nov 2019.
9	Multifunctional nanocomposite membranes for wastewater treatment	Dr. Farha Masood; COMSATS Institute of Information and Tech.	Agreement signed and the project started on 1 st Jun and will be completed in Nov 2019.
10	Wastewater Treatment and Reuse to approach zero water discharge in Al-Rahim Textile industries: a substantial increase in water use efficiency in Textile processing	Dr. Tanveer Ahmed Gadhi; USPCAS-W, MUET and Al-Rahim Textile Industry	Agreement signed and the project started on 1 st Jun and will be completed in May 2019.
11	Closed-loop secondary-level canal monitoring for equitable and reliable distribution of water	Prof. Abdul Latif Qureshi; USPCAS-W, MUET, and SIDA	Agreement signed and the project started on 1 st Jun and will be completed in Nov 2019.
12	Integrating water sanitation and hygiene indicators into the National Health Information System in healthcare facilities of Pakistan: the use of this novel tool in a randomized cluster trial.	Jamil Ahmed; USPCAS-W, MUET	Agreement signed and the project started on 1 st July and will be completed in Sept 2019.

13	Eco-innovation in textile processing industry of KITE for sustainable product processing	Dr. Zubair Ahmed; USPCAS-W, MUET	Agreement signed and the project started on 1 st July and will be completed in Sept 2019.
14	Production of drinking water from Indus River through Canal bank filtration for Mehran University Jamshoro: Estimation of yield, pumping requirements, bioclogging, and characterization of water quality.	Prof. Dr. Zubair Ahmed; USPCAS-W, MUET	Agreement signed and the project started on 1 st July and will be completed in Jun 2019.
15	Indus River Water Level Monitoring in Sindh using Satellite Radar Altimetry	Dr. Arjumand Zaidi; USPCAS-W, MUET	Agreement to be signed.
16	Improved Hydro meteorological forecast under changing climate by using robust modeling techniques	Ghulam Hussain Dars; USPCAS-W, MUET	Agreement signed and the project started on 1 st Jun and will be completed in Nov 2019.
17	Estimating Sustainability Cost of Urban Water Supply for Hyderabad City, Sindh, Pakistan	Rakhshinda Bano; USPCAS-W, MUET	Agreement to be signed.

So far, the center has awarded 30 research projects, whereas; the target was to grant 28 research grants over the life of the project.

3.2 Donor-Funded Projects

In total, the center has twelve projects from outside the project funding, and the total cost of those projects approximately amounts Rs. 120 million. The last four projects have been won during the reporting period. The status of these projects is given as under;

S#	Project Title	Supervisor/PI	Sponsor	Amount (Rs. in M)	Status
1	Identifying the likely impacts of coal combustion residues from Thar coal-fired power plant on the Region's ecosystem	Dr. R.B Mahar	HEINRICH BOLL STIFTUNG	2.0	Completed
2	Sustainable Fresh Groundwater Management for Irrigated Agriculture in Lower Indus Basin (LIB) using PMWIN model	Dr. Abdul Latif Qureshi	HEC	4.7	Ongoing
3	Improving groundwater management to enhance Agriculture and farming livelihood in Pakistan	Dr. Abdul Latif Qureshi	ACIAR	2.88	Ongoing
4	Diffusion and adoption through partnerships and action of the best watershed rehabilitation and irrigation practices and technologies to help rural farmers -Phase-II	Dr. Abdul Latif Qureshi	ICARDA	1.3	Completed
5	Capacity Building at MUET, Jamshoro to address drinking water issues in Pakistan	Dr. R.B Mahar	US-Pak (HEC)	50.0	Ongoing
6	Optimization of anaerobic digestion process using co-digestion of crop residues and buffalo dung.”	Dr. R.B Mahar	HEC	4.4	Ongoing
7	Efficient, participatory irrigation institutions to support productive and sustainable agriculture in South Asia.	Dr. Bakhshal Lashari	ACIAR	9.139	Ongoing
8	Capacity Building Of The Officers / Officials Of Sindh Irrigation Department	Dr. Bakhshal Lashari	Sindh Irrigation Department	42.0	Ongoing
9	Role and loss of biodiversity: implications for the local community of Hangu District, KPK	Dr. Asmatullah	HEC	1.044	Ongoing
10	Baseline Survey of Existing WaSH Conditions in Thatta City (Ward No. 3)	Muhammad Ali	NRSP	0.5	Completed

11	Proposal for Rehabilitation of sewage treatment plant (STP) installed at Niamat gas Field, United Energy Pakistan limited	Dr. R.B Mahar	UEPL	1.016	Completed
12	Smart groundwater monitoring for sustainable groundwater extraction in Sindh	Waqas Ahmed	NRPU-HEC	2.988	Ongoing
13	Situation Analysis of Waste Management at processing facilities of United Energy Pakistan (UEP)	Dr. Zubair Ahmed Dr. R.B Mahar	UEPL	1.1	Ongoing
14	Impact of Climate Change in the Indus River Delta and Coastal Region of Pakistan	Altaf a. siyal	GCISC	1.5	Ongoing
15	The Impact of Informal Institutions on Participatory Irrigation Management Outcomes	Dr. Mercedes Ward	Water Sector Improvement Program (WISP), MUET, UU	5.8	Ongoing
				130.367	

4. COMPONENT IV: GRADUATE AND POST GRADUATE TRAINING

4.1 Academic Program

USPCAS-W at MUET offers MS and Ph.D. degree programs in four streams;

- i. Hydraulics, Irrigation, and Drainage (HID)
- ii. Integrated Water Resources Management (IWRM)
- iii. Environmental Engineering (EnvEng)
- iv. Water, Sanitation and Health Sciences (WaSH) – MS only

Overall Update on Student Enrollment

Total Students	Fall 2015	Fall 2016	Fall 2017	Spring 2018	Total Enrollment
Female	12	13	20	21	66 (35%)
Male	36	25	28	34	123
Total	48	38	48	55	189*
Ph.D. Students					
Female	1	0	0	2	3 (15%)
Male	9	0	4	4	17
Total	10	0	4	6	20
MS Students					
Female	11	13	20	19	63 (37.3%)
Male	27	25	24	30	106
Total	38	38	44	49	169

* The students accessing HEI and scholarship numbers earlier reported to USAID/Pakinfo are 211. The number of active students who actually continued with the program now stands as 189 at the end of September. There is a total drop out of 22 students in all four batches.

Batch wise Update

1st Batch: Fall 2015

32 MS students of the 1st batch have already passed out last year and were conferred degrees in January 2018. However; the remaining six MS students are undergoing their final examinations, and the 10 Ph.D. scholars are concluding their research works.

2nd Batch: Fall 2016

The students of 2nd batch, i.e., fall 2016 are undergoing their final examinations and submission of the thesis. It is expected that this batch will pass out in the coming few months and the degree awarding ceremony would be held in the month of January 2019.

3rd Batch: Fall 2017

The batch is continuing their fourth/last semester and is working on their research and thesis writing.

4th Batch: Spring 2018

Spring 2018 batch successfully passed out its 1st semester and was promoted to 2nd semester and is continuing.

New Batch: Fall 2018

Pre-Admission Test for MS/ Ph.D. Programs

The Pre-admission Test for Master of Sciences (MS) and Doctor of Philosophy (Ph.D.) fifth batch, i.e. fall 2018 was held on Sunday – July 29, 2018, at five different cities throughout Pakistan simultaneously. Out of 581 candidates, 494 appeared in the test to seek admission.



The entrance test was conducted in five centers at different parts of the country. These centers included; i) Pakistan Scientific & Technological Information Center (PASTIC), Quaid-e-Azam University, Islamabad, ii) New Academic Block, U.S.-Pakistan Center for Advanced Studies in Energy (USPCAS-E), University of Engineering & Technology (UET), Peshawar, iii) Department of Agriculture Engineering, Bahauddin Zakariya University, Multan, iv) Water Resource Research Center (WRRRC) at Balochistan University of Information Technology, Engineering & Management Sciences (BUIITEMS) Takatu Campus, Quetta and v) USPCAS-W, Mehran UET Jamshoro.

Enrollment of Fall 2018 Batch

Subsequent to result of the admission test, 86 students were given provisional admission in the four MS degree program. None of the candidates could qualify for any of the three Ph.D. programs. Out of 86 provisionally admitted students, 76 students were enrolled. At the end of the first month of the session, i.e. 30th September 2018, six students could not continue with their respective programs and 70 students, including 22 females, continued their studies. The detail of new batch admissions is given as under;

Degree program	Females	Males	Total Active enrollment*
MS HID	1	20	21
MS IWRM	6	7	13
MS EnvEng	4	18	22
MS WaSH Sciences	11	3	14
Total	22 (31.4%)	48	70

* Student numbers as found active at the end of September 2018. These may change in coming months during 1st semester.

4.2 Graduate Seminar Series

Graduate Seminar Series is one of the key features of the Center. During the reporting period, the following seminars were held;



Dr. Hassan Abbas, a renowned hydrologist and water expert of Pakistan delivered a seminar “Pakistan’s Water Challenges: Need for Integrated Water Resources Management” on September 28, 2018.

Dr. Zeeshan Khatri, Professor at Department of Textile Engineering, Mehran University of Engineering and Technology delivered Seminar “Technology Innovation and Entrepreneurship: Ecosystem of Universities of Pakistan” on September 18, 2018.

4.3 Exchange & Scholarship Program

The exchange and scholarship training program is a central feature of the USPCAS-W that provides an opportunity for faculty & students to visit partner universities in the USA.

The 7th group of students and staff of the center including three females successfully completed their Summer Exchange Training at the University of Utah and Colorado State University, the USA from 3rd June to 15th August 2018. The goal of this particular summer exchange program was to inspire the next generation of water entrepreneurs in Pakistan. The program emphasis on to develop business, ventures, and technologies to help achieve targets of Sustainable Development Goal (SDG) – 6.

The group successfully completed this exchange program included; Dr. M. Rizwan, Assistant Professor, Mr. Mehran Soomro, Water Lab Technician, Mr. Muneer Memon, Soil Scientist, and MS scholars: Ms. Sorth Ansari, Mr. Aizaz Ali Qureshi, Ms. Sabira Muneer, Mr. Asrlan Mehmood, Mr. Muhammad Shoaib Jamro and Marvi Sharma.



All participants except Mr. Munir Memon returned back after completing their the exchange program whereas; Mr. Munir Memon was slipped off and did not come back on his own. The incident has already been reported to USAID.

Detail of Exchange Program Beneficiaries (As of 15th August 2018)

Category	Female	Male	Total
Faculty	3 (21%)	11	14
Students	31 (34%)	61	92
Staff	-	3	03
	34 (31%)	75	109

Fall 2018 Cohort of Exchange Program

The eighth group of 18 MS Scholars, including 8 females, has departed for a one-semester exchange visit to the United States on 15th August 2018. The details would be reported at the completion and return from the exchange program.

4.4 Internship

During the reporting period, 29 students were placed on internship at different organizations. The details are as under;

S #	Student Name	Placement Organization
1	Mr. Salman Sarwar	Irrigation Department Baluchistan
2	Mr. Zulfiqar Ali	PCRWR
3	Mr. Jawad Ahmed	PCRWR
4	Mr. Ali Raza Mangi	PCRWR
5	Mr. Nazir Ahmed	PCRWR
6	Mr. Abdul Basit	NESPAK
7	Mr. Abdul Manan	UNiCol
8	Ms. Onaiza Syed	Orangi Pilot Project
9	Ms. Rija	NRSP
10	Ms. Johar	NRSP

11	Mr. Waheed Ali	GIS, USPCASW
12	Mr. Hussain Bakhsh	PCRWR
13	Ms. Noor-un-Nisa Ghanghro	PCRWR
14	Mr. Dolat Singh	AWARE
15	Mr. Sarwan Ahmed Nahiyoon	PCRWR
16	Ms. Sabeen	Women Resource Center, MUET
17	Ms. Qanita Tarique	Women Resource Center, MUET
18	Mr. Waheed Ali	GIS, USPCASW
19	Mr. Zaki Zaidi	GIS, USPCASW
20	Ms. Saima Awan	GIS, USPCASW
21	Ms. Falak Naz	GIS, USPCASW
22	Ms. Vengus	GIS, USPCASW
23	Ms. Uroosa Memon	GIS, USPCASW
24	Mr. Dileep Kumar	GIS, USPCASW
25	Mr. Talal	Irrigation Department Baluchistan

With these internships, the total number of students provided an opportunity of internship stand 63 including 22 female students.

5. COMPONENT V: SUSTAINABILITY THROUGH PRIVATE SECTOR LINKS

5.1 USAID Deputy Mission Director visits Center

USAID Deputy Mission Director for Sindh & Balochistan Mr. John Smith-Sreen and USAID Deputy Office Director Michael Hryshchyn visited the center on 6th September 2018. While meeting with students and staff of the center, USAID team talked about ongoing Pak-US collaboration on effective and efficient water management, education, and research. During their visit, USAID officials interacted with CAS-W students who recently completed their exchange program at USA universities. They learned about their academic experience and impressions about life in the United States.



Mr. Smith-Sreen emphasized that the U.S. government is proud to partner with Mehran University and the University of Utah on such an important issue of Water. He further informed that the US had invested in multiple water-related activities in Sindh and Balochistan. He praised the higher education collaboration between Mehran and Utah Universities as an important component of our overall water investments in Pakistan.

5.2 Diploma Course of Sindh Irrigation Department

The diploma course was a collaborative effort of USPCAS-W MUET and Sindh Irrigation Department, Government of Sindh after signing of the Memorandum of Understanding (MoU) between the two entities in November 2017. It included funding support of Rs.41 million for “Capacity Building of Officers/ Officials of Sindh Irrigation Department.” Total 12 participants who were professional engineers in the Irrigation Department, Government of Sindh completed the diploma course “Flood Forecasting and Flood Hazard Management” which included seven training modules and 16 credit hours that was designed by the experts of USPCAS-W MUET and the University of Utah, USA. Prof. Dr. Sajjad Ahmad, University



Nevada, Las Vegas USA, Dr. Steve Burain, University of Utah, Dr. Arjumand Zaidi, Dr. Kamran Ansari, Mr. Waqas Ahmed, and Mr. Babar Naeem and others experts from SUPARCO delivered the course as resource persons.

Justice Retired Amir Hani Muslim, Chairman of Supreme Court-mandated Commission on Water and Sanitation of Sindh, was the chief guest on the occasion of certificates distribution ceremony of the diploma course. Honorable Justice appreciated the efforts taken by the MUET Water Center serving as a nucleus and a laboratory to facilitate the adoption of necessary measures in the translation of water Sustainable Development Goal (SDG).

MUET Vice Chancellor Prof. Dr. M. Aslam Uqaili said that the Diploma Course indeed focused on a very important need of the region – “Flood Forecasting and Flood Hazard Management” which was actually a fine example of not only recognition of the potential of the MUET Water Center in meeting the challenges of water sector but it is also an example of joint and

coordinated efforts of the Center and the Government of Sindh. Secretary Irrigation Mr. Jamal Mustafa Syed categorically mentioned that this diploma course had enhanced the capacity of the officers of the department and now they will apply the knowledge in the field with their acquired skills and expertise. He appreciated the efforts of trainers and management of USPCAS-W MUET for the successful completion of the diploma course.

Dr. Steve Burain, Dr. Bakhshal Lashari, Prof. Rasool Bux Mahar of USPCAS-W, Syed Mazhar Ali Shah, Member Sindh Indus River System Authority (IRSA), Dr. M. Aslam Chaudhry, Former Secretary Irrigation Khalid Hyder Memon, Project Coordinator Water Sector Improvement Project (WSIP) Dr. Fateh Mari, Chief Engineers, MUET Deans, University of Utah Faculty, USPCAS-W Faculty, Civil Society Activists and large number of students attended the ceremony.

A detailed report can be accessed at:

<http://water.mueta.edu.pk/diploma-course-concluded-at-muet-water-center/>

5.3 2nd Young Researchers' National Conference on Water and Environment

Second, of its series, a 2-Day Young Researchers' National Conference on Water and Environment (NCWE-18) was held on 2-3 August 2018. Vice Chancellor MUET Dr. Mohammad Aslam Uqaili inaugurated the conference and said that this young researchers' national conference is one of the nice initiatives taken by the Center last year and it will be continued in the coming years. It was briefed that aim of the conference was to provide an ideal academic platform to young researchers and scholars from all over the country to present, share and exchange their latest findings of water and environment-related research work.



Day – 1

Plenary Session: 1st plenary session of the conference included keynote talks by Dr. Muhammad Ashraf – DG PCRWR, Mr. Mahmood Akhtar Cheema - IUCN Country Head and Dr. Fateh Marri - Project Coordinator WISP Government of Sindh. Dr. Rasool Bux Mahar chaired the plenary session, and Dr. Najma Memon from the University of Sindh performed the duties of secretary.

Later on, the two separate technical sessions were held at in the Auditorium and Conference room of the Center. Where around 28 young researchers from USPCAS-W MUET, University of Gujrat, NUST Islamabad, University of Agriculture Faisalabad presented their research papers on various conference themes.

Day – 2

Plenary Session: Mr. Muhammad Abid – Water Management Expert of WB Project Govt. of Baluchistan and Engr. Beena Riaz, Environment Specialist of Karachi Neighborhood Improvement Project (KNIP), Government of Sindh gave key talks in the session. Senator Nisar A. Memon – the former Federal Minister, chaired the session and gave keynote speech. Subsequently; some 26 papers were presented in the two parallel technical sessions.

Senator Nisar A. Memon was the chief guest in the closing ceremony of the conference accompanied by the MUET Vice Chancellor. The prizes and certificates were distributed among winners and organizers of the conference.



Detailed report on the two-day conference can be accessed at:

<http://water.mueta.edu.pk/2nd-two-day-young-researchers-national-conference-on-water-and-environment-kicks-off-at-uspcas-w-muet/>

<http://water.mueta.edu.pk/2nd-two-day-young-researchers-national-conference-on-water-and-environment-concluded-at-muet-water-center/>

5.4 Policy Dialogue on Water and Women

The center organized a dialogue on the subject “Water and Women – Does the Water Sector Development have a gender?” in collaboration with the Center for Social Change (CSC) on 15th August 2018. A panel discussion was organized which was chaired by Chairperson Sindh Human Rights Commission Justice (Rtd.) Majida Rizvi.

The panel included the following:

S. #	Speaker Introduction	Topic of Talk
1	Ms. Afia Salam – Environment Journalist	Water and Women Nexus

2	Ms. Zofeen T. Ebrahim – Pakistan Editor for The Third Pole	Water and Media
3	Ms. Sanaa Baxamoosa – General Manager Hisaar Foundation	Women and Water : Experiences from the Field
4	Advocate Ali Palh – Director Rights Pakistan	Legal Barriers in Achieving Gender Equity in Water Distribution in Rural Sindh

Chairperson Sindh Human Rights Commission Justice Majida Rizvi in her keynote speech said that since water is a human right, so there is a strong bond between water and women. She said that the government and civil society must come forward for the collaborative efforts to ensure the women rights in general and for their water rights in particular. Justice Rizvi – the first woman judge of Pakistan, said that



water and women nexus through the institutional support could bring prosperity in the society. Vice Chancellor MUET Prof. Dr. Mohammad Aslam Uqaili in his closing remarks said that MUET was the first public sector the University of the Country in which gender equity policy was implemented.

Later on, speakers and notable guests inaugurated the Plant for Pakistan Campaign by planting the trees in the premises of the Center.

5.5 University of Utah Missions

July 2018

The theme of July 2018 UU Mission was “Sustaining Processes and Practices of USPCASW”. The mission visited center from 16 – 23 July which emphasized upon advancing processes and practices in curriculum reform, research, governance, and sustainability of USPCASW. The mission included two parts. In part 1, a series of meetings and short-term training were focused for improving governance of faculty performance evaluation and research administration. Part 2 included WaSH-focused training and meetings on curriculum review, thesis topic alignment with research thrusts, vision and standards for the training center, and center governance and sustainability.

The mission team was comprised of Dr. Steve Burian, Dr. Sajjad Ahmad, Dr. Aslam Chaudhry, Dr. Josh Garn, Dr. Jeff Ullman, Dr. Jim VanDerslice, and Dr. Mercedes Ward.

Faculty Performance Evaluation Process

This short-term training was aimed at creating a transparent faculty evaluation process. Dr. Mike Barber and Dr. Jeff Ullman shared their insights and experiences with processes related to Retention, Promotion, and Tenure at U.S. universities. PMU staff worked with Dr. Barber

and Dr. Ullman to refine and document faculty evaluation processes and develop clear and transparent tools and practices.

Proposal Review and Critique

The session was facilitated by Dr. Mike Barber, Civil and Environmental Engineering, University of Utah. This short-term training was organized into small group sessions to review, critique, and brainstorm to improve existing proposals. Dr. Barber facilitated small group reviews of 3-5 proposals and conducted the review like a typical peer-review process. The participants reviewed forms to provide written feedback to the investigator.

WASH Sciences Training

The training was facilitated by Dr. Jim VanDerslice, Division of Public Health, the University of Utah and Dr. Josh Garn, Division of Public Health, University of Nevada, Reno. The training was attended by all WaSH faculty and selected students of WaSH department. The training went for 6 days from 18-23 July 2018.

Training objectives were to i) conduct comprehensive review of WASH competencies and curriculum, identify gaps and overlap, revise syllabi and review assessment activities, ii) develop group research agenda and individual research development plans for junior faculty, iii) train faculty in sample collection and processing methods for assessing presence of antibiotic-resistant gram-negative bacteria as a means of surveillance in for WASH-related transmission of ARB (e.g., sink drains or latrines), and iv) conduct targeted training in epidemiologic research design and methods.

Development of Training Programs

The session was facilitated by Dr. Aslam Chaudhry and was attended by PMU staff, leaders of four thematic groups, leaders of research teams, faculty and visiting UU team. The session discussed the Center's long-term sustainability plan which includes offering and organizing a series of technical training to academicians, water experts, practitioners, and policy makers, etc. with two objectives in mind. First, to generate a stream of sustainable financial revenues and, second, to continue strengthening and enhancing the center's technical credibility among peer institutions. This meeting focused on developing a Training Plan and defining its expected quality and implementation arrangements.

Establishment of Water Extension Services Unit

Dr. Aslam Chaudhry facilitated the session and was attended by PMU staff, faculty, visiting UU team and experts with experience in this field from Agricultural Extension, Participatory Irrigation Management, Efficient Irrigation Techniques, and academia.

It is imperative to disseminate the results of on-going research to the farmers for enabling them to adapt to ever-increasing water stress. One way to approach this issue is to establish a water extension service unit at the Center. The meeting was aimed at discussing the idea of providing advisory services to the farmers which will gradually be expanded to include industries, utilities, and other end-users. After detailed brain-storming and obtaining views from of the stakeholders and experts, it was principally agreed that center shall not set-up any separate extension services unit but should intervene in enhancing the technical capacity of government's extension series department.

Thesis Topic Selection and Alignment with Center Research Agenda

Dr. Sajjad Ahmed facilitated the meeting which was attended by all faculty of the center. The sole purpose of the meeting was to discuss the selection process of students' thesis topics and its incoherence with the defined USPCAS-W research agenda and key research thrusts. This meeting focused on establishing a process of defining student thesis topics to align with ongoing research initiatives or new research activities that align with faculty strengths or emerging opportunities for funding or scholarly impact.

Curriculum Review and Continuous Improvement Process

Dr. Steve Burian facilitated this meeting which was attended by all faculty. It was discussed that the degree programs have been in place for nearly three years and several revisions have been implemented with the assistance of UU. The objective of this meeting was to create a process for assessing program outcomes, curriculum review, and revision, to review the curriculum within thematic groups.

Review of Governance Matrix and Sustainability Plan

This meeting reviewed progress on two issues; i) implementation status of the governance matrix – finalized in January 2018 and ii) finalization of a sustainability plan. The purpose of the meeting was to have an honest debate on the implementation challenges and their solutions. One by one action point of the governance matrix was reviewed, and actions agreed. The meeting also reviewed the progress made in revising the sustainability plan.

August 2018

The August mission (6 – 10 August) was focused on deep dive into irrigation & drainage field measurement and remote sensing research to address salinity management. The mission was comprised of experts from CSU including A.J. Brown – Soil & Crop Sciences and Dr. Jose Chavez – Civil & Environmental Engineering.

Salinity Field Measurements Workshop: Mission conducted a specific workshop on “Salinity Field Measurements”. The goal of the workshop was to present different technologies and methods to measure soil salinity in the field. The approach was first to discuss technologies and use the necessary equipment. The workshop also stimulated understanding of the different components needed to appropriately map soil salinity. During the workshop, the participants were also engaged in a hands-on demonstration in the field.

Curriculum Review Meeting: Alongside the specific workshop, curriculum review meeting was also held with the HID faculty. The present courses were discussed, and their contents were reviewed in detail. The mission provided suggestions to reform some of the courses to be applied from Spring 2019 session.

Thesis Topic Selection: A separate meeting with HID faculty was held to review the thesis topic selection and review processes. Dr. Jose Chavez provided suggestions on aligning thesis topics with CAS-W research identity, faculty research strengths, and/or emerging funding opportunities.

Remote Sensing of Salinity Workshop: The goal of the workshop was to present remote sensing methodologies that are adequate to identify and quantify salinity in agricultural fields. The approach was to show different remote sensing methods and data processing steps. The workshop stimulated the development of a holistic view regarding remote sensing of Ag salinity research. Participants were also engaged in the manipulation and data processing of hand-held and field sensors.

5.6 Building Partnerships

MoU with Indus Earth Trust

A MoU was signed between USPCAS-W and Indus Earth Trust – an NGO. The MoU was signed by Mr. Shahid Sayeed Khan, IET Chief Executive Officer and Dr. Bakhshal Lashari, Director of MUET Water Center. The MoU aims to take collaborative, sincere and genuine efforts in developing and implementing joint advocacy and research leading to the sustainable development and management of water resources in Pakistan.

6. Gender Equity

6.1 Women Resource Center

Since the center has moved into the new building in June 2017, hence it became imperative to shift the Women Resource Center (WRC) to a new location from the old premises of the center. Moreover; it was also needed to keep the WRC at some central location of the campus. Last quarter, the WRC was shifted to new premises of campus in the Student-Teacher Center. The operational plan was developed, and the center was furnished with basic furniture and equipment. During the reporting period, two students were placed at WRC who helped center in the interior design of the WRC and development of some material and plans. Since the recruitment of staff to be engaged with the center is under process hence the center is not operationalized yet.

7. COMMUNICATION & OUTREACH

7.1 Dawn Sindh Education Fair 2018

The DAWN Media Group organized its 4th Sindh Education Fair – a two-day event in held Hyderabad. The event was aimed at highlighting the available Higher Education opportunities in the country. It provided representatives from colleges & universities of higher education with a unique opportunity to interact with high achieving college and university-bound students. CAS-W also set-up a stall in the expo where it was visited by a large number of students, their parents and various stakeholders who showed their great interest in the academic, research and scholarship programs of the center.

7.2 Radio Show

USAID/Pakistan arranged a radio show on FM 101 on 13th September in which students and staff recently returned back from exchange training program participated. Those included; Lab Technician Mr. Mehran Soomro and students Ms. Marvi Sharma, Ms. Sorath Ansari, and Mr. Shoaib Jamro. The participants talked about their feelings on the completion of an exchange training program in the USA, their experiences, aspirations, expectations, and challenges. They also spoke about their feelings being part of the USAID funded program and that how their life has transformed by availing this opportunity. They also shared about their future dreams and plans.

7.3 Program Communications/Promotion

- Website of the center was kept operational & updated during the reporting period. <http://water.muet.edu.pk/>
- USPCAS-W Facebook remains highly active and updated ([@uspcasw](#))
- Twitter page of the center also remains active ([#uspcasw MUET](#))
- 11th issue of Center's Newsletter covering a period of Apr – Jun 2018 was published.
- The center also continued obtaining space in print media. Significant media coverage can be accessed from the link: <http://water.muet.edu.pk/about-us/news-views/uspcasw-news/>.

8. MANDATORY MINIMUM RESULTS AND TARGETS

The status of minimum mandatory results (MMR) against set targets is given below:

Minimum Mandatory Results (MMR)	Progress for the Reporting Period (Jul-Sept 2018)
At least 250 degrees awarded by USPCAS-W in five years of the project to students who receive USPCAS-W funded scholarships, resulting in more degree holding technical experts in the field of water resource management.	<ul style="list-style-type: none"> - During the reporting period, no degrees awarded. - So far, 32 MS students of the 1st batch (2015) awarded degrees.
In five years of the project at least 200 faculty and students participated in exchanges to the U.S that will result in university faculty with enhanced teaching and mentoring skills and students with stronger technical and research skills	<ul style="list-style-type: none"> - During the reporting period, 6 students, including 3 females, and 3 staff including one faculty member completed their exchange training at USA universities. - In total 109 individuals, including 34 females have completed their exchange & training program.
At least 50% of USPCAS-W graduates employed in a field related to water activities.	<p>During the reporting period, networking and establishment of close liaison is a continuous process to help achieve this target.</p> <p>The data is to be collected by USAID's 3rd party and reported by USAID.</p>
At least one strong American-Pakistani university linkage established that significantly improves teaching & research and improves how universities interact with and receive funds from the business community in the water management sector.	<p>MUET has already entered into a partnership with University of Utah (UU). Moreover; UU has further established a consortium of five Institutions/Universities viz: Colorado State University (CSU), City University of New York (CUNY), Stockholm Environment Institute (SEI), UNESCO Institute for Higher Education (IHE-W) and Nevada State University.</p>
The wide regional diversity of students trained, of whom at least 50% falls under economically disadvantaged criteria.	<p>In general, people do not opt for higher education due to the affordability factor. The center is considering all enrolled students as a disadvantaged group with very few exceptions. In order to achieve this target, MUET implements an outreach program to encourage students from economically disadvantaged areas to benefit from USPCAS-W program.</p>
Percentage of a female student and faculty participation in USPCAS-W activities exceeds by 15% the present rate of participation at the hosting university, with the objective of reaching 50% female participation in CAS-W activities.	<p>During the reporting period, the female ratio stands as under:</p> <ul style="list-style-type: none"> - The female ratio in staff including faculty stand at 20% and the ratio in students stands at 34%.
At least 50 advanced research projects conducted by CAS-W during the project period.	<p>This includes 28 grants to be awarded by the center and 22 projects won from outside the center.</p> <ul style="list-style-type: none"> - During the reporting period 1 new donor-funded project was initiated bringing the total projects to 15 against planned 22 projects.

	- So far; 30 grants have already been awarded against 28 planned grants.
At least 50% CAS-W students placed in internships with private sector entities.	During the reporting period, 29 students were placed on an internship at different organizations. - This brings the total number of students benefitted from the internship opportunity as 63.
The Council for Research and Policy (CRP) think tank made operational.	The council has been established in the name of National Water Research Network.
At least five public-private partnerships (PPPs) or Global Development Alliances (GDAs) established through CAS-W.	During the reporting period, MoU was signed with a NGO: Indus Earth Trust.
Three professional certification, degrees or programs established at CAS-W.	Seven degree programs; 4 MS and 3 Ph.D. programs in HID, IWRM, EnvEng and WaSH Sciences have already been started.
At least 20 CAS-W courses that feature a modern, Pakistan centric curriculum that meets international standards.	With the joint efforts of MUET and UU faculty, 40 new and improved courses have been developed and introduced.
A dedicated library established to support CAS-W priorities	To achieve this target, the procurement of the latest publication of books under all four streams is continuing. Until the center moves into the new building, now under construction, the MUET has allocated a corner in the main library for the center to serve as USPCAS-W library.
Specialized research/laboratory facilities at MUET established or upgraded to include the use of innovative and appropriate Information and Communications Technology that supports the service and problem-solving focus of the center.	Six laboratories have been established and are operational; i) GIS & Remote Sensing Lab ii) Computer & Software Lab iii) Advanced Water Quality Lab iv) Soil & Water Lab v) Pilot Scale Water Quality Lab vi) Hydraulics Lab
At least 28 applied research grants each valued at about Rs. 3 million awarded to MUET faculty and researchers and/or other Pakistani universities or Research and Development organizations related to the water resource management and water technologies.	During the reporting period, no new projects have been awarded. - As a whole, 30 grant projects have been awarded.

9. ACTIVITIES, TIMELINES AND TARGETS FOR 17th QTR (Oct – Dec 2018) - Tentative

Ref. #	COMPONENT WISE ACTIVITIES	No. of Units	Oct	Nov	Dec
Component 1. Governance of the CAS and the Higher Education					
1.1	Development of FAR Policy	1	---	---	---
1.2	Meetings of Project Management Unit /Faculty Meetings	3	1	1	1
1.3	Program Review with UU Mission	1	-	-	1
1.4	Faculty Handbook	1	---	---	1
1.5	Quarterly Progress Report	1	1		
1.6	Quarterly Financial Report	1	1		
Component 2. Curriculum Reform					
2.1	Capacity Building of Faculty	-	---	---	---
2.2	Review of Degree Programs	-	---	---	---
2.3	Development of implementation plan based on market survey	1	---	---	1
Component 3. High-Quality Applied Research					
3.1	Monitoring of USPCAS-W Awarded Research Projects	-	---	---	---
3.2	Obtain donor-funded projects	2	---	---	2
3.3	Research and Policy Papers published or presented by CAS-W faculty and student	5	1	2	2
3.4	Transformation of research products into policy document	2	---	---	2
3.5	Commercialization of Laboratories	-	---	---	---
3.6	Development of protocols/SoPs	1	---	---	1
3.7	Certification with Pakistan Standards and Quality Control Authority – PSQCA)	-	---	---	---
3.8	Outreach government and non-government organizations for marketing of research facilities	-	---	---	---
3.9	Establishment and Strengthening of Laboratories				
3.9.1	Strengthening of Soil and Water Analysis Lab	-	---	---	---
3.9.2	Strengthening of Advanced Water & Wastewater Quality Control Lab	-	---	---	---
3.9.3	Strengthening of Pilot Scale Water Quality	-	---	---	---
3.9.4	Strengthening of Computer and Software Lab	-	---	---	---
3.9.5	Strengthening of GIS and Remote Sensing Lab	-	---	---	---
Component 4: Graduate and Post Graduate Training					

4.1	Professional Certificate Trainings (Long Term & Short Term)	1	---	---	1
4.2	Exchange Training Program	20	---	---	20
4.3	Graduate Seminar Sessions	4	1	2	1
4.4	Graduate Field Visits	2	-	1	1
Component 5: Sustainability through Industry Private sector links					
5.1	Sustainability plan submitted to HEC	1	---	---	1
5.2	Strengthen Industries-Academia Collaboration	-	---	---	---
5.3	Promote TVC and Entrepreneurship	-	---	---	---
5.4	Implement Outreach Program	-	---	---	---
5.5	Establishment of Resource Mobilization Unit	-	---	---	---
5.6	Dissemination of the Research Findings	-	---	---	---
5.7	Developing productive linkages with national and international organizations	-	---	---	---
5.8	Strengthening of Career Advice and Placement Directorate	-	---	---	---
5.9	Operationalization of Water Treatment Plan and the Bottled Water Company	-	---	---	---
5.10	Operationalization and Strengthening of Women Resource Center	-	---	---	---
5.11	Enhancement of Library resources	-	---	---	---
5.12	Enhancement Endowment Fund	-	---	---	---
5.13	Develop promotional material	-	---	---	---
5.14	Improve and enhance website	-	---	---	---

10. PERFORMANCE MONITORING & TRACKING FOR THE 15th QTR (JUL – SEPT 2018)

#	Indicator	Target (LOP)	Last (15 th) Quarter Progress	Current (16 th) Quarter Progress	Cumulative Progress (30 th Sept 2018)	Remarks (if any)
Component 1: Governance of the PCAS-W and the Higher Education						
	Establishment of Board of Governors/Steering Committee	01	N/A	N/A	01	
	Establishment of Council for Research and Policy	01	N/A	N/A	01	Establishment of NWRN
	Establishment of Curriculum Advisory Council/Board of Studies	01	N/A	N/A	01	
Component 2: Curriculum reform						
	Number of universities/TTIs offering new degree and graduate programs	01	N/A	N/A	01	
	Number of new courses introduced in CAS-W that feature a modern, relevant and Pakistan-centric curriculum that meet international standards	20	-	7	40	
	Number of professional certifications/Degrees launched by CAS-W	04	N/A	N/A	07	4 MS and 3 PhD
	Number of CAS-W graduates who became entrepreneurs/open businesses	20	-	-	00	Data on this indicator is to be collected by USAID 3 rd Party.
	Number of US-supported CAS- W tertiary education programs/ post graduate programs that include experiential and /or applied to learn opportunities	04	N/A	-	07	4 MS and 3 PhD
	Number of US University linkages developed during the 5 year period by CAS-W which result in either student and faculty exchange, academic or research collaboration	03	-	-	3	The University of Utah, Colorado State University, University of Nevada
	Number of non-degree training designed/conducted by CAS-W	15	1	-	06	- Diploma in Flood Forecasting, - Geo-informatics, - Basic HEC-RAS CC Projections, - Advanced HEC-RAS, - SPSS Training, - Improving Groundwater
Component 3: High quality applied research						
	A number of new policy paper to which CAS-W contributed.	01	-	-	00	

Number of CAS-W funded applied research projects (including Joint projects with UJ)	28 (10 joint)	17	-	33	30 grants awarded and 3 Flagship projects
Number of academic research initiated where findings were replicated, applied or taken to market	50	-	-	00	
Number of Research Projects undertaken by CAS-W under external funding	22	2	1	15	
Number of research papers published or presented by CAS-W faculty	15	-	1	113	42 papers published
Number of international and national conferences conducted by CAS-W	07 (05 national)	-	1	09	2 nd Young Researchers'' National Conference
Number of improved or newly constructed facilities for staff and research in CAS-W	01	N/A	N/A	01	The new building is completed and operational
Number of CAS-W students placed in internships with private sector entities	125	5	24	63	
Component 4: Graduate and post graduate training					
Graduates from CAS-W reporting themselves as employed	200	-	-	22	This is MSF indicator, and as per PIRS the data for this is to be collected by a 3 rd party. However; we are reporting on it as per our data collection!
Number of students graduating from CAS-W in the field of Water	250	-2	66	259	
Number of graduates from CAS-W reporting themselves as employed in the Water sector	125	-		7	This is MSF indicator, and as per PIRS the data for this is to be collected by a 3 rd party. However; we are reporting on it as per our data collection!

Number of students receiving US-funded scholarships to attend Pakistani institutions of higher education	250	-1	65	258	
Number of participants funded for professional certification and training who come from economically disadvantaged areas	150	-	65	258	Considering all enrolled students here.
Number of host-country individuals who completed USG-funded short-term training or exchange program involving higher education institutions	200	22	9	109	75 male and 34 female

Component 5: Sustainability through industry/private sector links

Amount of funds raised by CAS-W from commercial activity, private sector	USD 1 million	-	-	1.30	Cost of donor-funded projects
At least one strong American-Pakistani university linkage established that significantly improves teaching and research.	01	N/A	N/A	01	UU
Number of public-private partnerships (PPPs) or Global Development Alliances(GDAs) established	05	-	1	11	
The number of female participation in CAS-W students/scholarship is reached/increased	125	-	20	88	
The number of female participation in employment of CAS-W faculty and staff is reached/increased	41	-	-	12	

Note: Text highlighted in yellow are MSF indicator (PakInfo).

11. QUARTERLY FINANCIAL ANALYSIS (JUL – SEPT 2018)

All amounts in USD

S #	Main Head	Total Allocation US \$	Actual Expense Incurred	Expense incurred during 4 th QTR (Jul - Sept 2018)			Total expenditure incurred	Overall Utilization
				Up to 30-Jun-18	Plan	Actual		
1	Salaries and fringe benefits	6,212,764	2,408,662	218,553	186,201	85%	2,594,863	42%
2	Travel & Transportation	89,000	117,039	5,420	5,507	102%	122,546	138%
3	Program Costs	3,899,837	1,861,338	196,252	191,383	98%	2,052,721	53%
4	Equipment	3,575,809	3,550,278	25,000	30,455	122%	3,580,733	100%
5	Contractual	80,389	11,870	2,000	1,575	79%	13,445	17%
6	Training	212,400	156,886	9,500	8,553	90%	165,439	78%
7	Other Direct Costs	712,370	295,390	23,016	17,460	76%	312,850	44%
	Total	14,782,569	8,401,463	479,741	441,134	92%	8,842,597	60%

ALUMNUS STORIES

Mr. Daniyal Hassan

The thought of getting Ph.D. from a well reputed University was on my mind since I started my undergraduate studies. I was fortunate to have the encouragement of my family and mentors to explore my abilities. After graduation in Civil Engineering, I decided to pursue my Masters in one of the best institute, U.S.-Pakistan Center for Advanced Studies in Water. The most distinctive feature of the Master's program is the exchange visit at the University of Utah, was enormously helpful for my professional development. My research interests led me to apply to the University of Utah for the Ph.D. degree. Here I'll work as a Graduate Research Assistant with Dr. Steve Burian.

Mr. Danyal Aziz

Getting admission in USPCASW is a decision that I will always cherish. At the USPCASW, I got a platform to realize my true potential. During exchange visit to The University of Utah in fall 2016, I started to think about pursuing higher studies at a reputable university like The University of Utah. When I went back to Pakistan in spring 2017, I had to complete my research and pass out by August 2017. Soon after graduation, I joined Abasyn University Peshawar as lecturer. During that time, I got an offer for a research position at the Global Change Impact Studies Center Islamabad where I worked with very able water and climate researchers. Dr. Tariq Banuri was the Executive Director of GCISC at that time and under his visionary leadership, I learnt and experienced a lot. Due to the nature of my job, I strongly felt to start PhD sooner so, I applied to University of Utah. Currently, I am working with Dr. Steve Burian in the department of Civil and Environmental Engineering.



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