



SDG-13 CLIMATE ACTION

Climate Action is one of the Sustainable Development Goals (SDG 13) established by the United Nations. It addresses the urgent need to take action to combat climate change and its impacts. The goal recognizes that climate change is a global challenge that affects everyone, regardless of borders, and requires collective efforts to mitigate its effects and build resilience.

Key targets and indicators of SDG 13 include:

- Mitigation and adaptation: Encourage countries to strengthen their resilience and adaptive capacity to climate-related disasters.
- Integrate climate change measures into policies and planning: Integrate climate change measures into national policies, strategies, and planning.
- Improve education, awareness, and capacity on climate change: Promote education, awareness-raising, and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning.
- Implement the UN Framework Convention on Climate Change (UNFCCC): Promote the implementation of the UNFCCC through its various mechanisms, including the Paris Agreement.
- Promote mechanisms to raise capacity for planning and management: Develop and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products.
- Promote mechanisms to raise capacity for effective climate change-related planning and management in LDCs, including focusing on women, youth, and local and marginalized communities.
- Improve North-South, South-South, and triangular regional and international cooperation on access to clean energy research and technologies and to promote investment in

clean energy infrastructure.

Addressing climate change involves reducing greenhouse gas emissions, transitioning to sustainable energy sources, and adapting to the impacts that are already occurring. The Paris Agreement, adopted in 2015, is a significant international accord that falls under SDG 13. It aims to limit global warming to well below 2 degrees Celsius above pre-industrial levels, with efforts to limit the increase to 1.5 degrees Celsius.

Governments, businesses, communities, and individuals all play a crucial role in achieving SDG 13 by taking concrete actions to reduce their carbon footprint, enhance climate resilience, and contribute to a sustainable and low-carbon future. This may involve changes in energy production and consumption, land use practices, transportation, and the promotion of sustainable technologies and practices.



COMSATS University Islamabad takes all measures to address this goal and publishes a sustainability report on an annual basis. This report provides an overview of the university's efforts and initiatives towards sustainability, including environmental conservation, social responsibility, and economic impact. It serves as a transparent account of the university's progress and commitment to sustainable practices.

COMSATS University Islamabad conducts awareness-raising programs, hands-on training, and capacity-building activities from time to time. These activities are likely aimed at enhancing knowledge, skills, and awareness among individuals associated with the university about the Sustainable development goal Climate Action.

COMSATS University Islamabad measures the amount of low carbon used across the university. This suggests that the university has a system in place to track and monitor its energy consumption with a focus on reducing carbon emissions.

In 2022

Total energy used	29,507GJ
Total energy used from low-carbon sources	188GJ

Graduates of ES Department Muhammad Waleed (Supervised by Dr. Muhammad Mubeen), Faisal Mehmood (Supervised by Dr. Zia Ul Haq), Muhammad Usman (Supervised by Dr. Muhammad Tahir) and Muhammad Usman Ali (Supervised by Dr. Farhan Saeed) got admission as PhD Scholars in renowned Universities of China and Dr. Umer Daraz (Student of Dr. Iftikhar Ahmad) has joined as Post-Doctoral Fellow at Center for Grassland Microbiome Lanzhou University, China.

Faculty of the Department of Environmental Sciences published 50 research articles from January-June 2022 in impact factor journals with almost 40 IF and more than 100 citations Four research projects of worth Rs. 26.8692 million were won by Faculty of the Department of Environmental Sciences CUI-Vehari during year 2021-2022. Moreover, six research projects of worth Rs. 27.79 million are already in progress.

A seminar/training was organized by RAEDC Vehari on 12th January 2022 on Writing and Winning Research Projects. Dr. Ghulam Mustafa Shah (Associate Professor) was the focal person of this training. University of Education Lahore, Vehari Campus invited Dr. Noor Samad Shah and Dr. Zia Ul Haq Khan (Assistant Professor Department of Environmental Sciences) to deliver

lectures on synthesis of organic compounds by electrochemical methods and nano zerovalent metals for waste water management respectively, on 23 June 2022. Dr. Muhammad Tahir delivered a lecture on World Environment Day.

Establishment of Environmental Sciences student group Ecofreaks at CUI Vehari Campus

Ecofreaks are the peoples who are very sincere to conserve the environment. An Environmental Sciences student group Ecofreaks was established during ESCON 2022 with the purpose make a vigilant team of Environmental Sciences students to train, involve, engage and empower them in various activities of international conferences (e.g. ESCON_2022) and several ongoing events in the department. Ecofreaks celebrated the World environment day with the slogan "Only One Earth" and spread awareness that we must shift from 'harming the planet to healing' to ensure better quality of Life on the earth. The Founder of the Ecofreaks was Dr. Ghulam Mustafa Shah (Associate Professor). The Pioneer Ecofreaks batch include Saira Afzal (President), Syed Mubashar Ishaq (Senior Vice President), Kabir Qamar (Vice President), Hassan Qasim (Finance Secretary), Laraib Maryam (General Secretary), Isra Saleem (Information Secretary) and several Executive Members. This year (2022) the slogan of Ecofreaks is "Save yourself by saving the Nature."

ADMISSION FALL 2022
DEPARTMENT OF
ENVIRONMENTAL SCIENCES
Handsome Scholarships for
BS | MS | PhD
EXTENDED DATE
2nd September 2022
PH: 0992-383591-6 Mobile: 0333-5577624 (9 A.M. TO 5 P.M.)
COMSATS UNIVERSITY ISLAMABAD, ABBOTTABAD CAMPUS



COMSATS University Islamabad's engagement with the government on carbon mitigation activities. The evidence shows that CUI remained actively engaged with the government on carbon mitigation activities. This suggests that the university has been involved in collaborative efforts with the government to address and reduce carbon emissions. COMSATS University Islamabad is dedicated to participating in cooperative planning for climate change disasters with the government and regional levels. This indicates that the university is actively involved in collaborative efforts with the government and regional entities to address and plan for climate change-related disasters. CUI is committed to working together to mitigate the impacts of climate change and enhance disaster preparedness.

CUI provides support at the local and regional level by providing weather update services and earthquake alerts by the meteorology department.

Comsats University Islamabad's efforts in organizing environmental education programs demonstrate a commitment to addressing climate change and promoting sustainable practices. By working together with NGOs following events were conducted with NGOs.

Gender and Climate Awards - Promoting the inclusion and leadership of women in climate action (November 1st, 2022)

International Training Workshop on Beidou Technologies and its applications in the Belt and Road Countries and Regions (19-20 September 2022) CUI organized a talk titled "Monitoring Drought in Pakistan: Teleconnections and Uncertainties in Changing Climate" in virtual capacity building workshop on Establishment of ECO-SDI to Combat the Challenge of Food Security in the ECO region, jointly organized by the Survey of Pakistan and Geological Survey of Pakistan in collaboration with Economic Cooperation Organization (ECO) on 5-7 July, 2022 at Survey Training Institute (STI), Islamabad.

Department of Environmental Sciences COMSATS University Vehari Campus celebrated world environmental day on June 8th. This day is celebrated to provide awareness to the people about environmental issues and the slogan for this year was "Only One Earth". Eco-freaks society of Department of Environmental Sciences in collaboration with the students of other departments performed a campus cleanliness campaign to provide awareness to the students and general public about the issue of waste management. A walk from admin block to main academic building was also carried out to raise the awareness.



Microbes in Action (MiA-22)"

ASM-Himalaya has recently organized a successful one-day event on Microbiology i.e. Microbes in Action (MiA-22) scheduled on 30.03.2022 (Wednesday) in COMSATS University Islamabad, Abbottabad Campus. Students of different biological domains (along with student-delegates from outside the COMSATS) actively contributed to various activities in the event. The diverse participation from various academic institutions of the region, was a source of motivation for the organizers and contributing students. Specifically, around 300 students participated from 9-10 different academic institutions in competitions of various microbial categories.



in heat waves and floods. This tendency is witnessed in Summers of 2019 and 2022 in Pakistan, as well as globally too. The current rate of warming in Pakistan is about 0.34 degree Celsius per decade, when averaged over recent 30 to 35 years. This means that starting from year 2000, by 2030, a more than 1.0 degree Celsius warming is predicted. By same reasoning, a 3.5 to 4.0 degree Celsius warming is predicted by 2099. This clearly indicates an overshoot of temperature limits (relative to 1.5 to 2.0 degree Celsius), as suggested in Paris agreement at COP 21.

A more integrated and bottom-up approach is needed to address the various issues arising from such a high rate of warming in Pakistan. For comparison, the cumulative rest of world warming rate is somewhat lower than this one, for the same period. This 7th edition of Conference thus has the following four sub-themes: 1. Climate Change & Maritime Security, 2. Glacial Lake Outburst Flood (GLOF), 3. Water Pollution & Waste Water Management, 4. Islamic Perspective on Climate Change, Water Pollution & Water Management. The above four sub-themes of this International Water Conference have rightly and timely addressed the selected issues, since contemporary community-based solutions are always key to any adaptation and mitigation strategy against adverse consequences of regional change in climate.

Climate Change Investigations in Pakistan

Prof. Dr. Athar Hussain, Head CCRD, gave invited talk titled 'Climate Change Investigations in Pakistan' in Seminar on Climate Change: Act Now organized by Islamabad Policy Research Institute (IPRI) and Department of Meteorology, CUI, held at CUI, on 6 December 2022, and in 7th International Water Conference 2022, held at PCRWR, on 29-30 December 2022 (Co-hosted by CCRD). The summary of the talk is as follows:

Essentially all the recent published works and reports related to state of climate of Pakistan are indicative of the fact that the climate of Pakistan is changing its manifestations including the more frequent occurrence of extreme weather events, resulting



CCIB Workshop on Bioenergy for Carbon Neutrality

COMSATS Joint Centre for Industrial Biotechnology (CCIB) holds workshop to discuss prospects of utilizing bioenergy as an alternative energy resource.

COMSATS Joint Centre for Industrial Biotechnology (CCIB) organized an online workshop on 'Bioenergy: A Road to Carbon Peaking and Carbon Neutrality' under its Joint R&D Group on Bioenergy. Held on 14th June 2022, the Workshop was aimed at encouraging meaningful dialogue between scientists and exploring potential cooperation for joint R&D to meet industrial needs. Over a 100 scientists and researchers from China, Egypt, Iran, Jordan, Pakistan, Tanzania, Thailand, and Türkiye participated in the Workshop.

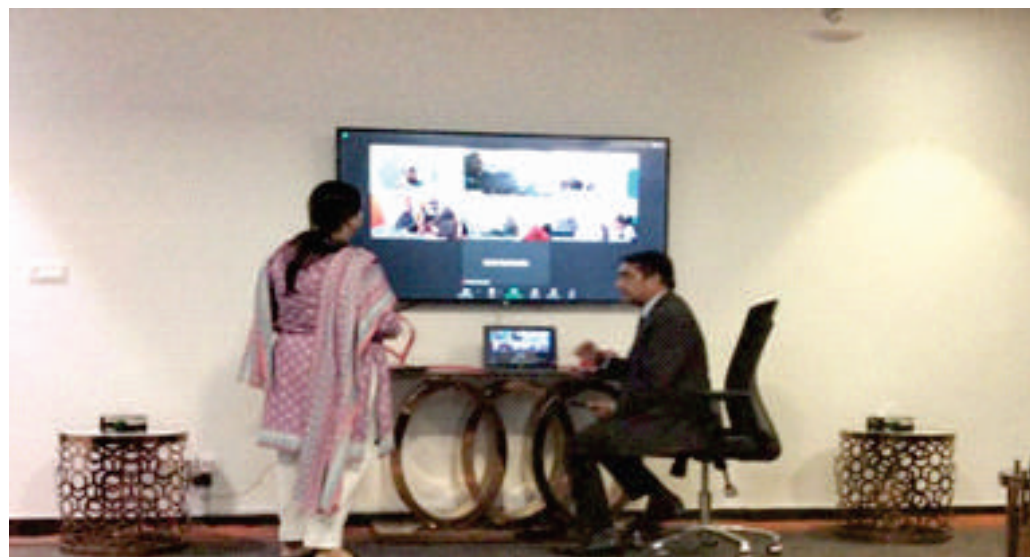


Flood Relief Camp at CUI, Islamabad from 19-20 September 2022

Centre for Climate Research and Development (CCRD) in collaboration with AIKhidmat Foundation has organized a two days Flood Relief Camp at CUI, Islamabad from 19- 20 September 2022. During two days faculty and students gave donations in

terms of money, food items and cloths and the response from all was very welcoming to help the Pakistani brothers and sisters in this catastrophe. All these donations have been handed over to AIKhidmat Foundation for distribution among the needy people.

Held on 10th October 2022, objective of the meeting with COMSATS' officials was to assess COMSATS' proposal on "Providing Accessible Primary Healthcare to Flood Affected Communities through a Telehealth System". Drawing upon the experience and expertise of COMSATS Telehealth (CTH), COMSATS' proposed project aims to support flood relief activities in the country in collaboration with government agencies, including NFRCC.



National consultative seminar on groundwater in Pakistan: "Making invisible visible" on 23rd June 2022

Pakistan Engineering Council (PEC) Think tank Committee on water resources development organized a National consultative seminar on groundwater in Pakistan: "Making invisible visible" on 23rd June 2022 at PEC Head Quarters, Islamabad. The seminar provided a platform for the policy makers and experts to devise strategies based on the implementable action plans to set a timeline with focus upon groundwater deteriorating situation in

Pakistan. The event was graced by Mr. Agha Hassan Baloch honorable minister for Science and Technology, Government of Pakistan. The discussion between the participants stressed on need of actions to tackle the groundwater quality and quantity situation in Pakistan. Dr. Umair Bin Nisar from Centre for Climate Research and Development (CCRD) represented COMSATS University Islamabad at the event.

World Water Day 2022

UNESCO Chair on Knowledge Systems for Integrated Water Resource Management at CUI Wah celebrated World Water Day on March 31, 2022 at COMSATS University Wah Campus and organized a Seminar titled “Monitoring Climate Extreme Events through Remote Sensing and Modelling” followed by a Poster Competition with this year theme "Groundwater: Making the invisible visible".

The resource person Dr. Mukhtar Ahmed enlightened the participants about the impact of extreme climate events (ECE) on the agricultural sector of Pakistan using remote sensing techniques to predict scenarios to explore possible options to mitigate the effect of ECE and to achieve sustainable development goals.

A large number of students from schools, colleges and universities and professionals participated in the poster competition. The purpose of this competition was to raise awareness about groundwater. Groundwater is an important source of fresh water which is invisible but its impact is visible everywhere. Experts from academia and industry evaluated posters. Seminar and Poster competition supported the Chair effort to achieve the Sustainable Development Goal 6: Water and Sanitation for all. The winners and runners up of the poster competition for school category and university category were awarded cash prizes and certificates.



Seminar on “Climate Change: Act Now” took place at the Video Conference Hall, Junaid Zaidi Library, COMSATS University Islamabad, on December 6, 2022. The event was organized by Dr. Jabir Hussain Syed, Tenured Associate Professor, from the Department of Meteorology at COMSATS University Islamabad (CUI), Islamabad Campus.

Dr. Syed's seminar was a valuable example of how education can be used to promote climate action. By educating people about climate change and empowering them to take action. By providing participants with this knowledge, Dr. Syed's seminar helped to raise awareness about the importance of climate change, empower participants to act on climate change, promote critical thinking and problem-solving skills, as well as promote inclusive education.



A group photo taken after the event on “Climate Change: Act Now.”

The Youth-Media Interaction on Climate Change was held at the EE Seminar Hall, COMSATS University Islamabad, on December 14, 2022. The event was organized by Dr. Jabir Hussain Syed, Tenured Associate Professor, from the Department of Meteorology at COMSATS University Islamabad.

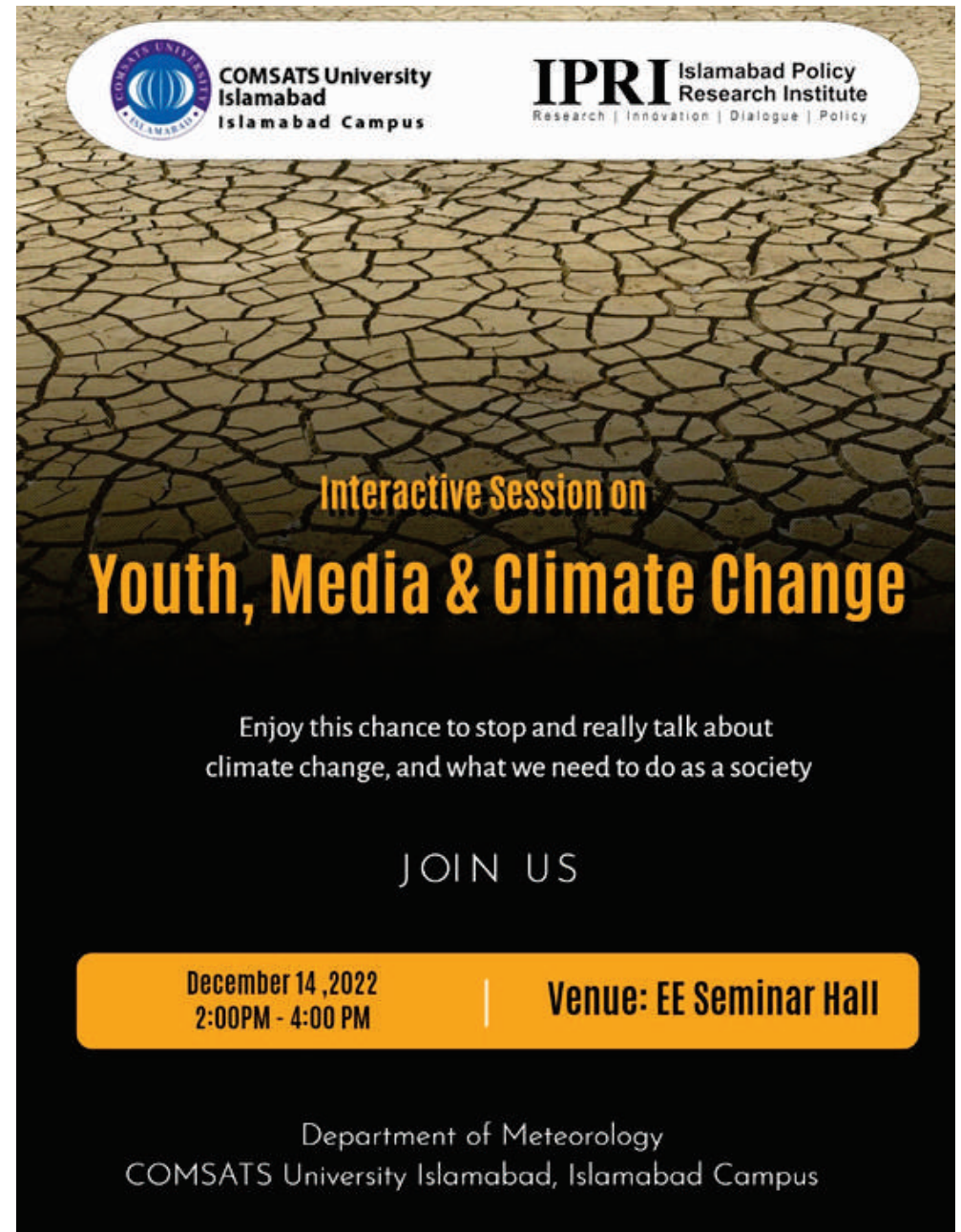
Here are some specific ways in which the Youth-Media Interaction on Climate Change aligns with SDG4: The event promoted knowledge sharing and collaboration between youth and media professionals on the important issue of climate change, it raised awareness about the role of youth and media in promoting climate action. Moreover, this event also empowered youth to take action on climate change and to communicate effectively about this issue.



Dr. Jabir Hussain Syed and other guests engaged in an interactive session discussing “Youth, Media, and Climate Change.”



A snapshot of participants during an interactive session on “Youth, Media, and Climate Change.”



The flyer for the event on “Youth, Media, and Climate Change.”

The Department of Meteorology, COMSATS University Islamabad (CUI), Islamabad Campus, organized a 1-day Climate Change Monitoring and Flood Mapping Bootcamp on 21 December 2022. The boot camp was a part of the Green Youth Movement organized by Dr M Imran Shahzad, Tenured Associate Professor and Head Department of Meteorology. Participants learnt the basic principles and characteristics of the different types of climatic and remote sensing datasets and their suitability for studying precipitation analysis, standardized precipitation index, extreme dry and wet periods, flood mapping, and climate-smart agriculture.

Some specific ways in which the 1-day Climate Change Monitoring and Flood Mapping Bootcamp aligns with SDG's are that this boot camp provided participants with the knowledge and skills necessary to monitor climate change and map floods, which are important environmental issues. It promoted critical thinking and problem-solving skills, which are essential for addressing complex environmental challenges. The participants were also empowered to take action on climate change and flood management, which is important for achieving SDG 13.



Dr. Muhammad Imran Shahzad is delivering the welcome remarks to the attendees at a “One-day Climate Change Monitoring and Flood Mapping Boot Camp.”



A participant being awarded a certificate by Dr. Kalim Ullah, Chairman of the Department of Meteorology, during “One-day Climate Change Monitoring and Flood Mapping Boot Camp.”



A group photo taken after the event on “One-day Climate Change Monitoring and Flood Mapping Boot Camp.”

1. The Training Workshop on Climate Change Monitoring & Flood Mapping was organized by the Department of Meteorology, CUI, Islamabad, on December 21, 2022 organized by Dr M Imran Shahzad, Tenured Associate Professor and Head Department of Meteorology. The boot camp encompassed theory and hands on training exercises and focused on capacity building of individuals to foster the understanding of concepts and practicality of climate change and climate drivers and geospatial techniques in mapping and monitoring vegetation and floods.

The training workshop provided participants with the knowledge and skills necessary to monitor climate change

and map floods, which are important environmental issues. This training workshop empowered participants to take action on climate change and flood management, which is important for achieving SDG4. It was open to all interested participants, regardless of their age, gender, or socioeconomic status, which aligns with the principle of inclusive education.



A participant being awarded a certificate by Mr. Syed Ghulam Qadir Shah, Inspector General of Forests, Ministry of Climate, at a workshop on “Climate Change Monitoring & Flood Mapping using Geospatial Techniques.”



A group photo captured after the workshop on “Climate Change Monitoring & Flood Mapping using Geospatial Techniques.”

2. A Seminar titled “A Next Generation Spatial Data Infrastructure for Digital Pakistan” was organized by the Department of Meteorology on December 26, 2022, at the library auditorium, video conference room, Junaid Zaidi Library, CUI, Islamabad. The distinguished guest speaker Dr. Khalid Ameen Khan from OGDCL, Islamabad/K-tron Research Inc. (KRI) delivered the seminar, and it was organized by Dr. Muhammad Rizwan Mughal, Assistant Professor, as part of the PM Green Youth Movement program.

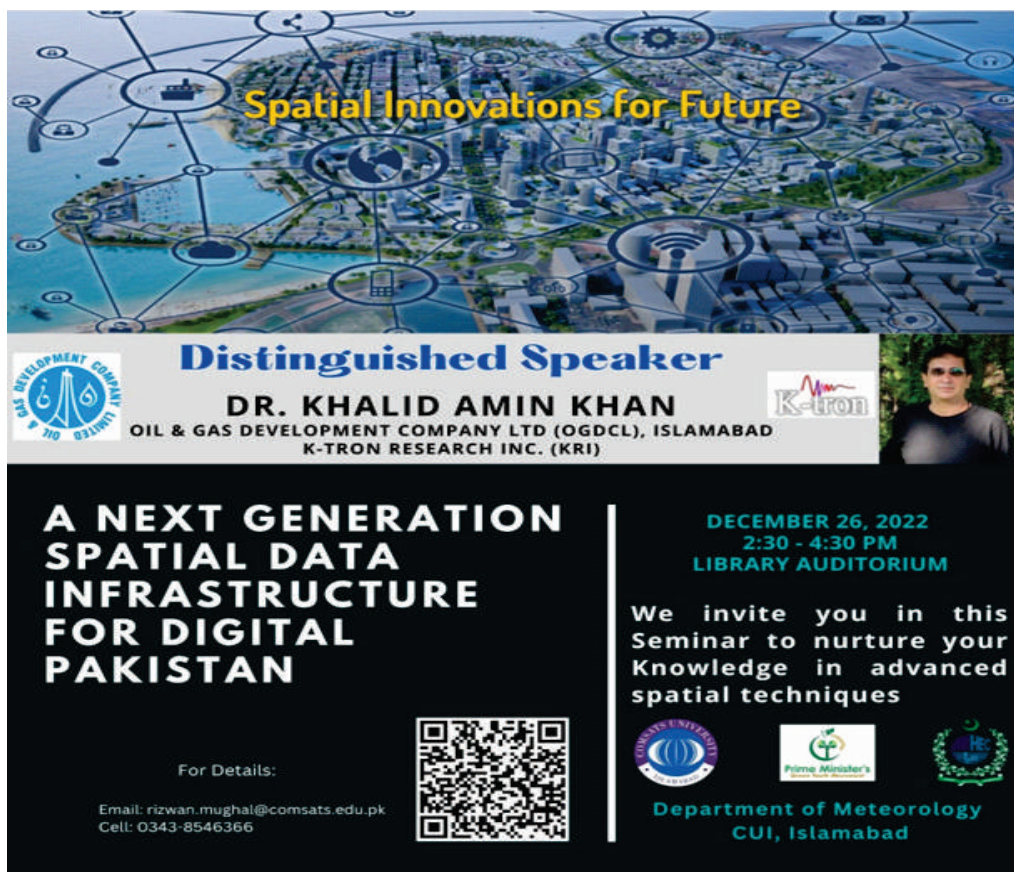
The seminar provided participants with the opportunity to learn about the latest advances in SDI technologies and their potential applications for Digital Pakistan. This knowledge is essential for building the capacity of stakeholders to develop and implement a next-generation SDI for Pakistan. The seminar provided participants with knowledge and skills related to SDI, which is an important emerging technology. It promoted critical thinking and problem-solving skills, which are essential for developing and implementing effective SDI solutions. It empowered participants to act on the development and implementation of a next-generation SDI for Pakistan, which is important for achieving Digital Pakistan and SDG's.



Guest speaker, Dr. Khalid Amin Khan, receiving a shield from Dr. Kalim Ullah, Chairman of the Department of Meteorology at CUI.



A group photo taken after the event on “A Next Generation Spatial Data Infrastructure for Digital Pakistan.”



The flyer for the event on “A Next Generation Spatial Data Infrastructure for Digital Pakistan.”

3. **Meteorological (or Weather) Observatory:** The meteorological Observatory, established by the Department of Meteorology, is equipped with state-of-the-art instruments for monitoring and collecting reliable and highly accurate data on various meteorological parameters. The observatory provides hands-on training experience in instrument operation, data collection, data analysis, and understanding instrument functionality. These practical skills are essential for enhancing research capabilities, developing expertise in meteorology, and analytical capabilities. Various research-related activities have been performed in the past based on the data collected from our observatory. It also improves the accuracy of our local short-term weather forecast, which is already being issued by the department to the CUI community.

The Meteorological Observatory holds a significant relevancy to SDGs because it provides students and researchers with the knowledge and skills needed to understand and address climate change, which is a major threat to sustainable development. The observatory offers hands-on training in instrument operation, data collection, and analysis, which are essential skills for conducting research in meteorology and climate science. The observatory also facilitates various research-related activities, which help to advance the knowledge base in these fields and inform the development of climate change solutions. Additionally, the observatory improves the accuracy of local weather forecasts, which is essential for making informed decisions about disaster preparedness and risk reduction, as well as for managing agricultural and other economic activities.



Air-Quality Monitoring System: An ambient air-quality monitoring system, HAZ-SCANNER, has been acquired by Dr. Kalim Ullah, Chairman Department of Meteorology, through the NRPU HEC project. Data for student research work is collected using the HAZ-Scanner (HIM 6000), a real-time air quality monitoring station that measures trace-level gases, particulate matter, and atmospheric characteristics according to the guidelines of the European Union (EU) and the United States Environmental Protection Agency (US EPA). The HAZ-SCANNER system collects data on a minute-by-minute basis, providing a high-resolution perspective of temporal changes in pollutant levels. This fine-grained information facilitates the identification of brief pollution spikes or variations, enabling a more in-depth examination of air quality dynamics. The system can measure numerous gaseous contaminants, such as NO₂, NO, CO, SO₂, O₃, NH₃, CH₄, CO₂, PM, and VOCs, along with atmospheric parameters, including temperature and precipitation.

This air-quality monitoring system directly supports SDGs by enhancing quality education. By incorporating this technology into student research, it provides hands-on experience and practical understanding of environmental challenges. Real-time monitoring empowers students to analyze air quality data, promoting informed, environmentally conscious individuals. This aligns with SDG4's goal of promoting education that

addresses sustainability issues. Ultimately, integrating HAZ-SCANNER contributes to building a more environmentally aware society, aligning with broader global sustainability goals.

Clean Air and Health Monitoring System

Department of Meteorology has been conducting real time air quality monitoring since 2016 supervised by Dr M Imran Shahzad, Tenured Associate Professor/Head of Department using bulk air samplers in collaboration with the Sub-Center of Atmospheric Sciences, Chinese Ecosystem Research Network (SCAS-CERN) at Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing China. Recently another real-time air quality monitoring system has also been installed at the Department of Meteorology in December 2022 to monitor urban air pollution levels, specifically PM_{2.5}, and assess its impact on the environment and human health. The project is funded by ANSO and involves collaboration with the Chinese Academy of Sciences and Shifa Tameer-e-Millat University, Islamabad. Dr. Jabir Hussain Syed, Tenured Associate Professor, is the focal person for this project and is overseeing various research activities aimed at measuring different air pollutants in the atmosphere.

The Clean Air and Health Monitoring System can help achieve SDG 13 in several ways: By providing real-time air quality data, the system can assist people in making informed decisions about when and where to spend time outdoors. This can help reduce exposure to air pollution and protect individuals from its harmful effects. The system can also track air pollution trends over time, enabling the evaluation of the effectiveness of air pollution control measures and identification of areas where further action is needed. Additionally, the system can support research on the health effects of air pollution, aiding in a better understanding of how air pollution affects our health and the development of more effective interventions to mitigate its impact.



The Atmospheric Constituents Monitoring System (HAZ-SCANNAR Model HIM-6000) was successfully installed at the Meteorological Observatory, COMSATS University Islamabad, Islamabad Campus.



Dr. Jabir Hussain Syed, Tenured Associate Professor, conducting routine checks on the Clean Air and Health Monitoring System installed at the Department of Meteorology, COMSATS University Islamabad.”

Climate Change Monitoring and Flood Mapping Bootcamp

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