

A close-up photograph of a hummingbird hovering near a cluster of bright orange flowers. The bird is positioned on the right side of the frame, facing left towards the flowers. Its wings are blurred from motion, and its long beak is pointed towards the flower cluster. The background is a soft, out-of-focus green, suggesting a natural outdoor setting.

NUST ANNUAL SDGs REPORT 2020

NUSTAINABLE



1.0 NUST: an SDGs- engaged University

Pakistan being initial signatory of UN SDGs, is obliged to meet the Agenda 2030 and report annually on its progress to the United Nations. In order to fulfill that obligation, organizations especially HEIs, must make SDGs an integral part of their strategy to assist in achieving the national commitment.

Realizing the importance of UN SDGs, NUST has adopted the requisite UN SDGs framework to become what is termed internationally as a “SDGs-engaged University”. NUST embarked upon the journey of SDGs engagement and initiated the program in 2018 and has achieved remarkable progress that has been appreciated both at home and internationally. We continue our upward journey towards greater adoption of SDGs in all of the following core functions with UN SDGs:

OPERATION & GOVERNANCE

- Integrating SDGs into NUST policy at all levels
- Performance evaluation based on SDGs
- Training HRs
- Green Campus, Carbon Neutrality

ACADEMIC & YOUTH ENGAGEMENT

- Integrating ESD with NUST curriculum
- Training Students on their future roles in SDGs
- Making Future Leaders and Change Agents
- Capacity Building

RESEARCH & INNOVATION

- Research alignment with SDG goals
- R&I Capacity building
- Cross-disciplinary approach for problem-solving
- Support Innovations & Social enterprises addressing SDGs

STAKEHOLDERS MANAGEMENT

- Strategic partnerships with other sectors of civil society to align SDGs implementation strategies

SDGs-Engaged University

1.1 THE Impact Rankings

NUST has also been submitting the SDGs related credentials in internationally claimed Times Higher Education (THE) Impact Rankings for the last three consecutive years.

2019

460+Universities
Participated Globally

Global
NUST Ranked Overall

300+

National
Ranked **#3**

No. of SDGs Participation
4

2020

860+Universities
Participated Globally

Global
NUST Ranked Overall

200-300
Top 100 in SDG 4 and 12

National
Second Overall

No. of SDGs Participation
17

2021

1200+Universities
Participated Globally

Global
NUST Ranked Overall

200-300
Top 100 in SDG 6

National
Ranked **#1**

No. of SDGs Participation
17

NUST also participated in 2020 THE Impact Rankings 2020 across all 17 SDGs and ranked in 200-300 globally, whereas on No. 2 nationally.

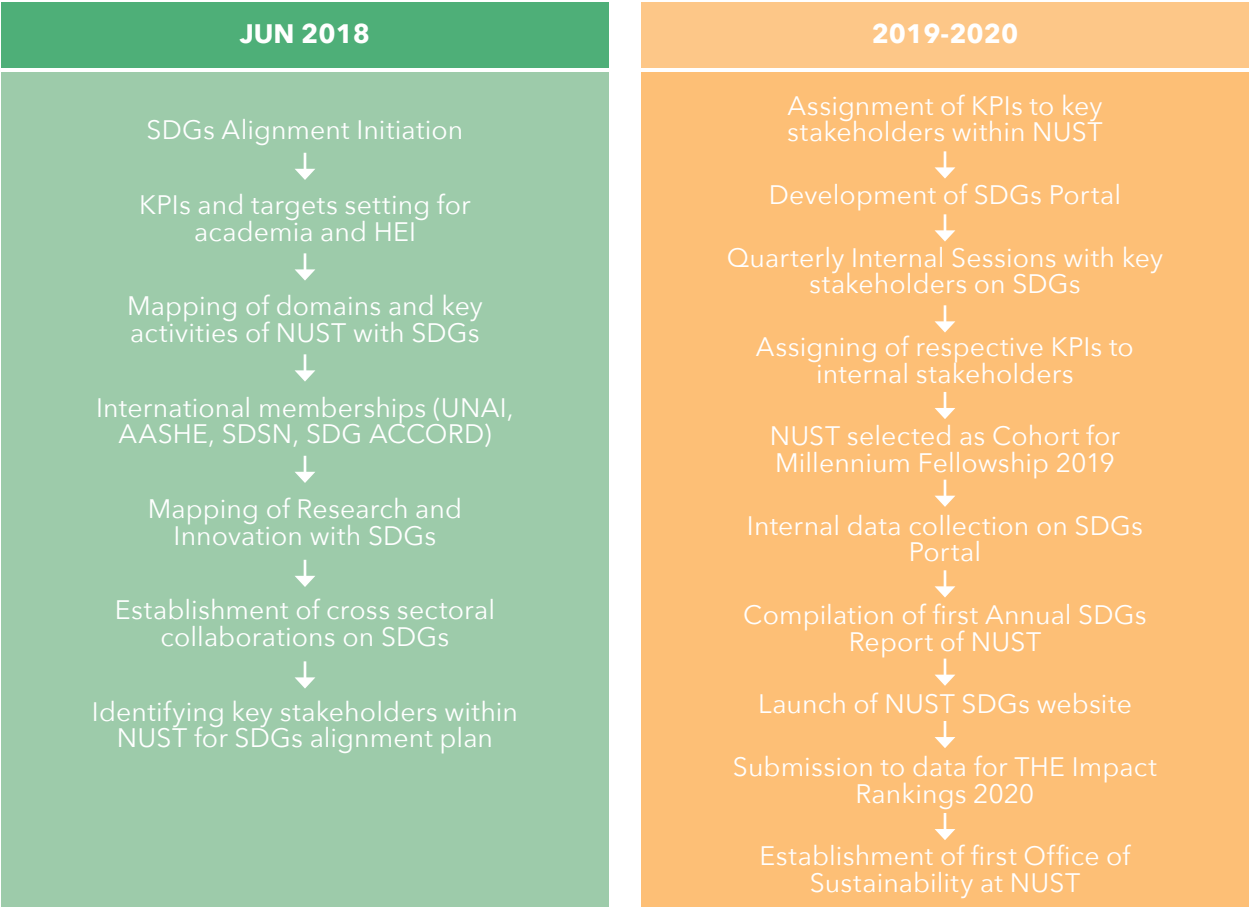
SDG	World Rank 2019	World Rank 2020	Domestic Rank 2020	World Rank 2021	Domestic Rank 2021
SDG 1: No Poverty		201-300	3 rd	401+	4 th
SDG 2: Zero Hunger		201+	3 rd	301-400	3 rd
SDG 3: Good Health and Well being		401-600	4 th	601-800	4 th
SDG 4: Quality Education	101-200	70	1 st	101-200	2 nd
SDG 5: Gender Equality	201-300	201-300	3 rd	401-600	6 th
SDG 6: Clean Water and Sanitation		201-300	3 rd	101-200	1 st
SDG 7: Affordable and Clean Energy		101-200	2 nd	67	1 st
SDG 8: Decent Work and Economic Growth		101-200	2 nd	201-300	2 nd
SDG 9: Industry, Innovation and Infrastructure	101-200	101-200	1 st	201-300	1 st
SDG 10: Reduced Inequalities		301-400	2 nd	401-600	1 st
SDG 11: Sustainable Cities and Communities		301-400	2 nd	401-600	3 rd
SDG 12: Responsible Consumption and Production		78	1 st	101-200	2 nd
SDG 13: Climate Action		301+	4 th	201-300	1 st
SDG 14: Life below Water		201+	2 nd	201-300	2 nd
SDG 15: Life on Land		201+	2 nd	201-300	1 st
SDG 16: Peace, Justice and Strong Institutions		301-400	2 nd	401-600	2 nd
SDG 17: Partnership for the Goals	300+	101-200	1 st	201-300	1 st
Overall	300+	201-300	2nd	201-300	1st

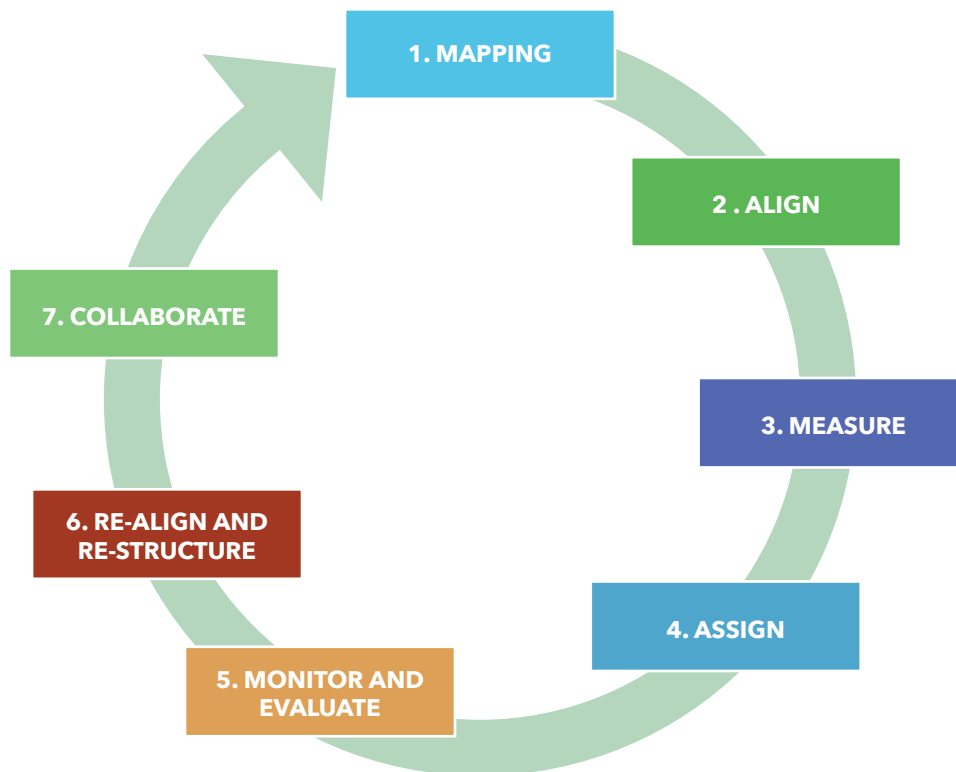
1.2

Highlights of NUST SDGs Alignment Plan

Highlights of the NUST SDGs transformation in the last few years since 2018, along with the organizational commitment, details on SDGs related initiatives and activities will be covered thoroughly in this report, listed by SDGs.

The complete journey of NUST SDGs Alignment plan is as follows:





1. MAPPING

As the first step, we performed analysis of research & innovation portfolio, curricula and all operations within NUST as well as analysis of internal capabilities and resources in implementing SDGs. The data of five years of publications, patents and projects have been mapped with corresponding SDGs through our NUST Research portal. Researchers submit their publications and projects on portal to the relevant SDGs. All the data present on portal has been aligned with SDGs.

- 1000+ Research projects mapped
- 7000+ Publications Mapped
- 650+ Patents mapped
- Key activities of 20 administrative offices of NUST mapped with SDGs.
- Activities of 18+ Schools/ departments, programs, courses mapped with SDGs
- Startup Competitions, Community Clubs Services, Events mapped with SDGs

2. ALIGN

The university core functions were aligned with the respective SDGs targets and eventually 17 goals, by disaggregating the national level targets and KPIs of SDGs framework into relevant achievable milestones and KPIs for appropriate alignment with the academic core functions.



3. MEASURE

“What gets measured is what gets improved”.

Although there are 232 SDGs Framework KPIs, 69 Targets and 17 Goals at national levels, indicators for organizations can be variable according to the type and the sector of the organization. Therefore, for a higher education institute, the KPIs selected were only those pertinent to the deliverables of a university in the context of youth and students’ engagement, research and innovation and green campus initiatives.

Measure only relevant KPIs

The choice of KPIs has to be made very carefully as the right KPIs will set the focus of the university / organization in their strategy and plan for SDGs alignment. The other important reasons why KPIs selection is very crucial because:

- Costs of measuring KPIs is very high
- Not all KPIs are relevant to the organization and its core strategy/ functions
- Wrong choice of KPIs can lead to misleading outcomes and inadequate performance, and eventually affect the results
- Only KPIs relevant to NUST Internal Domains and Stakeholders need to be selected
- NUST adopted a set of 242 KPIs, under four different domains which were selected on the basis of relevance to the organization and its long term strategic goals and modes of operations:

UN SDGs FOCUSED THE IMPACT RANKINGS FRAMEWORK ADOPTED

Domain/ Sector	SDGs	Targets	Indicators
Research & Innovation	17	34	64
Academics & Youth Engagement	14	26	64
Ops & Governance	14	46	121
NUST TOTAL	17 (SDGs Overlapping)	66 (Targets Overlapping)	242

4. ASSIGN

Once the set of KPIs were selected, these KPIs were assigned to 20+ administrative offices and relevant schools/ colleges of NUST. A dedicated online portal “NUST SDGs Portal” has been developed to track and measure the performance and impact of the organization in terms of SDGs.

Several internal sessions were held with the stakeholders to brief them on SDGs framework, KPIs assignment, reporting methodology and usage of the portal. They were also briefed on setting targets, devising plans and policy amendments to improve on these KPIs.

5. MONITOR AND EVALUATE

To formulate a better SDGs implementation strategy, we need to understand where action is needed. Tools to gather, present and disseminate SDG data are key to ensuring their extensive and effective use by policymakers. Reporting and dissemination platforms for SDGs are indispensable to policymakers and, indeed, to all stakeholders for understanding where progress is being made and informing future interventions. Data must be:

- Accessible
- Publicly available,
- Relevant
- Easily visualized and
- Analyzed - to those who want or need to use it.

The monitoring and evaluation on the progress against the KPIs is being conducted through the SDGs Portal, on which a dedicated dashboard to monitor performances by offices as well as overall performance by SDGs has been developed, called the “NUST Impact Dashboard” which provides us a birds’ eye view of the organization’s standing in terms of SDGs and impact.

NUST SDGs-IMPACT

ACADEMICS & YOUTH ENGAGEMENT



NUST COMMUNITY SERVICES CLUBS

NCSC Completed 102,045 Service Hours in 2018-19



1126 BLOOD PINTS
COLLECTED
THROUGH NCSC
BLOOD DONATION
DRIVES



600+ PRIZES OF
TRAINING, 13000+ PER-
SONNEL TRAINED,
800+ ORGANIZATIONS
BY PDC



PLANTATION DRIVES BY
NUST COMMUNITY SERVICE
CLUB BY ENGAGING YOUTH
AND PLANTED 97K SAPLING
ACROSS H-12 CAMPUS



1 CREDIT HOUR
COMMUNITY SER-
VICE COURSE
MANDATORY

1133
NO. OF
GRADUATES

10765
No. Of Students

3636
Graduates With
Primary School
Teaching
Qualifications



62
Number of
graduates at
ISCED 8 (Doctoral
level)

1701
Number of graduates
at ISCED 7 (Master's
level)

2503
Number of graduates
at ISCED 6 (Bachelor
level)



DIVERSITY & INCLUSION



541 Students Receiving Significant Financial Aid

153	Number of female senior academic staff
382	Arts & Humanities / Social Sciences
695	Number of female first degree graduates, STEM
1077	Number of female first degree graduates by subject area



486
Number Of First
Generation
Women Starting
A First Degree



1565
Number Of
Women
Starting A
First Degree

4.71%
Women's
Application Rate,
Acceptance/Entry
Rate.



2946
STUDENTS
STARTING A
FIRST DEGREE

12
INTERNATIONAL STUDENTS
FROM DEVELOPING COUNTRIES

1196
NUMBER OF FIRST GEN-
STUDENTS STARTING A
FIRST DEGREE

8 (0.17%)
EMPLOYERS
WITH DISABILITY

5
STUDENTS WITH
DISABILITY

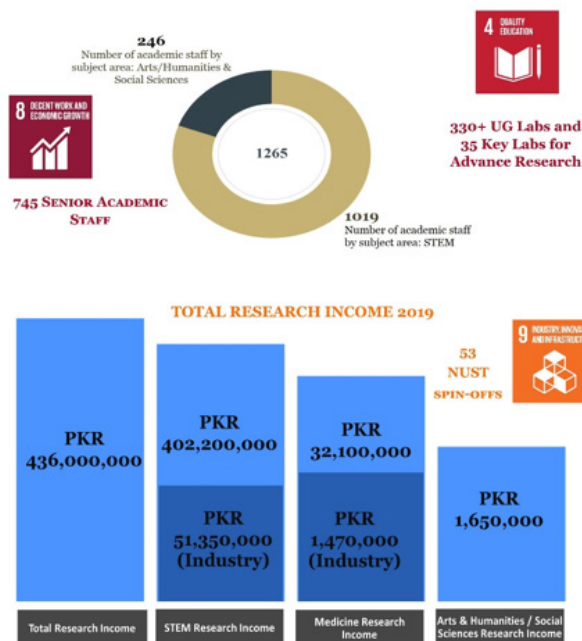


ACT DASHBOARD

CAMPUS OPERATIONS



RESEARCH & INNOVATION



6. RE-ALIGN AND RE-STRUCTURE

The plan also considers realignment and restructuring once the cycle is over, and the KPIs are re-aligned with new initiatives, new technologies or Programmes started at the university. The process is a continuous improvement cycle and does not halt at the end of a year, but takes continuous efforts to improve and re-align on the KPIs assigned. New policies, strategies and initiatives must be introduced for a complete re-alignment and re-structuring in accord with the SDGs.

7. COLLABORATE

We use “Systems thinking” to implement SDGs, which give us a framework for assessing the whole picture and understanding complex dynamics and interdependencies. Systems thinking are based on a collaborative model instead of working in silos and identifies “Key Leverage Points” within a system.

For NUST, it means operating on three levels:

- joining up with others’ efforts to achieve individual goals
- looking at the inter-relationships between all the goals
- and finally delivering the goals in a way that models the characteristics we need for a sustainable society.

NUST not only held various collaborative and interactive sessions to engage internal stakeholders, more than 20 offices and schools of NUST, to work towards a unified goal of SDGs alignment, but also established cross-sectoral partnerships and international memberships for the cause.



3rd Session on NUST SDGs Alignment Plan with internal Stakeholders 2020

2.0

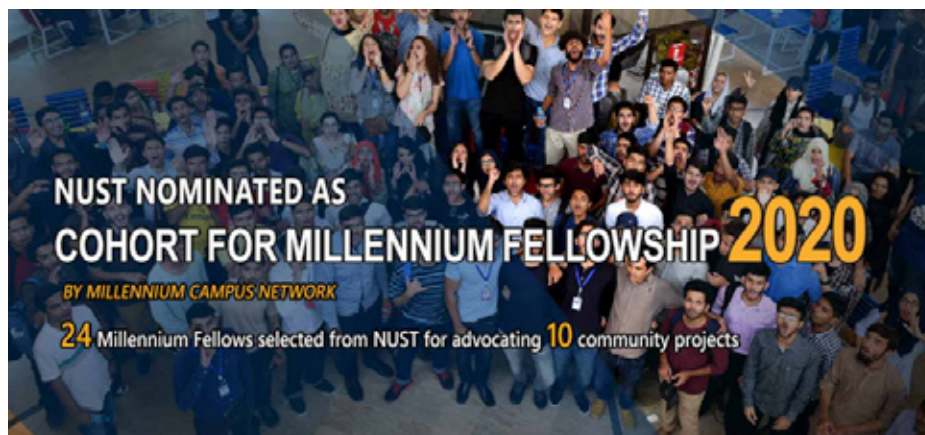
NUST Selected as Cohort for Millennium Fellows 2020

Out of 1400 campuses across 135 countries, NUST is one of the 80 nominated Cohorts for Millennium Fellowship 2020 to host 1,000+ Millennium Fellows this year. Millennium Fellowship, a joint program of United Nations Academic Impact and Millennium Campus Network (MCN), a Boston-based

global non-profit convening and training social impact leaders, aims to help young leaders find their voice and own their power for social impact on campus and in the community.

The Millennium Fellows selected from NUST are currently advocating community service projects including Break the Barriers, Fem Power, Grow with Hope, Namood e Subah, Sahara , Uraan, Spark Career, Dream Sober, Sargodha Youth Peace, and Street School.

NUST also was among the top applicants in terms of the highest number of applications received from a single campus in the Asia region.



The Millennium Fellows will attend training sessions arranged by MCN, be the part of international virtual global events, advocate for the causes/ community service projects committed to SDGs localisation, and building communities. At the end of the Fellowship in November 2020, the Fellows will receive certificates of recognition from MCN and UNAI.

This is a tremendous achievement for NUST, harbouring international recognition for contribution towards SDGs localisation and societal impact, as UNAI will be engaged in publicising the Fellowship Programme through its global network.



GOAL 1

No Poverty



4

Research Projects

125

Publications

2

Patents

First-Generation Students

NUST has around 35% of first-generation students, i.e. Whose parents were never enrolled for higher education. Such a large proportion of students at the campus speaks of our contribution towards bringing out an increasing number of families from poverty.

NEED Initiative

NUST aims to be a need-blind university, affording education to all those who make it to the university on merit. In this respect, NUST looks after the financial needs of the students from underprivileged and underrepresented groups from all across the country, through partnerships with NUST alumni, private donors, and government agencies for funding. More than 1800 students are studying on need-based scholarships in NUST since 2015, and 127 of the targeted 400 seats have been made free for scholars through a permanent endowment.

1940 Students
Studying on
NEED based
scholarships,
135 Free Seats



GOAL 2

Zero Hunger

27

Research Projects

98

Publications

7

Patents

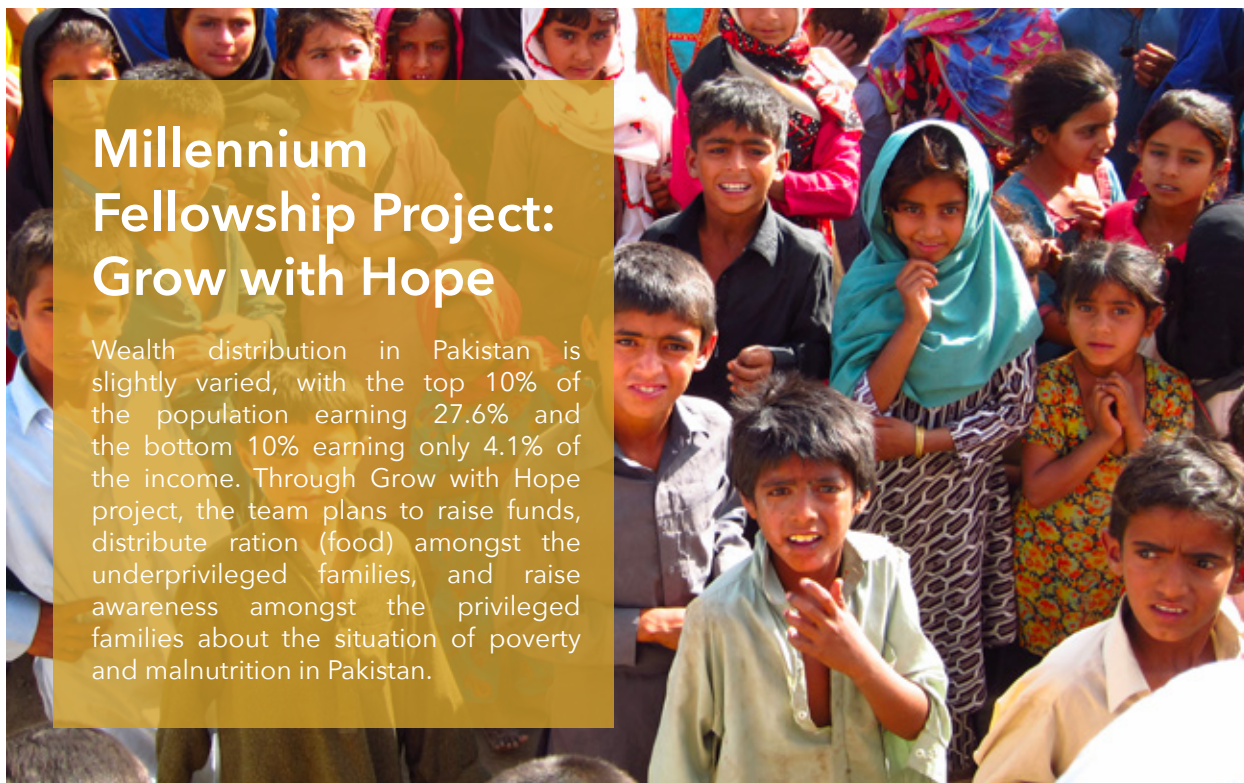
"FLOODS": NUST Food Bank

Floods: NUST Food Bank is an initiative undertaken under NUST Community Services Club. It aims to inculcate empathy and compassion in the affluent segment of the society towards the underprivileged and encourage the resourceful people/organizations with abundant food to donate the surplus to those who often sleep with an empty stomach. 'Floods' is run purely by NUST students, who collect the food and distribute it among the impoverished through its Food Bank. It

also aims to curtail the enormous wastage of food from marriage halls and food outlets by collecting excess food at the end of the day and distributing it among the needy with responsibility and ensuring the sanctity of human dignity. 'Floods' is a non-profit, charitable organization that distributes food to those who have difficulty purchasing enough to avoid hunger. Food was distributed within and outside the premises of NUST, approximately 60 food boxes were distributed in each drive.

Millennium Fellowship Project: Grow with Hope

Wealth distribution in Pakistan is slightly varied, with the top 10% of the population earning 27.6% and the bottom 10% earning only 4.1% of the income. Through Grow with Hope project, the team plans to raise funds, distribute ration (food) amongst the underprivileged families, and raise awareness amongst the privileged families about the situation of poverty and malnutrition in Pakistan.



NUST hands over crop spraying drones to NDMA



Desert locusts and swarming short-horned grasshoppers have been destroying crops in Africa and Asia for centuries. Their tendency to move in huge swarms with great speed makes them one of the most devastating agricultural plagues. In January last year, the locusts flew from the Red Sea coast of Sudan and Eritrea to hit Saudi Arabia and Iran. They entered Pakistan's southwestern Balochistan province in March and affected different parts of Sindh, Balochistan, Punjab and KPK province. Aerial spraying is one of the most effective remedies for destroying and controlling locust swarms, especially for the ones sitting on trees with big canopies, where other solutions might not be effective.

In view of the Locust swarm eating its way across Pakistan, NUST has been actively engaged in fighting its spread through technological interventions. NUST Robot Design & Development Lab (RDDL) is part of the National Centre of Robotics & Automation (NCRA). The centre aims at solving socio economic problems through Robotics and Automation and has conducted

trials of aerial pesticide sprays using agricultural spraying drones in different parts of Pakistan. The pesticide spray operation was carried out in Dera Ismail Khan for locust control, Khanewal and Lalian for white fly control in sugarcane crop, Swabi for pest control in Tobacco leaves, Kharian for organic nutrients in guava orchards, Chakwal for pest control in wheat crop.

RDDL has been collaborating with Shenzhen Sunwin Intelligent Company, a Chinese company working on drone technology, for manufacturing/ assembling of drones in Pakistan. Apart from other efforts, RDDL has recently coordinated a donation of drones from the Chinese company directly to NDMA's Anti-Locust Cell. Consequent upon it, 5x drones have already arrived in Pakistan. RDDL has provided configuration and commissioning of these drones, and will impart master training for pilot, flight operation, and maintenance of aerial spraying drones to officials of National Locust Control Centre (NLCC) and Department of Plant Protection (DPP).

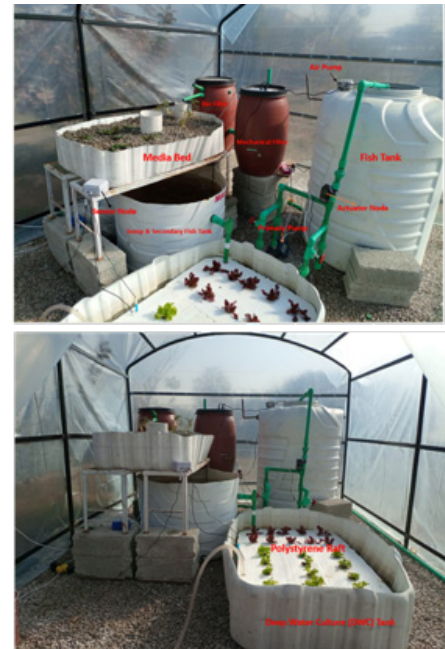
Smart Aquaponics

The smart aquaponics system integrates aquaculture (i.e. fish farming) and hydroponics (i.e. growing plants in a soilless medium). The objective of this project by NUST researchers is to provide an alternative to the traditional food production on industrial as well as private sectors. The proposed system is particularly useful for urban areas with low land and overpopulation. The system is portable, light-weight , and requires minimal human interference during the cultivation process which provides organic and cheaper produce than traditionally grown crops.

In a country like, Pakistan where water shortage and overpopulation are major issues, this system will use approximately 90% less water as compared to land-based farming via water recycling and result in a larger crop yield per meter square. This project will not only contribute towards improvement of agricultural methods but also serve positively to the Pakistani society and economy.



Aquaponics prototype at NUST H-12 Campus



Secure Pakistan Wheat Production through Controlling Rust

Comparing to the population and the yield of wheat Pakistan has certainly scope for further improvement in wheat yield. Scientists at Atta-ur-Rehman School of Applied Biosciences (ASAB) worked on project to secure the wheat production through adapting standard approaches and molecular technologies to identify potential new sources of genetic resistance to wheat rusts to screen wheat germplasm against stem, leaf and stripe rust acquired from within Pakistan and international wheat germplasm.



Good Health and Wellbeing

73

Research Projects

118

Publications

146

Patents

13

IPRs Licensed
to Industries

EPIC

Industry: RiseTech Pvt. Ltd.

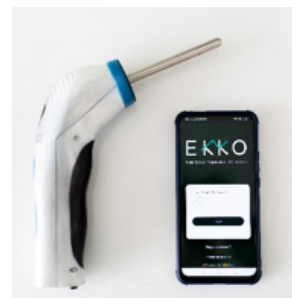
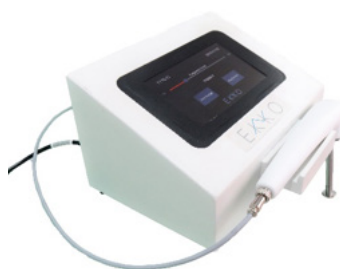
EPIC is a wearable band that provides a cost-effective solution to detect generalized tonic-clonic seizure (GTS) from muscle activity of patients by capturing Surface Electromyography (sEMG) signals. The device is coupled with mobile application to notify the caregiver of the patient regarding epileptic activity and the current location of the patient for timely assistance. The licensing agreement of the related IPRs for "EPIC: A Smart Wearable Epilepsy Monitoring Unit" was signed between NUST and RiseTech Pvt. Ltd. in Dec. 2020.



EKKO

Industry: RiseTech Pvt. Ltd.

EKKO is a wave therapeutic device that uses vibration waves to treat neurological disorders. Ultra low frequency vibrational waves have been found effective in the fast recovery of muscles because of their resonance with the natural frequencies of the muscle fibers and are already used in the medical industry. Two versions of EKKO devices were fabricated to cater for the needs of the community. One of the versions has been developed for therapy of children at home, accompanied by a mobile application which assists the parents to perform therapy in an effective manner. The other version is a self-contained device suitable for use in hospitals and therapy centres.



N-Safe Hand Sanitizer Gel

Launched by NUST

Industry: Pharmatec Pvt. Ltd.

Amidst the ever-growing necessity of regular disinfection of hands to help prevent the spread of novel Coronavirus, the safety of millions of Pakistanis is in jeopardy as many uncertified hand sanitizers, with questionable efficacy, have appeared in the market across the country.

NUST has a national mandate and a proven track record of society-specific research & development for high quality, cost-effective, and reliable solutions to the diverse challenges faced by Pakistanis. In continuation of the same spirit and practice, NUST launched N-Safe; an Alcohol-Based Hand Sanitizer Gel, developed according to the World Health Organization (WHO) Guidelines 2020 that declare only high percentage alcohol-based disinfectants as effective protection against COVID-19. N-Safe Hand Sanitizer Gel has been certified for 99.99% microbial control by Pakistan Council of Scientific & Industrial Research (PCSIR).

Having received authorization by the Drug Regulatory Authority of Pakistan (DRAP), N-Safe Hand Sanitizer Gel was manufactured under license by Pharmatec Private Limited, one of Pakistan's most dynamic and fast-growing privately owned pharmaceutical companies, which is developing, manufacturing and supplying pharmaceutical generics and value-added products in the market.



NCSC and Sundus Foundation: Restoring Blood Banks

NCSC collaborated with the esteemed Sundus Foundation, to hold a door-to-door blood donation drive. The drive was held keeping in mind all the mandatory precautions and tenets of social distancing that the ongoing pandemic demands. Willing donors could register if they wanted to donate, after which a mobile unit would come to their homes to collect the blood. The purpose of this donation drive was to contribute to the depleting blood bank at Sundus Foundation.



LICENSED TO INDUSTRY

Prime Minister inaugurates N-ovative Health Technologies (NHT), Pakistan's first facility for manufacturing of heart stents and other medical devices

Prime Minister Imran Khan inaugurated N-ovative Health Technologies (NHT) Pakistan's first facility for indigenous manufacturing of cardiac stents, angioplasty balloon catheters and other life-supporting medical devices at the National University of Sciences & Technology's (NUST) Islamabad campus. With the establishment of NHT, Pakistan has become the 18th country in the world, and second Muslim country in the world after Turkey, to have its own facility for cardiac stent production. As per the World Health Organization (WHO), Pakistan stands 18th in the world to have maximum deaths per year due to coronary diseases and falls in the Red Alert Zone. This precarious situation is largely due to exorbitant prices of imported cardiac implants, which over 80 percent patients find inaccessible. The establishment of NHT not only brings quality stents within the reach of these patients, but also saves huge sums of foreign exchange every year for the national exchequer. NHT is an ISO 13485: 2016 certified facility accredited



by European Commission Notified Body and approved by Drug Regulatory of Pakistan (DRAP). To begin with, NHT has launched three of its major products, including REJUVENTATE - Bare Metal Stents (BMS), N-DEAVOUR - Drug Eluting Stents (DES), and VASOGLIDE - PTCA Balloon Catheters. NHT has also made another phenomenal breakthrough by manufacturing "N-SAVIOUR," a ventilator system against the backdrop of COVID-19, which will be used to treat patients with chronic respiratory issues. The indigenous manufacturing of high-quality and cost-effective cardiac stents, angioplasty balloon catheters by N-ovative aims to reduce dependence on imports and also save precious foreign exchange to the tune of PKR 8.5 billion spent annually on the imports of cardiac stents and catheters.

Minister MoST extols NUST as tech leader for developing indigenous technologies and products to combat Coronavirus

The outbreak of COVID 19, caused by Novel Coronavirus, has forced Governments, scientists and medical professionals the world over, to contemplate how to counter this unanticipated and deadly challenge facing the world. Leading

research-intensive institutions and centres across the globe are doing their best to grapple with the crisis; in Pakistan, National University of Sciences & Technology (NUST) has been going the extra mile to combat this pandemic through indigenously developed technologies as well as intellectual input and support to the Government. Federal Minister for Science & Technology Chaudhry Fawad Hussain paid a visit to the university on 2nd April, 2020. The Honourable Minister was apprised about specifications and applications of projects displayed at the occasion. These projects included:

- tele-operated decontamination robot
- aerial spraying drone,
- robust & cost-effective PCR-based testing kits for the detection of Coronavirus;
- bilingual (Urdu & English) COVID-19 self-screening app, the world's first Urdu app for Android, named COVID CHECK PAKISTAN (app is available at <http://ncra.org.pk/covid/>);



- high-quality sanitisers for microbial control, produced as per the revised guidelines of the World Health Organisation (WHO) and Centers for Disease Control & Prevention (CDC), USA;
- ventilator systems for short-term stabilisation (ranging from few hours to 1 day) of COVID-19 patients, as per the design specifications specially issued for combatting COVID-19 by the Medicines & Healthcare products Regulator Agency (MHRA), UK.

Later, the Minister witnessed a demonstration of the decontamination systems developed by scientists for disinfecting open and closed spaces. These technologies would be used to disinfect high risk and critically important locations, such as hospitals, in- and outdoor quarantine camps, airports, commercial spaces, etc., to lower the risk of Coronavirus spread.

#academicsfightingpandemics

NUST made diagnostic kits for COVID-19 get nod from DRAP over successful lab trials

In a breakthrough indigenous development of diagnostic kits for the detection of COVID-19, National University of Sciences & Technology (NUST) received approval from the Drug Regulatory Authority of Pakistan (DRAP) over the successful lab trials of N-CovKit – a Coronavirus Testing Kit developed by NUST for the diagnosis of COVID-19.

A team of NUST researchers successfully performed lab trials of N-CovKit on as many as 330 blinded samples. These indigenously



established assays were robust, sensitive to the target, and would be available at a lower price as compared to imported ones.

NUST Balochistan Campus conducts free of cost COVID-19 testing for staff and students with the support of Balochistan Health Department (BHD)

Due to COVID-19 pandemic, NUST Balochistan Campus in Quetta, keeping in line with NUST's re-opening instructions and HEC guidelines, took a generous initiative to provide relief to its returning students and staff by conducting free of cost COVID-19 testing with the support of Balochistan Health Department (BHD) in the first week of October. A Rapid Reaction Team of BHD conducted tests of students and staff over two days and provided fast results. Moreover, shortly before welcoming back the students at NBC, the campus was sanitized thoroughly. Classrooms, library, laboratories, and hostels were sprayed with sanitizing disinfectants in collaboration with

Abu Turab Open Scout Volunteers who led the sanitization drive.



NUST scientists publish Pakistan's first whole genome sequence of SARS-CoV-2

In extension to NUST's tenacious undertakings to fight SARS-CoV-2 Pandemic and after successful establishment of assays for the diagnosis of the disease, Dr Aneela Javed and Dr Ali Zohaib, faculty members at NUST Atta-ur-Rahman School of Applied Biosciences (ASAB), in another ground-breaking scientific discovery, have sequenced the complete genome of SARS-CoV2 - this will open up new avenues in tracing the evolutionary origin of SARS-CoV2 that infected Pakistani patients, and will be useful in comparative genome analysis. This is indeed a much-needed breakthrough, as it was the need of the hour to understand the origin of the virus - this will not only help to develop more accurate diagnostic assays for this virus but will also be applied in vaccine development studies. The project has been completed in collaboration with Armed Forces Institute of Pathology (AFIP) Rawalpindi, and Charite-Berlin Germany. The sequence was published through National Genome Data Centre China, on March 25, 2020, making it the first genome sequence of SARS-CoV2 to be published from Pakistan, and is now available on NCBI <https://www.ncbi.nlm.nih.gov/nuccore/MT240479>, GISAID and NEXTRAIN.



#academicsfightingpandemics



GOAL 4

Quality Education

13

Research Projects

265

Publications

9

Patents

NUST Academic Programs

NUST offers top-notch education with a comprehensive curriculum of 29 UG, 61 Masters and 42 Ph.D. programs, offered in 19 different schools and colleges, all over Pakistan. NUST has an enrollment of 17.5k students and boasts of a competitive pool of 1186 faculty members out of which 50% are Ph.D. qualified. NUST is the top university of Engineering and Technology in Pakistan, and 400th in the world according to QS World University Rankings 2020. NUST has also been nominated in the list of the top young universities of the world, declared 51st among world universities under the age of 50 - QS World University Rankings 2020.

**17,483 Current
Students, 132 Academic
Programmes, 19
Constituent Schools &
Colleges, 7 Campuses in
5 Cities, 400th Globally
QS World University
Rankings 2020**

Labs and Research Facilities

NUST has been equipped with state-of-the-art labs to facilitate practical knowledge and applied research. There are more than 330+ labs for UG programs and 35 key labs for advanced research. NUST also provides on-campus cloud infrastructure offering IAAS, SAAS services. Some of the notable research-intensive labs include Anechoic Chamber, Image Processing Centre GPU-based Supercomputing, Supersonic Wind Tunnel, Material Characterization Facility at Micro & Nano level, Smart Grids, Robotics & Control Lab and Neuro-Informatics, etc.

Professional Development Centre

PDC is imparting high quality continuing education to NUST employees and industry professionals in the field of Management, Engineering and Information Technology. PDC has conducted so far 308 trainings in the last five years and trained more than 8832 personnel and made a huge clientele of over 300 industries and organizations. PDC is leveraging upon a rich faculty base of 1200 members of NUST, including more than 600+ PhDs.

PDC is considered one of the most sought after institutions of Pakistan for short term courses in various fields and has maintained a tradition of excellence since its inception in 2007. The prime objective of PDC is to provide access to knowledge, capacity building and continuing education facility to professionals from all walks of life.



**308 trainings/
workshops**

**8832 Personnel
Trained**

**300+ organizations/
industries engaged**

—— 2016-2020 ——

Central Library and Affiliated Libraries

A state of the art Central Library has been established in H12 Islamabad Campus along with 17 institutional libraries in different NUST campuses all over Pakistan to house more than 350,000 books/e-books and 30,000 journals/e-journals. Such a facility is open to NUST students, faculty and staff to promote reading culture, facilitate group studies and conduct training on citation management, information literacy and search management. NUST has continued to revive book-keeping culture as well as upgraded the facility with digital formats like e-books/e-journals to keep up with the pace of the modern age. The students are facilitated with publications, presentations, and writings in all formats free of cost, thus committing to free access to education for everyone.

**350,000 books/e-
books and 30,000
journals/e-
journals**



Students Clubs and Societies

Dedicated office for activities (Students Affairs Directorate, 30+ Students Societies, and Clubs, 5000+ Annual Students Engagement)

Besides academic excellence, NUST ensures that students also develop literacy, creative and leadership qualities to tackle the global challenges. Therefore, NUST has the establishment of several societies and clubs for students to provide them with opportunities to pursue their passions, participate and arrange events under the auspices of a dedicated directorate. The office, Students Affairs Directorate, is responsible for arranging and coordinating co-curricular activities at the campus. The following central clubs and societies are currently operational in NUST:

1. NUST Bazm-e- Pakistan (NBP)
2. NUST Adventure Club (NAC)
3. NUST Environment Club (NEC)
4. NUST Science Society (NSS)
5. NUST Literary Circle (NLC)
6. NUST Book Club (NBC)
7. NUST Community Service Club (NCSC)
8. NUST Dramatic Club (NDC)
9. NUST Debating Society (NDS)
10. NUST Media Club (NMC)
11. NUST Fine Arts Club (NFAC)
12. NUST Bio Reach Society
13. NUST Entrepreneurs Club (NEC)
14. NUST Leaders Society (NLS)
15. NUST Excursion Club (NEC)
16. NUST Digital Club (NDC)
17. NUST Water Sports Club
18. NUST Technical Amusement Club (NTAC)
19. NUST Paragliding Club
20. NUST Robotics Club (NRC)
21. NUST Quiz Club (NQC)
22. International Chapter (SCME)
23. NUST Trekking Club (NKC)
24. NUST GeneUs
25. NUST Archery Club (NAC)
26. NUST Cultural Club (NCC)
27. NUST Fitness Club (NFS)
28. NUST Physics and Astronomy (NPA)
29. Institution-based Clubs and Societies

NUST conferred CSR Award for Impact through Education



In recognition of its extraordinary Corporate Social Responsibility (CSR) efforts and initiatives, NUST was conferred the CSR Award for “Impact through Education” by the National Forum for Environment & Health (NFEH). Deputy Speaker National Assembly, Mr Qasim Khan Suri, graced the occasion as chief guest. Dr Nassar Ikram, Pro-Rector RIC NUST, received the award on behalf of the university.

The accolade awarded to NUST spoke volumes of how the university is effervescently engaged in creating discernible positive impact on the communities at large by providing quality education for all. Under its flagship NUST Endowment for Educational Development (NEED) initiative, NUST endeavors to ensure that students from financially challenged backgrounds, who qualify on merit for admission at the university, are provided financial aid options to pursue their aspirations. Beyond offering financial assistance to deserving scholars, the university also never loses focus on establishing an environment based on inclusivity. The recently inaugurated NUST Balochistan Campus (NBC) at Quetta is a step towards achieving this objective.

Millennium Fellowship Project: Street School

Street School, a project by Millennium Fellows 2020, ensures 5 days a week classes and 1 weekly event for the street children of Afghan Refugees, living in a slum area behind NUST H-12 campus. After the start of the Millennium fellowship, with the help of 50 other Volunteers of NUST campus, the project initiated in a slum area of Islamabad, Pakistan, teaching around seventy Afghan refugee boys and girls of different age groups. The street school aims to not only teach these kids the basic school subjects like mathematics and English but aims to instill the courage, self-confidence, awareness on their rights and proper etiquette to survive in a modern society.





GOAL 5

Gender Equality

5

Research Projects

40

Publications

1

Patents

Female Representation at NUST

Science and technology is a field where women are usually under-represented globally with an evident gender gap. Despite being a university focused on engineering and related technologies, NUST has managed to provide an environment conducive for women to pursue an education in these fields, with current female enrolment at 29%. The university also facilitates female students by providing them with on-campus accommodation, equipped with appropriate sports and health facilities, with priority given to students from remote areas of Pakistan. Apart from a healthy female students' representation, NUST also has a female membership of around 22 % in its pool of faculty and researchers. NUST has a stringent policy on harassment against women at the workplace to provide a healthy environment for women at the workplace.



Millennium Fellowship Project: Break the Barriers

The transgender community in Pakistan faces discrimination at the hands of the masses, they are considered to bring shame to the family and are abandoned at an early age. Most of them do not get an opportunity to get a good formal education and start their life with this disadvantage. They are, therefore, forced to work demeaning jobs like begging on the streets, dancing at functions and even prostitution. Project Break the Barriers, initiated by the non-profit organization, Pakistan Humari Pehchaan, and now under the Millennium Fellowship, aims to provide vocational training to members of the transgender community in Pakistan and consequently link to employment opportunities. This is part of a much larger goal to increase the acceptance of this community and provide them with equal opportunities to contribute in the mainstream of society.

NUST Daycare Facility

To ensure female inclusion in the workforce and higher education, NUST has taken significant measures to facilitate working mothers or women pursuing higher education. A dedicated day-care facility for NUST female students and employees, along with an on-campus school for kids has been established at NUST so that the mothers can carry out their duties without stress. Currently, more than 30 Children are enrolled in daycare whereas 200+ students are enrolled in NUST affiliated school. Such adequate childcare access at arms' length has significantly reduced the burden on mothers.



Women in Circuit and System

Microwave Theory & Techniques /Antennas & Propagation / Electromagnetic Compatibility / Circuits & Systems Society Joint Chapter at RIMMS NUST arranged a webinar on "Women in Circuits & Systems" on December 23, 2020. Two Distinguished women speakers Dr Wala Saadeh (Assistant Professor at LUMS, Pakistan) and Dr Rabia Yazicigil (Assistant Professor, Boston University, USA), working in the domain of Circuits and Systems were invited to enlighten the participants regarding their areas of research.



A panel discussion on "Women in Higher Education, Research and Entrepreneurship" was also held during the event. Four accomplished women working in the domain of Circuits and Systems including Dr Seemab Latif (HoD Research & Assistant Professor SEECS, NUST), Dr Mohaira Ahmad (Assistant Professor, SEECS, NUST), Dr Sana Qadir (Assistant Professor SEECS, NUST) and Ms Aqeela Saghir (Researcher, Links Foundation, Italy) were invited to motivate women and share their experience.



GOAL 6

Clean Water and Sanitation

13

Research Projects

214

Publications

12

Patents

Waste Water Treatment Plant

With water shortages plaguing the world, water scarcity has become one of the largest threats facing society today, making it one of the UN's main sustainable development goals. Therefore, NUST is aiming to focus on developing new projects and technologies to reduce its water consumption. Our researchers developed and installed the Wastewater Treatment plant which is a low-cost technology requiring minimal energy and operational attention for the treatment of wastewater. A joint project of UNESCO and NUST, it is able to produce 75,000 gallons of recycled water per day for the entire horticulture of NUST. Unlike the rest, wastewater treatment presents a sustainable short-term and long-term solution to water scarcity. Currently, around 20,000 liters of water is being recycled per day which is used for horticulture, thus significantly reducing water usage of the campus.



Insulation of Water Supply Pipes in Residential Buildings

Risalpur is an area of KPK which face extreme weather of summer and winter. Insulation of water supply pipes is compulsory in these areas to prevent the pipes from extreme weather conditions. In cold weather water supply pipes that are exposed to exterior walls or unheated spaces may freeze burst and flood homes. Students of Military college of Engineering (MCE), NUST Risalpur, under MCE community service club utilize the easily and cheaply available raw material, to insulate the water supply pipes in different residential colonies of Risalpur, particularly the lower-income community suburbs, to improve the water supply system. The methods they used are bitumen coating on pipes, AC ducts tape for insulation etc.



Installation of Reed Bed Plants at Pakistan Navy Engineering College (PNEC), NUST Karachi Campus

In order to meet watering requirements of plants and trees at campus, two reed bed STPs are functional with daily output of 70000 GPD. Out of these two, 50000 GPD capacity plant had been installed in 2020. Currently, around 50% of the campus water requirement is being met by the recycled/purified process.





7 AFFORDABLE AND
CLEAN ENERGY



GOAL 7

Affordable and Clean Energy



42

Research Projects

39

Publications

24

Patents

NUST GOES SOLAR

PLEDGE: 100% RENEWABLES BY 2030

World-class universities, being hubs of research and innovation, have a responsibility to meaningfully contribute to combatting climate change through strategic planning of operations, effective sustainable policies, and governance models.

As a large organisation with 4500+ employees and 18000+ students in 19 Schools and Colleges spread across the country, NUST's operational carbon footprint is closely monitored, and measures are being taken to reduce the impact of our operations through effective sustainable policies and governance models. These measures will contribute to a clean and green NUST.

One of the strategies being deployed by NUST to reduce carbon footprint is energy conservation and divesting from fossil fuel-intensive energy while

shifting to alternative energy generation methods, with a pledge to shift to 100% Renewable energy by 2030!

In a major step towards achieving this objective, NUST's Islamabad campus has reduced its dependence on the local grid by shifting part of its electricity needs to self-generated solar power. As of December 2020, NUST H-12 campus has a total installed capacity of 1 MW for solar power generation. Solar panels are installed at multiple locations across the campus, including rooftops and parking areas.

Moreover, as part of its Green NUST campaign, NUST is actively working on water conservation and recycling and extensively planned plantation drives across all its 7 campuses nationwide.

Centre of Excellence in Energy

NUST collaborated with Arizona and Oregon State Universities to establish U.S.Pakistan Centre for Advanced Studies in Energy (USPCAS-E) to address some of the outstanding challenges faced by the energy sector in Pakistan. Strategic goals behind USPCAS-E are to evolve into a Centre of Excellence in applied research catering to the energy sector and economy of Pakistan with the aim to establish efficient governance structures, sustainability, value-added curriculum, and capacity building, promote applied research to serve public/private sector and NUST-US students/faculty exchange programmes. The core mission of USPCAS-E is to efficiently address and implement the E3 criteria (Energy, Environment, and Economy) for sustainable societal development.





Promoting Sustainable Energy Production and use of Biomass in Pakistan

The energy sector in Pakistan is characterized by low levels of access to modern energy services, a high dependence on traditional fuels and an unsustainable dependence on imported fossil fuels for power generation. In order to support the sustainable introduction of biomass gasification technologies in Pakistan, NUST USPCAS- E research team initiated the project to build capacities of market enablers and market player in dealing with Biomass Gasification Technologies (BGTs). In addition, the project aims to strengthen the capacities of existing technology services providers so that they are able to support BGTs system, especially their operation and maintenance.

NUST is also working on Sustainable expansion of Electricity generation from biomass by providing the national government and provincial authorities in Pakistan, and commercial developers, with an improved understanding of the location and potential of biomass resources.

The launch of Pakistan's first Biomass Cluster

The US-Pakistan Center for Advanced Studies in Energy (USPCAS-E) of NUST, in collaboration with the UNIDO-United Nations Industrial Development Organization, Pakistan Office (UNIDO) and Global Environment Facility, launched Pakistan's first Biomass Cluster on January 24, 2020, at NUST H-12 campus. The United Nations Resident Coordinator for Pakistan, Mr Knut Ostby, graced the occasion as chief guest.

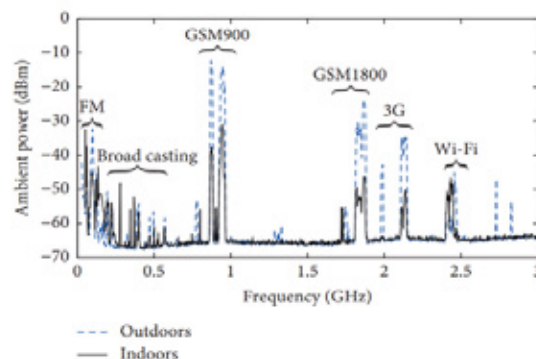
The idea of setting up a biomass cluster metamorphosed into its formal launch at NUST, as a result of a collaborative project of the three stakeholders to demonstrate technical feasibility and commercial viability of modern biomass-to-energy conversion technologies in Pakistan. The project is aligned with the Government of Pakistan's goal for 30% renewable energy contribution to the country's power portfolio by the year 2030.



The Powering of Internet of Things (IoT) Devices via RF Energy Harvesting

The Internet of Things (IoT) is a robust network that allows inter-networking of devices with sensors and actuators to collect and exchange information. It finds numerous applications in various applied fields such as agriculture, environmental monitoring, medical and healthcare, energy management, infrastructure management, building and home automation. The IoT market is expected to grow from an installed base of 17.68 billion devices in 2016 to 75.4 billion in 2025. The technological advancement in the field of IoT has made it possible to develop low powered IoT devices. However, in many cases such IoT sensor networks/devices are not easily accessible. Furthermore, they are usually

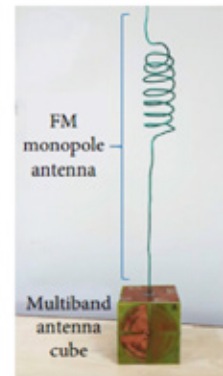
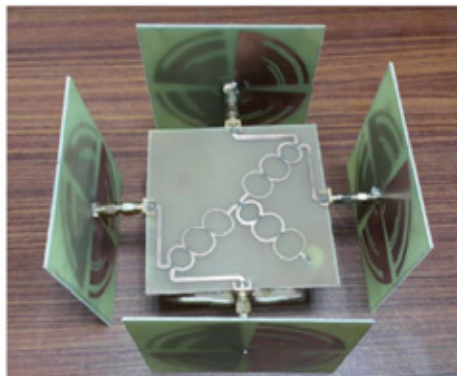
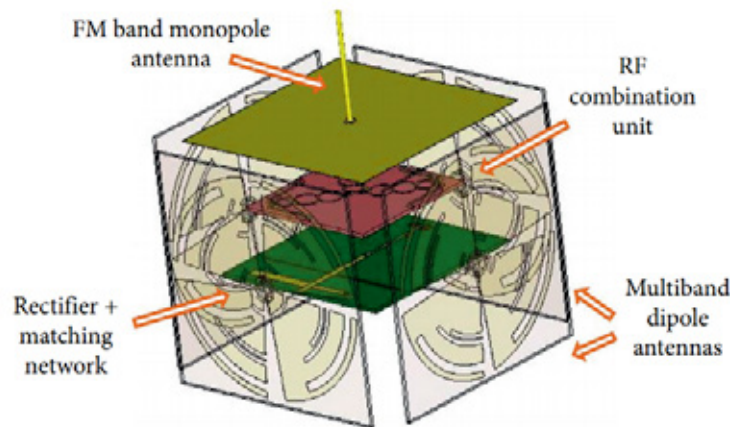
powered by large size and heavy batteries which also make the battery replacement more difficult and inconvenient. Therefore, energy harvesting



techniques are used to power them.

A research team at NUST Research Institute for Microwave and Millimeter-Wave Studies (RIMMS) lead by Dr. Noshewan Shoaib, has investigated the possibility of powering low power IoT devices via efficient RF energy harvesting system i.e. rectenna. In this context, the research team have conducted an indoor and outdoor RF field survey

in a local semi-urban environment and measured the peak ambient power at various frequency. The rectenna system is able to harvest energy from four frequency bands and has a cube shape containing multiband cross-dipole antennas at its sides. The future work includes the development of power management unit for the rectenna.





GOAL 8

Decent work and Economic Growth

123

Research Projects

225

Publications

18

Patents

NUST Placement Ecosystem

637 Recruitment Drives, **17055** Internships offered, **10217** jobs, **4992** Industries engaged in the last five years, **94%** Employment Rate

NUST has a strong ecosystem supporting placements of its students for internship and jobs for its graduates, through active engagement with the industry. A large number of on-campus recruitment drives, industry sessions, and alumni talk series are conducted across all schools and campuses. Being a comprehensive university, industries matching each discipline are selected. NUST has thus achieved a 93% employment rate as per QS ranking criteria and ranked as Pakistan's No 1 university in Employers' Reputation, and ranked at 148 globally, thus improving 93 positions vs. last year.

Preparing Students for Employability

In order to prepare our students for the job market, we implement custom made career development programs focusing mainly on developing employability skills applicable to the competitive job market. The career development program includes Career Orientation Seminars, Workshops on Resume Writing, and Workshops on Interviewing Techniques, One-o-One counseling sessions, and Focused Group Discussions (FGD).



NUST Holds First Job Fair at Multan

30 Industries Engaged

National University of Sciences and Technology (NUST) held its first ever Job Fair in Multan on March 12, 2020, presenting its dynamic graduates to employers from around the City of Saints, and adjacent towns and cities including Vehari and Rahim Yar Khan. Representatives from over 30 industries showed up at the event held at Multan Industrial Estate, to pick and choose from amongst soon-to-be graduates in the disciplines of Chemical Engineering, Materials Engineering and Applied Biosciences. Some of the prominent industries included Khawaja Mineral Industries Ltd, Allahdin Group of Companies, Life Pharmaceuticals, Servo Motor Oil Ltd, Multan Chemicals, Agrica Group of Companies, Solex Chemicals Ltd and Exin Chemicals Ltd, to name a few. The sectors these firms represented were Chemical, Pharmaceutical, Pesticides, Agribusiness, Food & Beverages, Light Engineering, Manufacturing, Plastics, Cotton, Biotechnology, etc. The event was inaugurated by Mr Sheikh Fazal Elahi, President Multan Chamber of Commerce & Industries (MCCI), who lauded NUST initiative of holding the job fair in Multan for the very first time, hoping that the event would become a regular annual feature. General Secretary MCCI Mr Mian Rashid Iqbal, Vice President MCCI Mr Nadeem Ahmed and NUST Pro-Rector Research, Innovation & Commercialisation (RIC) Dr Nassar Ikraam were also present at the occasion amongst other distinguished guests from the industry.



Technology Incubation Centre (TechOne)

1500+ jobs created, **102** Start-ups graduated,
70+ Client Startups, **70%** Survival Rate

TechOne is the first Technology Incubator of Pakistan established in academia in 2005 by Pakistan's premier university NUST as a mean to replicate the concept of incubators in Pakistan. It provides a conducive environment for young businesses with all the necessary facilities, training and venture capital opportunities under one roof.



Prime Minister approves Hi-Tech Special Economic Zone Status for NUST, the first S&T based SEZ of Pakistan

In a major breakthrough that would give tremendous impetus to Pakistan's economy, Prime Minister Imran Khan approved High Tech Special Economic Zone (SEZ) status for the National University of Sciences & Technology (NUST). As per the announcement by Board of Investment (BoI), this approval was granted in the 6th meeting of the Board of Approvals chaired by the Prime Minister on October 7, 2020. Through the conferment of this unprecedented status for any Higher Education Institution in Pakistan, NUST has become the only High Tech Special Economic Zone among the 20 SEZs in the country (the remaining being industrial zones). Through this landmark development, national and international high tech businesses as well as Small & Medium-sized Enterprises (SMEs) shall immensely benefit, thereby accelerating Pakistan's transition into a thriving Knowledge Economy.

SEZs provide a number of economic incentives that are a preferred component of thriving Research and Innovation ecosystems across the world. Free Trade Zones, Export Processing Zones, Special Technology and Hi-tech Zones, etc., around the globe are some of the economic substructures that have been designed to deliver tax and import stimulants and enhance the germination and development of disruptive technologies and hi-tech entities.

The first S&T-based SEZ of the country will witness the transformation of the pilot National Science & Technology Park (NSTP) at NUST (which was inaugurated by the PM in Dec 2019) into a full-blown STP with a hosting capacity of 250 industry and R&D partners, becoming the nation's optimal platform for research and innovation. National and international companies working to tap the Fourth Industrial Revolution will now have the most diametrically complete and perfect ecosystem of the country in the form of the NSTP, thus contributing towards achieving import substitution and exports.

NUST holds Roundtable/Webinar on “Pakistan’s Tourism Potential”

The NUST Institute of Policy Studies (NIPS) organized a roundtable/ webinar on “Pakistan’s Tourism Potential”. The event brought to the fore the crucial propellers of strength and harmony in the tourism sector of Pakistan. A distinctive factor was the pursuit of discovering connections of our local approaches and experiences with the world-class Turkish ideals of tourism advancement.



ICAP awards Relevant Degree Awarding Institute (RDAI) Certificate to NUST

NUST Business School (NBS) has been awarded Relevant Degree Awarding Institute (RDAI) Certificate by the Institute of Chartered Accountants of Pakistan (ICAP). ICAP is a premier accountancy body that is recognized internationally and regulates the profession of Accountancy with world-class competencies. It has more than 10,000 members with global presence and has a list of collaborations and reciprocal arrangements with several Accountancy bodies around the world.

Based on the previous MoU between NUST and ICAP (2014), BS ACF graduates were given exemption from 8 papers and were required to appear for five more papers before starting professional training and appearing for the third level papers. It merits mention that NBS is one of only two Pakistani Business institutions and the only one in the country’s North region to have been awarded the status of RDAI. This milestone will not only help NUST’s BS ACF final-year students to start profes-

sional training immediately after graduation, but will also benefit ICAP in terms of having finest students of Chartered Accountancy.



Millennium Fellowship Project: Uraan

Suffering from the lack of work-study programs/culture in Pakistan, the team of Uraan, a group of Millennium Fellows, decided to start a movement which focuses on helping students find work opportunities, mentoring them about employability and entrepreneurship, and spreading awareness around the need for students to be financially independent.

The project aims to:

- Build an online community of students who have successful work-study stories
- Provide a one-stop platform for finding internships and part-time jobs to high school and university students.
- Help at least 15 students find the right mentors and guidance through the platform.
- Get more organizations on board for creating work-study opportunities in the market.



GOAL 9

Industry, Innovation, and Infrastructure

74

Research Projects

967

Publications

379

Patents

53

IPRs Licensed

Faculty Placement Program

2018-2020: 21 faculty members, **11** Industries, **342** Industrial Research Projects Secured

NUST placed 21 faculty members in 11 industries from 14 institutions for two weeks during the summer breaks, under its Faculty Placement Program during 2018-2020. The program enabled NUST to secure 48 internships, job positions and 14 professional trainings. On reciprocal basis, two members from each industry visited NUST for three days that resulted in furthering relationship with these industries. For the years 2018-2020, 342 projects focusing on industrial needs, were secured from industries to be considered as Final Year Projects.

Industry-Academia Linkages

800+ Industrial Partnerships, **53** Technologies licensed to Industry, **100+** Industrial Consultancies/ **40+** Joint Research projects with Industry

At NUST, we strongly believe in knowledge transfer and open innovation to meet industrial needs. NUST has formulated an integrated, interdependent ecosystem that helps in establishing and consolidating industry-academia linkages and subsequently in commercializing research. The parts of this eco-system are:

- Corporate Advisory Council (CAC)
- National Science & Technology Park (NSTP)
- Directorate of Research
- Intellectual Property Office (IPO)
- Technology Transfer Office (TTO)
- Professional Development Centre (PDC)
- Industrial Liaison Office (ILO)

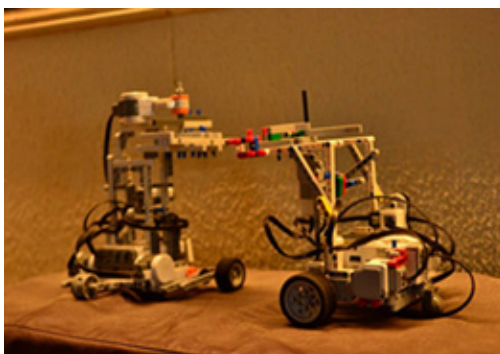
All of the above organs play a key role in establishing collaborations with industry and bridging the gaps between industrial needs and academic research

National Engineering Robotic Contest:

15 years, **1600+** Teams from all over Pakistan, **7000+** Students' Participation

College of Electrical and Mechanical Engineering (E&ME) is one of the leading constituent colleges of National University of Sciences and Technology (NUST). Department of Mechatronics at NUST, College of E&ME has been organizing this event for the last 15 years. The contest provides a great learning opportunity and exposure, assists in capacity building of youth, girls and students from all over Pakistan, even from remote areas, to learn about advance fields of Robotics and automation. So far, the contest has been able to attract talent from all over Pakistan and provided a platform to showcase their talent, including areas like Swat, Balochistan and Interior Sindh.

A nominal fee is charged for participation, and all the funds for the event are arranged by NUST, with partial funding by supporting organizations and industries.



Finding Innovative & Creative Solutions for Society (FICS)

2014-20: No. of Ideas Submitted: 1370+, No. of successful startups: 28

NUST strongly believes in inculcating the spirit of entrepreneurship and innovation among students to tackle modern-day challenges head-on. Finding Innovative & Creative Solutions for Society (FICS) is an annual competition hosted by NUST in which students from around the country present their ideas and prototypes for funding and commercialization. This initiative aims to instill a spirit of social entrepreneurship amongst students, encouraging them to convert their creative ideas into value-adding solutions and thereby benefit themselves and society. The three-stage competition spans over two months in which projects are examined by industry leaders, innovators, and investors. Some of the objectives of FICS are given below:

- To encourage students to become valuable members of society and contribute to societal / community development by deploying technical knowledge and scientific tools.
- To allow students to think creatively and develop the latest applications and innovative technology based-solutions, hence encouraging them to work on practical utilization of knowledge.



NUST Signs MoU with Textile Testing International (TTI Labs)

NUST and Textile Testing International (TTI) signed a Memorandum of Understanding (MoU) to enhance co-operation between the two organisations, at the TTI premises in Lahore. Dr Nassar Ikram, Pro-Rector Research Innovation & Commercialisation (RIC) NUST and Mr Hameed K Latif,

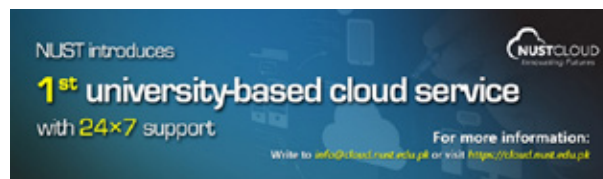


CEO TTI Labs, signed the MoU on behalf of their respective organisations. The MoU aims at increasing collaboration between NUST and TTI in areas including faculty placement, jobs and internships, professional trainings and joint research leading to technology transfer.

NUST introduces first university-based cloud service

Organisations around the world continue to depend greatly on cloud computing for optimal business operations. For the modern needs of public and private sector, corporate businesses as well as the educational sector; a successful cloud computing service needs unparalleled features of resource pooling, on-demand self-service, easy maintenance, large network access, availability, automatic monitoring and control, and reliable security.

Committed to excellence in these qualities; NUST



has launched NUSTCLOUD; Pakistan's first university-hosted client-focused service offering broad-based experience with affordable, customizable packages. The service is designed to best suit large and small businesses, startups, educational institutions, and public sector organizations.

NUST Formula Student Team participated in Formula Student UK Virtual 2020

NUST Formula Student Team participated in "Formula Student UK Virtual 2020" and attained remarkable achievements by securing 3rd position in Design, 3rd position in Acceleration, 9th position in Skid pad, 10th position in Cost and an Overall 7th position, which has been a remarkable achievement for any team from Pakistan in Formula Student.



NUST Formula Student Team
makes a mark at **Formula Student UK Virtual 2020**
by securing

3rd	Position in Design Event
3rd	Position in Acceleration Event
9th	Position in Skidpad Event
10th	Position in Cost Event

Overall **7th** Position

NUST
FORMULA STUDENT TEAM

FORMULA STUDENT
Institution of MECHANICAL ENGINEERS

International Webinar on the role of S&T for National Progress, Growth and Competitiveness held at NUST

The existence of a comprehensive S&T-based apparatus is a crucial determinant of long-run growth, economic independency, and the competitive edge of a state. A highly globalized contemporary world environment necessitates the adoption of S&T and innovation-oriented strategies for rapid growth in relevant output measures. Accordingly, with a view to determining answers as to how Pakistan can advance its domestic S&T infrastructure, capitalize on existing opportunities and acquire competitive advantages, the NUST Institute of Policy Studies (NIPS), the think tank of NUST which is a leading national policy research and advocacy forum, organized an international webinar on the

“Role of Science & Technology for National Progress, Growth and Competitiveness.”

The virtual event was chaired by Lt. Gen Naweed Zaman, HI (M), (Retd), Rector NUST & Patron NIPS. The resource persons of the webinar were Dr Malcolm Parry, CEO Surrey Research Park, United Kingdom; Dr Kang Dachen, Professor at Institute of Policy & Management, Chinese Academy of Sciences (CAS); and Dr Masoom Yasinzai, Rector International Islamic University Islamabad (IIUI). The webinar was moderated by Dr Nassar Ikram, Pro-Rector Research, Innovation & Commercialization (RIC), NUST & Vice President National Science & Technology Park (NSTP) at NUST.



NUST Holds National Seminar on Knowledge Economy- The Path to Speedy and High-Quality Growth



Knowledge has always been the core component of any country's vision and policies for comprehensive progress. The contemporary era is, however, witnessing an unprecedented speed of the phenomenon, making knowledge an even more essential constituent in rapid economic development, characterized by close linkages between innovative evolution and considered investments in R&D and education. In the context of greater emphasis being placed in Pakistan on developing a strong knowledge economy, the NUST Institute of Policy Studies (NIPS), the university-based think tank, organised a high-level national seminar on "Knowledge Economy: The

Path to Speedy and High-Quality Growth," at the university's main campus on 4th March, 2020.

Mr Asad Umar, Federal Minister for Planning Development & Special Initiatives, shared his valued assessments on operationalizing the Quadruple Helix Model of innovation for knowledge economy: moving up the value chain from infrastructure-led to innovation-led development. He exhorted academics and researchers to align knowledge creation and innovation with real world problems, and stressed the need for building indigenous capabilities in terms of technological advancement and human resource development, so as to reduce and eventually eliminate foreign

dependency. Advisor to the PM on Digital Pakistan Initiative, Ms Tania Aidrus, elaborated on her vision of "Fostering Digital Pakistan Vision as a Powerful Initiative for the Development of Knowledge Economy." Chairman PM Taskforce on Knowledge Economy, Dr Atta-ur-Rahman, presented salient prospects of "Leveraging Science & Technology for Building National Innovation Systems in the 21st Century and the Roadmap to kickstarting Knowledge Economy." Chairman HEC, Dr Tariq Banuri, talked about "The role of HEC towards National Development and Growth" and shared his thoughts on transforming this sector to embrace innovation-led development and accelerate knowledge-based economy.

Other distinguished speakers that included Chairman Kohinoor-Maple Leaf Group Mr Tariq Saeed Saigol, and CEO APIMatic Mr Ameer Hassan,

delivered talks on "Overcoming the Challenges of Industrial Upgradation in Pakistan to Transform it to Knowledge Economy" and "A Case Study on Successful Startup - A Model for Innovation and Entrepreneurship," respectively.

An overall consensus was achieved on the establishment of world-class centers of learning, policy reforms directed at strengthening the research base, and formation of a national hi-tech culture that creates, disseminates, and uses knowledge to enhance Pakistan's sustained growth and development.

The event was attended by a large number of senior government officials, policymakers, higher education leaders, academic experts, eminent industrialists and corporate personalities, public and private innovation managers, think tank specialists, entrepreneurs, scholars, and students.

NUST alumna designs world's first eco-friendly aircraft engine

Dr Sarah Qureshi, an alumna of the NUST College of Electrical and Mechanical Engineering (CEME), has made headlines with her breakthrough invention in Aerospace Engineering, by building the world's first eco-friendly aircraft engine - this engine will help reduce air pollution that is caused by the "contrail phenomenon" - condensation trails from commercial aircraft en-

gines, that have a major role in global warming. Dr Sarah, who has the honour of being the first



female Mechanical Engineering graduate of NUST (class of 2001), grew up under the mentorship of highly accomplished parents – her mother a PhD in Quantum Chemistry, and her father a renowned Physicist and Scientist. Her project, on which she has been working for the last two years, is now set to be officially launched by end of 2021.

It is worth mentioning that Dr Sarah completed the major portion of her project in Pakistan, under the

supervision and support of her father, who acted as an external supervisor for her invention that was granted 2 international patents. During her PhD at Cranfield, she developed the entire engineering model for the project.

Dr Sarah is a living proof of the exceptional talent and dynamism that Pakistanis, specifically Pakistani women, possess, and how they strive to serve society through their innovations.

NUST STUDENTS IN HEADLINES

Microsoft Imagine Cup: Team Flowlines from NUST SEECS win the national round

Microsoft Imagine Cup is a premier international event about product ideas and software development. Team “Flowlines” from NUST School of Electrical Engineering and Computer Science (SEECS) won the national round of Microsoft Imagine Cup 2020 in Feb, 2020. The winning project from NUST was a collaborative mobile app, where users can draw images and write text in the air, which can be seen by anyone, through augmented reality technology. Another project from NUST, “Canvas insight” was declared the runner up at the regional level. The award ceremony was held at Pakistan China Friendship Centre, Islamabad, on February 19, 2020. The occasion was graced by eminent guests including Federal Minister for Education Mr Shafqat Mahmood, Digital Pakistan’s incharge Ms. Tania Aidrus and Chairman Higher Education Commission, Pakistan Dr Tariq Banuri.

The winning team was short-listed to the next round of Microsoft Imagine Cup in Amsterdam, Netherlands to compete against the teams from Europe, the Middle East and Africa (EMEA).



Students from NUST SEECs win the Pakistan Science Fair Award

Students from NUST School of Electrical Engineering and Computer Science (SEECs) won the Pakistan Science Fair Award 2020 organised by Ulster University, United Kingdom. The award ceremony took place at Serena



Hotel, Islamabad, on January 28, 2020. The Pakistan Science Fair Award 2020 is a collaborative project between Ulster University, UK and Pakistan's leading universities; NUST, Air University, Bahria University, and FAST NUCES. This competition provided an opportunity for students to showcase their talent, as well as continue their studies with Ulster University.

The title of the winning poster by Noor was "FLOWLINES: Tackling Body Image Issues using AI-Based Autodraw Art in AR", and the title of Kamran's poster was "Plant Health Monitoring via Motion Induced Priors."

Students from NUST win PTCL- hackathon

NUST students participated in the virtual Hackathon, held from October to November 2020, aimed at fostering innovation in a structured scheme of idea evaluation and, in so doing, accentuating the value of idea-sharing in a challenging time-bound environment. Recognizing the team of young enterprising students from NUST who stood first at the Ideas Hackathon – the first-ever PTCL-hosted hackathon – an award ceremony was held at the PTCL headquarters. The NUST team members, undergraduate students from NUST Business School NBS and NUST School of Electrical Engineering & Computer Science SEECs were conferred medals, certificates and cash prize as a token of appreciation for their ingenuity and stupendous performance.





GOAL 10

Reduced Inequalities

20

Research Projects

16

Publications

3

Patents



Non- discrimination policy

NUST imposes a strict, non-discrimination policy for reducing in-equalities due to gender, race, marital status, ethnicity, religion, financial background, disabilities, and sexual orientation. The policy, which emphasizes on merit, applies to all matters of university employment, administration, admission to university academic programs and other activities.

NUST Disability Redressal Policy

Disability covers various physical and psychological impairments that pose a challenge to the functionality of a person, affecting his/her ability to carry out day-to-day tasks. Disability may be associated with long-term health issues, thus requiring rigorous management which impediments a person's participation and productivity as an individual and member of society. Social barriers and lack of facilitation may be a hindrance to effective participation on an equal basis with others.

NUST constituted "National Disability Redressal Committee (NDRC)" to review existing infrastructure and practices and recommended plans to make NUST disability-friendly institution. Previously, students or staff with a disability was duly facilitated upon need and request. However, there was a dire need for policy and formation of dedicated committees/structures to streamline the assistance and facilitation process for students/staff with disability, hence NUST introduced this policy for redressal of disability into the following categories:

- o Admission
- o Curriculum & Examination
- o Rehabilitation/Employment
- o Addressing Temporary Disability
- o Disability Awareness and Staff Development
- o Infrastructural Changes
- o Constitution of Disability Redressal Committee



NUST Under Graduate (UG) Awareness Drives

2019-2020: 21 Cities, 51 Institutes, 11,820 Students Outreach

NUST believes in education being the only tool to bridge not only economic inequalities but also cultural inequalities. NUST UG Awareness Drives are conducted on the request of different educational institutes in order to guide students regarding NUST and its Under-Graduate Admissions Procedure. It also focuses on promoting awareness on the importance of higher education and encourages talented but underprivileged students from remote areas of Pakistan to apply for various undergraduate programs. As a result of these UG drives, many students enroll at NUST from all over Pakistan, the distribution of composition of the students' body representing all the provinces of Pakistan is as follows:

MS/PhD Applicants and Enrollment Gender Wise State (Year-2020)												
PG Data 2020												
Province Wise	MS						PhD					
	Applicant			Enrolled			Applicant			Enrolled		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total
FOREIGN	21	8	29	16	5	21	5	0	5	5	0	5
AJK	210	142	352	39	34	73	13	14	27	2	3	5
BAL	116	68	184	29	19	48	15	15	30	0	5	5
CAP	383	383	766	73	102	175	16	20	36	3	7	10
FATA	123	21	144	34	4	38	1	1	2	0	0	0
GILGIT	75	50	125	23	10	33	5	4	9	1	0	1
KPK	1506	441	1947	248	92	340	100	35	135	25	6	31
PUNJAB	3980	2651	6631	763	442	1205	259	234	493	56	67	123
SINDH	379	134	513	81	41	122	40	9	49	7	3	10
Total	6793	3898	10691	1306	749	2055	454	332	786	99	91	190

NUST Outreach Programmes

4 Yrs., 625 Students from remote areas coached on NUST Main Campus

NUST launched its Outreach Program in 2017, with objective to synchronize the raw talent and refine the faculties of the promising students hailing from underprivileged areas of the country to join mainstream universities for pursuing their academic career.

Students belonging to remote areas like Sindh (All districts less Karachi, Hyderabad and Sukkur), Khyber Pakhtunkhwa (KPK) and Balochistan are eligible to apply.

The program is intended to coach the qualified students of High School students to prepare for NUST Entry Test. The duration of the training is 4-6 weeks during summers, at various centres. Following facilities are provided to the selected students, free of cost, during the training: -

- a. Boarding and Lodging
- b. Stipend
- c. Stationery / Photostat / Guide Books
- d. Medical Facility / Hygiene Kit
- e. Laundry
- f. Sports Gadgets

NUST also offers Need-Based Scholarships to deserving selected applicants. From 2019 onwards, campus in Balochistan also started enrolling students in UG programs, which is a laudable step of NUST for ensuring social inclusion.

Need-Based Financial Scholarships for Students

Total 2400+ Scholarships awarded 2015-20

Need-Based Financial Aid Program aims to make NUST education affordable and accessible to the most financially challenged students, admitted purely on merit. The program is bolstered by NUSTs' own resources and external funding, seeking to facilitate students from low and middle-income families. Need-based financial aid is offered to Undergraduate and Masters students in various forms like tuition fee coverage, interest-free loans, deferment of tuition fee, and fee deposits in installments.

Accessible Pakistan Application launched at NUST

For the first time in Pakistan, Friends of Paraplegics (FOP), in collaboration with the Embassy of Germany and NUST, launched the “Accessible Pakistan Application” on March 2, 2020 at the university’s main campus. The application draws upon a unique concept that focuses on the social integration of Persons with Disabilities (PWDs) and senior citizens, by highlighting the universal accessibility standards and building by-laws. Supported under the Micro Project Scheme of the Federal Republic of Germany, the Accessible Pakistan Application helps in the online identification of accessible spots/services for PWDs and old-aged citizens, through Android & IOS applications and website.

In addition to a large number of students and faculty, prominent dignitaries attending the launch included Ms Romina Khurshid Alam, MNA, member of SDGs taskforce, Dr Palitha Mahipala, WHO Representative in Pakistan, Ms Annika Wistrach, Representative of German Embassy and Mr Irfanullah General Secretary, Friends of Paraplegics.



UN75 Dialogue on Inequalities

The United Nations turned 75 in 2020 year and to spur global discussions on the issues facing humanity, UN Secretary His Excellency General Antonio Guterres called out to stakeholders worldwide to participate in UN75 dialogues. During His Excellency's visit to Pakistan and NUST in February 2020, he specifically requested NUST to participate in UN75 debates. NUST hosted first-ever online UN75 Dialogue on "Inequalities: Bridging the Divide" which was live streamed from the university's main campus on 28th May, 2020.

Prominent dialogue participants included Ms Kanwal Shauzab, Parliamentary Secretary Planning & Development; Ms Romina Khurshid Alam, MNA and Member Parliamentary Committee on SDGs; Mr Saleem Ranjha, Additional Secretary Ministry of Education; and Ms Nighat Dad, Founder Digital Rights Pakistan. Each of the participants shed light on various forms of inequalities, their effects on society, and how to take measures to create a more equitable society within their individual realms.

Besides online panelists, the event was attended by over 200 online participants, out of majority were youth, thus ensuring inclusion of youth in the dialogues.

PANELISTS FOR UN75 DIALOGUE ON "INEQUALITIES: REDUCING THE DIVIDE"

MAY 28, 2020





				
<p>MS. KANWAL SHAUZAB PARLIAMENTARY SECRETARY PLANNING & DEVELOPMENT</p>	<p>MR SALEEM RANJHA ADDITIONAL SECRETARY MINISTRY OF EDUCATION</p>	<p>MS. NIGHAT DAD FOUNDER DIGITAL RIGHTS PAKISTAN</p>	<p>MS. ROMINA KHURSHID ALAM MNA AND MEMBER PARLIAMENTARY COMMITTEE ON SDGS</p>	<p>MS. TANIA AIDRUS SPECIAL ASSISTANT TO PRIME MINISTER ON DIGITAL PAKISTAN</p>



NUST
Defining futures



GOAL 11

Sustainable Cities and Communities

23

Research Projects

249

Publications

17

Patents



NUST Campus facilities

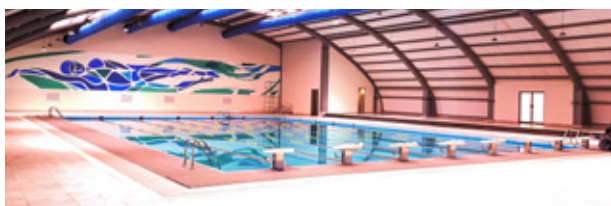
Transport

NUST maintains an organized transportation network within and outside the campus for the students, staff and residents. NUST has invested in designing Regular Transport Shuttle Service which is battery operated and environment-friendly vehicles which run throughout the day within the out the day. NUST has also deployed a bike-sharing programme, initiated by startups of NUST students, within Main Campus. Also, a regular transport network from Gate 10 to various institutions from 8:30 to 9:30 am. Coaches are available during the evening shift for transportation between the Girls Hostels and different institutions, as per pre-defined schedules. Special Arrangements For occasions such as club activities, study tours, recreational trips, industrial visits and interuniversity championships, etc., buses, coaches or vans are arranged as per requirement, both within and outside of the city.



Accommodation

NUST also provides comfortable and affordable on-campus accommodation facilities to its faculty, students, and employees to enable them to pursue their academic and career goals without usual distractions of routine life. The faculty and employees are provided with serene and secure on-campus residence, which assists them in unswervingly execute their professional responsibilities. The residential areas have adjacent recreational facilities for adults and children, like libraries, restaurants and cafes, sports clubs, horse-riding, and swimming pools, to facilitate a healthy and all-encompassing life experience on campus.



NUST establishes the Centre for Creative Economy

NUST has established the Centre for Creative Economy CCE, a one-of-its-kind centre, uniquely positioned at NUST School of Social Sciences & Humanities S3H. The Centre aims to promote knowledge-based economic activity in Pakistan. This unique initiative will be a hub of innovation and creativity in Pakistan. CCE's work is divided in creative focus areas including Design, Traditional Media, Visual & Digital Media, Arts & Craft, Theater & Performing Arts, Heritage Documentation & Creative Entrepreneurship, which are targeted to identify develop and transform avenues for practice-led research and creative product development for the creative industries in Pakistan. CCE's mission is to bridge the gap between different creative sectors and promote interdisciplinary thought process, through Creative Economy (CE) hub and communities.

As NUST realises the critical importance of creative economy and its potential to contribute towards the development of Pakistan, CCE will ensure that through learning, experimentation and guidance, new ideas can take shape and transform lives by creating a significant impact. NUST firmly believes in not only imparting knowledge, but also creating knowledge and bringing about meaningful change in society.

NUST Establishes Centre for Creative Economy (CCE)

A Hub for Creativity, Learning & Experimentation

Aims to promote knowledge-based economic activities

- www.cce.nust.edu.pk
- <https://www.facebook.com/ncece.pk>
- <https://www.instagram.com/cce.pk>
- https://twitter.com/cce_pk



GOAL 12

Responsible Consumption and Production

6

Research Projects

210

Publications

21

Patents

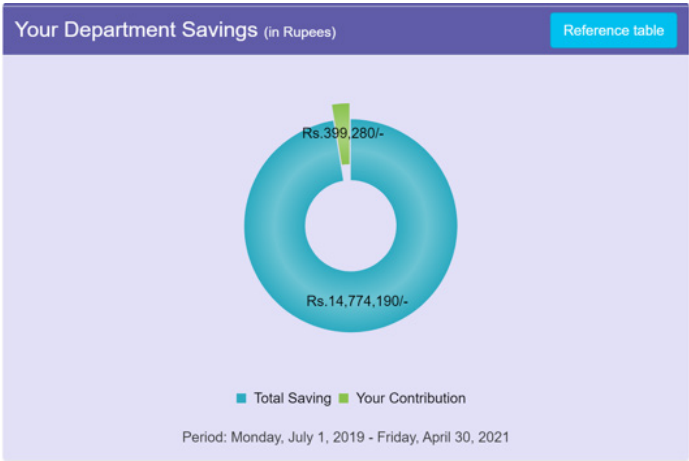
Ban on Plastic Bags

NUST actively promotes environment-friendly practices at all of its campuses. The use of plastic bags at all stores inside NUST was banned on account of their negative impact on the environment and has long been replaced by eco-friendly alternatives.



NUST launches E-Office

In order to reduce paper-work, an online minuting system “NUST E-office” has been launched since July 2019 for paperless processing. This has not only made internal processing time extremely efficient but has also reduced the use of paper in each office, resulting in huge savings of paper and resources.



Cost Savings Base Values

Name	Value
Printing Cost / page (Rs)	2
Paper Rim Cost	700
No of Pages in a Rim	500
Attachments with Docs	2
Min of Meeting Recipient	25
Meetings Recipients	50
Circular Recipients	100
ION Recipients	10
Minsheet Pages	5

Rawal Dam Cleanup Drive

NUST Environment Club in collaboration with Rotaract Club of Islamabad Metropolitan, held its Water Conservation and Clean-Up Drive at Rawal Dam, inviting everyone to spread a little love for the environment right in time for Valentine's Day. Having been marketed adroitly on social media handles, the event titled as 'Safai Ki Kashti' was met with excitement all around and the prospects of enjoying the scenic views, exploring the park and getting to enjoy boating on dam made everyone far too eager to take part.





GOAL 13

Climate Action



14

Research Projects

139

Publications

26

Patents

NUST Green Campus Initiative

2 Plantation drives per annum, 14k+ Saplings planted in 2019-2020

In line with its commitment towards university social responsibility, NUST endeavors to follow environment-friendly practices, and arranges frequent plantation drives across all its campuses spread in different cities of Pakistan. By doing so, not only does the university contribute to the betterment of society and adhere to UN SDGs, but also sets examples encouraging others to make an effort. Over the past decade, NUST, in compliance of its green campus policy, has planted 97,000 saplings across its Islamabad campus alone. Such efforts have transformed Sector H-12 from a barren land to a lush green campus that is home to approximately 9000 students, faculty and employees.

Plantation Drives at Pakistan Navy Engineering College (PNEC), NUST Karachi Campus

Trees play an important role in reducing pollution, reclamation of natural environment and also enhance aesthetic look of the area. Pakistan Navy Engineering College (has made concerted efforts to improve greenery by maximizing the tree plantation. In year 2020, PNEC focused on the tree plantation campaign and a target



of planting 20000 trees sapling was achieved. The varieties of planted trees comprised of Pairs Peepal, Moringa, Suckchain, Gulmorh, Amaltas, Ficus, Jatropa, Almanda, Sharee, Jaman and Cheeku, the survival rate of the saplings is about 90%.



E-Shuttle services at NUST

NUST has a very elaborate and well organised transport system to meet the requirements of students, faculty and staff. Special emphasis is on environment-friendly transport system to reduce carbon emissions and as a result limit carbon footprint of its campus operations. NUST runs a fleet of Electric cars within its campus to use as shuttle service between various locations within the campus i.e. hostels to various School/Offices and from Gates to Schools/Hostels/Offices.

Adaptation to Climate Change

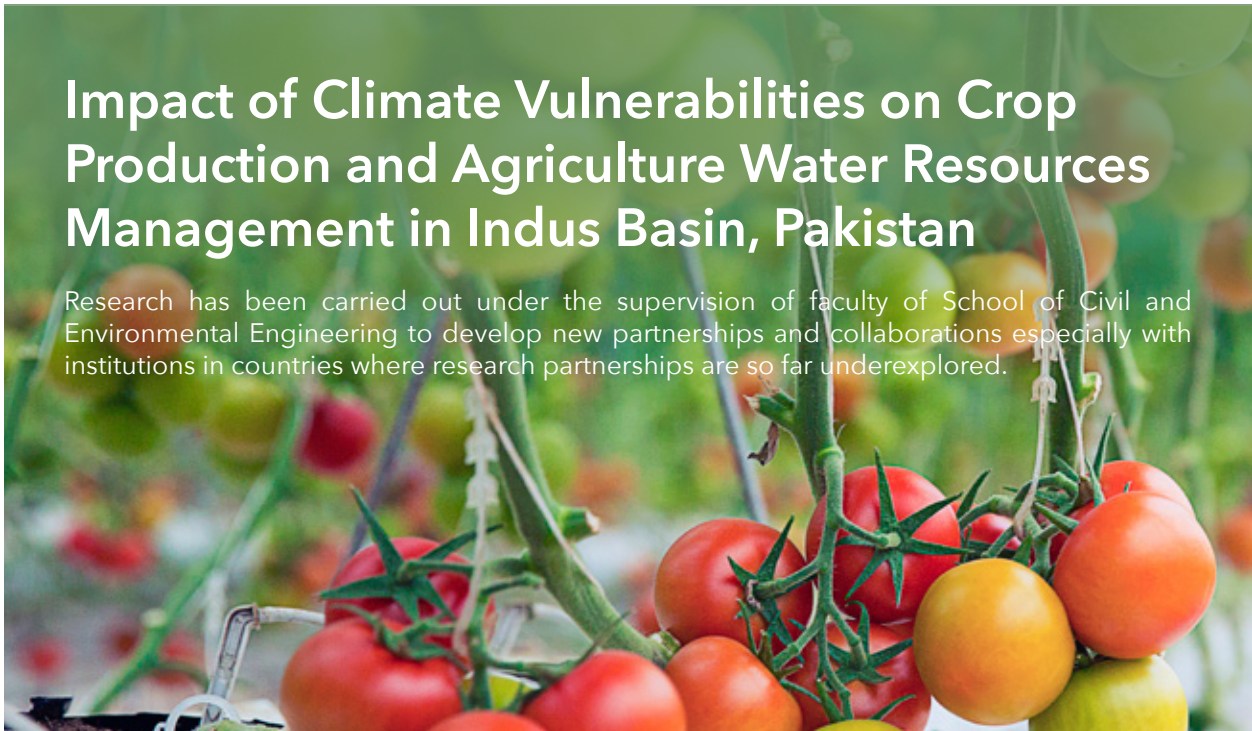
School of Social Sciences and Humanities (S3H, NUST) aims to build the resistant livelihood for the vulnerable communities of Hazara and Malakand Division of KPK, Pakistan .The major goal of this project is to analyze the adverse effects of flooding on the livelihood of the poor community in eleven Distts of Hazara and Malakand division and also to examine adverse effects of flooding on the economic status, thereby look for mitigation of means of living the locality.

Prioritizing Climate Change Mitigation Options for Pakistan Food Security

NUST Business school with the collaboration of Higher Education Commission of Pakistan proposed a project to understand the recent state of food security and sustainability issues of Pakistan and to identify possible empirical research opportunities, which exist in Pakistan to discover more mitigation option for the food security.

Impact of Climate Vulnerabilities on Crop Production and Agriculture Water Resources Management in Indus Basin, Pakistan

Research has been carried out under the supervision of faculty of School of Civil and Environmental Engineering to develop new partnerships and collaborations especially with institutions in countries where research partnerships are so far underexplored.





GOAL 14

Life below Water

3

Research Projects

75

Publications

1

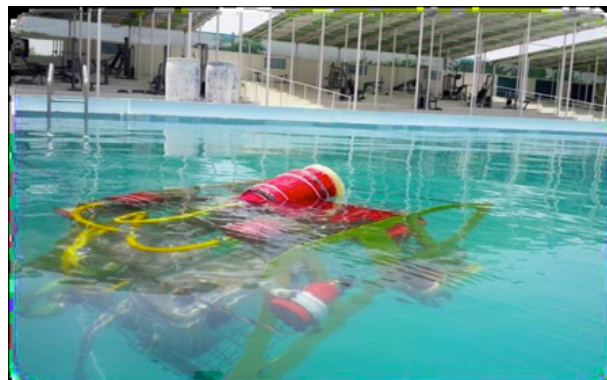
Patents

Corrosion Health System for Marine Structures

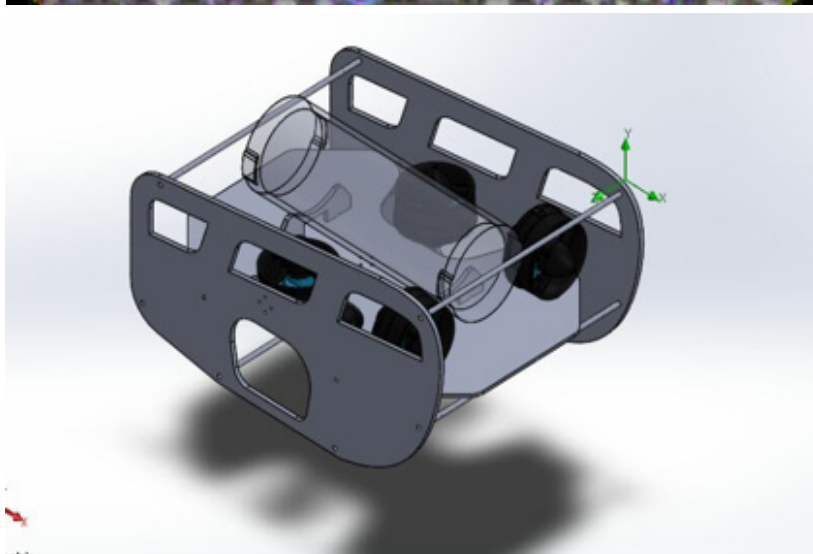
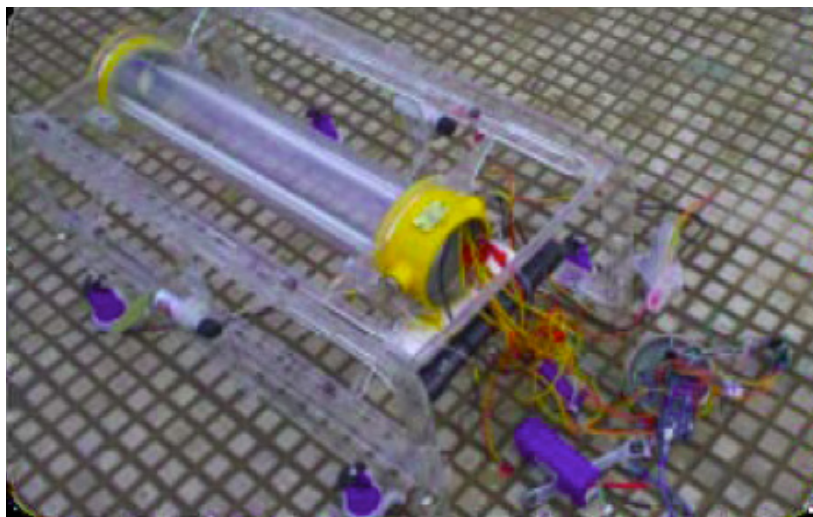
Marine structures are subject to severe environmental conditions, resulting in deterioration and malfunctioning of the critical structures installed on board the underground vessels. Researchers from School of Chemical and Material Engineering Electrically connected hanging specimens of different alloys and dissimilarly joint materials to monitor the marine structures, which has given promising results.

Robotics & Dynamic Systems (RDS) Research Lab at Pakistan Navy Engineering College (PNEC), NUST Karachi Campus

At NUST PNEC RDS has been actively involved in indigenous development of a number of prototype Unmanned Underwater Vehicles (UUVs). These vehicles are technically advanced robotic vehicles, which are either controlled by a human operator via tether cable or can be programmed to operate autonomously. UUVs can carry out real-time observation of underwater environment to conduct surveillance and monitoring of underwater regions of interest, as well as assist in conduct of underwater search and rescue activities etc. Extensive performance tests and experiments have been conducted to validate their design methodologies.



Recently, an updated model of UUV has been successfully developed, deployed, and tested in Arabian Sea, giving headway for further refinements in its design and inclusion of sensors and instruments of interest that can help in observation and monitoring of the underwater environment. This innovation can help people involved in fisheries and marine life that will indirectly impact society and humanity.





GOAL 15

Life on Land



10

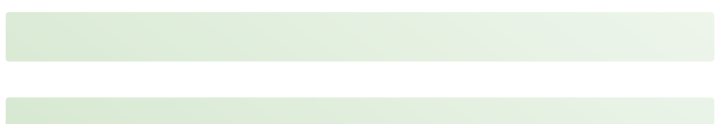
Research Projects

137

Publications

13

Patents



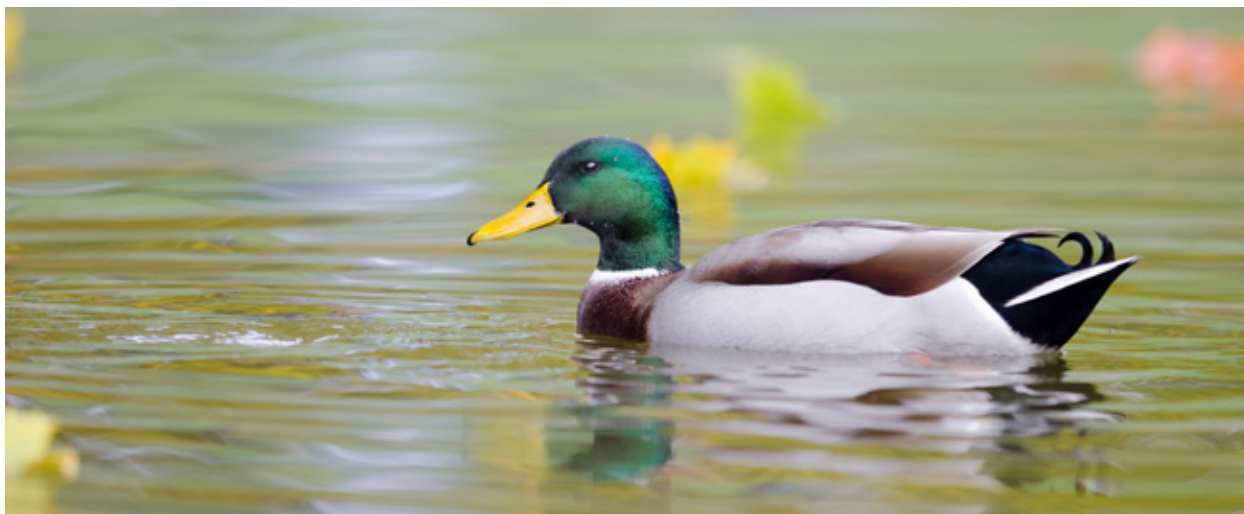
NUST Plantation Drives to Preserve Environment and Natural Habitat

2 Plantation drives per annum, 100k+ Saplings Planted, 338 Acres of Green Land, 79+ Acres in forest, Dedicated Horticulture office

NUST is trying its best to increase awareness on preserving ecosystems by organizing programs as well as taking initiatives to defer the rate at which ecosystems for wildlife are being destroyed. A dedicated horticulture office has been established at NUST which looks after landscaping, plantation and horticulture if NUST H12 Campus.

2 massive plantation drives, one in spring and one during monsoon, are organized every year, in which hundreds of saplings have been planted all over NUST since 2008. Apart from that, the plantation is organized at different occasions like orientations, semester ends, summer, international visits, chief guests and all other important events. These drives, aiming to restore the habitat of wildlife within NUST, are also aligned with the Prime Minister's Clean and Green Pakistan Initiative.

NUST Main Campus offers 338 acres of green land, out of which 80 acres is covered in forest, which provides habitat to several wild animals such as fox, porcupines, cats, dogs, mongoose, pigs and many more. Apart from forests, lakes situated inside the campus attract several bird species such as sparrows, francolins, kingfishers, and drakes, etc.



NUST Environmental Club (NEC):

NUST Environment Club (NEC) was proudly launched at NUST H-12 Campus back in 2011 to celebrate nature and create awareness on environmental issues that are challenging the fate of planet Earth. The purpose of NEC has been to instill a sense of collective and individual responsibilities in the community towards protecting the environment and to inspire people into innovating and reforming their lives to eco-friendlier alternatives. NEC hosts exclusive events, sessions, blogs and much more to interact with its audience and is one of the most active societies thriving at NUST. Some of the events NEC successfully held are NEC Earth Day Carnival, Cycling Competition, Waste Reduction Week, etc.



Green Hunt: A Scavenger Hunt by NUST Environment Club (NEC)

NUST Environment Club hosted its environmental themed Scavenger Hunt program "Green Hunt" with an ambition to bring people closer to nature in a merry but adventurous way.

As indicated by its name, the event was a convivial environment-friendly episode. The riddles and clues that guided the way of the curious participants were all associated with our climate, and even so that the key to the final puzzle was "Ozone Depletion". Hence, this made sure that as participants moved their way through the rounds, their minds only filled up with more background of the very same environment that they occupy. A total of seven teams were comprised, and each contained 3-5 members. The team which would conclude all of the challenges within two hours of the hunt first would be declared as the winner.





GOAL 16

Peace, Justice and Strong Institutions

3

Research Projects

199

Publications

10

Patents

Centre for International Peace and Stability (CIPS)

The Centre for International Peace and Stability (CIPS) was established and inaugurated by UNSG Ban Ki-moon on 13th August 2013 in NUST. It is one of its kind institute established to conduct research and training in matters related to UN Peacekeeping Operations (UNPKOs). Its mandate is not restricted to the relatively narrow field of peace-keeping, but it also offers combined graduate programs in Peace & Conflict Studies (PCS) with short courses on pre-deployment peacekeeping training. With time, CIPS has emerged as a centre of excellence in



international peace and stability with a focus on peacekeeping, peacebuilding, and conflict resolution within the context of prevailing international and regional politics.

NUST launches Law Program

NUST established the Department of Law in Fall 2020 in fulfilling its commitment to creating professionals and future leadership of the country. The academic program is adopted keeping in view the needs of the society and the national and international legal systems. The teaching methodology is designed to enable students to acquire professional skills and enhance their capacity of Legal Analysis, Legal Research and Writing, Legal Problem Solving, Client Services and Professional Responsibility.

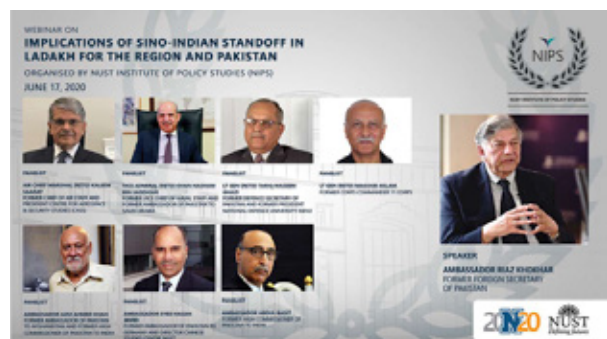


Reconstructing Pakistan's Counter-terrorism Strategy: Setting Grounds for a Revised National Action Plan

This research project by researchers at the Centre for International Peace and Stability (CIPS), aims to chronologically explore the trends concerning counterterrorism efforts and strategies by Pakistan i.e., prior to the National Action Plan (NAP). Such an analysis will enable to highlight the politics and contentions (including social and religious) regarding the re-construction of counter terrorism strategy, both at society and policy level. Furthermore, the research reinforces the significance of 'National Action Plan' (NAP) to implement and drive the counter-terrorism strategy. The research project necessitated the involvement of participants who have been associated with institutions such as the National Counter Terrorism Authority (NACTA), Ministry of Interior (MoI), Pakistan's armed forces, Federal Investigation Agency (FIA), Counter-Terrorism Departments (CTDs), other Law Enforcement Agencies (LEAs) and individuals and experts from academics and think-tanks who have been at the forefront of (counter-terrorism) policy/ strategy formulation.

NUST Institute of Policy Studies Arranges Webinar on China India Standoff Implications for the Region and Pakistan

The NUST Institute of Policy Studies (NIPS), Pakistan's leading university-based think tank, organised a high-powered webinar to examine the implications of ongoing China-India standoff on the security of the region and Pakistan. The virtual event was attended by former veteran diplomats, former senior military officials, academics, policy experts and eminent members of the think tank community. The webinar was chaired by Lt Gen Naveed Zaman, HI (M), (Retd), Rector NUST & Patron NIPS; and moderated by Dr Ashfaque Hasan Khan, Director General NIPS and Principal NUST School of Social Sciences & Humanities. The participants unanimously emphasized that the current state of relations amongst major powers had turned the region into a critical zone for global peace and stability.





GOAL 17

Partnerships for the Goals

10

Research Projects

517

Publications

5

Patents

NUST holds “Building nation through transformative higher education” outreach event

With a view to enhancing its collaboration reach across Pakistan, and establishing partnerships with local industry and community, National University of Sciences & Technology (NUST) held an outreach event in Lahore, based on the theme of ‘Building nation through transformative higher education’ to engage representation from Lahore’s Industry and Corporate Leadership. The event was attended by notable leaders and business owners from Cement Industry, Electronic & IT organisations, Manufacturing, Chemical, Banking & Finance, Fertilizers and Engineering sectors etc. of Lahore.

Celebrity fro, showbiz and sports fraternity also supported and attended the event. Film star Mr Shaan Shahid, singer Mr Sahir Ali Bagga, and cricketers Mr Amir Sohail, Mr Taufeeq Umar and Mr Muhammad Yousaf showed their support for higher education, terming it an instrument of change and progress for the country.



NUST collaborates with TelcoNet

A four-member delegation of TelcoNet, led by Mr Khurram Jawaid, visited NUST on November 6, 2020 to hold a meeting which entailed introductory briefs on NUST and TelcoNet, followed by a thorough discussion where future collaborative projects were deliberated. The visiting delegates expressed their gratitude for facilitating their visit to the university.



Civil- Military Cooperation (CIMIC) in UN Peacekeeping Operations

The Centre for International Peace and Stability (CIPS), at NUST and the Hanns Seidel Foundation (HSF), Pakistan Office, jointly hosted an online symposium featuring empirically grounded research conducted over the past six months on, November 4th, 2020. As an academic think-tank, CIPS aims at promoting rigorous engagement with emergent issue areas in order to catalyze contextually grounded solutions.

Funded by HSF, the grant project facilitated seven MS students from the Department of PCS, CIPS, in defining the nature of 'CIMIC' under the guidance of their supervisors. Presenters included Ms Aisha Ali, Ms Rabeea Jabbar, Ms Faruzan A. Butt, Mr Muhammad Abdul Wassay. The session was moderated by Brig (R) Dr Waseem Ishaque, an Assistant Professor at the Department of International Relations, at the National University of Modern Languages (NUML), Pakistan. Dr Muhammad Makki, Assistant Professor, PCS-CIPS, spearheaded the project, alongside Dr Steffen Kudella, the HSF's resident representative in Pakistan.

Civil-Military Coordination in UN Peacekeeping Operations

A Case study of Pakistan's Peacekeeping Missions

Managing Health Disasters and Civil- Military Co-operation (CIMIC): A Case of Covid-19 in Pakistan

By Rabeea Jabbar
Centre for International Peace and Stability, NUST



International Memberships National Science and Technology Park (NSTP)

NSTP strives to forge partnerships with like-minded institutions and organisations, that can serve the overall national interests of promoting Science, Technology and Innovation; training and grooming scientists, technologists and engineers to become drivers of change through innovative products and services; providing foreign markets to Pakistani innovators and entrepreneurs and opening doors to the Pakistani market for overseas innovators and entrepreneurs; facilitate joint ventures and partnerships between enterprises from different industries or countries; and more.

NSTP is member and in strategic alliance with the following international organizations:

International Association of Science Parks (IASP)

IASP is a worldwide network of Science & Technology Parks having 347 members from 77 countries. NSTP is the only full member of IASP from Pakistan.



Asian Science Park Association

ASPA is an international nongovernmental organization established in Japan in 1997 for the purpose of accomplishing the joint development in the fields of scientific technology, industry and economy in the Asian region.



World Technopolis Association (WTA)

WTA is a multilateral international organisation created with the purpose to connect the advancement of science and technology with local development. NSTP is the only associate member of WTA from Pakistan.



Inter-Islamic Network on Science & Technology Parks (INSTP)

INSTP is a platform for technological development among Muslim countries. NSTP is member for INSTP as well as the only Pakistani member of its Executive Council.



International Business Incubator (IBI) Beijing, China

International Business Incubator (IBI) Beijing, China, also known as Zhongguancun Science and Technology Park. It is the most intensive scientific, education and talent resource base in China.



iAccelerate, Wollongong, Australia

iAccelerate one of the leading and unique business accelerator and incubator programme run by the University of Wollongong (UOW)). It's a thriving community of like-minded entrepreneurs with vision, purpose and passion, offering a unique eco-system with exceptional education, mentoring and support.



NUST Internship Programme for International Students (NIPIS)

In 2018, NUST launched its own international internship programme - NUST International Internship Programme (NIPIS) to further enhance its collaborative efforts in youth engagement and empowerment.

NUST's signature Internship Programme for International Students - NIPIS '19 - launched with a bang at

NUST Islamabad campus. Promising to deliver a high-quality internship experience to incoming students; interns belong to Austria, China, Egypt, France, Poland, Turkey and 20 other countries were provided an excellent platform for advancing their professional training and reinforcing academic learning through practical application. In total 51 foreign interns attended the programme, out of which 12 were from IAESTE (International Association for the Exchange of Students for Technical Experience), 24 from NIPIS, and 15 from AIESEC (Association for the International Exchange of Students in Economics & Commerce). The programme also included various industrial and recreational trips in and around Islamabad.



NUST Collaborations with International Associations

NUST believes in establishing collaboration with international bodies for the capacity building, shaping future leadership, and preparing youth for the multi-dimensional global challenges. NUST has been collaborating with International Association for Exchange of Students for Technical Experience (IAESTE) foreign interns since 2013 as well as International Association of Students in Economic and Commercial Sciences (AIESEC) for students' exchange programmes.

So far NUST has hosted fourteen international students in these programmes and aims to increase the numbers in the future, focusing on in-take from under-represented countries.

Apart from students' exchange, NUST has been a member of Sustainable Solutions Development Network (SDSN), SDG Accord, United Nations Academic Impact (UNAI) and Association for Advancement of Sustainability in Higher Education (AASHE) which enable NUST to propagate its sustainability initiatives, establish collaboration, and share knowledge with the global key players.



NUST Community Service Club (NCSC):

**2018-2020: Total
102,045 service hours**

NUST has encouraged and facilitated its students to participate in community service. Therefore, a highly dedicated and active club, NUST Community Service Club (NCSC), sponsored by the School of Mechanical and Manufacturing Engineering (SMME), was established in 2007 for the sole purpose of developing a sense of responsibility, compassion, and empathy towards the community amongst the students of NUST. From a humble beginning of 35 volunteers in 2007, the club has now grown to 1000 registered members every year, 1100 registered for community service courses and an extensive network of NCSC alumni.

It is headed by a council of students, yearly selected based on past community service contributions. The council makes a yearly calendar of activities, collaborates with community partners and non-government organizations (NGOs).







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