SDG Report 2023-2024

Message from our leaders

CECOS University is dedicated to advancing the Sustainable Development Goals (SDGs) by embedding sustainability into its educational programs, championing gender equality, and engaging in impactful community projects. By fostering innovative learning, implementing eco-friendly practices, and forming strategic partnerships, the university plays a vital role in creating a more equitable and sustainable future.

Catch your reader's eye by highlighting one of your main points in this space.

GOAL 1

World Poverty Statistics 2024

Facing the harsh reality of extreme poverty, over 700 million individuals globally survive on under $1.90 per day, a crisis that disproportionately affects children. The goal to eradicate this by 2030 underlines the vital global effort of Sustainable Development Goal 1.

GOAL 1

NO POVERTY

CHILDREN REHABILITATION AUTHORITY AT PESHAWAR

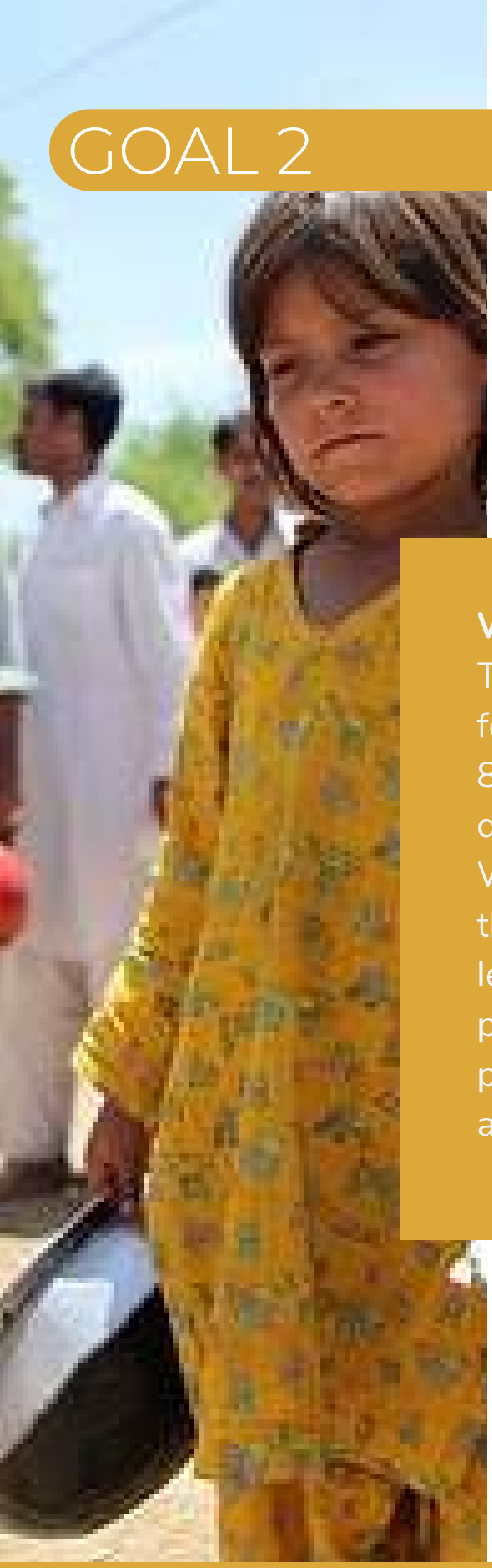
Cecos students recently visited the Children Rehabilitation Authority in Peshawar, where they engaged in meaningful interactions with the children. They participated in various activities designed to uplift and support the young residents. The visit included games, educational sessions, and personal conversations, all aimed at boosting the children's morale. This initiative helped bridge the gap between the community and the authority, fostering a supportive environment for the children. The day concluded with a renewed sense of hope and camaraderie.

INSTITUTE FOR POULTRY AND LIVE STOCK AT KARAK

Cecos students visited the Institute for Poultry and Livestock in Karak, where they explored advanced techniques in animal husbandry. The students participated in hands-on demonstrations and discussions with experts, gaining valuable insights into the industry. This visit aimed to enhance their practical knowledge and foster a deeper understanding of livestock management.

According to the latest poverty statistics, approximately 9.2% of the global population, or about 700 million people, live in extreme poverty. Extreme poverty is defined as living on less than $1.90 per day.

GOAL 2



World Hunger Statistics 2024

The world produces enough food to feed all of its 8 billion people, yet 828 million people go hungry every day. Of those 828 million, the World Food Program estimates that over 40% are facing acute levels of hunger and 2.3 billion people — 29.6% of the global population — don't have adequate access to food.

GOAL 3

3 GOOD HEALTH AND WELL-BEING

Good Health and Well Being

This SDG aims to ensure health and promote well-being for all at all ages by improving reproductive, maternal and child health; ending epidemics of major communicable diseases; and reducing non-communicable and mental diseases. It also calls for reducing behavioural and environmental health risk factors.

GOAL 3

GOOD HEALTH & WELL BEINGS

Blood Camp

CDC and Blood Donor Society arranged a vital blood donation camp on March 7, 2024the blood donation camp exemplified the power of collaboration in addressing pressing healthcare needs and promoting public health initiatives.

ACM Society

Career Development Centre (CDC) and the American Society for Microbiology (ASM) Society arranged the workshop on Biosafety. The event, held on March 6, 2024, brought together experts, researchers, and professionals from diverse fields to delve into critical aspects of biosafety practices in biomedical research

GOAL 3

GOOD HEALTH & WELL BEINGS

PREVALENCE OF HEPATITIS C IN DISTRICT BUNER: POST-2010 RETROSPECTIVE STUDY

To assess the prevalence of hepatitis C, A retrospective study was conducted in different hospitals of district Buner. The study demonstrates the prevalence of (HCV) viral infection in district Buner. A total of 350 HCV positive patients were enrolled in the study; 197 males and 143 females. The prevalence of HCV were 56.3% in male and 43.7% in female. High rate of infection was reported in 31-45 years of age group, which was 36.0%. The highest percentage of infection, 23.4%, was identified in the tehsil Chagharzai, while the lowest rate, 10.3%, was found in the tehsil Totalai.

Evaluation of molecular diagnostic assays and sampling approahes for detection of SARS-COV-2 RNA

This study was carried out to evaluate the activity of different diagnosti techniques for the detection of SARS-COV-2. By comparing result of different diagnostic Kits it was found that BGI and Maccaron were more sensitive and specific for diagnostic purpose against SARS-CoV-2.

The assessment of Blood Transfusion Reactions in different age groups in hospitalized patients at Lady Reading Hospital Peshawar

This study aimed to assess the frequency of blood transfusion reactions in hospitalized patients at LRH, Peshawar. The objectives included determining the incidence rate of TRs among hospitalized patients, evaluating the influence of age, gender, age, blood group and estimating frequency in different wards.

GOAL 3

GOOD HEALTH & WELL BEINGS

The Role of ABO Blood Grouping in Predicting the Risk of Diabetes Mellitus

This research was conducted to investigate this relationship, review existing literature, identify gaps, and propose research to understand how ABO blood grouping affects diabetes. The goal was to enhance treatment strategies and improve outcomes for diabetic patients while reducing the healthcare burden. The study finds a link between blood groups and diabetes risk. AB group has the lowest risk, O group higher, and A group the highest.

Association of Hepatic and Renal biochemical parameters and severity of the disease in Dengue infected patients

This project investigates the relationship between hepatic and renal biochemical markers and the severity of dengue fever. By analyzing liver function tests (LFTs) and renal function tests (RFTs) in dengue patients, the study aims to identify correlations that could assist in evaluating disease severity and guiding clinical management.

comparative analysis of histopathological slides vs. conventional glass slides in the detection of common microscopic features seen in 21 cancer types

This final year project involves a comparative analysis of histopathological slides and conventional glass slides to detect common microscopic features across 21 cancer types. The focus is on creating a comprehensive database for image analysis, aiming to enhance diagnostic accuracy and efficiency. The project seeks to evaluate the effectiveness of digital versus traditional slide methods in cancer detection and characterization.

GOAL 3

GOOD HEALTH & WELL BEINGS

Degradation of Water Soluble Pesticides Using Manganese Dope-Zinc Oxide Nanoparticles

Research indicates that the presence of manganese dopants enhances the catalytic activity of zinc oxide nanoparticles, while PEGylation (coating with polyethylene glycol) improves their stability and dispersibility in aqueous environments. When exposed to light or suitable catalysts, Mn-ZnO NPs generate reactive oxygen species (ROS) that efficiently cleave lignin bonds, breaking down the polymer into smaller, more easily degradable fragments.

Isolation and Purification of Microbial Collagenases from Bacteria

This research focuses on the isolation and purification of collagenases from bacteria, aiming to extract enzymes capable of breaking down collagen. Collagenases have wide-ranging applications, from aiding in wound healing and tissue engineering to improving the texture, cancer therapeutics research and nutritional profile of food products. By isolating collagenases from microbial sources, we can identify enzymes with specific properties suited for various applications. The research involves extracting these enzymes from bacterial cultures, purifying them to high levels of homogeneity, and characterizing their enzymatic activity and stability. Understanding the biochemical properties of microbial collagenases can facilitate their optimization for industrial processes and therapeutic development, contributing to advancements in biotechnology and healthcare.

The Evaluation of Antibacterial Activity of Cobalt Doped Zinc Oxide Nanoparticles

plants and animals. In efforts to eliminate or reduce the effects of these bacteria, the utilization of conventional chemicals and antimicrobial compounds have negative effects on environment. For that nanomaterial are being investigated as a possible alternative for controlling plant and animal diseases with minimal effects on ecosystem. The current study aimed to synthesize and investigate the antibacterial activity of cobalt-doped zinc oxide nanoparticles against both plant and animal pathogens. Different techniques were used to determine and analyze the Minimum Inhibitory Concentration (MIC) for these pathogens. In results, the animal pathogens showed MIC at different concentrations while plant pathogens were resistant to these nanoparticles. Co-ZnO NPs have high antibacterial efficacy against animal pathogens causing bacterial cell damage by releasing Reactive Oxygen Species (ROS) but zero efficacy against plant pathogen i-e R.solananceearum. Therefore, this study showed that these nanoparticles are a feasible solution for controlling animal bacterial infection but an effective alternate solution for plant pathogens needs to be studied.

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GOAL 3

GOOD HEALTH & WELL BEINGS

Degradation of Lignin Using Pegylated Manganese Doped Zinc Oxide Nanoparticles

The degradation of lignin using pegylated manganese-doped zinc oxide nanoparticles (Mn-ZnO NPs) represents a novel approach in lignocellulosic biomass conversion. Lignin, a complex polymer in plant cell walls, poses a significant challenge in biomass processing due to its recalcitrant nature. Mn-ZnO NPs offer a promising solution by leveraging their catalytic and photocatalytic properties for lignin degradation.

Research indicates that the presence of manganese dopants enhances the catalytic activity of zinc oxide nanoparticles, while PEGylation (coating with polyethylene glycol) improves their stability and dispersibility in aqueous environments. When exposed to light or suitable catalysts, Mn-ZnO NPs generate reactive oxygen species (ROS) that efficiently cleave lignin bonds, breaking down the polymer into smaller, more easily degradable fragments.

Moreover, the use of pegylated nanoparticles ensures better interaction with lignin molecules, enhancing the efficiency of degradation processes. This innovative approach holds promise for applications in biomass valorization, biofuel production, and environmental remediation, offering a sustainable pathway for lignin utilization while mitigating its environmental impact. However, further studies are warranted to optimize nanoparticle synthesis, understand degradation mechanisms, and assess the scalability and environmental implications of this technology.

Synthesis and Evaluation of Zinc Oxide Nanoparticles Against Bacterial Pathogens

A plant pathogen Ralstonia solanacaerum found out to have pathogenicity against animals too. However, the extensive use of conventional chemicals and antibiotics to eradicate the harmful effects of this bacteria is creating negative disturbance in the ecosystem. This research is conducted in order to create nanomaterial as a potential substitute for managing animal and plant infections with the least amount of environmental impact..

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Molecular Characterizations of Secretory Antigens in Mycobacterium Tuberculosis from Khyber Pakhtunkhwa

Mycobacterium tuberculosis is the causative agent of tuberculosis and its secretory proteins are responsible for the disease severity and immune system regulationThis study examines the structures and therapeutic potential of three secretory proteins from M. tuberculosis. With a greater understanding of the host-pathogen relationship, effective anti-tuberculosis therapies can be developed. This research primarily focuses on three genes in Mycobacterium TB. The overall focus of this work is on the importance of comprehending how mutations in Mycobacterium TB impact the development of its proteins. . It implies that the secretory proteins and secretive mechanisms of bacteria may be acquired and used as a possible treatment strategy to treat TB. Targeted therapy development and more investigation into these proteins may prove beneficial in the fight against this disease.

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GOAL 3

GOOD HEALTH & WELL BEINGS

Production and Purification of Keratinolytic Protease from Bacteria

The production and purification of keratinolytic protease from bacteria is a significant area of research due to its potential applications in various industries, including leather processing, waste management, and bioremediation. Bacteria capable of producing keratinolytic proteases are often isolated from keratin-rich environments, such as soil, feathers, or poultry waste. Production typically involves cultivating the keratinolytic bacteria in nutrient-rich media supplemented with keratinous substrates like feathers or hair. Optimization of culture conditions, such as pH, temperature, and aeration, enhances protease yield. Additionally, genetic engineering techniques may be employed to improve enzyme production. Purification of the keratinolytic protease involves several steps, including cell separation by centrifugation, followed by protein extraction and precipitation

. Further purification methods such as chromatography, including ion exchange, size exclusion, or affinity chromatography, help isolate the protease from other cellular components and contaminants. The purified keratinolytic protease exhibits potential for various applications, including enzymatic hydrolysis of keratinous waste into valuable products like amino acids and peptides. Additionally, it finds application in the formulation of detergents, animal feed, and cosmetics. Further research focuses on enhancing enzyme stability, substrate specificity, and scalability for industrial use.

GOAL 3

GOOD HEALTH & WELL BEINGS

Green Synthesis of Cerium Oxide Nanoparticles Using Turmeric Extract and its Biomedical Evaluation

TTuberculosis, caused by Mycobacterium tuberculosis, is a major global health concern associated with high mortality rates. The pathogen has demonstrated adaptation to the human immune system and antibiotics, highlighting the importance of robust DNA repair systems for its survival and genomic integrity. Recent studies have shown that DNA repair is involved in genome diversification and drug resistance development in mycobacteria. Certain DNA repair genes and proteins are associated with the persistence and latent stage of tuberculosis. Reactive oxygen species and nitrogen intermediates produced by the host's immune response can damage the pathogen's DNA. Multiple DNA repair mechanisms have evolved in mycobacteria, including base excision repair, nucleotide excision repair, homologous recombination, non-homologous end joining, single-strand annealing, and ribonucleotide excision repair. However, understanding these systems is limited due to challenges in culturing mycobacteria. This review provides a comprehensive overview of DNA repair in M. tuberculosis, highlighting its role in infection and pathogenicity. The findings revealed mutations in several genes, showing potential significance in antibiotic resistance. Further investigations demonstrated that the mutation led to gene instability and subsequent drug resistance. Additional research is needed to confirm these findings and explore other genetic factors contributing to drug resistance in M. tuberculosis.

Green Synthesis of Cerium Oxide Nanoparticles Using Turmeric Extract and its Biomedical Evaluation Khyber Pakhtunkhwa

The green synthesis of cerium oxide nanoparticles (CeO2 NPs) using turmeric extract is a noteworthy advancement in nanotechnology with potential biomedical applications. Turmeric extract serves as a reducing and stabilizing agent, facilitating the eco-friendly production of CeO2 NPs without the need for harsh chemicals or high temperatures. Biomedical evaluation of these nanoparticles reveals promising properties for various applications. CeO2 NPs exhibit antioxidant activity attributed to their ability to scavenge reactive oxygen species (ROS), thus showing potential for mitigating oxidative stress-related diseases. Moreover, their anti-inflammatory properties make them attractive candidates for treating inflammatory conditions. Furthermore, CeO2 NPs demonstrate antimicrobial activity against a spectrum of pathogens, suggesting their utility in combating microbial infections. Their biocompatibility and low cytotoxicity enhance their suitability for biomedical use, including drug delivery systems and tissue engineering scaffolds. Overall, the green synthesis of CeO2 NPs using turmeric extract presents a sustainable and versatile approach for producing biocompatible nanoparticles with significant potential for various biomedical applocations.

GOAL 3

GOOD HEALTH & WELL BEINGS

Importance of Food Hygiene Safety Practices

The Centre for Professional Development (CPD) hosted a training session on the "Importance of food safety and hygiene practices in the workplace".
The session was led by Mr. Hisham Javed, Project Lead at Bureau Veritas Pakistan (Pvt) Ltd. This session aimed to raise awareness of the principles of food safety to make informed choices that can save everyone from any inconveniences they may bring.

Drug Abuse Awareness in Academic Institutions

The Centre for Professional Development (CPD) conducted the second part of its "Drug Abuse Awareness in Academic Institutions" training on December 7th-8th, led by Prof. Dr. Fazal Subhan. The session covered advanced topics like drug types, brain circuitry, and prevention methods. It was well-received and ended with an engaging Q&A.

GOAL 3

GOOD HEALTH & WELL BEINGS

Cyber Crimes Risks and Their Countermeasures

Centre for Professional Development (CPD) organized a training session on “Cyber Crimes Risks and their Countermeasures”. This session was conducted by Mr. Muhammad Akram Mughal, Deputy Director Network Security, Federal Investigation Agency (FIA).

The session provided valuable insights into the current threat landscape and effective measures to safeguard against cyber attacks, including protecting yourself and your family and preventing cyberbullying.

GOAL 3

GOOD HEALTH & WELL BEINGS

Exploring the Complexities of Human Health: Insights from a Multidisciplinary Perspective

IThe Centre for Professional Development (CPD) hosted a training session on “Exploring the Complexities of Human Health: Insights from a Multidisciplinary Perspective” with Dr. Badar Mahmood on metabolic health. The session covered the interplay of diabetes, endocrinology, and neurology, and introduced innovative teaching methods. Faculty gained valuable insights into enhancing student engagement through discussions and case studies.

Seeing Beyond Sight: Awareness of Your Unconscious Forces

Dr. Shehla Akbar's CPD session, “Seeing Beyond Sight: Awareness of Your Unconscious Forces,” guided faculty through the complexities of unconscious biases impacting teaching and communication. The session offered practical strategies for creating inclusive environments and addressing professional challenges. Engaging case studies and discussions provided valuable tools for personal and professional growth.

GOAL 3

GOOD HEALTH & WELL BEINGS

Applying physical therapy approaches to uplift the workplace environment and enrich the overall quality of life

The Centre for Professional Development (CPD) recently hosted a training session titled "Applying Physical Therapy Approaches to Enhance Workplace Well-being and Elevate Overall Quality of Life," led by Dr. Kashmala Zeb, Orthopaedic Manual Physical Therapist. Dr. Zeb provided valuable guidance to faculty members on alleviating desk work-related challenges, addressing issues like forward head posture, text neck syndrome, and cervicogenic headaches. The session offered insights into creative strategies for staying active in the office, integrating physical therapy principles into daily routines. Faculty members explored ways to improve posture and enhance overall well-being, promoting a healthier work-life balance and better quality of life.

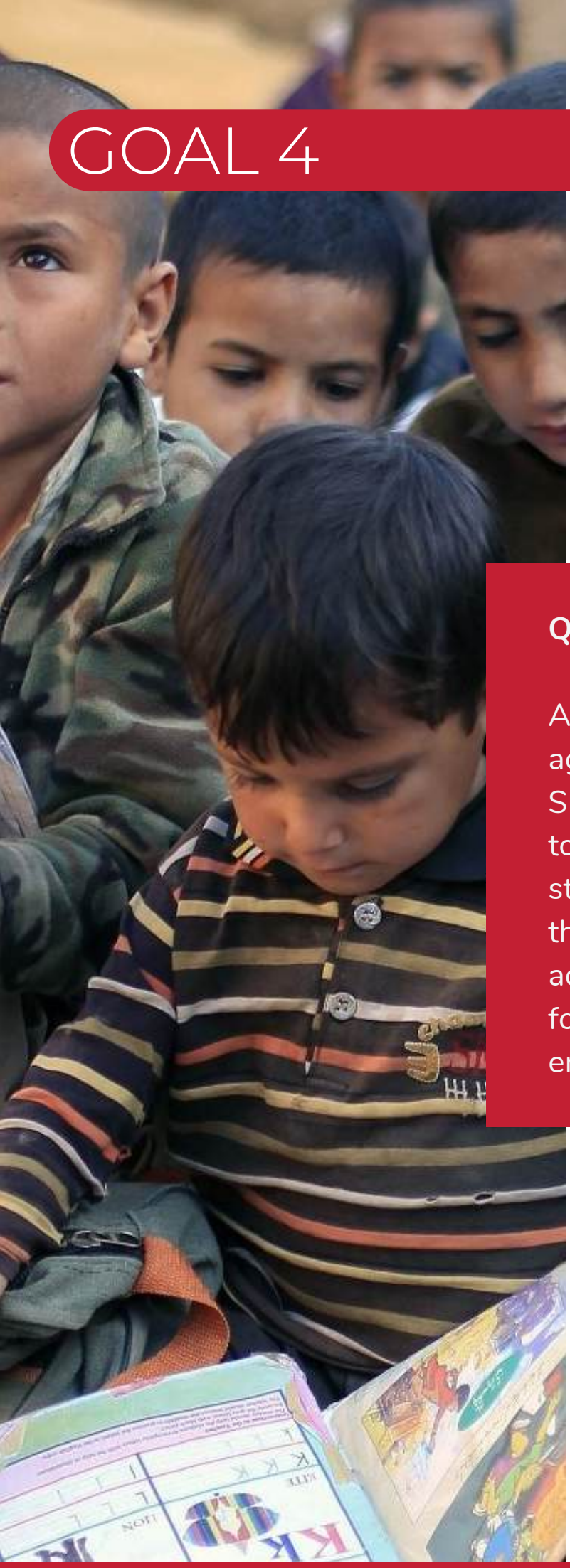
GOAL 3

GOOD HEALTH & WELL BEINGS

Project or Thesis Title	Student Names	Project Details
Pink	• Salman Ullah • Ehsan Ghani • Falak Sher • Muhammad • Sohail, Jawad Khan.	Pink offers a curated collection of preloved dresses and accessories, promoting sustainable fashion and reducing waste. By choosing our products, customers contributed to a healthier planet and supported overall well-being.
Holistic Wellness Centre	• Rooshna Malik	We provided comprehensive wellness services focusing on mind, body, and spirit. Our approach combined therapeutic practices, personalized care, and holistic health strategies to enhance overall well-being and promote a balanced lifestyle
Organic Cooking Oil Industry	• Muhammad Usama	We specialized in producing high-quality, organic cooking oils sourced from natural, sustainably grown ingredients. Our commitment to purity and environmental stewardship ensured that every product supported healthier cooking and a greener planet.

"Wellness is not merely the absence of illness.It is a dynamic process of change and growth."
– Paul S. T. Williams

GOAL 4



Quality Education Statistics 2024

An estimated 22.8 million children aged 5-16 are out-of-school.This SDG seeks to ensure access for all to quality education through all stages of life, as well as to increase the number of young people and adults who have the relevant skills for employment, decent jobs and entrepreneurship.

GOAL 4

QUALITY EDUCATION

Importance of Digital Skills with Academics

The Career Development Centre (CDC) hosted a session on March 28, 2024, focusing on the crucial link between digital skills and academic success.

The session kicked off by highlighting the significant changes happening across various industries due to advancements in technology. Everything from artificial intelligence to blockchain is reshaping how we operate, communicate, and tackle challenges. In light of this, the discussion underscored the essential need for digital literacy in today's professional world.

Institution for Poultry and Live Stock at KARAK

The Career Development Centre (CDC) held an exciting session all about professional communication. Led by Imad Javed, a respected Manager at CDC, attendees got valuable insights into effective communication at work.

Mr. Javed shared practical tips and emphasized how crucial communication is in different situations. The session highlighted CDC's dedication to helping people communicate better in their careers, boosting confidence and competence in work settings.

"Education is the most powerful weapon which you can use to change the world. It is through education that we empower individuals to break the chains of poverty, enhance their understanding of the world, and contribute meaningfully to society. It opens doors, broadens horizons, and cultivates the potential for a better future"- Nelson Mandela

GOAL 4

QUALITY EDUCATION

Road Show

CDC has arranged an awareness session Road Show. The awareness session will cover all the aspects of our incubation program and the perks & privileges offered at Durshal Hub Peshawar for incubated entrepreneurs..

Effective Communication

CDC arranged the session on communication skills was nothing short of empowering We delved into the art of effective communication and learned some invaluable tips to enhance our interactions.

GOAL 4

QUALITY EDUCATION

The Role of Artificial Intelligence (AI) in Higher Education: Benefits and Ethics

Centre for Professional Development (CPD) organized a two-day training session on “The Role of Artificial Intelligence (AI) in Higher Education: Benefits and Ethics”. Dr. Cedric Aimal Edwin assisted our esteemed faculty in gaining a deeper understanding of the benefits and ethics of AI in Higher Education.

Implementation and Assessment of an Intervention to Enhance the Knowledge of Medical Lab Technologists (MLTs) regarding Culture Testing of Blood, Urine, and Stool Samples

CA pre and post survey analysis was done which evaluated the knowledge of MLTs regarding culture testing. After the pre survey, an intervention was done in the form of a pamphlet, the effect of which was then assessed post survey.

GOAL 4

QUALITY EDUCATION

The Art and Science of Teaching: Unveiling the Profession

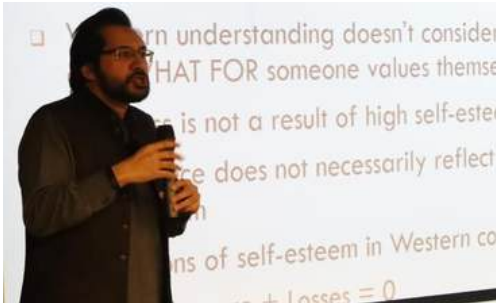
The Centre for Professional Development (CPD) hosted a two-day training session on "The Art and Science of Teaching," led by Dr. Kashif Mehmood, focusing on the integration of technology and evidence-based practices to enhance student engagement and learning outcomes. Faculty members gained insights into effective teaching methods, ethical considerations, and the importance of continuous professional growth through peer discussions.

Cultivating Collaborative Connections: Enhancing Interpersonal Skills for University Teachers in the Workplace

The Centre for Professional Development (CPD) hosted a training session led by Mr. Khurshid Qasim Marwat on "Cultivating Collaborative Connections," focusing on enhancing interpersonal skills for university teachers in areas like communication, conflict resolution, and emotional intelligence. Faculty members left equipped to navigate academic relationships, fostering a positive and collaborative educational environment.

GOAL 4

QUALITY EDUCATION



Growth Mindset: A Game-changer for Teacher

The Centre for Professional Development (CPD), in collaboration with the Career Development Centre (CDC), hosted a two-day training session led by Dr. Abdul Baseer Qazi on topics including "Dwindling Self-Esteem: How to Regain Yourself" and "Growth Mindset: A Game-changer for Teachers." Faculty and students gained insights into addressing low self-esteem and fostering a growth mindset to enhance academic and personal development.

The Evolving Landscape of Higher Education

The Centre for Professional Development (CPD) conducted a two-day faculty training session on "The Evolving Landscape of Higher Education," led by Dr. Irfan Ullah, Dean of Engineering. Faculty members explored transformative trends in higher education, focusing on essential skills for future graduates, innovative teaching methods, and curriculum reform to better prepare students for the dynamic job market.

GOAL 4

QUALITY EDUCATION

Cultivating Lifelong Learners

The Centre for Professional Development (CPD) hosted a two-day session on "Cultivating Lifelong Learners," featuring Dr. Zaheer Uddin and Engr. M Irfan Khan, who explored the significance of lifelong learning and its integration into educational practices. Dr. Uddin emphasized the importance of continuous knowledge acquisition for personal and career development, while Engr. Khan shared practical strategies to foster a culture of lifelong learning among students. Faculty members left empowered to enhance their teaching approaches and contribute to a dynamic learning environment at CECOS University.

GOAL 4

QUALITY EDUCATION

Beyond Copy-Paste: Insights into HEC Plagiarism Policy (2023) and Effective Use of Turnitin and AI Checkers

The Centre for Professional Development (CPD), in collaboration with the Quality Enhancement Cell (QEC), held a training session on "Beyond Copy-Paste," featuring Dr. Maryam Mahsal Khan and Dr. Muhammad Aleem, who discussed the HEC Plagiarism Policy (2023) and effective use of plagiarism detection tools. Dr. Maryam detailed the policy's alignment with CECOS's commitment to academic integrity, while Dr. Aleem highlighted how tools like Turnitin and AI checkers can aid in preventing plagiarism and promote proper citation practices. Faculty members gained valuable insights to enhance their understanding and implementation of academic integrity within their teaching practices.



Quality Assurance Practices in Higher Education

The Centre for Professional Development (CPD), in collaboration with the Quality Enhancement Cell (QEC), hosted a training session on "Quality Assurance Practices in Higher Education," facilitated by Dr. Khalid Azim, a consultant with over 25 years of experience in quality assurance and academic accreditation. Dr. Khalid shared practical insights and strategies for establishing robust quality assurance frameworks and effective accreditation processes to enhance educational standards. Faculty members left equipped with valuable knowledge and tools to drive quality enhancement initiatives within their institutions.



GOAL 4

QUALITY EDUCATION

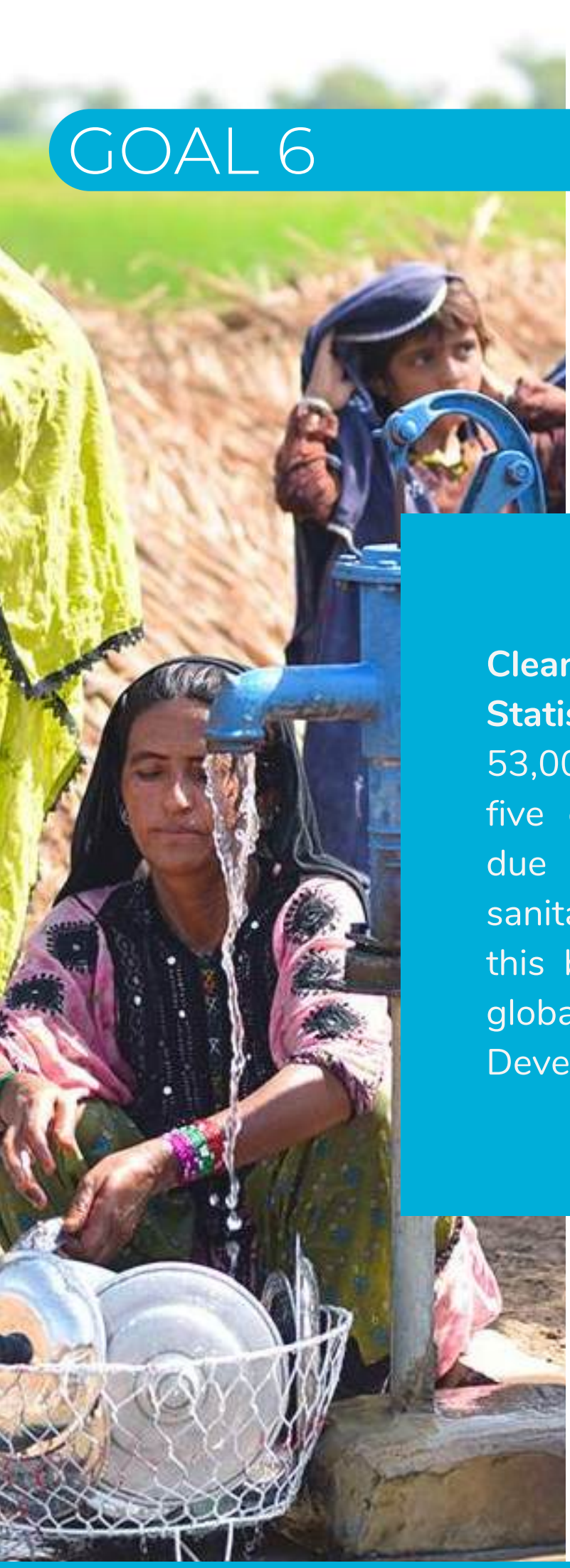
Project or Thesis Title	Student Names	Project Details
MEDICAL COLLEGE AT NORTH WAZIRISTAN	• MUHAMMAD SHABEER	Visiting a medical college in North Waziristan offers a unique opportunity to explore its educational programs and community impact amid a distinct regional context.
Holistic Wellness Centre	• Rooshna Malik	A visit to the Holistic Wellness Centre provides students with insights into integrative health practices and wellness strategies.
Organic Cooking Oil Industry	• Muhammad Usama	The final year project on the Organic Cooking Oil Industry focuses on evaluating sustainable production practices and market potential for eco-friendly cooking oils.

GOAL 5

Gender Equality Statistics 2024

According to the Global Gender Gap Index 2022, Pakistan ranks second to last in terms of the Gender Gap, with only 56.4% of its gender gap closed, a 0.8 percentage point increase from 2021.By percentage, men form about 51.46% and women form about 48.54% of the total population of Pakistan.

GOAL 6

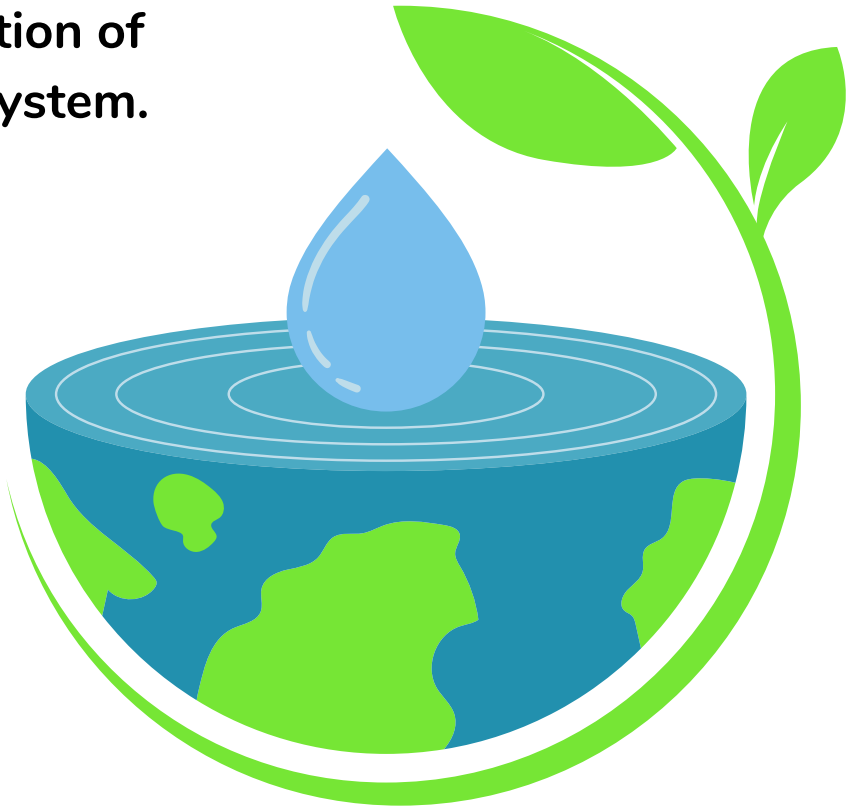


Clean Water and Sanitation Statistics 2024

53,000 Pakistani children under five die annually from diarrhoea due to poor water and sanitation.The goal to eradicate this by 2030 underlines the vital global effort of Sustainable Development Goals

GOAL 6
CLEAN WATER AND SANITATION

Design and Implementation of Rainwater Harvesting System.



The aim of this project was to develop an automatic system that provided water to the crops when needed. Additionally, during rainfall, the system covered the field upon reaching the optimal level of soil moisture. The extra water was harvested and stored in a tank, which could later be utilized for irrigation purposes as required. The following were the main objectives of this project:

1. To estimate the water harvesting capacity of surface runoff in the Buner Karakar catchment area.
2. To investigate the rainwater harvesting capacity of a 5 marla house rooftop.
3. To evaluate, estimate, and design the storage tank for harvesting.

There is nothing more important to the future of humanity than ensuring that the world's children have access to clean and safe drinking water." Nelson Mandela underscores the fundamental role of clean water in safeguarding the health and future of children

GOAL 6
CLEAN WATER AND SANITATION

Identification of microbial agents (E. coli and Salmonella typhi) from tap water in phase 1 and 6 Hayatabad, Peshawar

Waterborne diseases constitute a significant public health concern, necessitating regular scrutiny of water sources to ensure their safety. This study focuses on discerning the presence of two prevalent waterborne pathogens, Escherichia coli (E. coli) and Salmonella Typhi, within tube well and tap water samples collected from Phase 1 and 6 of Hayatabad, Peshawar. The primary objective is to evaluate the microbial quality of these water sources and provide crucial insights into potential health hazards associated with water consumption.

Prevalence of Antibiotic Resistance in E.Coli Isolated From Water Collected From Tube Wells of Phase 6 Hayatabad, Peshawar

The research was targeted towards the isolation of E.Coli from mixed aquatic culture. Then the antibiotic susceptibility was analyzed against the isolated strain. The results showed the emergence of multi drug and extensive drug resistant bacteria. This proved that this issue require a quick thorough understanding of all the mechanisms and reasons responsible. Antibiotic susceptibility analysis also proved E.Coli to be resistant to all the antibiotics used but to know which serovar of E.Coli tested disease are causing 16s analysis is required.

Antibiotic Resistance in Pseudomonas aeruginosa and Klebsiella pneumoniae Isolated from Tube Well System of Phase-6, Hayatabad

In this study two clinically important bacterial strains i-e Klebsiella pneumonia and Pseudomonas aeruginosa were specifically targeted for their multi drug and extensive drug susceptibility. The strains were isolated from a mixed aquatic culture on the basis of their importance and pathogenesis. The results proved the strains to be susceptible only to fluroquinolones while resistant to all the other antibiotics used against them. However, to prove these isolated strains to be the major carriers of ARGs, a detailed molecular analysis is needed.

GOAL 6
CLEAN WATER AND SANITATION

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GOAL 7

7 AFFORDABLE AND CLEAN ENERGY

Affordable and Clean energy statistics 2024

Over 90% of the world's population now has access to electricity, but there are still around 770 million people without reliable access

GOAL 7
AFFORDABLE AND CLEAN ENERGY

Energy Efficiency, Energy management and Energy Audits

The Centre for Professional Development (CPD) held a training session on "Energy Efficiency, Energy Management, and Energy Audit" for the faculty of the Electrical, Mechanical, Civil Engineering, and Architecture Departments.

Engr. Muhammad Ali, Senior Assistant Manager from the Centre for Industrial and Building Energy Audits (CIBEA), was invited as a guest speaker and provided valuable insights into energy-saving opportunities, measurement techniques, and sustainable development goals related to the construction industry.

The session commenced with a discussion on key concepts related to energy conservation and its role in optimizing building performance. Participants were introduced to the United Nations' 17 Sustainable Development Goals, emphasizing their relevance to the construction sector.

The speaker highlighted the steps involved in implementing an effective energy management program, which included developing an energy policy/strategy, setting specific and measurable goals, establishing administrative and management structures, conducting energy audits, benchmarking energy costs, identifying opportunities, implementing energy projects, and monitoring and reporting progress.

Additionally, the speaker focused on energy-saving opportunities in the industrial sector, emphasizing low-hanging fruits. Participants were educated about strategies such as installing Variable Frequency Drives (VFDs), implementing waste heat recovery systems, automatic metering and control, and controlling the oxygen percentage in boiler exhaust. The utilization of renewable energy sources like solar PV, solar water heaters, and biomass was also highlighted.

GOAL 7

AFFORDABLE AND CLEAN ENERGY

Solar and wind powerd hydrogen fuel cell power generator

https://cdc.cecos.edu.pk/project-details.php?keyword=3295c76acbf4caaed33c36b1b5fc2cb1

Solar and wind power assisted charging system for Electric vehicles

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D & F of two wheel drive forklift for industrial warehouse

https://cdc.cecos.edu.pk/project-details.php?keyword=3c59dc048e8850243be8079a5c74d0799

GOAL 8

8 DECENT WORK AND ECONOMIC GROWTH

Decent Work And Economic Growth Statistics 2024

Youth unemployment remains a critical issue, with an estimated 14% of young people (aged 15-24) unemployed globally, reflecting the need for better job creation and skills development. This underscores the need for continued efforts to ensure decent work and sustainable economic growth for all

GOAL 8

DECENT WORK AND ECONOMIC GROWTH



Cyber Crimes Risks and their Countermeasures

The Centre for Professional Development (CPD) organized a training session on “Cyber Crimes Risks and their Countermeasures,” conducted by Mr. Muhammad Akram Mughal, Deputy Director of Network Security at the Federal Investigation Agency (FIA). The session offered valuable insights into the current threat landscape and effective measures to safeguard against cyber attacks, including protecting personal and professional data. Participants received practical tips and best practices to stay informed and take proactive steps against cyber threats.

Applying physical therapy approaches to uplift the workplace environment and enrich the overall quality of life

The Center for Professional Development (CPD) recently organized a training session on "Applying Physical Therapy Approaches to Enhance Workplace Well-being and Elevate Overall Quality of Life," led by Dr. Kashmala Zeb, Orthopaedic Manual Physical Therapist at the Department of Allied Health Sciences. During the event, Dr. Zeb provided valuable insights into addressing musculoskeletal disorders related to desk work and offered creative strategies for staying active in the office. Faculty members gained actionable knowledge to promote a healthier work-life balance, improved posture, and an enhanced quality of life.



GOAL 8

DECENT WORK AND ECONOMIC GROWTH

Cultivating Collaborative Connections: Enhancing Interpersonal Skills for University Teachers in the Workplace

The Centre for Professional Development (CPD) organized a training session on enhancing interpersonal skills for university teachers, led by Mr. Khurshid Qasim Marwat. The session covered effective communication, conflict resolution, and cultural sensitivity, specifically within the academic context. By the end, faculty members had acquired essential skills to improve relationships in the workplace, fostering a more collaborative educational environment.



Investigating the minerological composition of motor by replacement of cement with alkali activated clay

This study investigates the mineralogical composition of mortar with partial replacement of cement by alkali-activated clay (AAC) as a sustainable alternative. Using X-ray diffraction (XRD) and scanning electron microscopy (SEM), we analyze the changes in phase composition and microstructure due to AAC substitution. Our findings highlight AAC's potential to reduce the environmental impact of construction materials, contributing to sustainable building practices.

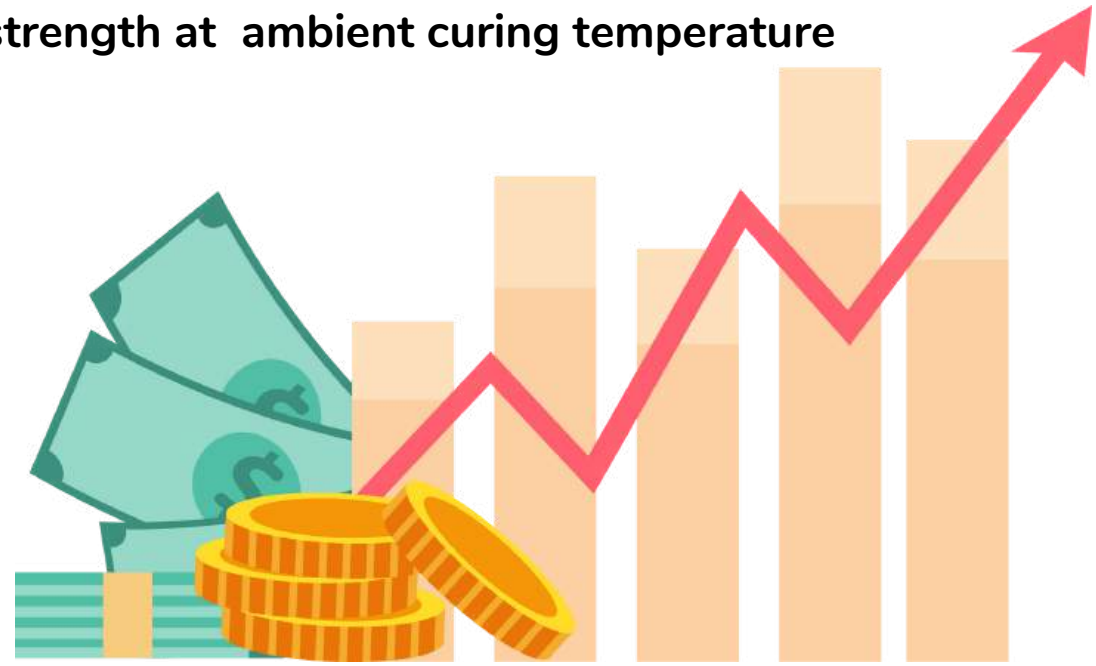
Investigating the mechanical properties of self compacting concrete by using alkali activated clay based geo polymer binder

This study examines the mineralogical composition of mortar with partial cement replacement by alkali-activated clay (AAC), a sustainable alternative that helps reduce carbon emissions. Utilizing X-ray diffraction (XRD) and scanning electron microscopy (SEM), we analyze the changes in phase composition and microstructure due to AAC substitution. Our findings highlight AAC's potential as a greener construction material, contributing valuable insights for sustainable building practices.

GOAL 8

DECENT WORK AND ECONOMIC GROWTH

Effect of alkali activated clay based in concrete compressive strength at ambient curing temperature



Alkali activated materials have been gaining interest in recent years as a sustainable alternative to traditional Portland cement in concrete production. Among these materials, clay- based binders have shown promising results, particularly in terms of their mechanical properties. This study aims to investigate the effect of an alkali-activated clay-based binder on the compressive strength of concrete at ambient curing temperature.

Experimental procedures were carried out to produce two types of concrete mixes: one using a traditional Portland cement binder and the other using an alkali-activated clay-based binder. The clay used in the binder was sourced locally and activated using a combination of sodium hydroxide and sodium silicate. The concrete mixes were tested for compressive strength at different curing periods (7, 14 and 28 days) using a compression testing machine.

Results showed that the concrete mix containing the alkali-activated clay-based binder exhibited a higher compressive strength compared to the Portland cement-based mix at all curing periods. Specifically, the alkali-activated clay-based (50% AAC) concrete had a compressive strength of 29.90 MPa after 28 days of curing, while the Portland cement-based concrete had a compressive strength of only 21.52 MPa.

Overall, the results of this study suggest that the use of an alkali-activated clay-based binder can significantly improve the compressive strength of concrete at ambient curing temperature, making it a promising alternative to traditional Portland cement in sustainable concrete production.

GOAL 9

Industry,Innovation and Infastructure Statistics 2024

It sees a 4% rise in global manufacturing output and $2.3 trillion in R&D investment. Infrastructure spending reaches $3.5 trillion, with a 3% boost in energy efficiency and 65% internet access globally, driving innovation and sustainable development.

GOAL 9

INDUSTRY INNOVATION & INFRASTRUCTURE

Optimizing Project Management in Construction Engineering through the Use of Primavera Software: A Comparative Study of Traditional and Automated Approaches

There are various problems faced by construction manager during a project. The main construction issue is improper planning of a project, due to which time, cost and quality of a project will disturbed. So, for the success of any project there must be proper balanced in time,cost scope. If any one of this get effect, it directly or indirectly will affect the quality of the project. For this purpose, proper management tools must be taken in account for scheduling, tracking and resource allocation purpose logic is advance comparing with primavera p6 for the purpose of site management. Aim & objective To identify construction sequence for building construction.

To identify technique used in developing planning and scheduling.

To develop scheduling model using Primavera Software.

To identify proper execution of the planning and scheduling.

To know the steps required before and after completion of the project.

To investigate defects in the planning and scheduling procedure of the organization.

Investigating the minerological composition of motor by replacement of cement with alkali activated clay

This study explores the mineralogical composition of mortar when cement is partially replaced with alkali-activated clay (AAC), a sustainable alternative to traditional cementitious materials. In the face of environmental concerns associated with cement production, AAC offers a promising avenue for reducing carbon emissions and mitigating the environmental impact of construction materials. Through a comprehensive investigation, we analyze the mineralogical properties, such as phase composition and microstructure, of mortar specimens with varying levels of cement replacement by AAC. X-ray diffraction (XRD) and scanning electron microscopy (SEM) techniques are employed to assess the changes in mineral phases and microstructural features. Our findings reveal insights into the impact of AAC substitution on the mineralogical characteristics of mortar, shedding light on its potential as a greener construction material. This research contributes to the growing body of knowledge regarding sustainable construction practices and provides valuable information for architects, engineers, and materials scientists seeking innovative solutions to reduce the environmental footprint of construction materials.

GOAL 9

INDUSTRY INNOVATION & INFRASTRUCTURE

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GOAL 9

INDUSTRY INNOVATION & INFRASTRUCTURE

Effectiveness of Quality assurance strategies in Project Execution of Construction of Road in Hayatabad

This thesis examines the effectiveness of quality assurance strategies in road construction, emphasizing their crucial role in infrastructure development, connectivity, and economic growth. It explores how these strategies impact environmental sustainability, economic performance, and social welfare. Environmental considerations include measures to minimize the adverse effects of road construction, such as soil erosion, preservation of native vegetation, and reduction of air and noise pollution. The study evaluates proper disposal of construction waste and erosion control mechanisms within quality assurance frameworks, highlighting the potential for sustainable practices. Economic efficiency is assessed through comprehensive cost-benefit analyses and the evaluation of building material supply, determining whether quality assurance strategies help deliver projects within budget and reduce unforeseen costs. Additionally, the integration of preventive maintenance and long-term economic factors into the quality assurance framework is explored for improving road infrastructure longevity and cost-effectiveness. The social dimension focuses on the strategies' impact on local communities, public safety, and social welfare. By analyzing public feedback and communication regarding construction progress, this study investigates how quality assurance efforts foster positive social outcomes, create local employment opportunities, improve accessibility, and maintain emergency response pathways.

Soil improvement Using lime and Polyethylene Terephthalate (PET) Bottles Waste.

This study aimed to enhance the strength of black problematic soil for road subgrade construction by using lime and PET bottle waste. Soil stabilization improves physical properties like shear strength and bearing capacity, crucial for supporting structures. Expansive soils, such as black cotton soil, often face issues like swelling and shrinkage. The research recommended using lime and PET waste as soil stabilizers, addressing both soil improvement and the environmental problem of PET waste disposal. The use of lightweight PET bottle stirrups offers advantages as an admixture for strength improvement and drainage material. The experimental program included Atterberg's limit testing, modified proctor testing, and unconfined compression testing on composite specimens with varying PET stirrup contents. This study aimed to optimize the quantity, percentage, size, and shape of PET bottle stirrups for improved subgrade and foundation performance.

GOAL 9

INDUSTRY INNOVATION & INFRASTRUCTURE

Solar and wind powerd hydrogen fuel cell power generator

https://cdc.cecos.edu.pk/project-details.php?keyword=3295c76acbf4caaed33c36b1b5fc2cb1

Solar and wind power assisted charging system for Electric vehicles

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Design and Fabrication of vein detector and injecting device

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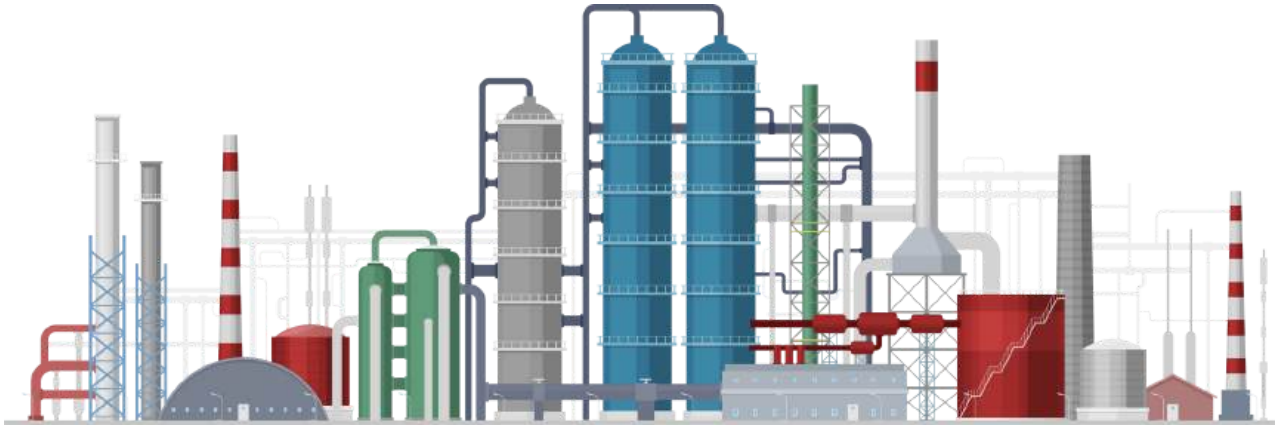
GOAL 9

INDUSTRY INNOVATION & INFRASTRUCTURE

Use of Lime and Hemp as a Soil Stabilizer in Earth Work Construction.

Soil stabilization occurs when the proper amount of lime is added to a reactive soil to initiate the development of cementitious products. Stabilization differs from modification in that a significant increase in strength is developed over the longer term through an on-going pozzolanic reaction. This reaction results in the formation of calcium silicate and calcium aluminate hydrates as the calcium from the lime reacts with the soluble forms of aluminates and silicates solubilized from the clay mineral surface. This reaction can begin quickly and is responsible for some of the effects of soil modification. The full-term pozzolanic reaction can continue for a long period of time, often for many years resulting in sustained strength gains and long term durability of the lime stabilized soils..



Isolation and Purification of Microbial Collagenases from Bacteria

This research focuses on the isolation and purification of collagenases from bacteria, aiming to extract enzymes capable of breaking down collagen. Collagenases have wide-ranging applications, from aiding in wound healing and tissue engineering to improving the texture, cancer therapeutics research and nutritional profile of food products. By isolating collagenases from microbial sources, we can identify enzymes with specific properties suited for various applications. The research involves extracting these enzymes from bacterial cultures, purifying them to high levels of homogeneity, and characterizing their enzymatic activity and stability. Understanding the biochemical properties of microbial collagenases can facilitate their optimization for industrial processes and therapeutic development, contributing to advancements in biotechnology and healthcare.

GOAL 9

INDUSTRY INNOVATION & INFRASTRUCTURE

Project or Thesis Title	Student Names	Project Details
GUNS & COUNTRY CLUB AT DISTRICT KHYBER	• ASAD KHAN AFRIDI	CECOS University students visited the Guns & Country Club in District Khyber to gain insights into recreational activities and the club's role in fostering community engagement and local sports.
EXPO- CENTRE AT RASHAKY MARDAN	• HAFEEZ ULLAH	CECOS University participated in the Expo-Centre at Rashaky Mardan, showcasing its innovations and fostering connections with industry leaders and local businesses.
Skill Development Centre FOR INTERSEX COMMUNITY AT PESHAWAR	• EMAN NAWAB	CECOS University students participated in skill-building workshops at the Skill Development Centre for the intersex community in Peshawar.

Albert Einstein once said, "The measure of intelligence is the ability to change," highlighting the crucial role of innovation and adaptability in driving progress within industry and infrastructure.

GOAL 10

Reduced Inequalities Statistics 2024

In 2024, on Reduced Inequality shows a slight improvement in global income inequality, with the Gini index at 0.42 and the bottom 40% earning 12% of global income, though disparities persist in wealth, education, and healthcare.

GOAL 11

Sustainable Cities and Communities Statistics 2024

In 2024, shows that 55% of the global population lives in urban areas, 70% of new housing uses green practices, and 45% of cities have climate action plans, with urban air quality improving by 8%.

GOAL 11
SUSTAINABLE CITIES & COMMUNITIES

Project or Thesis Title	Student Names	Project Details
HORTICULTURE RESEARCH CENTRE AT DISTRICT BAJAUR- KPK	• OMAR FAROOQ JAN	Students visited the Horticulture Research Centre in District Bajaur, KPK, to explore agricultural advancements and research in crop cultivation.
REHABILITATION OF FLOOD AFFECTED COMMUNITIES AT BAHRAIN - SWAT	• HAKIR ULLAH	Students went on a study tour to Bahrain, Swat, to examine the rehabilitation efforts for flood-affected communities and understand disaster recovery strategies.
PUBLIC FACILITATION CENTRE AT PESHAWAR	• MUHAMMAD AIMAL KHAN	Students visited the Public Facilitation Centre in Peshawar to learn about its services and the role it plays in enhancing citizen access to government resources.

The greatest threat to our planet is the belief that someone else will save it.
– Robert Swan.
This quote underscores the importance of individual and collective action in achieving on Climate Action, highlighting that proactive engagement is essential to address climate change and create a sustainable future.

GOAL 11

SUSTAINABLE CITIES & COMMUNITIES

Project or Thesis Title	Student Names	Project Details
RESORT AT KUMRAT DIR	• BARYAL ASAD	Students visited the resort at Kumrat Dir to explore its facilities and understand its impact on local tourism and community development.
SAFARI PARK AT DISTRICT KHYBER	• FAJAR IRFAN	Students visited the Safari Park in District Khyber to learn about wildlife conservation and the park's role in environmental education.
VERTICAL NEIGHBOURHOOD	• SHAH HUSSAIN	CECOS University students developed a project on Vertical Neighborhoods, focusing on innovative high-rise solutions to enhance urban living and optimize space in growing cities.
MUNICIPAL CIVIC CENTER	• ABDULBASIT KHAN	Students visited the Municipal Civic Center to explore its operations and understand its role in local governance and community services.

GOAL 11

SUSTAINABLE CITIES & COMMUNITIES

Project or Thesis Title	Student Names	Project Details
TOURISM RESORT	• SAHIBZADA M.SAAD	Students visited and stayed at a tourism resort to experience its hospitality and understand its impact on local tourism and community development.
ART AND DESIGN VILLAGE	• TOOBA	CECOS University students visited the Art and Design Village to explore creative workshops and gain insights into innovative artistic practices and design techniques.
VIRSA MUSEUM AT PESHAWAR	• MUHAMMAD DANYAL KHAN	CECOS University students visited the Virsa Museum in Peshawar to explore its rich cultural exhibits and gain a deeper understanding of regional heritage and history.
COMMUNITY AREA THE REGI COMPLEX	• ABDULBASIT KHAN	CECOS University students visited the Regi Complex community area to explore its innovative urban planning and vibrant community development initiatives.

GOAL 12

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Responsible Consumption and Production Statistics 2024

In 2024, a 10% increase in global recycling rates, a 5% reduction in food waste, and a 15% growth in the adoption of sustainable production practices by major industries. However, challenges remain in reducing overall resource use and promoting circular economy practices.

GOAL 12

RESPONSIBLE CONSUMPTION AND PRODUCTION

E - Bikes

The transportation industry needs to find a way to be both convenient and environmentally friendly.

1. E-bikes is a better option.
2. E-bikes provide a solution as they use environmentally friendly technology.
3. This thesis looks at how the e-bike industry is growing and suggests ways for E-bikes to become leaders in the market.

Design and Implementation of Rainwater Harvesting System.

The aim of the project is to develop automatic system which will provide water to the crops when needed. Also, at the time of rain the system will cover the field upon reaching the optimal level of soil moisture. The extra water will be harvested and stored in the tank. Later upon the need the same water will be utilized for irrigation purpose.

Following are the main objectives of this project

1. To estimate the water harvesting capacity of surface run off of Buner Karakar catchment area .
2. To investigate the rain water harvesting capacity if 5 marla house roof top
3. To evaluate/ estimate / design the storage tank for harvesting etc

GOAL 12

RESPONSIBLE CONSUMPTION AND PRODUCTION

Solar and wind power assisted charging system for Electric vehicles

https://cdc.cecos.edu.pk/project-details.php?keyword=b6d767d2f8ed5d21a44b0e5886680cb9

Design and Fabrication of vein detector and injecting device

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Design and Fabrication of smart halmet

https://cdc.cecos.edu.pk/project-details.php?keyword=c0c7c76d30bd3dcaefc96f40275bdc0a

GOAL 13

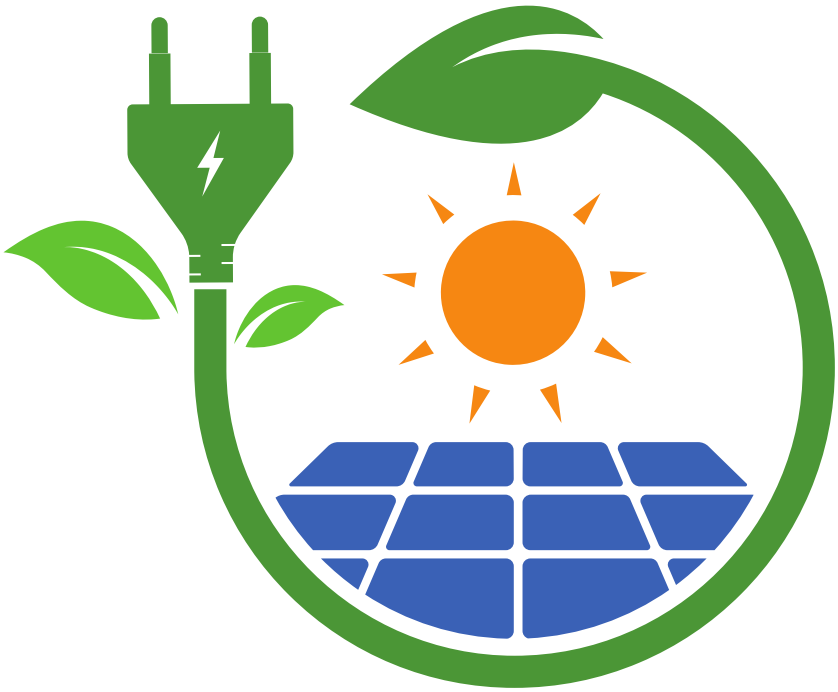
13 CLIMATE ACTION

Climate Action Statistics 2024

In 2024, Climate Action reveals a 7% reduction in global carbon emissions from 2020 levels, a 25% increase in renewable energy adoption, and 85% of countries have integrated climate action plans into their national policies. Despite progress, global temperature rise remains a significant challenge.

GOAL 13
CLIMATE ACTION

Technologically Advanced and Solarized Pakistan



The aim of this project was to develop an automatic system that provided water to the crops when needed. Additionally, during rainfall, the system covered the field upon reaching the optimal level of soil moisture. The extra water was harvested and stored in a tank, which could later be utilized for irrigation purposes as required. The following were the main objectives of this project:

1. To estimate the water harvesting capacity of surface runoff in the Buner Karakar catchment area.
2. To investigate the rainwater harvesting capacity of a 5 marla house rooftop.
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GOAL 13
CLIMATE ACTION

Solar and wind powerd hydrogen fuel cell power generator

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GOAL 14

Life below Water Statistics 2024

In 2024, statistics shows that marine protected areas cover 8% of the ocean, ocean plastics have decreased by 10%, and overfishing is down 5% in key areas, though marine biodiversity remains under threat..

GOAL 14

LIFE UNDER WATER

Project or Thesis Title	Student Names	Project Details
ASTOLA ISLAND & MARINA RESORT GAWADAR	• SHEHBAZ ALI KHAN	Students visited Astola Island and the Marina Resort in Gwadar to explore its unique marine ecosystem and understand its role in sustainable tourism and conservation efforts.
AQUATIC CENTRE & MARINA	• AMEER UD DIN	Students visited the Aquatic Centre and Marina to explore marine conservation efforts and learn about sustainable practices in water-based recreation and tourism.
Aquatic Fussion Enigma/Eco Marine Discovery Hub	• HAMID AHMAD	Students visited the Aquatic Fusion Enigma/Eco Marine Discovery Hub to explore innovative marine conservation technologies and gain insights into sustainable aquatic ecosystems.

No water, no life. No blue, no green.This emphasizes the critical connection between healthy oceans and the health of our planet
- Sylvia Earle

GOAL 15

life on Land Statistics 2024

Life on land is highly diverse, with 80% of Earth's species thriving in forests, grasslands, deserts, and mountains. Human activities, like deforestation and habitat loss, threaten these ecosystems. Conservation efforts are crucial to protect and preserve this rich biodiversity.

GOAL 15
LIFE ON LAND

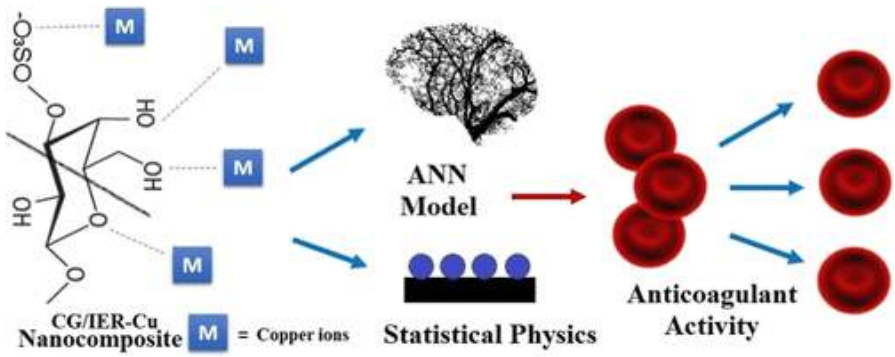
Use of Lime and Hemp as a Soil Stabilizer in Earth Work Construction

Soil stabilization is a critical process that enhances the mechanical properties of reactive soils, particularly through the application of lime. This method not only improves the soil's structural integrity but also contributes significantly to sustainable land use and infrastructure development.

The primary objectives of this research on soil stabilization are to enhance the stability, impermeability, and load-bearing capacity of subgrade soils for sustainable construction practices. We aim to improve shear strength to enhance slope stability and reduce landslide risks. Additionally, we advocate for replacing poor-quality soils with aggregates that have superior engineering properties. Finally, we focus on increasing the bearing capacity and durability of clay soils, ensuring their resistance to weathering and long-term sustainability.

SARS-CoV-2-induced phosphorylation and its pharmacotherapy backed by artificial intelligence and machine learning

This study introduces a novel surface-modified nanocomposite of iron oxide (IER) and chitosan (CG) to explore the biosorption of Cu^{2+} ions, highlighting the unique combination of these materials with artificial neural networks (ANN) and statistical process functions (SPF). The multilayer perceptron (MLP) approach is employed to predict adsorption capacities based on various factors, including temperature, pH, and adsorbate concentration, presenting an innovative method for optimizing adsorption processes. Additionally, the SPF model is utilized to analyze the complex behavior of Cu^{2+} biosorption, focusing on steric and energetic factors. By integrating these methodologies, the study provides a comprehensive understanding of the adsorption process, enabling accurate predictions of capacity under varying conditions. This research opens new avenues for enhancing biosorption technologies in environmental applications.



GOAL 15
LIFE ON LAND

Production and Purification of Keratinolytic Protease from Bacteria

The production and purification of keratinolytic protease from bacteria is a significant area of research due to its potential applications in various industries, including leather processing, waste management, and bioremediation. Bacteria capable of producing keratinolytic proteases are often isolated from keratin-rich environments, such as soil, feathers, or poultry waste. Production typically involves cultivating the keratinolytic bacteria in nutrient-rich media supplemented with keratinous substrates like feathers or hair. Optimization of culture conditions, such as pH, temperature, and aeration, enhances protease yield. Additionally, genetic engineering techniques may be employed to improve enzyme production. Purification of the keratinolytic protease involves several steps, including cell separation by centrifugation, followed by protein extraction and precipitation. Further purification methods such as chromatography, including ion exchange, size exclusion, or affinity chromatography, help isolate the protease from other cellular components and contaminants. The purified keratinolytic protease exhibits potential for various applications, including enzymatic hydrolysis of keratinous waste into valuable products like amino acids and peptides. Additionally, it finds application in the formulation of detergents, animal feed, and cosmetics. Further research focuses on enhancing enzyme stability, substrate specificity, and scalability for industrial use.

Isolation and Purification of Microbial Collagenases from Bacteria

This research focuses on the isolation and purification of collagenases from bacteria, aiming to extract enzymes capable of breaking down collagen. Collagenases have wide-ranging applications, from aiding in wound healing and tissue engineering to improving the texture, cancer therapeutics research and nutritional profile of food products. By isolating collagenases from microbial sources, we can identify enzymes with specific properties suited for various applications. The research involves extracting these enzymes from bacterial cultures, purifying them to high levels of homogeneity, and characterizing their enzymatic activity and stability. Understanding the biochemical properties of microbial collagenases can facilitate their optimization for industrial processes and therapeutic development, contributing to advancements in biotechnology and healthcare.

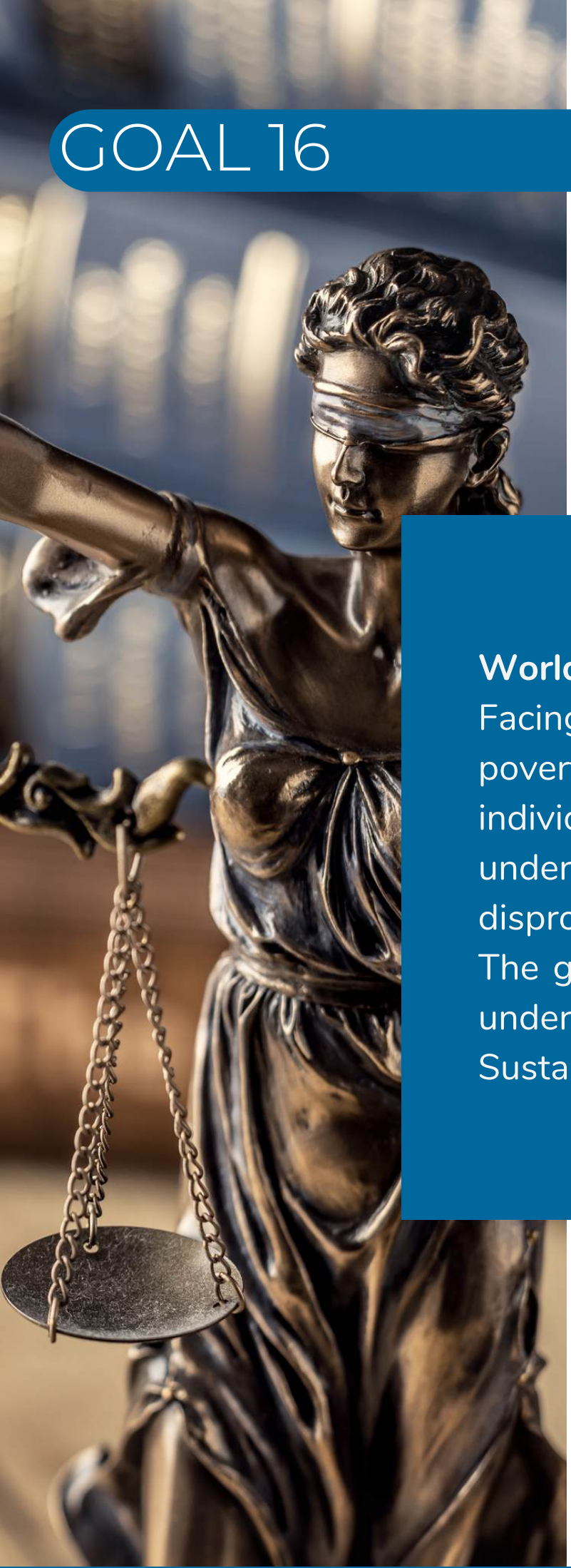
GOAL 15

LIFE ON LAND

Project or Thesis Title	Student Names	Project Details
Agriculture Facilitation Centre	• MUHAMMAD HARIS ZAMANN	An Agriculture Facilitation Centre provides students hands-on experience with farming techniques and sustainable practices through guided tours and interactive demos.
Taxidermy and Botenical Museum	• TAHIR ZAMAN	CECOS students gained a unique perspective on natural history during their visit to the Taxidermy and Botanical Museum, exploring both preserved fauna and diverse plant life.
BOTANICAL GARDEN & RESEARCH INSTITUTE AT PESHAWAR	• MIRAAL KHAN	Students visited the Botanical Garden & Research Institute in Peshawar to explore diverse plant species and ongoing botanical research.

GOAL 16

16 PEACE, JUSTICE AND STRONG INSTITUTIONS



World Poverty Statistics 2024

Facing the harsh reality of extreme poverty, over 700 million individuals globally survive on under $1.90 per day, a crisis that disproportionately affects children. The goal to eradicate this by 2030 underlines the vital global effort of Sustainable Development Goal 1.

GOAL 16

PEACE,JUSTICE & STRONG INSTITUTIONS

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

Environment Leadership Program

Reflecting on the incredible journey we shared at The Environment Leadership Forum (ELF), a workshop organized by CDC and CPD in collaboration with Stand for Peace and the US Embassy, we are filled with gratitude for the experiences and insights gained. The event, which brought together passionate individuals dedicated to environmental stewardship, fostered a sense of community and collaboration that was truly inspiring.

Kashmir Solidarity Day

In a monumental display of unity, we recently gathered to recognize and honor Kashmir Solidarity Day, an occasion that transcended borders and served as a poignant reminder of our shared humanity. This significant day allowed us to come together as a community, emphasizing the importance of empathy and understanding in the face of adversity. Throughout the event, we engaged in a series of thoughtful sessions that highlighted the ongoing struggles faced by the people of Kashmir, fostering a deeper awareness of their plight.

GOAL 17

17 PARTNERSHIPS FOR THE GOALS

GOAL 17

PARTNERSHIP FOR THE GOALS

Sustainable Development Goals and the Role of CECOS University

CECOS University's Quality Enhancement Cell (QEC) and Centre for Professional Development (CPD) organized an enriching training session on "Sustainable Development Goals (SDG) and Role of CECOS University".CECOS University's Vice Chancellor, Dr. Naseer Ahmed, led this enlightening session to improve faculty understanding of sustainable development goals and their importance in creating a sustainable future.

He began the session by discussing the Sustainable Development Goals (SDGs), a set of 17 global goals developed by the United Nations in 2015 that address society's most pressing social, economic, and environmental challenges.In this session, faculty members explored the interconnectedness and transformational potential of each of the 17 goals for communities worldwide, as well as their interconnections. In achieving these goals, Dr. Naseer stressed the need for proactive involvement by various stakeholders, including governments, businesses, academia, and civil society, and emphasized the importance of education, innovation, and collaborative partnerships.

Lumine Consultancy Group

Lumine Consultancy Group is dedicated to providing innovative solutions for businesses, focusing on strategic planning, operational efficiency, and sustainable practices. Our final year project aims to analyze and implement effective strategies that enhance organizational performance and drive growth. By leveraging industry insights and expertise, we strive to empower clients to achieve their goals and foster long-term success.

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