



SDG INSIGHT REPORT

2024-2025





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Way Foreword

At the National University of Sciences and Technology (NUST), our commitment to the United Nations Sustainable Development Goals (SDGs) continues to guide our efforts in education, research, and societal impact. The NUST SDG Report 2024-2025 highlights our progress in aligning institutional priorities with global sustainability goals.

Over the past year, NUST has strengthened its focus on sustainability-driven research, advancing work in renewable energy, sustainable agriculture, and environmental conservation. Sustainability has also been further integrated into our academic framework, ensuring that our graduates are equipped to contribute meaningfully to responsible and inclusive development. Strategic collaborations with national and international partners have enhanced the reach and impact of these efforts.



Our commitment to environmental stewardship is reinforced through Pakistan's first university-based Office of Sustainability, which continues to coordinate sustainability initiatives across the university, promoting resource efficiency, environmental awareness, and long-term impact.

Community engagement remains central to our mission, with students, faculty, and staff actively contributing to initiatives that support social inclusion and environmental responsibility beyond campus boundaries.

I extend my appreciation to all members of the NUST community whose dedication has been instrumental in advancing our sustainability agenda. I invite you to explore the NUST SDG Report 2024-2025, which reflects our collective efforts toward a more sustainable and resilient future.

Zia-Ur- Rehman
Head of Sustainability
National University of Sciences and Technology (NUST)

Introduction

This report highlights the sustainability initiatives of the National University of Sciences and Technology (NUST) from January to December 2024[ZR2.1], emphasizing the university's dedication to advancing the United Nations Sustainable Development Goals (SDGs). Building upon our ongoing commitment since 2018, this report delves into four key areas: research and innovation, academics and youth engagement, operations and governance, and community engagement. It also showcases impactful research projects from all NUST schools that contribute directly to addressing critical issues such as climate change, global health challenges, economic resilience, and technological advancement at both national and international levels.

A cornerstone of NUST's sustainability efforts is the Living Lab Initiative, which transforms our campus into a dynamic environment for testing and implementing innovative solutions. This initiative integrates the university's physical infrastructure with cutting-edge research, serving as a testbed for sustainable technologies and practices. By leveraging our campus as a living laboratory, we foster collaboration among students, faculty, and industry partners, driving advancements in sustainability and operational excellence.

Central to our mission is the "Nustainable" vision, aiming to establish NUST as a model of sustainability in higher education. This vision guides our strategic planning and daily operations, ensuring that sustainability principles are embedded across all facets of the university. Through initiatives like resource conservation, renewable energy adoption, and sustainable campus development, we strive to reduce our environmental footprint while promoting social responsibility and economic viability.

Additionally, the report highlights NUST's recognition in global sustainability rankings, particularly in The Impact Rankings 2024, and its active role in community-driven initiatives that support Pakistan's sustainable future.

We hope this report serves as an informative and insightful resource, reflecting our ongoing efforts toward sustainability. We welcome your feedback and suggestions, which will help us improve how we communicate our annual SDG progress. This report also incorporates AI-assisted image generation and paraphrasing to enhance clarity and accessibility.



The IMPACT Rankings

In the QS Sustainability Rankings 2025, the National University of Sciences and Technology (NUST) achieved a remarkable milestone, securing the 439th position globally and proudly maintaining its position as the #1 university in Pakistan for sustainability. This recognition underscores NUST’s unwavering commitment to environmental stewardship, social impact, and governance, reinforcing its role as a leader in driving sustainable development in the country.

| SDG NO. & DESCRIPTION | WORLD RANK 2024 |
|---|-----------------|
| SDG 1: No Poverty | 401-600 |
| SDG 2: Zero Hunger | 201-300 |
| SDG 3: Good Health and Well being | 1001+ |
| SDG 4: Quality Education | 301-400 |
| SDG 5: Gender Equality | 801-1000 |
| SDG 6: Clean Water and Sanitation | 201-300 |
| SDG 7: Affordable and Clean Energy | 89 |
| SDG 8: Decent Work and Economic Growth | 301-400 |
| SDG 9: Industry, Innovation and Infrastructure | 101-200 |
| SDG 10: Reduced Inequalities | 601-800 |
| SDG 11: Sustainable Cities and communities | 401-600 |
| SDG 12: Responsible consumption and production | 201-300 |
| SDG 13: Climate Action | 101-200 |
| SDG 14: Life below Water | 201-300 |
| SDG 15: Life on Land | 201-300 |
| SDG 16: Peace, Justice and Strong Institutions | 401-600 |
| SDG 17: Partnerships for the Goals | 401-600 |
| Overall | 401-600 |

The Sustainability Team



Syed Asghar Ali
AM Sustainability



Zia Ur Rehman
Head of Sustainability



Menahel Hamid
AM Sustainability

The Office of Sustainability at NUST, known as Nustainable, was established in March 2021 as Pakistan's first university-based sustainability office. This initiative underscores NUST's commitment to aligning with the UN SDGs and achieving carbon neutrality by 2030.

Collectively, the team at the office of Sustainability is dedicated to promoting knowledge diffusion regarding climate change and sustainable practices. They actively engage youth through educational events and have established a Student Youth Panel to bridge the gap between campus policies and the perspectives of the next generation. On a broader scale, the office serves as an institutional platform for international partnerships, promoting interdisciplinary research to address challenges in implementing the SDGs.





GOALS

PUBLICATIONS
80



NO
POVERTY

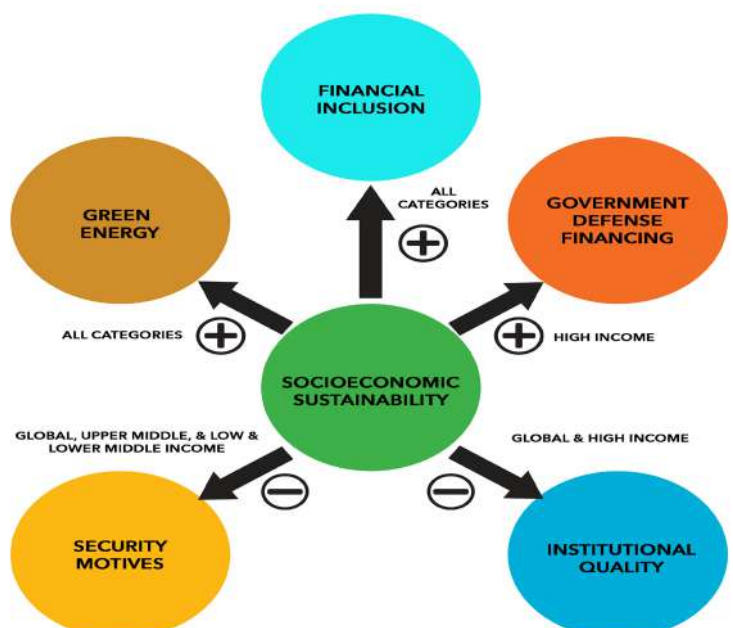
Technological Entrepreneurship and Its Impact on Poverty: The Case Study of Larkana City

This study by Kamran Ali Abbasi investigates how technological entrepreneurship influences poverty reduction in Larkana City, Sindh, Pakistan. Focusing on institutions like APTECH, the research highlights how IT training and employment opportunities empower the local population. The findings suggest that technological entrepreneurship significantly contributes to alleviating poverty by enhancing skills and providing sustainable employment in the region.



The Nexus of Green Energy, Financial Inclusion, Government Defense Financing, and Socioeconomic Sustainability Across Diverse Income-Level Groups: A Global Indication

This global study examines the relationships between green energy (GRE), financial inclusion (FIN), government defense financing (GDF), and socioeconomic sustainability (SES) across 121 countries from 2003 to 2022. The research reveals that GRE and FIN positively impact SES across all income groups, though their effects are less pronounced in high-income countries. Conversely, GDF exhibits a complex relationship, negatively affecting SES globally and in low-income countries, but showing a positive impact in high-income nations. The study underscores the importance of tailored policies to enhance SES based on a country's income level.



Poverty Dynamics: How Well Do Pakistan's Provinces Compare?

This paper analyzes the dynamics of poverty across Pakistan's provinces, assessing how each region fares in terms of poverty reduction over time. By examining factors such as income levels, employment rates, and access to education and healthcare, the study identifies disparities and common challenges among the provinces. The research provides insights into the effectiveness of provincial policies and programs aimed at poverty alleviation, highlighting areas where targeted interventions could yield significant improvements.



Government Scholarships Initiative (2024)

A targeted scholarship initiative was implemented through strong collaboration with provincial governments, aimed at empowering students from underprivileged and marginalized backgrounds. A total of 180 scholarships were awarded under various government-funded programs, including BEEF, CMEEF, HEC (FATA & GB), KPEF, PEEF, SEEF, and Honhaar.

This partnership bridged institutional gaps by aligning local priorities with a shared objective of increasing access to higher education. The scholarships provided financial security to students facing systemic barriers, improving academic performance and retention.



Financial Access through MoUs and Endowment Seats (2024)

In 2024, NUST signed 29 MoUs and created 23 Endowment Seats through partnerships with individual philanthropists, alumni, foundations, and corporate entities. These collaborations aimed to expand financial access for academically talented but economically disadvantaged students.

The initiative brought together a diverse range of supporters, including organizations like Qazi Foundation, Akhuwat, PEF, FAMS, and others, with a shared goal of student empowerment. The resulting scholarships have enabled students to pursue higher education without financial strain, while also building a strong sense of motivation and belonging.





GOALS 2

PUBLICATIONS
299



ZERO **HUNGER**

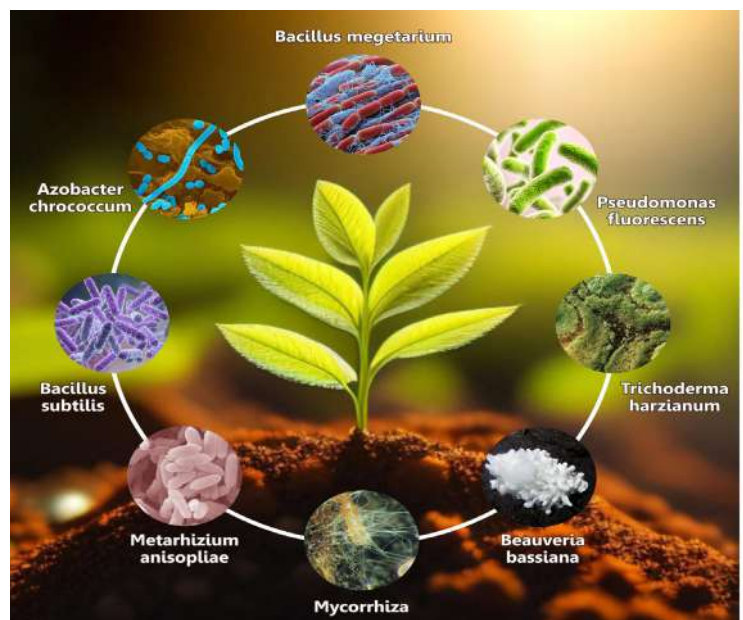
Ramadan Ration Drive

In the Holy Month of Ramadan 2024, the NCSC carried out its Ramadan Ration Drive, successfully collecting over 1.1 million rupees and distributing 236 ration bags among families in need. This initiative aligns with several UN SDGs by addressing hunger, poverty, and community welfare. It directly supports SDG 1 and 2 by providing essential food supplies and nutritious food to and reducing malnutrition of underprivileged families. and SDG 10 (Reduced Inequalities) by bridging economic disparities through direct assistance. Through this impactful initiative, NCSC demonstrated its commitment to social responsibility, making a meaningful difference in the lives of those in need during Ramadan.



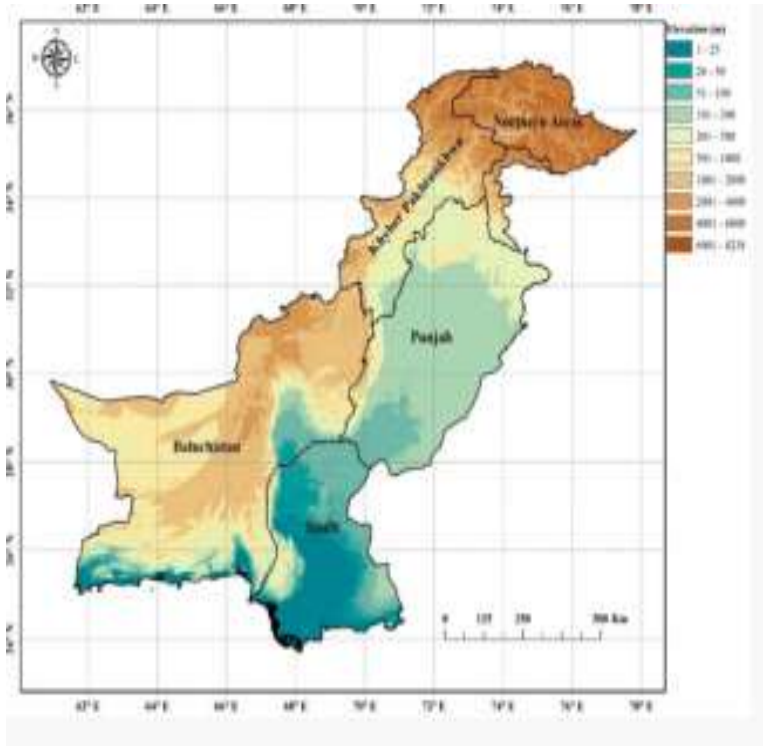
Microbes in Plant Health, Disease, and Abiotic Stress Management

This paper explores the pivotal role of microbial communities in enhancing plant health, combating diseases, and managing abiotic stresses such as drought, salinity, and temperature extremes. It delves into the mechanisms by which beneficial microbes—like rhizobacteria, mycorrhizal fungi, and endophytes promote plant growth, induce systemic resistance, and improve nutrient uptake. The study underscores the potential of harnessing microbial solutions as sustainable alternatives to chemical fertilizers and pesticides, aiming to bolster crop resilience and productivity in the face of environmental challenges.



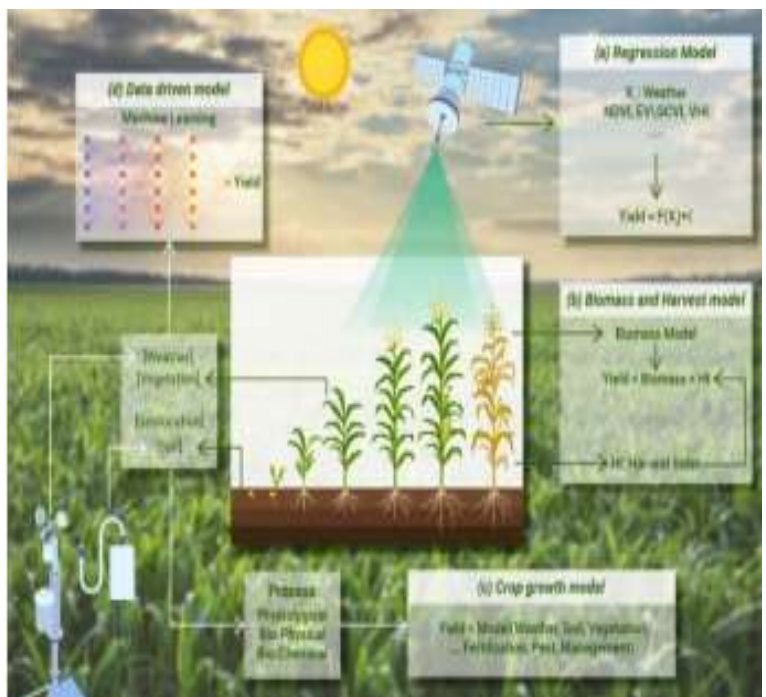
Analyzing Spatiotemporal Drought Patterns in Punjab Province, Pakistan, Utilizing SPI and SPEI

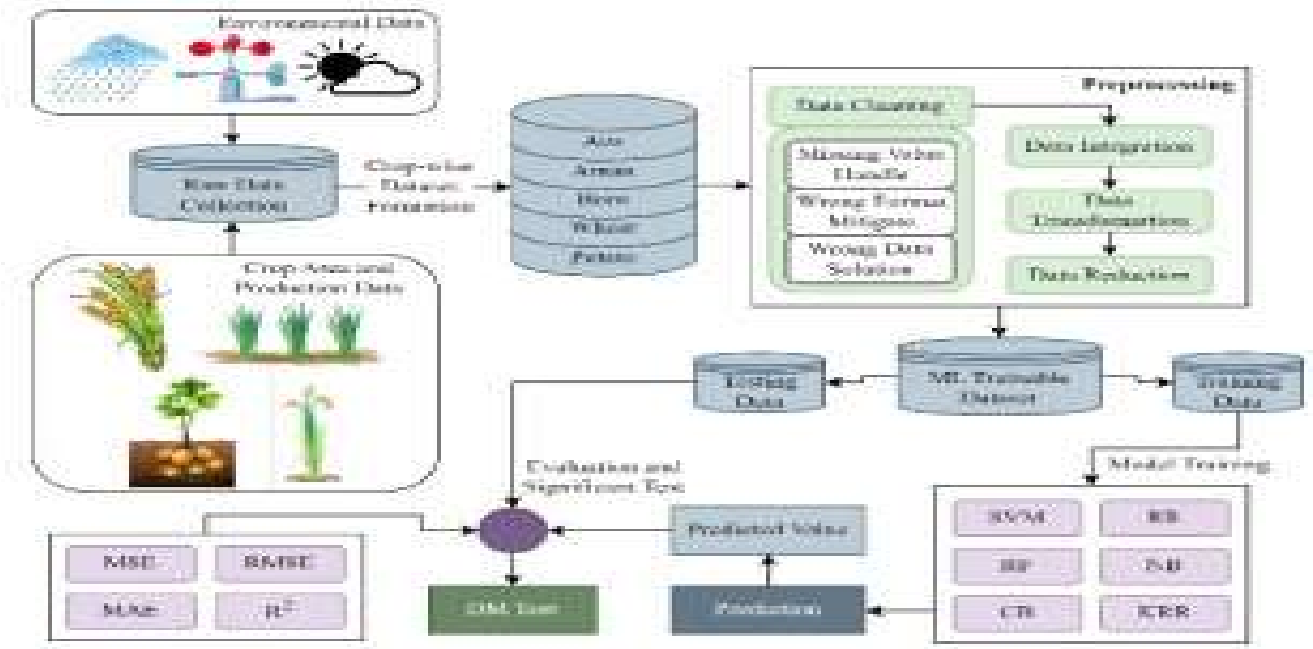
This study employs the Standardized Precipitation Index (SPI) and the Standardized Precipitation Evapotranspiration Index (SPEI) to assess drought patterns across Punjab Province from 1980 to 2020. Analyzing data from 12 weather stations, the research identifies that high-elevation areas exhibit greater variability in precipitation, leading to periodic droughts. The SPEI proved more sensitive in detecting drought conditions compared to SPI. Notably, the severity of droughts has diminished in recent years, especially following the peak period between 1998 and 2002. These insights are crucial for developing effective water resource management and drought mitigation strategies in the region.



Assessing the Impacts of Temperature Extremes on Agriculture Yield and Projecting Future Extremes Using Machine Learning and Deep Learning Approaches with CMIP6 Data

This research investigates how temperature extremes affect agricultural yields in Punjab, Pakistan, and projects future climate scenarios using machine learning (ML) and deep learning (DL) models with CMIP6 data. The study finds that cold nights (TN10p) negatively impact wheat yields, while warm nights (TN90p) have a positive effect. For rice, cold spells (CSDI) are detrimental, whereas warm spells (WSDI) enhance yields. Projections indicate an increase in temperature extremes under future scenarios, emphasizing the need for adaptive agricultural practices. These findings provide valuable insights for policymakers and stakeholders aiming to mitigate climate change impacts on agriculture.







GOALS 3

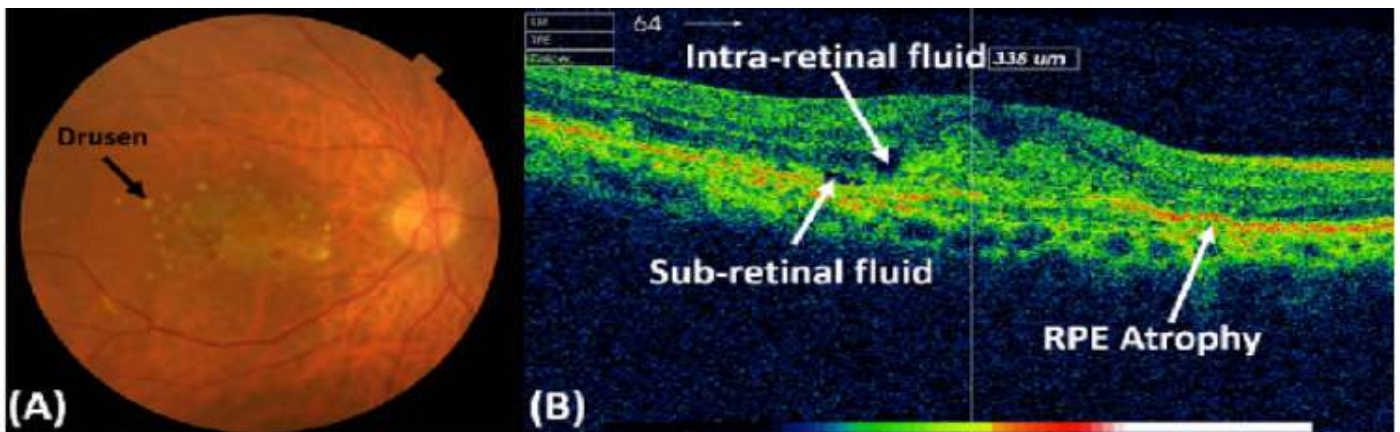
PUBLICATIONS
381



GOOD
**HEALTH AND
WELL-BEING**

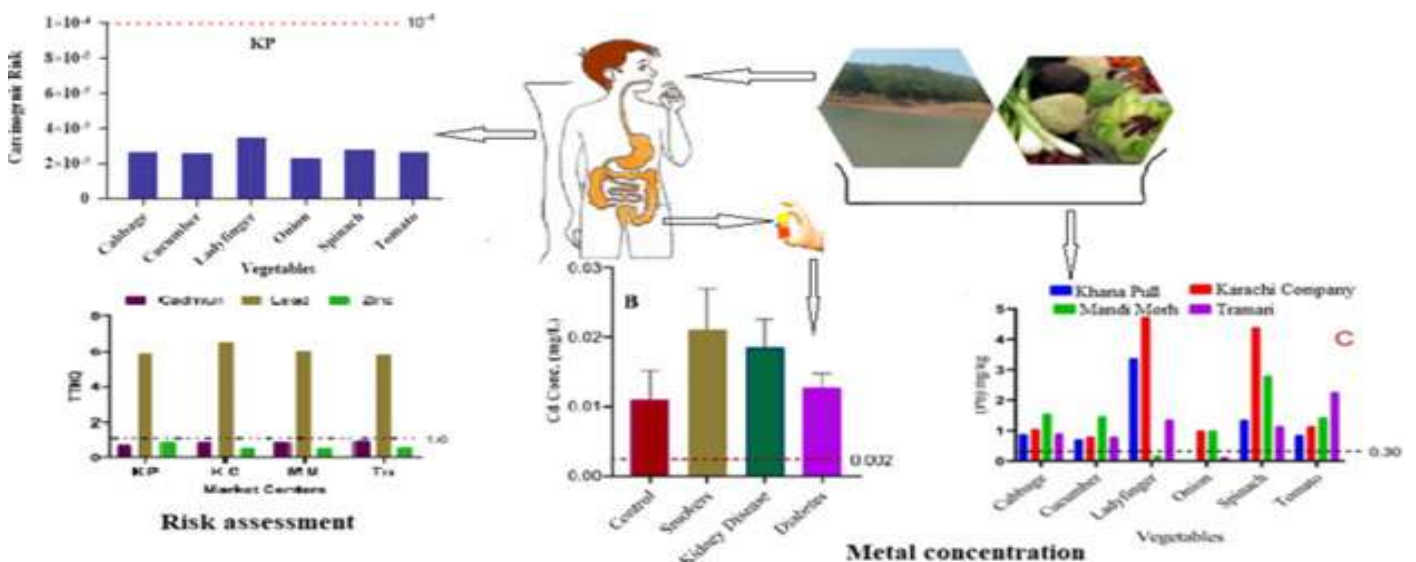
A Comprehensive Review of Artificial Intelligence Models for Screening Major Retinal Diseases

This paper provides a systematic survey of artificial intelligence (AI) models developed over the past decade to screen retinal diseases, which can lead to severe visual impairments or blindness. It covers both clinical and technical perspectives, evaluating various methods for identifying structural abnormalities and diagnosing retinal diseases. The review also identifies future research directions based on a critical analysis of existing literature.



Occurrence of Some Heavy Metals in Drinking Water, Vegetables, and Urine in Rawalpindi and Islamabad, Pakistan—Human Health Risk Assessment

This research assesses the presence of heavy metals in drinking water, vegetables, and urine samples from Rawalpindi and Islamabad, Pakistan. The study aims to evaluate the associated health risks posed by these contaminants. Findings indicate the occurrence of certain heavy metals in the samples, highlighting potential health concerns for the local population.



Comparing Dyslipidemia Patterns in Newly Diagnosed and Long-Term Type 2 Diabetics in a Tertiary Care Hospital at Mirpur Khas, Sindh

The study investigates the prevalence and severity of lipid abnormalities in patients with Type 2 Diabetes Mellitus. Conducted on 300 participants, it reveals that long-term diabetics exhibit significantly higher rates of dyslipidemia (92%) compared to newly diagnosed individuals (78%), with elevated levels of cholesterol, LDL, and triglycerides, and notably lower HDL—especially among females. The study also finds a strong link between poor glycemic control (high HbA1c) and worsening lipid profiles, highlighting the importance of early lipid monitoring and management in diabetic care to prevent cardiovascular complications

| Dyslipidemia Parameter | Newly Diagnosed Diabetics (n=150) | Long-Term Diabetics (n=150) | P-Value |
|---|-----------------------------------|-----------------------------|----------|
| Any Dyslipidemia, n(%) | 117 (78%) | 138 (92%) | <0.001* |
| Raised Total Cholesterol (>200 mg/dL), n(%) | 42 (28%) | 66 (44%) | 0.002* |
| Raised LDL Cholesterol (>100 mg/dL), n(%) | 83 (55%) | 108 (72%) | 0.001* |
| Low HDL Cholesterol (<40 mg/dL for men, <50 mg/dL for women) , n(%) | 45 (30%) | 87 (58%) | <0.001* |
| Elevated Triglycerides (>150 mg/dL), n(%) | 53(42%) | 99(66%) | <0.001* |
| Mean LCL Cholesterol (mg/dL) | 112.3±27.4 | 130.8±31.2 | <0.001** |
| Mean HDL Cholesterol (mg/dL) | 39.8±9.0 | 37.8±9.4 | 0.045** |
| Mean Triglycerides | 170.5±38.2 | 192.7±45.6 | <0.001** |

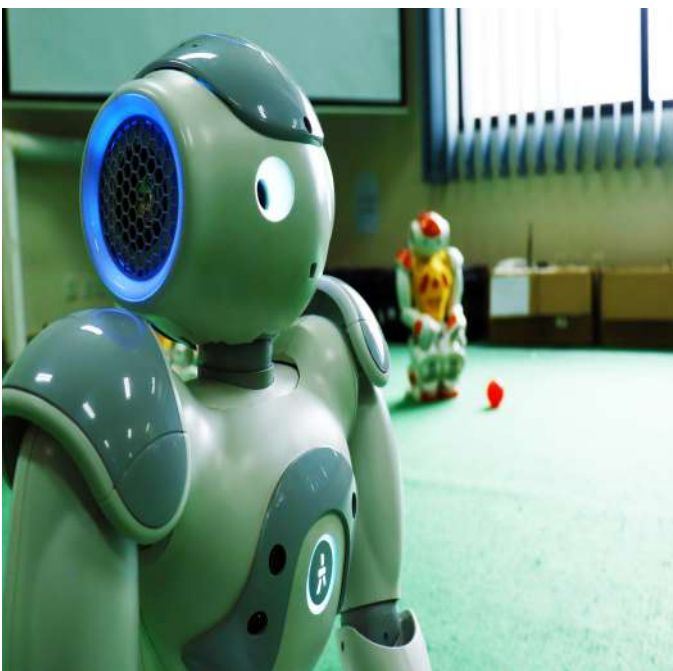
HER Climate Art Competition

NUST's School of Health Sciences (NSHS), in collaboration with Jhpiego Pakistan, organized the "HER Climate" art competition in September 2024. The event engaged over 100 students in creating artworks that explored the intersection of climate change and community health, emphasizing the role of youth in addressing environmental health challenges (The Nation).



Smart Machines and Robotics Technology (SMART) Lab

NUST's SMART Lab collaborated with Holy Family Hospital to enhance medical training through technology. They developed a laparoscopic and robotic surgery training system, helping medical professionals enhance their skills without the need for real-life surgeries. This project directly contributes to improving healthcare standards, ensuring more lives are saved through better-trained medical personnel.



Blood Donation Drive

In October 2024, NCSC organized a Blood Donation Drive in collaboration with the Jamila Sultana Foundation, achieving a record-high collection of 606 pints of blood over two days. This initiative mobilized students, faculty, and staff, fostering a culture of altruism and community service within the university. The collected blood significantly bolstered local healthcare resources, aiding patients requiring transfusions for surgeries, treatments, and emergencies. This drive exemplifies NCSC's dedication to impactful community engagement and public health advocacy.



NUST Students Secure Bronze Medal at Global Kaggle Competition

A team of undergraduate Computer Engineers from NUST EME secured a bronze medal in a global Kaggle competition, ranking in the top 8% for their AI model on malignant melanoma detection. Using advanced machine learning and deep learning techniques under the BIOMISA Lab, the team contributed to innovations in medical diagnostics. The project focused on the early detection of malignant melanoma, a critical health issue. By contributing to AI-powered medical diagnostics, the students directly supported advancements in healthcare accessibility and innovation.



Dermopsy by NUST Student Makes Global Waves at Dubai Future Solutions

NUST is proud to share that “Dermopsy,” an AI-powered innovation developed by students from the Department of Computer & Software Engineering, College of Electrical and Mechanical Engineering, has been recognized among the Top 100 innovations at the Dubai Future Solutions: Prototypes for Humanity event! This standout project rose above 2,700 submissions from over 100 countries, making it a proud moment for Pakistan on the global stage. Dermopsy is redefining how we diagnose skin disorders. By combining reflectance confocal microscopy with deep learning, the solution enables rapid, non-invasive detection of conditions such as skin cancer and fungal infections, reducing diagnostic time from days to just minutes. And because it doesn’t require staining or complex lab setups, it’s making healthcare more accessible and affordable, especially in underserved communities.

This remarkable achievement is the result of a cross-continental collaboration between the BIOMISA Lab at NUST CoE&ME and NIDI Skin, USA, and reflects NUST’s deep commitment to innovation with impact.



NUST and PAEC General Hospital Join Forces for Enhanced Collaboration

The National University of Sciences and Technology (NUST) and Pakistan Atomic Energy Commission (PAEC) General Hospital formalised a long-term collaboration through the signing of a Memorandum of Understanding (MoU) at the NUST Main Office. The partnership aims to promote joint efforts in education, healthcare research, and professional development. Key representatives, including Dr. Abdul Majeed (Director, PAEC General Hospital) and Prof. Dr. Rizwan Ashraf (Principal, NUST School of Health Sciences), signed the agreement outlining initiatives such as joint research, faculty/student exchange programs, and knowledge sharing.



Interdisciplinary Seminar on Engineering Innovation in Healthcare

NUST School of Mechanical and Manufacturing Engineering hosted an interdisciplinary seminar, "Role of Mechanical and Biomedical Engineering in Transforming Healthcare in Pakistan." Faculty and students gathered to explore how engineering and healthcare can drive progress in Pakistan's medical field. Dr. Jasim Anwar from the Planning Commission of Pakistan discussed healthcare's potential to boost employment and economic growth, emphasizing universities' critical role in fostering innovation and interdisciplinary collaboration in the sector.



C3A's Efforts Toward Student Mental Health Support

As part of NUST's commitment to promoting student wellness, the Centre for Counselling and Career Advisory (C3A) organized awareness sessions focused on mental health issues such as stress, anxiety, and depression. These sessions aimed to build a supportive environment and equip students with practical strategies to manage their mental well-being. Through psychoeducation, participants were encouraged to recognize early signs of mental health concerns and seek timely support. A total of 166 students benefitted from this initiative, contributing to a healthier and more resilient campus community.





GOALS 4

PUBLICATIONS
285



QUALITY **EDUCATION**

Echoes of Doubt: Unveiling Imposter Phenomenon Among First Generation Pakistani Students

This paper investigates the imposter phenomenon among first-generation college students in Pakistan, examining how social and cultural factors influence their experiences. The study adopts a phenomenological research framework to explore themes such as social adaptation, motivation, and the interplay of collectivism and individualism. Authors Dr. Nida Abbas and Muhammad Saad Riaz are affiliated with NUST Business School, while Effa Ahmad is also associated with NUST, highlighting the university's involvement in psychological and educational research



Mentoring Communication in Higher Education: A Qualitative Exploration



This qualitative study examines factors affecting communication in mentoring relationships between mentors and postdoctoral mentees in higher education institutions in Germany. The research identifies key elements influencing the effectiveness of mentoring programs. Co-author Henna A. Qureshi is affiliated with the Department of Behavioural Sciences, School of Social Sciences at NUST, indicating the university's contribution to research on academic mentoring practices.

NUST ConnectEd

NUST ConnectEd is NUST’s dedicated online learning platform, launched on November 19, 2024, to enhance access to higher education in Pakistan, where only 13% of students progress to tertiary education compared to the 40% global average. Offering both cohort-based and self-paced courses, the platform provides a flexible learning experience with expert-led content, interactive cohort models, and comprehensive learning resources. As of March 2025, it has introduced nine online courses across various disciplines. Developed in partnership with the University of Utah under USAID’s Higher Education System Strengthening Activity (HESSA), the initiative trained 21 NUST faculty members and launched four initial courses, reinforcing digital learning’s role in expanding education. Actively engaging on LinkedIn and Instagram, NUST ConnectEd fosters a vibrant learning community, aligning with NUST’s vision of leveraging technology to make quality education more accessible and inclusive.



NUST ConnectEd

NUST Summer School on Climate Change

From August 5 to 9, 2024, NUST hosted Pakistan’s first-ever Summer School on Climate Change, a five-day program designed to enhance participants’ understanding of climate change and its impacts on Pakistan. Held at the School of Interdisciplinary Engineering and Sciences (SINES)– a venue chosen for its sustainable features like solar energy and electric shuttles– the program combined interactive lectures and hands-on workshops led by experts such as Bilal Anwar (CEO, NDRMF) and Sidra Riaz (Founder & CEO, Environmental Change Makers). Aligned with NUST’s sustainability goals, the event incorporated eco-friendly practices, including biodegradable crockery and refill stations to minimize waste. Attracting a diverse group of participants, the initiative fostered meaningful discussions on climate action and environmental sustainability, reinforcing NUST’s commitment to addressing climate challenges and promoting sustainable development in Pakistan.



NUST and Oman's Military Technological College Sign DoU to Foster Academic and Research Collaboration

NUST has signed a Document of Understanding (DoU) with Oman's Military Technological College (MTC), marking the beginning of a strategic partnership focused on faculty and student exchanges, joint research initiatives, and the co-development of academic programs. This collaboration is set to enhance technical expertise, foster innovation, and provide international exposure for students and faculty alike, enriching both academic and professional dimensions. Through shared knowledge and mutual cooperation, NUST and MTC reaffirm their commitment to addressing future global challenges and driving forward excellence in technological education.



NUST Partners with FAMS to Support Deserving Medical Students and Advance Healthcare Education

As part of a recent NUST delegation visit to the UK, a significant partnership was formalized between NUST and the Financial Assistance for Medical Students (FAMS), a UK-based non-profit led by Dr. Aamir Ayub, renowned for his philanthropic work in healthcare. The partnership aims to provide scholarship support to deserving students at the NUST School of Health Sciences (NSHS), enhancing access to quality medical education.



NUST Concludes Faculty Development Program for SANDU

NUSTHR has successfully concluded an International Faculty Development Program for the National Defense University (NDU) of Saudi Arabia, offering a comprehensive range of modules designed to enhance academic leadership and teaching capabilities. The program covered advanced topics such as EdTech, Emotional Intelligence for Academic Leadership, and Interactive Teaching Techniques, each led by experienced trainers. This initiative aimed to provide participants with the knowledge and skills necessary to lead and inspire in the evolving educational landscape. By bringing together academic leaders from NDU, the program not only showcased NUST's expertise in higher education but also fostered meaningful international collaboration. This successful endeavor further strengthened Pakistan's image globally, reinforcing NUST's role as a key player in shaping the future of education through knowledge exchange and professional development.



Launch of MS and PhD Climate Change and Sustainable Development (CCSD) program

Launched in Fall 2023, this interdisciplinary program is a collaborative effort among five NUST institutes, including SINES, as well as USPCAS&E, SCEE, ASAB, and S3H. It is designed to address the intricate relationship between human activities and natural systems, aligning with SDGs to combat pressing issues such as biodiversity loss, energy Mitigation," thereby significantly enhancing NUST's academic contribution to global sustainability efforts.





GOALS

PUBLICATIONS
14



GENDER **EQUALITY**

Digital Financial Inclusion of Women in Pakistan: Evidence from Global Findex Database

This chapter, published in the book *Economics of Financial Inclusion* by Routledge in December 2024, examines the state of digital financial inclusion among women in Pakistan using data from the Global Findex Database. The study highlights the gender disparities in financial inclusion and suggests policy interventions to bridge the gap. The authors, Wajiha Haq and Faisal Abbas, are affiliated with the School of Social Sciences and Humanities (S3H) at NUST, underscoring the university's engagement in research on financial inclusion and gender equity

Human Security and Sustainable Development Goals: The Voices of Afghan Women Refugees in Pakistan

This qualitative study explores the lived experiences of Afghan women refugees in Kohat camps, focusing on themes related to human security and Sustainable Development Goals (SDGs) 5 and 10. The research delves into issues of gender equality, empowerment, and structural inequalities. Authors affiliated with NUST include Dr. Najimdeen Bakare from the Centre for International Peace and Stability (CIPS), Dr. Lubaba Sadaf and Dr. Zujaja Wahaj from NUST Business School, and postgraduate student Kainat Kamal from CIPS. Their involvement underscores NUST's engagement in social science research addressing refugee experiences and gender-based challenges.



Women in Climate Action: Celebrating Resilience

On March 8, 2024, NUST, in collaboration with GIZ Pakistan and the Gender Intersectionality and Climate Change (GICC) initiative, hosted “Women in Climate Action: Celebrating Resilience” at the Roomy Signature Hotel, Islamabad. Attended by 250 participants from academia, the energy sector, and development organizations, the event featured panel discussions, success storytelling sessions, an art and photo exhibition, and project showcases. Distinguished speakers, including Anam Rathore (GIZ), Maha Kamal (Women in Energy Pakistan), and Zahra Khan Durrani (Islamic Relief Worldwide), emphasized the pivotal role of women in climate leadership. The event also included an article writing competition, a Recognition Award Ceremony, and stalls by organizations championing gender and climate action. Additionally, from September 24 to 25, 2024, NUST hosted the International Conference on Gender, Intersectionality, and Climate Change (GICC), in partnership with GIZ and BMZ, to highlight equitable climate policies and the challenges faced by women and marginalized communities. Featuring research presentations, a Human Library, and a photo exhibition, the conference reinforced NUST’s commitment to gender-responsive climate action, promoting sustainable development and social justice in Pakistan.



NUST-PDC and PAGE Partner to Empower Women through Professional Development and Skills Training

The Pakistan Alliance for Girls Education (PAGE) has signed a Document of Understanding (DoU) with the NUST Professional Development Centre (PDC) to jointly deliver impactful educational and professional development programs. This strategic partnership is focused on empowering women, enhancing soft skills, and creating inclusive pathways for career advancement.



Awareness Raising on NUST Policy for Protection Against Harassment

To promote a safe and inclusive environment at NUST, the Centre for Counselling and Career Advisory (C3A) conducted sensitization sessions throughout 2024 on the NUST Policy on Protection Against Harassment. These sessions targeted 2nd-year students across both the H-12 Campus and other affiliated institutes, educating them about prohibited behaviors, confidential reporting mechanisms, and complaint procedures. By addressing common myths and emphasizing the importance of respectful conduct, the initiative empowered 1327 students with the knowledge to recognize and respond to harassment, reinforcing NUST's commitment to gender equality and safety for all.



“

TOGETHER WE CREATE
SAFE SPACES

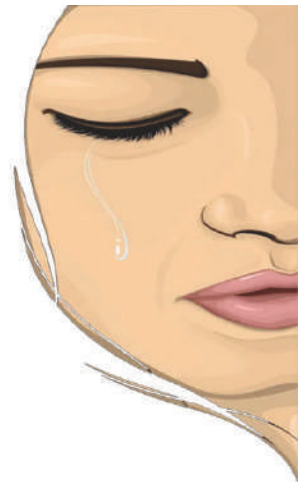
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NUST HAS A ZERO TOLERANCE POLICY AGAINST HARASSMENT



DIGNITY FOR ALL
ZERO TOLERANCE AGAINST HARASSMENT

NUST HAS A ZERO TOLERANCE POLICY AGAINST HARASSMENT





GOALS

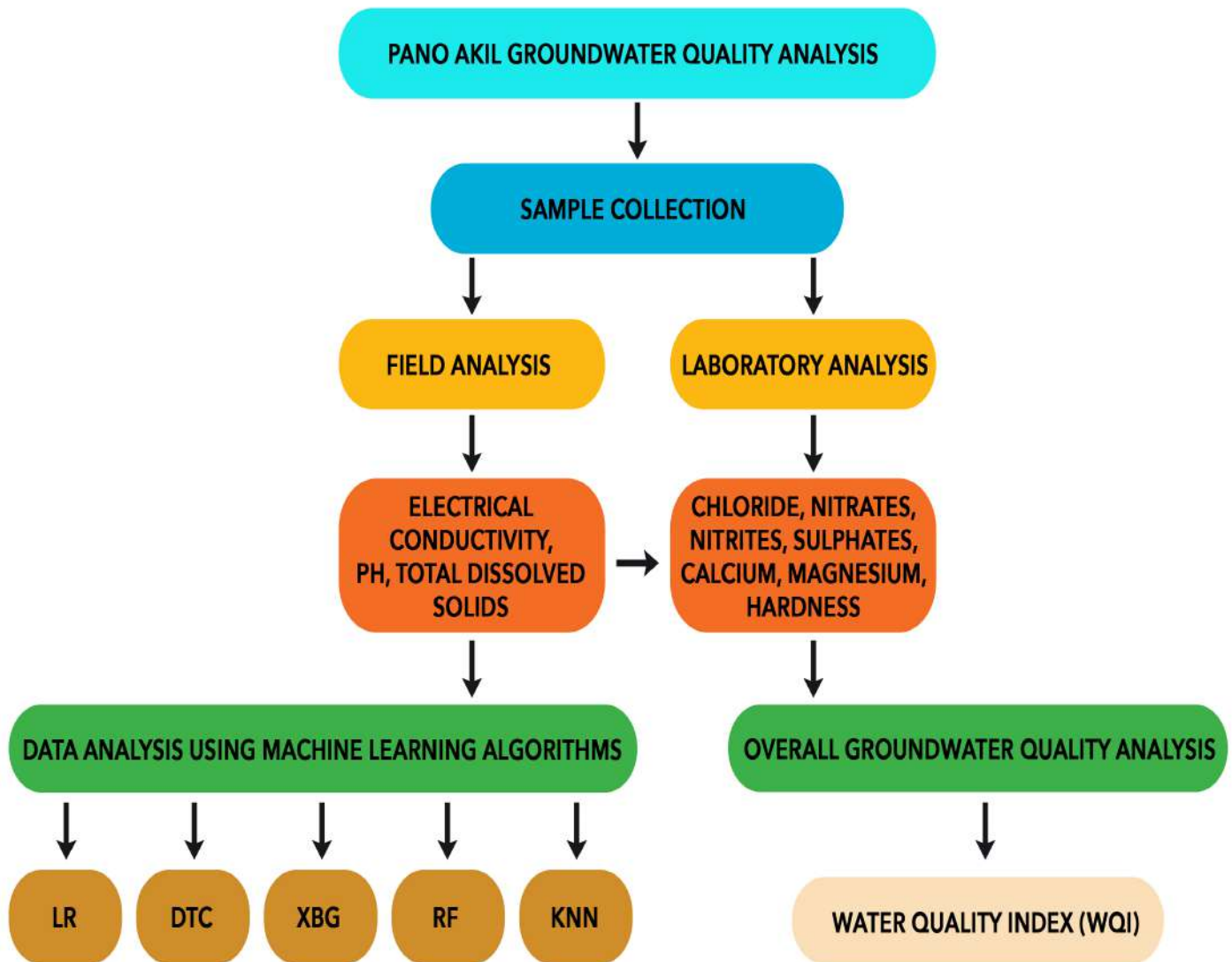
PUBLICATIONS
96



CLEAN WATER AND **SNITATION**

Machine Learning, Water Quality Index, and GIS-Based Analysis of Groundwater Quality

This study employs machine learning algorithms alongside Water Quality Index (WQI) assessments and Geographic Information Systems (GIS) to evaluate groundwater quality in Pano Aqil City, Sindh, Pakistan. The research aims to predict and monitor water quality, identifying areas unsuitable for drinking purposes. Notably, several co-authors are affiliated with the Department of Civil Engineering at NUST's Baluchistan Campus in Quetta, highlighting NUST's contribution to this interdisciplinary environmental research.



Exploring Research-Driven Approaches to Water-Sensitive Cities: A Pathway from Australia to Pakistan

In collaboration with WWF-Pakistan, NUST hosted a one-day workshop titled “Exploring Research-Driven Approaches to Water-Sensitive Cities: A Pathway from Australia to Pakistan.” This event aimed to adapt Australian urban water management practices to address Pakistan’s unique urban water challenges. It provided a platform for researchers to explore innovative pathways for sustainable urban water management in Pakistan. This workshop aligns with the broader objectives of the Australia-Pakistan Water Security Initiative (APWASI), a four-year project (2021-2025) funded by Australian Aid, which seeks to strengthen cooperation between Australia and Pakistan on urban water resource management. The collaboration between NUST and WWF-Pakistan is further solidified by a Memorandum of Understanding (MoU) signed on February 21, 2024, focusing on research and innovation to promote sustainable development and academic linkages in Pakistan.





GOALS

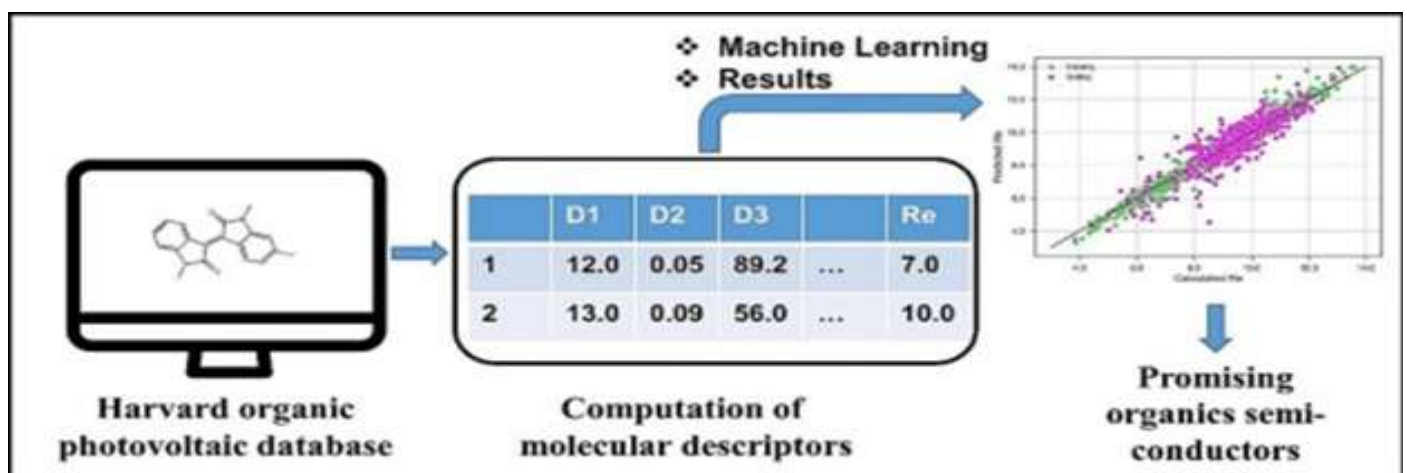
PUBLICATIONS
330



AFFORDABLE AND CLEAN **ENERGY**

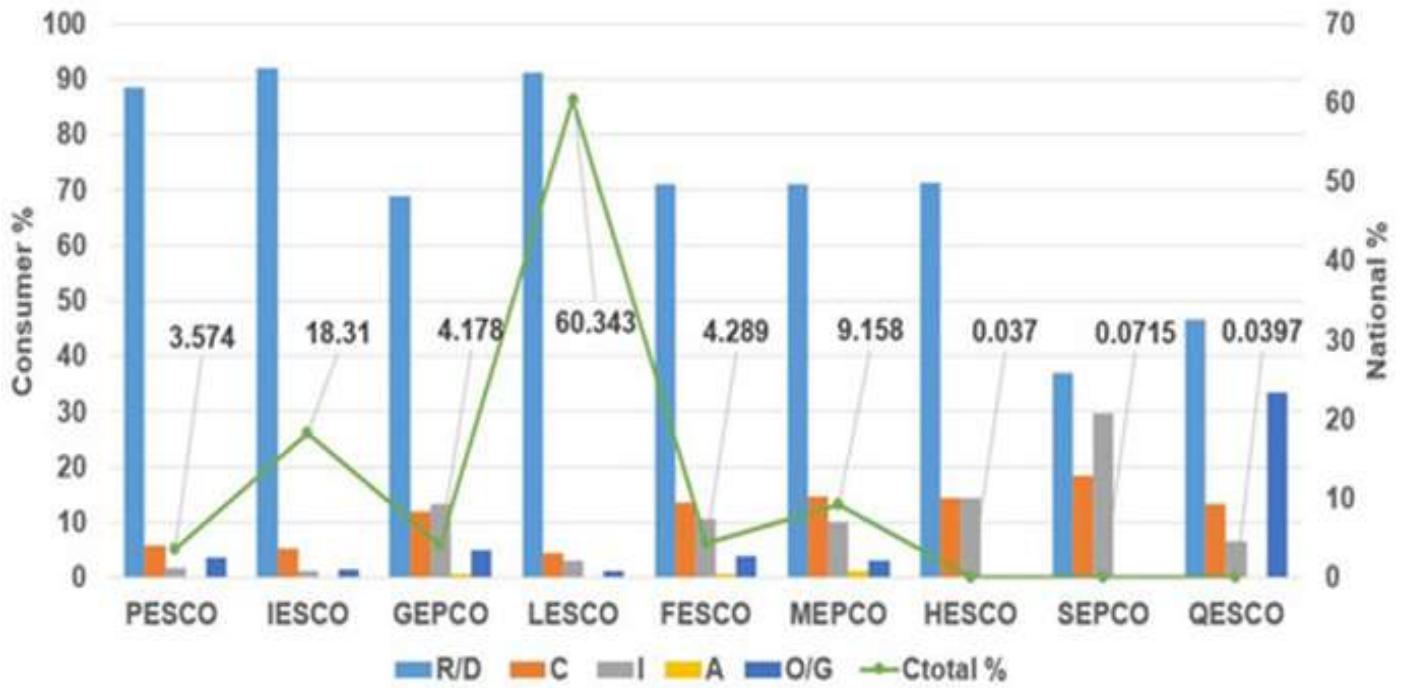
Designing Efficient Materials for High-Performance Organic Solar Cells: Detailed Chemical Space Exploration, Machine Learning, and Virtual Screening

This study, co-authored by Dr Syed Shoaib Ahmad Shah a professor of School of Natural Sciences, published in Chemical Physics Letters in November 2023, presents a comprehensive approach to identifying efficient materials for organic solar cells (OSCs) using machine learning and virtual screening techniques. The research involves testing over 40 machine learning models to predict the performance of small molecule acceptors in OSCs, ultimately identifying the Light Gradient Boosting Machine (LGBM) regressor as the most effective model.



Enhancing Renewable Energy Integration in Developing Countries: A Policy-Oriented Analysis of Net Metering in Pakistan Amid Economic Challenges

Published in the journal Sustainability in 2024, this paper examines the trajectory of net metering (NM) in Pakistan, analyzing the impact of regulatory changes, confidence-building strategies, hindering factors, and technical/financial issues. The study employs a three-stage methodology involving techno-economic analysis, stakeholder engagement surveys, and impact analysis of financing mechanisms. The research was conducted under the guidance of Dr. Syed Ali Abbas Kazmi, affiliated with NUST's U.S.-Pakistan Center for Advanced Studies in Energy (USPCAS- E)



Green Energy Systems for Powering Electric Vehicles Considering Telecommunication System: A Case Study of Pakistan

This research, published in the iPolytech Journal in 2024, analyzes the sustainability and efficiency of Pakistan’s telecommunication sector by developing a framework for base transceiver stations that integrate renewable energy sources and electric vehicle (EV) charging stations. The study considers various renewable energy sources such as solar, wind, biomass, and hydropower. One of the co-authors, Dr. Syed Ali Abbas Kazmi, is affiliated with NUST, highlighting the university’s involvement in advancing sustainable energy solutions



Solar Energy Initiatives in Flood-Affected Villages

Under the “Adopt a Village” program, NUST’s School of Electrical Engineering and Computer Science (SEECs) led efforts to rehabilitate flood-affected villages in Sindh Province. The initiatives included the distribution of solar panels to provide clean energy solutions to the communities.



Energy Initiative

In 2024, the NUST made a major leap in its sustainability efforts by expanding its solar power generation capacity to 11.5 megawatts (MW). This initiative is a key part of NUST’s long-term goal of achieving complete reliance on renewable energy sources by 2030. By significantly increasing its use of solar energy, the university is not only reducing its carbon footprint but also setting an example for sustainable energy practices in Pakistan. This expansion aligns with the global shift towards renewable energy, reinforcing NUST’s commitment to environmental responsibility and energy efficiency.



Launch of Green Tech Hub (GTH) at SINES – MoU/ Partnership signed with Ministry of Climate Change & IGNITE

On 29 October 2024, NUST announced the launch of the Green Tech Hub in collaboration with Ministry of Climate Change & Environmental Coordination and IGNITE. A trilateral MoU was signed to support green entrepreneurship, climate adaptation technologies, and sustainable agri-tech innovation. The Hub fosters incubation, research, and industry collaboration in renewable energy, climate resilience solutions, and circular economy models. The initiative advances SDG 7 and SDG 9 through innovation-driven infrastructure, and SDG 13 by focusing on climate mitigation in Pakistan.



i-Talk: Industry-Academia Session 8 on Energy & Environment

On 4 July 2024, SINES organized its 8th i-Talk event on the theme “Energy and Environment”, bringing together industry representatives (GISPlus, AdeptIT, Dataeye Labs) and SINES labs (Electric Vehicle Lab, Advanced Integrated Energy Lab, Supercomputing Lab). The session fostered exchange on clean energy technologies, smart grid systems, EV engineering, and environmental data analysis.



GOAL 8

PUBLICATIONS
131



DECENT WORK AND ECONOMIC **GROWTH**

The Role of Human Talent Capital in Shaping Firm Value: Evidence from Non-Financial Sector of Pakistan Stock Exchange (PSX)

This research examines the impact of human talent capital on firm value, growth opportunities, and volatility within the non-financial sector of the Pakistan Stock Exchange. Analyzing data from 290 firms over 11 years (2013-2023), the study finds that human talent capital significantly enhances firm value and growth prospects while mitigating cash flow volatility. Notably, Dr. Romana Bangash, one of the co-authors, is affiliated with NUST Business School, highlighting the university’s contribution to this research



Project SPARK

Project SPARK is a student-led initiative at NUST dedicated to empowering orphans in Islamabad and Rawalpindi through skill-based education, psychological support, and awareness programs. The project focuses on equipping children with practical skills, such as training in software like SolidWorks, to prepare them for financial independence. Additionally, art therapy sessions promote emotional well-being, while awareness programs educate children on personal safety. Between August and November 2024, Project SPARK reached five orphanages, benefiting around 300 orphans and aligning with several UN SDGs, including quality education and economic growth. The initiative has gained recognition and support from mentors and the academic community, highlighting the impactful role of NUST students in social development.





GOAL 9

PUBLICATIONS
624



INDUSTRY,
INNOVATION AND
INFRASTRUCTURE

NUST Placement Office (NPO)

NUST aids Student development by providing opportunities for placements in industry - with more than 500 recruitment drives and up to 1200 industries engaged within the last seven years, NUST Students have a 94% employment rate as per QS ranking criteria and is ranked as Pakistan’s No. 1 University in the employer’s reputation. The Students are polished with skills that would transfer seamlessly into the industry where recruiters can notice talent at the on-campus recruitment drives. The industry sessions and alumni talk series occur on all branches and are an engaging opportunity for all.



NPO
 NUST PLACEMENT
 OFFICE

Technology Incubation Centre (TIC)



Technology Incubation Centre (TIC): Established in 2005, NUST’s Technology Incubation Centre continued to foster innovation in 2024 by mentoring and hosting startups. The TIC aims to bridge the gap between industrial development and technological research, facilitating collaborations between academia and industry to drive economic growth and technological advancement.

Green Tech Hub (GTH)

NUST in collaboration with the Ministry of Climate Change and Environmental Coordination (MoCC&EC) and Ignite, launched the Green Tech Hub (GTH) on October 25, 2024, at the SINES Building in Islamabad. This initiative aims to position Pakistan as a leader in green technology by fostering innovation in climate adaptation, mitigation, agriculture, and sustainability. GTH serves as a platform for green entrepreneurship, research, and policy support, promoting climate-smart solutions and sustainable development. Officially inaugurated at COP29 in Baku, Azerbaijan, the hub organized Pakistan’s first Green Tech Hub Startup Competition [ZR9.1] to encourage green entrepreneurship. With backing from partners like Acumen, Ahya, PakLaunch, Sarmayacar, and Zayn VC, GTH is playing a crucial role in advancing sustainable technology and environmental innovation in Pakistan.



NUST Showcases Emerging Technologies at IDEAS 2024 SDG-9

The National University of Sciences and Technology (NUST) proudly participated in the International Defence Exhibition and Seminar (IDEAS) 2024, held from November 19-22 at Expo Centre Karachi. On Day 1, NUST's pavilion featured three specialized booths, including Defence Technologies, NUST Technologies, and Emerging Technologies, highlighting the university's cutting-edge work in artificial intelligence, IoT, and a range of forward-looking innovations. The event attracted delegates from over 70 countries, including local and international organizations, creating fertile ground for future research and development collaborations. NUST's presence emphasized its commitment to driving technological advancement and industrial innovation, positioning itself at the forefront of Pakistan's innovation ecosystem while contributing to global knowledge exchange and sustainable tech solutions.



NUST's Participation at Mae Fah Luang University, Thailand

NUST participated at Mae Fah Luang University, Thailand from November 4-6, 2024, showcasing its research in IoT and AI. Engaging with MFU's School of Applied Digital Technologies, NUST presented impactful projects in precision agriculture, healthcare, and environmental monitoring, including the TeleCardio Project. The visit led to an MoU for academic cooperation, paving the way for joint research, faculty exchanges, collaborative publications, and a prospective research lab at NUST. The NUST shield was presented by Prof Dr Rafia Mumtaz (Associate Dean, SEECS) to MFU, symbolizing a strong alliance in innovation and academic excellence.



Research Cluster at SINES featuring 34 cutting-edge research labs under six diverse research areas

SINES hosts a substantial research cluster, unifying labs from 11 NUST schools under six critical areas: Green Energy, Intelligent Systems, Biomedical & Informatics, Smart Agri-tech, Materials and Manufacturing, and Climate Change & Sustainable Development. This interdisciplinary framework fosters innovation, driving socioeconomic growth in Pakistan through diverse research projects, publications, and patent filings. The cluster's impact is evident in its capacity to address complex, real-world problems through advanced research in fields such as drug discovery, personalized medicine, genome editing (Bioinformatics), and sustainable agriculture. The collaborative environment within these labs promotes cutting-edge solutions and knowledge creation vital for national development and global challenges.



SCHOOL OF INTERDISCIPLINARY ENGINEERING AND SCIENCES

Established in February 2022 to promote and cultivate interdisciplinary education & research and respond to the contemporary challenges that require cross-cutting knowledge & expertise from multiple domains.

QS WORLD UNIVERSITY RANKING

- Overall # **353**
- Sustainability # **439**
- Engr & Tech # **144**

TIMES HIGHER EDUCATION RANKING

- Interdisciplinary Research #**187**

Shuttle App by NUST School of Interdisciplinary Engineering and Sciences (SINES)

SINES developed and introduced a “Shuttle App” designed to streamline the tracking of electric vehicles (EVs) across the NUST H-12 campus. This practical application of interdisciplinary engineering demonstrates SINES’s commitment to leveraging technology for operational efficiency and sustainability within the university. The app contributes to the promotion of sustainable transport solutions on campus by making EV usage more convenient and traceable. Its implementation underscores NUST’s focus on integrating smart technologies into its infrastructure to create a more efficient and environmentally friendly campus environment.





GOAL 10

PUBLICATIONS
24



REDUCED
INEQUALITIES

NSCS's Efforts to Reduce Inequality

NUST Community Service Club (NCSC) conducted a series of outreach initiatives aimed at bridging societal gaps and promoting empathy among students. Under the project "Orphans kNOw More", NCSC organized interactive visits to SOS Village and orphanages, engaging students with children through games, art activities, and meaningful conversations. Another initiative, "Elevate", involved collaborative sessions with underprivileged children from the Mashal Model School, focusing on education, self-esteem, and creative expression. Additionally, the club arranged heartfelt visits to old homes, where students spent time with the elderly, offering companionship, performances, and emotional support. These activities not only fostered a culture of inclusivity and compassion at NUST but also empowered marginalized groups by making them feel seen, heard, and valued. [





GOALS

PUBLICATIONS
231



SUSTAINABLE CITIES AND **COMMUNITIES**

Estimation of Greenhouse Gas (GHG) Emissions in NUST H-12 Islamabad

This study, conducted by researchers from the Institute of Environmental Sciences and Engineering at NUST, focuses on quantifying GHG emissions within the NUST H-12 campus. The research primarily examines emissions from transportation activities, including daily commutes of students, faculty, and staff, as well as vehicles used for industrial visits. Due to certain constraints, such as limited access to all emission sources and security considerations, the study provides an initial estimation rather than a comprehensive assessment. The findings underscore the significant contribution of campus transportation to GHG emissions and highlight the need for targeted mitigation strategies to reduce the university's carbon footprint.

| SCOPES | GHG EMISSION SOURCE | CALCULATED EMISSION tCO ₂ e |
|------------------------|---|--|
| SCOPE 1 | Natural Gas Consumption | 2021 |
| | Fuel Consumption by University Owned Fleet (Petrol) | 434.7685616 |
| | Fuel Consumption by University Owned Fleet (Diesel) | 225.3993293 |
| | Fuel Consumption by Generators (Diesel) | 197034 |
| SCOPE 2 | Total Electricity Consumption | 4695.72 |
| SCOPE 3 | Wastewater Treatment | 3753.58 |
| | Wastewater Treatment from MBR | 0.011928 |
| | Annual Waste Generation | 135 |
| | Other Solid Waste Generation | 97.89 |
| | Paper Waste | 241.7957 |
| | Food Waste | 0.657791 |
| | Plastic Waste | 0.165972 |
| TOTAL EMISSIONS | | 11803.32928 |

Data-Driven Spatial Analysis of Reforestation in Pakistan: Identifying Optimal Locations for Sustainable Forest Growth and Climate Change Mitigation

This research, published in IEEE Access, employs data-driven spatial analysis to identify optimal locations for reforestation in Pakistan, aiming to promote sustainable forest growth and mitigate climate change impacts. The study utilizes advanced geospatial techniques to analyze variations in vegetation and environmental factors, thereby pinpointing areas with high potential for future forestation efforts. Among the authors is Dr. Rafia Mumtaz, affiliated with the School of Electrical Engineering and Computer Science at NUST, highlighting the university's active involvement in interdisciplinary research addressing environmental sustainability.



| RELATIVE POSITION | COORDINATES |
|-------------------|-------------|
| Longitude Left | 60.61° E |
| Longitude Right | 77.10° E |
| Longitude Top | 37.31° N |
| Longitude Bottom | 23.97° N |

4th International Flagship Conference

Held in September 2024, this conference brought together experts from around the world to discuss the intersection of water, energy, and the environment. NUST's SADA (School of Architecture, Design, and Arts) hosted the event, which highlighted how cities can be designed to promote sustainability while addressing the challenges posed by climate change.



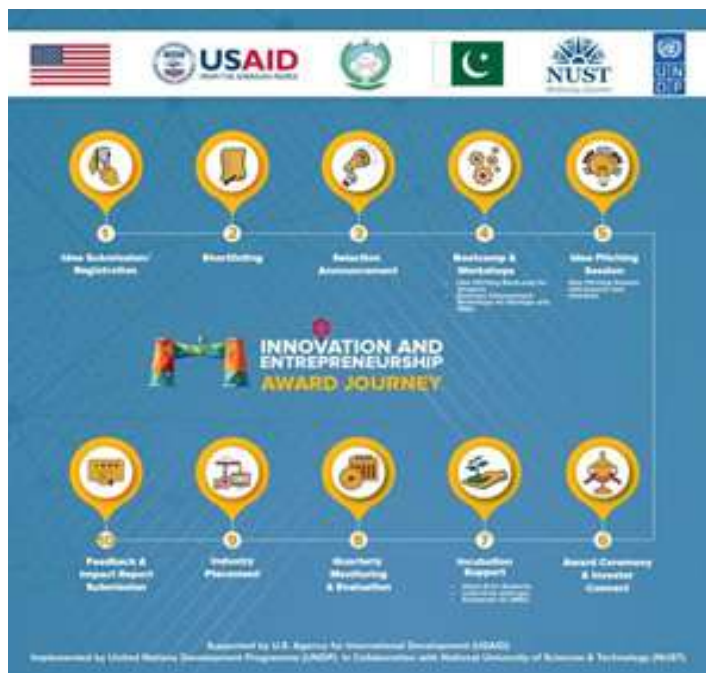
World Habitat Day Celebration

In 2024, NUST, in collaboration with UN-Habitat, celebrated World Habitat Day at the NUST School of Civil and Environmental Engineering (SCEE) Seminar Hall. The event focused on youth engagement in creating sustainable urban environments. Distinguished guests, including Ms. Coco Yushiana, Country Director of the World Food Programme and acting UN Resident Coordinator, and Mr. Jawed Ali Khan, HPM at UN-Habitat, highlighted the critical role of youth in urban transformation. A panel discussion titled “The Role of Youth in Urban Transformation” concluded that universities, in collaboration with industries, should equip youth with the necessary skills to become future leaders in sustainability.



The Innovation and Entrepreneurship Award

The Innovation and Entrepreneurship Award, a collaborative initiative by NUST, UNDP Pakistan, and USAID Pakistan, aims to empower the youth of Khyber Pakhtunkhwa by fostering innovation and entrepreneurship. The program provides financial support, mentorship, and incubation opportunities to students, startups, and SMEs, helping them transform ideas into viable businesses. With a focus on areas such as sustainable energy, digitization, AI, water resource management, food security, climate change, and waste management, the initiative seeks to drive economic growth, create jobs, and attract investment while promoting sustainable development and technological advancement in the region.





GOAL 12

PUBLICATIONS
114



RESPONSIBLE
CONSUMPTION AND
PRODUCTION

Economic Analysis of Fertilizer Use and Its Price Variability Effects on Wheat Productivity in Punjab – A Case Study of Faisalabad

This study, published in the Sarhad Journal of Agriculture in October 2024, examines the impact of fertilizer shortages and price fluctuations on wheat productivity in Faisalabad, Punjab. The research indicates that increased fertilizer costs have led to a 36% decrease in wheat yield among sampled farmers. The study emphasizes the need for timely availability and affordable pricing of fertilizers to enhance wheat production. Notably, Dr. Muhammad Waqas Alam Chattha, an Assistant Professor at the Atta-ur-Rahman School of Applied Biosciences (ASAB) was one of the co-authors. This collaboration underscores NUST's involvement in agricultural economics research aimed at addressing food security challenges in Pakistan

Table 8: Results of Random-Effect Regression Model

| | COEFFICIENT | STD.ERR | P>T |
|--------------------------|-------------|----------|-------|
| Constant (Yield) | 32.65 | .6269 | 0.7 |
| Age | .0979 | .0546 | 0.073 |
| Education | .0172 | .1800 | 0.924 |
| Wheat Farming Experience | .06333 | .05615 | 0.259 |
| Seed Quantity | .1850 | .1078 | 0.086 |
| Urea Quantity | -.3715 | 1.0748 | 0.730 |
| AN Quantity | .2347 | 1.1535 | 0.839 |
| DAP Quantity | -2.2728 | 2.7946 | 0.416 |
| NPK Quantity | -1.9401 | 1.3957 | 0.165 |
| Pesticide Quantity | -1.8363 | 1.7577 | 0.296 |
| Market Quantity | .0089 | .0028054 | 0.002 |

International Conference on Research Advancements in Chemistry

Held in August 2024, this conference brought together over 600 participants to discuss how advancements in chemistry can lead to a greener future. Topics included sustainable production techniques, the role of chemistry in renewable energy, and the reduction of harmful emissions in industrial processes.



UNAI Hub for SDG 12

In 2024, NUST was selected as the United Nations Academic Impact (UNAI) Hub Chair for Sustainable Development Goal 12—Responsible Consumption and Production—for the 2025-2027 term. This prestigious recognition places NUST among 17 institutions worldwide, highlighting its commitment to promoting sustainable practices and responsible resource utilization.

NUST
Defining futures

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

NUST Selected as
UNAI Hub Chair for SDG-12
Responsible Consumption & Production (2025-2027)

KEY HIGHLIGHTS

- Selected from **333** institutions worldwide
- Among **17** universities globally
- Only** university from Pakistan

This honour speaks volumes of NUST's efforts towards advancing sustainable practices, fostering innovation, and championing global responsibility.

SDPI Sustainability Award 2024

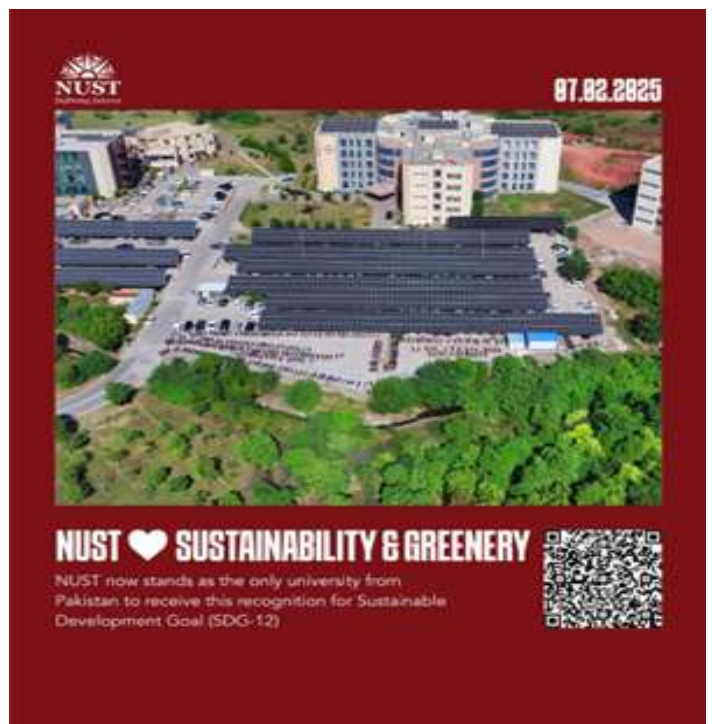
NUST has been recognized for its innovative efforts in ‘Production Innovation and Decarbonization’ by SDPI. The submission, the Carbon Sequestration Tower, was evaluated on its social, economic, and environmental impact and ranked among the top 5 in this prestigious category. This achievement highlights NUST’s commitment to driving sustainable innovation and addressing global challenges.



The banner features the logos of the National University of Sciences & Technology (NUST), SDPI, and e-XP 2024 at the top. The main text reads: "SDPI's 2nd SUSTAINABILITY AWARDS 2024". A call to action says "Get ready to celebrate sustainability!" and "Don't miss your chance to witness excellence in action." A QR code is provided with the instruction "Scan to visit the website". A graphic of a globe surrounded by colorful rings is labeled "Only for Pakistan". A "COMING SOON" banner is also present. At the bottom, it says "See you at the 27th SDC 2024 for the upcoming Sustainability Awards." and lists social media handles for SDPI PAKISTAN, OFFICIALSDPI, and SDTVPakistan.

NUST selected UNAI Hub Chair for SDG-12 Responsible Consumption & Production

NUST has been selected as the United Nations Academic Impact (UNAI) Hub Chair for SDG 12: Responsible Consumption and Production. Among only 17 institutions globally and the sole representative from Pakistan, NUST will lead global initiatives, research, and policy development to promote sustainable consumption practices. This recognition highlights the university’s commitment to environmental sustainability and offers a platform for students and faculty to contribute to international efforts for a greener future.



The banner features an aerial view of the NUST campus with a large solar panel array. The NUST logo is in the top left, and the date "07.02.2025" is in the top right. The main text reads: "NUST ♥ SUSTAINABILITY & GREENERY". Below this, it states: "NUST now stands as the only university from Pakistan to receive this recognition for Sustainable Development Goal (SDG-12)". A QR code is located in the bottom right corner.



GOAL 13

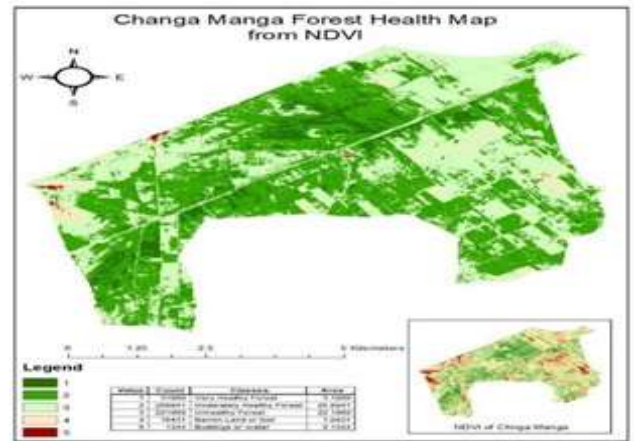
PUBLICATIONS
178



CLIMATE **ACTION**

Spatial Forest Health Monitoring Using Geospatial Techniques: A Case Study of Changa Manga Forest, Pakistan

Published in September 2024, this study employs remote sensing and GIS tools to assess forest health in Changa Manga Forest, Pakistan. The research identifies healthy and unhealthy forest areas based on vegetation indices such as NDVI, NDWI, and NDPI. Notably, researchers from NUST’s Department of Water Resources Engineering and Management, including Hamza Farooq Gabriel and Uzair Abbas, contributed to this study. Their involvement highlights NUST’s commitment to environmental sustainability and forest management



| VALUE | FEATURES | NDVI VALUE RANGE | AREA (KM ²) | AREA (%) |
|--------------|---------------------------|------------------|-------------------------|---------------|
| 1 | Very healthy Forest | 0.32 - 1 | 3.11 | 5.90 |
| 2 | Moderately Healthy Forest | 0.25 - 0.35 | 25.69 | 48.79 |
| 3 | Unhealthy Forest | 0.15 - 0.25 | 22.11 | 41.98 |
| 4 | Barren Land or Soil | 0.1 - 0.15 | 1.61 | 3.06 |
| 5 | Buildings or Water | -1 - 0.1 | 0.13 | 0.26 |
| TOTAL | | | 52.66 | 100.00 |

COP in My City 2024

COP in My City 2024: NUST concluded the “COP in My City Pakistan 2024” event on August 29, 2024, at the SINES Auditorium in Islamabad. This initiative, part of the Climate Change for Youth Road Map by the Ministry of Climate Change, was executed in collaboration with NUST Placement Office (NPO), UNICEF, the Prime Minister’s Youth Program, and UN Women. The event marked the end of provincial-level competitions across seven regions of Pakistan—Federal, KPK, Punjab, AJK, Sindh, Balochistan, and GB. Winners from these competitions advanced to the Grand Finale in October 2024, with the ultimate winners representing Pakistan at COP29 in Baku, Azerbaijan, later in the year.



Participation in COP29

NUST played a significant role at COP29 in Baku, Azerbaijan, from November 12 to 24, 2024, strengthening global collaborations on climate action. On November 20, NUST hosted a panel discussion at the Pakistan Pavilion, moderated by Mr. Zia ur Rehman, Head of Sustainability at NUST. The session showcased advancements in renewable energy, smart agriculture, eco-friendly construction, and waste-to-energy solutions, emphasizing collaboration among academia, industry, and government to address environmental challenges and operationalize the Green Technology Hub at NUST. Additionally, NUST's delegation engaged in over ten sideline meetings, fostering international partnerships for sustainable solutions. A key highlight was its flagship event, "Showcasing Pakistan as an Innovator in Green Technologies," which received high praise for highlighting local climate innovations. NUST also empowered youth through its "COP in My City 2024" initiative, allowing winners to represent Pakistan at COP29. Through these efforts, NUST reinforced its commitment to sustainability, innovation, and global climate leadership.



Climate Action Plan Launch

NUST launched its Climate Action Plan in 2024, outlining strategies to reduce greenhouse gas emissions and mitigate climate change impacts. The plan emphasizes the university's role in developing innovative technologies and devices to address climate challenges, reinforcing its commitment to sustainability.



NUST launches the Green Tech Hub (GTH) at the SINES Building, H-12, Islamabad

NUST, in collaboration with the Ministry of Climate Change and Environmental Coordination (MoCC & EC) and IGNITE, has launched the Green Tech Hub (GTH) at the SINES Building, H-12, Islamabad. This joint initiative is a groundbreaking effort to foster innovation in climate adaptation, mitigation, agriculture, and sustainability. Rector NUST, Lt Gen (Retd) Engr Javed Mahmood Bukhari, welcomed the distinguished guests, including Madam Coordinator MoCC & EC Ms. Romina Khurshid Alam and Secretary MoCC & EC Ms. Aisha Humera, at the launch ceremony. Dr. Rizwan Riaz (Pro-Rector RIC NUST), Madam Secretary Ms. Aisha Humera, and Mr. Adeel Aijaz Shaikh, CEO of IGNITE, signed the trilateral agreement, marking a new chapter in green entrepreneurship and sustainable development.

Serena Green: Forest Monitoring Interface

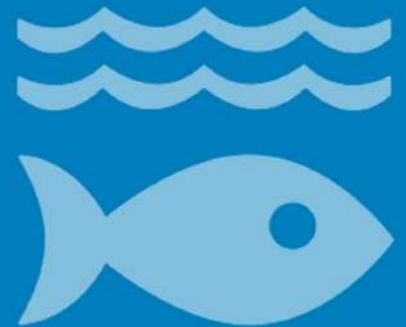
In 2024, Serena Hotels launched a proprietary Forest Monitoring Interface under its Serena Green initiative to digitally track afforestation across regions like Gilgit-Baltistan, Chitral, Balochistan, Punjab, and KP. The dashboard integrates satellite imagery, GIS mapping, and IoT sensor data to provide real-time insights into tree planting density, species survival rates, water usage, and carbon sequestration. With interactive maps, automated alerts, and mobile access for local communities, the platform enhanced transparency, accountability, and community engagement. By year-end, the system helped achieve over 85% sapling survival and estimated CO₂ offsets of nearly 12,000 tonnes, directly supporting climate mitigation goals and advancing SDG 13.





GOAL 14

PUBLICATIONS
178



LIFE BELOW **WATER**

**Throughout the 2024-25 session, there
were 178 papers published regarding
SDG 14**



GOALS 15

PUBLICATIONS
08



LIFE ON
LAND

Eco-Tourism

In May 2024, Islamic Relief Pakistan (IRP), in collaboration with the NUST and the Karakoram Area Development Organization (KADO), launched a week-long Eco-Tourism Campaign in the Gilgit-Hunza region. This initiative focused on three primary areas: waste reduction and management in tourism, energy management and transition, and biodiversity conservation. The campaign featured sessions and workshops at KADO and the Karakoram International University, Hunza campus, engaging hotel owners, educators, government officials, and students. The opening ceremony saw participation from various stakeholders, including representatives from governmental departments, developmental organizations, educational institutions, and youth groups, all emphasizing the importance of sustainable tourism practices to preserve the natural beauty and cultural heritage of Hunza.





GOAL 16

PUBLICATIONS
18



PEACE, JUSTICE AND STRONG **INSTITUTIONS**

The Impact of Identity on the Success of Peacekeeping Missions: The Pakistani Perspective

Authored by Jawaiza Sulehri, an MS graduate, and Dr. Humaira Shafi, an Assistant Professor—both from the Department of Peace and Conflict Studies at the Centre for International Peace and Stability, NUST—this paper critically examines how shared identity traits (such as race, religion, language, and gender) between UN peacekeepers and local populations influence mission outcomes. The research uses qualitative data from interviews and focus groups with both veteran and trainee Pakistani peacekeepers to assess whether these commonalities help in gaining the trust of local communities and improving mission efficacy. The findings suggest that shared identity can indeed strengthen operational outcomes, while also emphasizing the importance of maintaining impartiality, providing humanitarian aid promptly, and incorporating language training in peacekeeping preparation.



Humanitarian Crisis and Crumbling Pillars of R2P in Gaza

This paper, written by Dr. Humaira Shafi Awan, Assistant Professor, and Hiba Malik, a student—both from the Centre for International Peace and Stability at NUST—provides a critical analysis of the Responsibility to Protect (R2P) doctrine in the context of the ongoing humanitarian crisis in Gaza. It argues that the failure of international actors, particularly the United Nations and NATO, to uphold R2P principles has led to unchecked violence and suffering among civilians. The paper discusses how political agendas and selective enforcement have weakened the normative power of R2P, calling for structural reforms and a reinvigorated commitment to protecting vulnerable populations. Through this analysis, the authors highlight the moral and operational shortcomings in the current application of humanitarian intervention policies.

NUST Law School Triumphs at Henry Dunant Moot Court Competition

NUST Law School marks its first triumph after being established as an independent school! Continuing the legacy, its prodigies conquered the courtroom once again! As our talented moot court team has clinched the national title at the Henry Dunant Moot Court Competition in Pakistan, retaining their title as HDMC champions, and earning their spot in the prestigious international finals in Hong Kong. Not only this, but also bringing home two out of four individual awards namely the “Best Researcher” and “Best Preliminary Answers” this time. The team, comprised of Minahil Azam, Safian Khan, and Abdullah Iltaf Cheema, under the guidance of their exceptional coach, Sir Haziq Ali Khan, delivered brilliant legal arguments and unwavering dedication, bringing immense honor to our university. Congratulations to the entire team and NUST fraternity.





GOALS

PUBLICATIONS
25



PARTNERSHIP FOR
THE GOALS

Strategic Partnership with Toyota

At the IDEAS Expo 2024, NUST and Toyota signed a Memorandum of Understanding (MoU) to foster innovation and address key national challenges in Pakistan. This partnership aims to develop transformative solutions across multiple sectors, focusing on engineering advancements and applied research. The collaboration reflects a shared vision for promoting sustainable development and driving industrial growth by harnessing advanced research and engineering innovation to create impactful solutions addressing real-world challenges.



Pakistan Youth Leadership Initiative (PYLI)

On March 5, 2024, NUST participated in the launch of the Pakistan Youth Leadership Initiative at the HEC Auditorium in Islamabad. This initiative, part of the Green Youth Movement under the Prime Minister’s Youth Programme, aims to empower youth to lead sustainable development and green growth in Pakistan. NUST’s involvement underscores its commitment to fostering youth leadership in sustainability.



NUST & WWF Collaboration

NUST & WWF-Pakistan have forged a partnership aimed at strengthening collaboration and engagement in endeavors pertaining to climate change initiatives. The MoU delineates the blueprint for concerted endeavors in areas of utmost importance to both entities. Dr. Rizwan Riaz, Pro-Rector RIC, underscored NUST's commitment to sustainable technology, fostering links between industry and academia, and its expansive global outreach during the announcement of this collaboration. Hammad Naqi Khan, Director General, WWF-Pakistan, spoke about WWF's key areas of work and discussed many potential areas of collaboration. Hammad's visit to NUSTP advanced the institutional commitment to collaborate, emphasizing their combined strength in fostering sustainable solutions through research, advocacy, and entrepreneurial ventures. This MoU signifies a crucial milestone towards fostering a more sustainable future.



Tameer-e-Khalaq and NUST collaboration

Tameer-e-Khalaq Foundation (TKF) and National University of Science and Technology (NUST) have joined hands to enhance collaboration and participation in activities related to climate change initiatives. The MOU outlines the framework for joint efforts in priority areas of mutual interest. Dr Rizwan Riaz Pro-Rector RIC, highlighted NUST's endeavors in sustainable technology, industry-academia linkages, and the university's global reach. Sana Maqbool, Director of ICON, and Muhammad Usman Aslam, Head of Climate Change Initiatives at DRR & Strategic Partnerships TKF, officially signed the MOU. This marks the beginning of a strategic partnership between academic and humanitarian organizations, pooling their resources and expertise to address climate change challenges in Pakistan. The collaboration aims to address the pressing issues related to climate change, disaster resilience, and sustainable development in Pakistan.







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