



**7** AFFORDABLE AND  
CLEAN ENERGY



# SDG-7

## AFFORDABLE AND CLEAN ENERGY

## Journey Towards Affordable and Clean Energy

The University has upgraded its buildings to a higher energy efficiency and plans to replace all conventional lights to LED lights, which save 75% energy. In the first phase, 1,500 LED lights have been installed in three buildings at the Islamabad campus.



To support energy conservation, the Lahore campus is trying to implement on-campus solar energy, solar heating, making buildings more energy efficient and promoting sustainable transportation.

## Carbon management and reducing CO<sub>2</sub> emissions

CUI's Energy Research Center (ERC) promotes and collaborates with industrial partners to provide technical support for low-carbon industries. A 100kW Solar Power Plant was commissioned at the Islamabad Campus as far back as 2016. It has saved 456 tons of CO<sub>2</sub> emission so far, which is equivalent to CO<sub>2</sub> absorption capacity of 14,700 fully grown trees. Another 300kW Solar Power Plant, at the Sahiwal Campus, has produced 57,282 kW/h, saving 34

tons of CO<sub>2</sub> emission since commissioning. A similar 400 kW plant is planned for the Vehari Campus, which will save 350 tons carbon dioxide emissions. The Islamabad campus plants over 5,000 tree samplings each.

## Energy efficiency plan in place to reduce energy consumption

CUI had installed Multi Digital Scroll System (MDS) Technology, enabling a 30% saving in energy consumption in air-conditioning. Where this technology is not installed, DC inverter type air-conditioners have been installed to save electricity consumption. In addition, Building Management Systems has also resulted in highly efficient use of energy-consuming devices, aided by the Power Factor Improvement Panel.

ERC actively develops smart energy-related programs and promotes sustainable development curricula with the relevant ministries, emphasizing an ever-increasing share of renewable energy in the energy mix.

CUI has also aligned its policies with the execution of the 'four conservations initiative' (water, electricity, paper, and fuel conservation), and is striding towards the ultimate goal of achieving 100% renewable energy. The strategies to devised include education, research and online activities.

## Energy wastage identification through energy reviews

A comprehensive energy audit was conducted and the measures for energy conservation taken by CUI were found to be adequate by the auditor.

This research has indicated that a significant proportion of the total energy consumed is by air-conditioning, followed by lighting systems. Solutions, including timer switches, aimed at reducing energy wastage and fulfilling the sustainable development goals, are now in place.

## Moving away from carbon-intensive energy industries, like coal and oil

The University plans to eventually phase out diesel generators and replace them with renewable energy technologies. A feasibility study supported the potential of solarization of all campuses. Based on this, solar energy is now being prioritized and a 400kW Solar Power Generation Facility is already in place at the Islamabad campus. Based on its success, establishment of another 700kW solar power generation facility has been recommended.

## Energy use density

The total energy used at CUI is 9,794,280 KWh in Year 2021. The total University floor space is 217,458 square metres. Thus, giving the energy use density of 45KWh per square metre.

## Local community outreach for energy efficiency

Energy Research Center (ERC) conducts a wide range of programs for the local community to learn about importance of energy efficiency and use of clean energy. This is done by training current students through technical education and training awareness campaigns for the public through a variety of clean and renewable energy-related activities, projects, and seminars.

CUI also partakes in an energy storage initiative to boost the energy efficiency of local industries and extends cooperation to manufacturers for providing services related to high-efficiency and clean energy, such as solar power and electricity storage devices.

Furthermore, one of the objectives of the 100 kW Power Plant installed the Islamabad campus and a 300 kW Solar Generation Facility at the Sahiwal Campus, is to create a demonstration effect for faculty and students for inspiring them towards undertaking research and development purposes in the field of renewable energy.

A short course on energy audit was conducted by Engr. Rao Zeeshan, Senior Engineer, to raise the awareness of clean energy for CUI employees, sensitizing CUI human resources towards the changing environmental trends.

### **The pledge to achieve 100% renewable energy**

The mission of the Energy Research Center (ERC) is to develop actively smart energy-related programs, improve the quality of the domestic talent in basic research, development of smart energy and promote sustainable development curricula in collaboration with the Ministry of Environment and the Ministry of Science & Technology, Government of Pakistan. The ERC endeavors to improve and advance its commitment to renewable energy through continuous education.

Apart from establishing the ERC, the University has also aligned its policies with the execution of 'four conservations' – water, electricity, paper, and fuel conservation – initiative, aggressively moving

towards the goal of 100% renewable energy. The policies include University-based education activities (including academics altering their programs to coordinate their teaching on some aspect of climate change); research activities (such as conferences and workshops on climate change); education activities beyond the university (such as talks to schools, community groups or the general public on climate change; online activities (such as webinars, discussion groups, forums, social media, podcasts and campaigns.

CUI is moving towards renewable energy sources and plans to commission Solar Power Plants at all its campuses. A 100 KW Solar Power Plant has already been installed at the Islamabad campus and a 300 kW Solar Generation Facility at the Sahiwal Campus. Furthermore a 400 KW system is at advanced stage of completion and another 700 KW Solar Power plant at Islamabad campus is planned.

### **Policy development for clean energy technology**

Another mission of the Energy Research Center is to inform and support governments in clean energy and energy-efficient technology policy development by promoting and pitching relevant projects. This includes commissioning and collaborating on projects with government agencies, like the Ministry of Science & Technology and the Ministry of Education.

These policies play a central role in the deployment of renewable energy technologies as participation by the government reduces some of the perceived risks of the private sector. It also helps leverage financing and increasing capital

flows towards R&D. Renewable projects require huge amounts of investments in infrastructure, to which the private sector is generally risk-averse, unless they have the right incentives.

In accordance with government projections on energy conservation, the University is striving towards the goal of reducing the annual electricity consumption by 1% each year. This is being done by diligently reviewing and gradually replacing high energy-consuming equipment in a phased manner.

### **Assistance to low-carbon innovation**

CUI provides assistance for start-ups that foster and support low-carbon technology through its Business Incubation Center, which was established at the Islamabad Campus with the aim to assist and support budding entrepreneur and business initiators in its student body. 'Smart Sense' is an engineering technology company engaged in research, design, development, integration, and sustainability of advanced solar technology systems, products and services that was successfully incubated at CUI.

