

U.S.-Pakistan Centers for Advanced Studies in **Energy**

Newsletter | JANUARY 2018

Energizer

USPCAS-E Sponsors International Energy Conference

The United States Agency for International Development (USAID) showcased its partnership with Pakistan in the energy sector in the two-day International Conference on Energy Conservation and Efficiency 2017 held in Lahore, Pakistan, November 22-23.

USAID Provincial Director for Punjab, Ms. Lea Swanson, joined the Vice Chancellor of University of Engineering and Technology-Lahore (UET-Lahore), Dr. Fazal Ahmad Khalid, CEO Lahore Knowledge Park, Dr. Zubair Iqbal Ghouri, and other dignitaries from government, academic and private sectors to kick off the conference. Hosted by UET-Lahore, the conference and accompanying exhibition were co-sponsored by the USAID-funded U.S.-Pakistan Center for Advanced Studies in Energy (USPCAS-E).

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Lea Swanson, USAID Punjab Director addressing the audience at opening ceremony of ICECE 2017. Photo by Aarsal Latif/ASU-USPCAS-E

Message from the Project Director: As the PCASE center heads into its fourth year, we are seeing our work pay off. More than 100 students and faculty have participated in the exchange program at ASU's and OSU's research labs working on energy-related projects. Over 200 graduate students are enrolled in 11 degree programs at NUST and UET. More than 30 MS students have graduated from the center and have entered the energy workforce making an impact in the Pakistan Energy Sector. The faculty at NUST and UET are working with the ASU and OSU faculty on over 20 applied research projects and 6 joint research projects on various aspects of energy research including solar, policy, batteries, fuel cell and smart grids. As we welcome the latest cohort, we continue our work to make a positive impact and urge all our scholars to continue to strive for their best.

Dr. Sayfe Kiaei, Project Director, USPCAS-E



Advancing Collaboration with the Energy Industry

USPCAS-E hosted its 3rd National Stakeholders Meeting on Energy in Islamabad, Pakistan. The consultative meeting was attended by over 80 participants including senior officials from the Government of Pakistan, Higher Education Commission (HEC), United States Agency for International Development (USAID), industry and the academia. Led by ASU, the primary objectives of the meeting were to share the curriculum changes at NUST and UET, the ongoing research in the field of energy, and provide a forum to discuss strategies to enhance cooperation and collaboration across

industries to address Pakistan's energy needs. Twenty-two poster presentations showcased the applied research being done by faculty and their students. Key stakeholders provided technical feedback on the research projects that will eventually be commercialized.

"There is a disconnect between the private sector and universities—for this reason Pakistan hasn't been able to overcome its energy crisis. I believe that this remarkable partnership between ASU, NUST, and UET supported by USAID is a great opportunity to help solve Pakistan's

energy concerns and respond to market needs for research," said an energy entrepreneur during the stakeholder feedback session.



Photo by Aarsal Latif ASU/USPCAS-E

MoU Signing with Higher Education Commission

On November 7 2017, a four-way memorandum of understanding (MoU) was signed by Higher Education Commission (HEC) along with Arizona State University (ASU), National University of Sciences and Technology (NUST), and University of Engineering and Technology

(UET) Peshawar for the USAID-funded U.S.-Pakistan Centers for Advanced Studies in Energy program. This MoU supports development of the energy centers at NUST and UET as collective resources for the Government of Pakistan as it addresses the future energy needs

and priorities of Pakistan. NUST and UET also plan to collaborate with each other—and with other universities in Pakistan and the U.S.—to promote mutual learning, outreach to stakeholders, information exchange and joint degree programs.



Photo by Aarsal Latif ASU/USPCAS-E

Sowing the Seeds of a Bright Future: Our Fourth Exchange Cohort Returns to Pakistan

Students receive completion certificates in their entrepreneurship class at ASU. Photo by Erika Gronek/ASU-USPCAS-E



The fourth cohort of exchange scholars have bid America and ASU farewell as they return home to apply what they have learned. The cohort of UET students returns after spending a semester studying with

engineering, entrepreneurship and policy faculty at ASU.

The visiting students have called the exchange program a transformative experience. Not only do they gain hands-on experience in state-of-

the-art labs and mentoring from faculty who are experts in their fields, they also gain an understanding and appreciation for other cultures which is critical to success in an increasingly global work environment.



Photo by Erika Gronek ASU/USPCAS-E

Exchange Students Celebrate Homecoming at ASU

USPCAS-E exchange students participated in ASU's annual homecoming event. Homecoming is a signature event that brings together students, parents and alumni to share their Sun Devil pride and celebrate ASU accomplishments.

The scholars from USPCAS-E staffed a booth with ASU's Office of Knowledge and Development as part of the massive block party that is part of ASU's Homecoming celebration. They had the opportunity to share the mission of the USAID and the value of the USPCAS-E project to the Pakistani people with the ASU community and the public.



Munazza

Electrical Engineering

"If I had to describe my experience at Arizona State University in one word, I would say, 'Amazing!' The focus of my work here was on energy policy, and I have been able to identify some policy gaps in Pakistan. I'll try my best to work on solutions for the benefit of my country."



Laraib Shaukat

Electrical Engineering

"In Pakistan, the engineering field is mainly dominated by men, and I strongly believe that women should come forward to bring a positive change in our society. The Center for Advanced Studies is an excellent opportunity for women engineers to pursue their dreams in the energy sector."



Kamran Alam

Electrical Engineering

"My research at ASU is in the field of solar technology. Pakistan has immense solar potential, however, it's not being fully utilized. My research focuses on enhancing the efficiency of solar, particularly on a self-cleaning system of solar panels."

The experience was valuable for both the scholars and visitors who were able to learn about USPCAS-E and the role it has in providing research opportunities in the energy field for our Pakistani exchange students.



Exchange scholar sharing the work USPCAS-E is doing with the American public during Homecoming. Photo by Erika Gronek/ASU-USPCAS-E

Scholars visit FECTO Cement Factory in Pakistan

On November 28, USPCAS-E scholars visited FECTO Cement Factory near Islamabad, Pakistan. The company was a pioneer in setting up a technical collaboration with Japan. It is considered to be the country's first pollution-free cement factory.

Industry visits connect technical knowledge and applied research experiences to real-world applications. The visit was especially valuable for the students of Thermal System Engineering program (TSE) as it was aligned with their course Power Plant Operation. During the visit, the students were able to study various thermal processes and the operation of the heat recovery system and thermal power generation.



Scholars visit to FECTO cement factory. Photo by Aarsal Latif/ASU-USPCAS-E

IEEE Fellow Brings Expertise to Pakistan

Dr. Bertan Bakkaloglu, a professor at Arizona State University, visited Pakistan as part of the U.S.-Pakistan Centers for Advanced Studies in Energy (USPCAS-E) program.

Dr. Bakkaloglu is an international expert in integrated circuit design, and was recently honored as an IEEE Fellow for his contributions to distributed autonomous robotic systems. In his two-day visit to Pakistan, he conducted a seminar titled "Linear and Switch-Mode Power Converter Design from Ground-Up," for the faculty and students from both NUST and UET Peshawar.

The participants also had the opportunity to learn about research work that is being done in Dr. Bakkaloglu's lab at ASU.



One Student's Journey from a Pakistani Tribal Area to a Research Lab in Arizona

Struggling to support his three children and a desire to get them educated, Muhammad Zain Ul Abideen's father decided to move from FR Kohat—a Pakistan tribal area—to the city of Peshawar where he could earn a better livelihood. This is where Zain became an engineer and continued his passion for research.

"My journey with the U.S.-Pakistan Centers for Advanced Studies in Energy (USPCAS-E) was an amazing and productive one. I learned about the innovative research being carried out throughout the world in the field of electrical engineering. In 2016, USPCAS-E provided me a wonderful opportunity to conduct research as an exchange research scholar at Arizona State University in the Photovoltaic Reliability Laboratory (ASU-PRL)."

"During my stint at ASU-PRL, my primary focus of study and research was in the field of solar photovoltaics. Since Pakistan receives ample sunlight, solar power can help us achieve self-sufficiency in energy generation and completely eradicate the energy crisis in Pakistan."

"The practical knowledge that I learned at ASU – where I measured the effect of sand, dust and other airborne particles at various tilt angles of solar photovoltaic modules – was put to good use when I returned to Pakistan. Since Pakistan is planning to commission sizable solar power plants in the near future, this knowledge can help in reducing the output power loss due to airborne dust particles. In 2018, I will be heading to the U.S. once again, this time as a PhD Fulbright Scholar!"



Best Tech Award Goes to USPCAS-E Applied Project at 3rd Invention to Innovation Summit

It was USPCAS-E's opportunity to shine at the 3rd Invention to Innovation Summit, November 29-30 at the University of Engineering and Technology (UET) Peshawar. A USAID-funded applied project entitled, "An Innovative Demonstration for Low Energy Buildings: Component, energy techniques and ICT Tools" received the Best Technology Award.

The project involved retrofitting a research lab to be a low energy use

building. This was done through intelligent energy management of air conditioning and lighting systems as well as using renewable energy generation and recycling.

Solar energy was utilized as the renewable energy source and it was carefully measured via a solar data logger. Walls were insulated and the room use was monitored in an effort to use energy only on an as-need basis. A tool called EstiEnergy Tool was implemented to calculate and

estimate energy needs as well.

The summit was organized by the Office of Research Innovation and Commercialization of UET Peshawar in collaboration with the Institute of Research Promotion Lahore.

The endeavor shows USPCAS-E return on investment and commitment to engaging industry, government and the public in order to move Pakistan forward towards energy sustainability.



Dr. Muhammad Noman, USPCAS-E receiving the best technology award at the 3rd Invention to Innovation Summit.
Photo courtesy of UET Peshawar

Open Door



Tempe Campus

Saturday, February 24, 1–6 p.m.

Join us for a behind the scenes look at the most innovative university in the nation!

ASU Open Door is an opportunity for visitors of all ages to participate in hands-on activities and explore laboratories, living collections, museums and innovative learning spaces.

Each of ASU's campuses have a unique identity and we invite you to visit all locations.



Join us! Get energized with the USPCAS-E exchange students!

Visit our booth near Hayden Lawn



opendoor.asu.edu



@asuopendoor



ASU is #1 in the U.S. for Innovation