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

Partnering Universities:



Energizing Pakistan



Working together to develop the solutions that Pakistan needs to create lasting energy security

MISSION

The U.S.-Pakistan Centers for Advanced Studies in Energy (USPCAS-E) foster innovative solutions to Pakistan's energy challenges through collaborative and applied research, advancements in curriculum and technology, technical training, leadership, policy development and advocacy.

MOTIVATION

Pakistan's economic growth and security require stable and sustainable energy systems that can reliably support businesses and communities nationwide. The USAID-supported USPCAS-E program is a partnership between Arizona State University (ASU) and Oregon State University (OSU) in the United States and the National University of Sciences and Technology (NUST) and the University of Engineering and Technology Peshawar (UET-P) in Pakistan.

The universities are working together to strengthen academic programs, support energy research, educate a new generation of skilled engineers, and build enduring connections among government, industry and academia.

GOALS

- Ongoing student and faculty exchange programs between U.S. and Pakistani universities
- Modernized curricula and teaching methods and relevant advanced degree programs covering power systems, electric grid and distribution systems, thermal energy, renewable energy, solar energy, biomass and energy policy
- Established channels to facilitate local and international networking in the energy sector
- Greater access to energy-related professions for women and economically disadvantaged students through inclusion and scholarships
- Strengthened university capability to deliver quality applied research in energy
- Regular policy dialogue between Pakistan's public and private energy stakeholders

STRATEGIC APPROACH

USPCAS-E taps into the potential of higher education to develop real-world solutions to Pakistan's energy challenges. Renowned energy experts from ASU and OSU partner with faculty members from NUST and UET-P to form transdisciplinary and cross-cultural research teams to share knowledge, research and the latest industry developments.

NUST and UET-P can now respond to changing public and private sector needs with state-of-the-art facilities, applied research, teaching, skilled graduates and capable leaders in the energy sector.



Key accomplishments

- New buildings at NUST and UET-P providing 114,000 square feet of research and classroom space
- Built 16 state-of-the-art labs and two libraries
- Supporting 36 applied and 12 joint (U.S.-Pakistan) research projects to address pressing energy problems in Pakistan
- Developed 14 new degree programs and 147 graduate-level courses in cutting-edge energy fields
- About 900 students have enrolled in energy-related graduate degree programs at NUST and UET
- More than 200 students and faculty from NUST and UET-P have completed an exchange program in the U.S.
- 517 scholarships awarded
- Raised \$1.54 million through public-private partnerships
- More than 370 attendees from government and private sector engaged at stakeholder meetings
- 84 internships secured for students and more than 70% of graduates employed
- 12 technical workshops and eight virtual seminars conducted for students and faculty
- More than 200 graduates to date

USPCAS-E CORE ACTIVITIES

CURRICULUM

USPCAS-E is developing new energy curricula in power systems, electric grid and distribution systems, thermal, renewable energy, including solar and biomass, energy policy and related areas to be responsive to the needs of Pakistan's public and private sector. Faculty focus on experiential learning, internships and student participation in multidisciplinary research to provide broadly applicable, transferable skills.

- **KEY TARGETS:** 250 graduates per center as well as development of 20 new courses and three new graduate degree programs.

APPLIED RESEARCH

Research findings produced by USPCAS-E on residential, business, and energy sector needs focus on providing a greater understanding of the ongoing and future energy challenges in Pakistan.

- **KEY TARGETS:** 30 applied research projects and 10 joint research projects.

EXCHANGE PROGRAM

An exchange program enables students and faculty members to spend a semester in the U.S. at ASU and/or OSU to conduct energy research and training in 12 labs and learn from their counterparts in the U.S.

- **KEY TARGETS:** At least 200 students and faculty will spend a semester as exchange scholars in the U.S.

SUSTAINABILITY

USPCAS-E is developing financially sustainable centers at NUST and UET-P through research grants, fundraising and public-private partnerships. Stakeholder engagement with Pakistan's higher education institutions is key to private sector innovations, promoting modernization, strengthening government policy and stimulating economic growth. Active engagement of energy sector is ensured through bi-annual national and frequent one-to-one meetings.

- **KEY TARGETS:** 5 public-private partnerships per center and raise at least \$1 million USD from the public and private sectors per center.

GOVERNANCE

USPCAS-E fosters the partnership between U.S. and Pakistani universities through the Higher Education Commission (HEC). HEC oversees the governance of the centers including constituting a steering committee, approving of M.S. and Ph.D. degree programs, and providing guidelines for scholarships.

With technical assistance from ASU and OSU, the centers at NUST and UET-P are expected to become Pakistan's premier energy think tanks producing a skilled workforce and an applied research portfolio that addresses critical needs in Pakistan.

- **KEY TARGETS:** 250 merit and need-based scholarships per center.