



NED University of Engineering and Technology

Sustainability Report 2021-22

PREFACE

This is the fourth Sustainability Report published by NED University of Engineering and Technology, for the year 2021-22 with the aim to report progress on the commitment and contributions of the University towards sustainable development agenda. NED University has explored to enhance its impact on sustainability in many and various ways including campus infrastructure and setting, institutional policies and strategies, curriculum, and community engagement. The report outlines key achievements, summarizes performance and provides detailed evidence and data, with reference to published documentation where appropriate. The report also highlights the diverse sustainability initiatives in progress across the campus and looks ahead to those planned for 2022 onwards.

The Honorable Vice Chancellor of the NED University has taken the lead in transforming the Main Campus of the University into a 'live lab' working towards a sustainable and ultimately first carbon neutral engineering university campus of Pakistan. He himself chairs a variety of University forums to address challenges and monitor the progress of all the activities related to sustainability. The NED University has taken up the responsibility in leading the Higher Education Institutions of Pakistan in becoming the sustainable campus sites and host academic and research activities for the local and international industries and municipalities working towards the establishment of a sustainable future for us all.

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UNIVERSITY MANAGEMENT

- **Dr. Sarosh Hashmat Lodi**, *Vice Chancellor*
- **Prof. Dr. Muhammad Tufail**, *Pro Vice Chancellor*
- **Prof. Dr. Asad-ur-Rehman Khan**, *Dean Civil and Petroleum Engineering (CPL)*
- **Prof. Dr. Syed Amir Iqbal**, *Dean Mechanical and Manufacturing Engineering (MME), Dean Chemical and Process Engineering (CPE - Additional Charge)*
- **Prof. Dr. Saad Ahmed Qazi**, *Dean Electrical and Computer Engineering (ECE)*
- **Prof. Dr. Noman Ahmed**, *Dean Architecture and Management Sciences (AMS), and Dean Information Sciences and Humanities (ISH - Additional Charge)*
- **Prof. Dr. Asif Ahmed Shaikh**, *Dean Chemical and Process Engineering (CPE)*
- **Mr. Syed Ghazanfar Hussain**, *Registrar*

SUSTAINABILITY LEADERSHIP

- **Dr. Sarosh Hashmat Lodi**, *Vice Chancellor*
- **Prof. Dr. Muhammad Tufail**, *Pro Vice Chancellor*
- **Prof. Dr. Saad Ahmed Qazi**, *Dean Electrical and Computer Engineering (ECE), and Sustainability Director*
- **Prof. Dr. Noman Ahmed**, *Dean Architecture and Management Sciences (AMS), and Dean Information Sciences and Humanities (ISH - Additional Charge)*
- **Engr. Syed Wasiuddin**, *Director Works and Services*
- **Dr. Ali Hasan Mahmood**, *Controller Student Affairs*
- **Engr. Muhammad Saqib**, *Assistant Professor, Department of Civil Engineering, Sustainability Coordinator and Faculty Advisor NED Green Society*
- **Dr. Muhammad Ali Memon**, *Associate Professor, Department of Electrical Engineering*
- **Dr. Atif Mustafa**, *Chairman, Department of Environmental Engineering*
- **Dr. Junaid Akhlas**, *Assistant Professor, Department of Polymer and Petrochemical Engineering*
- **Engr. Madiha Zaidi**, *Assistant Professor, Department of Urban and Infrastructure Engineering*
- **Engr. Muhammad Hassan ul Haq**, *Assistant Professor, Department of Electrical Engineering*
- **Ar. Sadia Bano**, *Assistant Professor, Department of Architecture and Planning*
- **Engr. Adeel Ahmed Khan**, *Assistant Professor, Department of Mechanical Engineering*
- **Engr. Muhammad Ali Akhtar**, *Lecturer, Department of Computer and Information Systems Engineering*

1. University Vision Statement

Be a leader in enabling Pakistan's social and economic transformation.

2. University Mission Statement

Acquire education and research excellence in engineering and allied disciplines to produce leadership and enabling application of knowledge and skills for the benefit of the society with integrity and wisdom.



3. Quality Policy of the University

NED University of Engineering and Technology believes in establishing environment conducive to continual improvement its efforts for providing the highest-level quality education.

The University is making all out efforts to raise its standards through teaching excellence and quality research. These efforts are carried out with involvement of the entire university work force – to obtain utmost possible satisfaction of its customer.

Our endeavors are to make our students useful to the society in particular and to humanity in general. In dealings with industry and utilities, attempts are made to maintain standards of integrity as well as quality.

4. Carbon Neutral Built Environment Initiative of the University

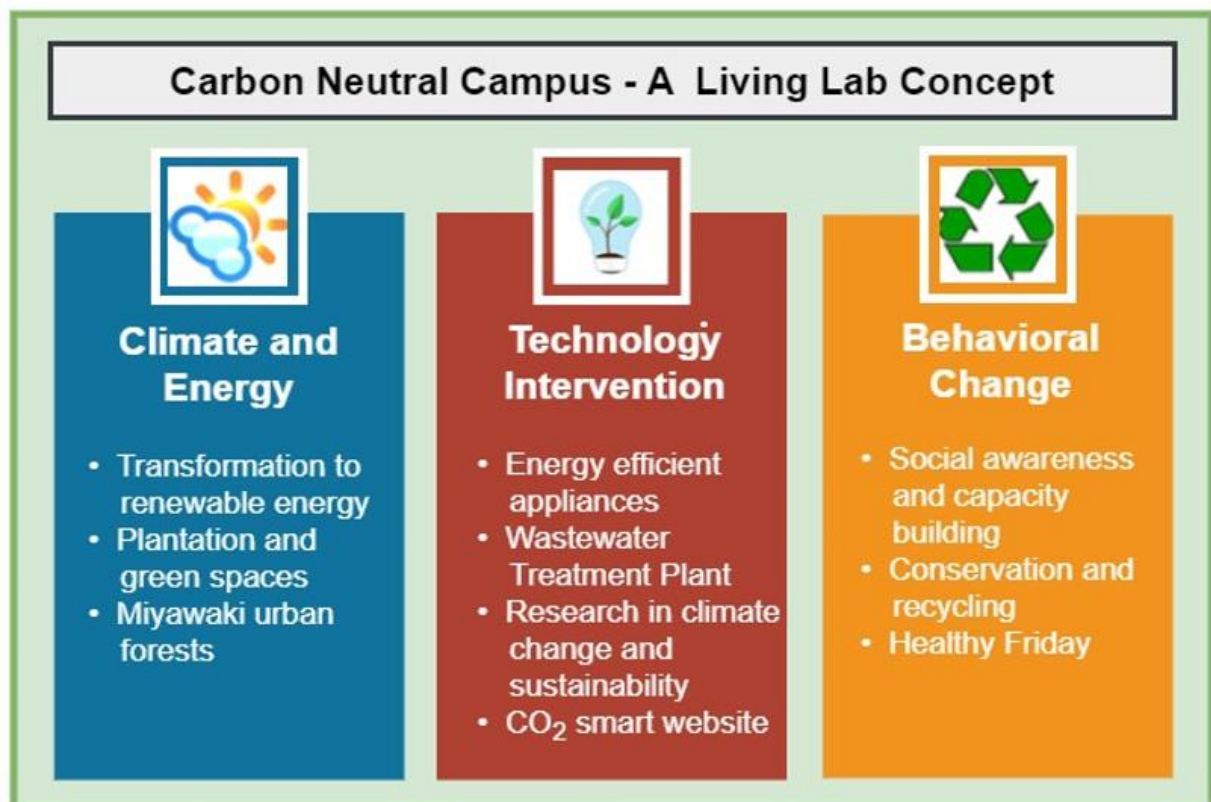
NED University is the oldest institution and one of the leading engineering universities of Pakistan. On February 12, 2018, the worthy Vice Chancellor of NED University Dr. Sarosh H. Lodi has signed the Talloires Declaration to become Carbon Neutral Campus and brought Pakistan as a member of Talloires Signatory List. As an institution of higher education, concerned about the state of the world environment and the advancement of sustainable development, NED University shall strive to promote actions that will achieve a sustainable future. By signing the Talloires Declaration, a university agrees to Increase Awareness of Environmentally Sustainable Development, Create an Institutional Culture of Sustainability, Educate for Environmentally Responsible Citizenship, Foster Environmental Literacy for All, Practice Institutional Ecology, Involve all Stakeholders, Collaborate for Interdisciplinary Approaches, Enhance Capacity of Primary and Secondary Schools, Broaden Service and Outreach Nationally and Internationally, and Maintain the Movement.

More than ever, our world is facing the challenges of climate change and sustainability. The future of our existence is at stake. NED University has taken this initiative to bring together professionals in academia and research, practicing and consulting engineers/architects, construction and energy industry professionals, public and private sector managers, builders, policy makers, assessors, certification and funding bodies and government officials concerned with climate change and sustainability projects and centreprogrammes from all over the world, for engagement and exchange of thoughts and experiences regarding the concepts of climate change, sustainability and carbon neutrality.

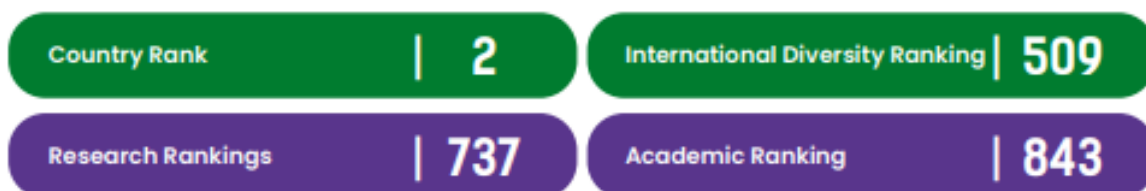
The term carbon neutrality generally refers to achieving a net zero carbon emission. The task of achieving carbon neutrality requires taking two parallel lines of actions.

- i. **Reducing Carbon Emission:** In order to reduce carbon emission on campus the measures that need to be taken include creating general awareness, conducting carbon emission studies, improving energy efficiency to reduce carbon emission related to energy generation, making the campus green and using renewable energy sources.
- ii. **Balancing Carbon Emission:** In order to balance carbon emission on campus the measures that need to be taken include tree plantation, optimization of water use, optimization of land use and turning the campus into forested campus.

Under a Carbon Neutral Built Environment initiative, launched in 2018, a steering committee was formed under the leadership of Vice-Chancellor NED University to drive the initiative's multi-pronged agenda. The idea was to create a set of diverse experiences related to climate change best practices within and beyond the University campus, with a goal to gradually transform the University as a "LIVE LAB" of carbon neutrality – based on the concept of "SEEING IS BELIEVING".



5. University Rankings



6. University Impact

NED University has demonstrated a strong commitment to promoting sustainable development through its academic and research activities. By mapping seven key components, NED University has identified areas where it can contribute to achieving the United Nations Sustainable Development Goals (SDGs). Through these efforts, NED University is making a significant impact towards creating a more sustainable future and promoting global progress towards achieving the SDGs. The seven components mapped on SDGs include:

- Undergraduate courses
- Postgraduate courses
- Undergraduate projects (Final year design projects)
- Postgraduate projects / thesis
- Externally funded research projects
- University events
- Research Publications

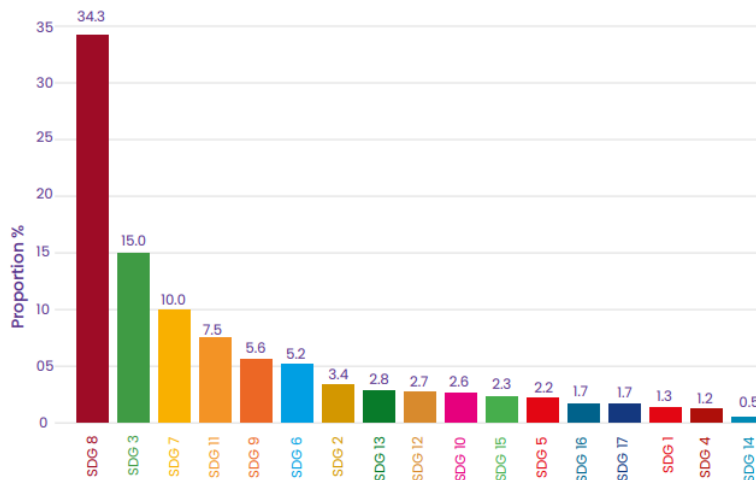


6.1 Undergraduate Courses

During year 2021-22, 804 courses at undergraduate level were offered. There were 1,447 mapping instances on SDGs. The following table shows the numerical mapping while the proportions are visualized below:

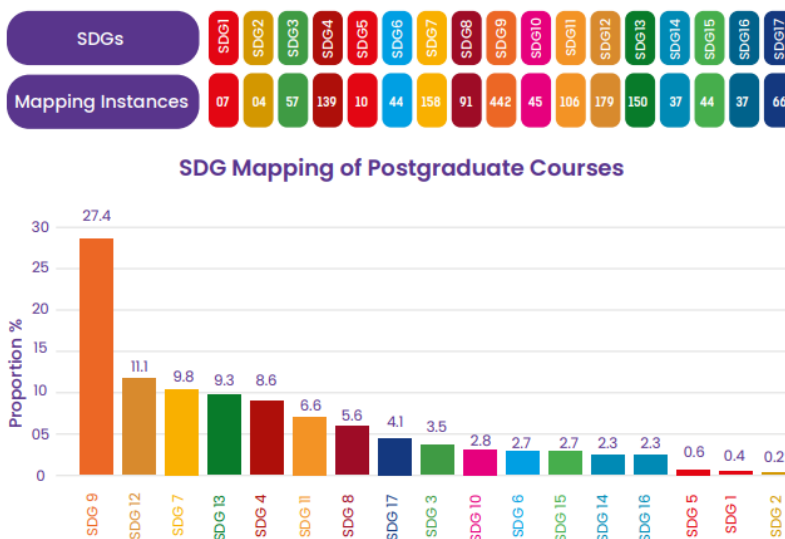


SDG Mapping of Undergraduate Courses



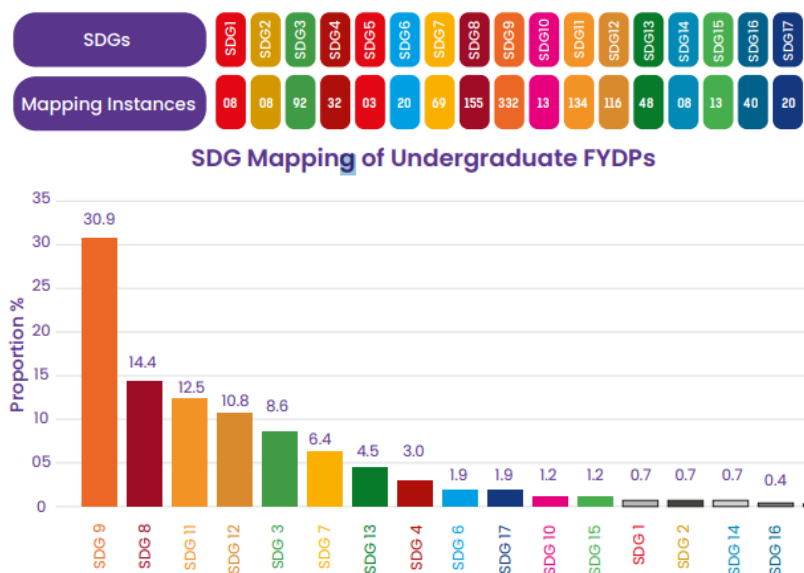
6.2 Postgraduate Courses

During year 2021-22, 507 postgraduate courses were taught at the master level. There were 1,616 mapping instances on SDGs. The following table shows the numerical mapping while the proportions are visualized below:



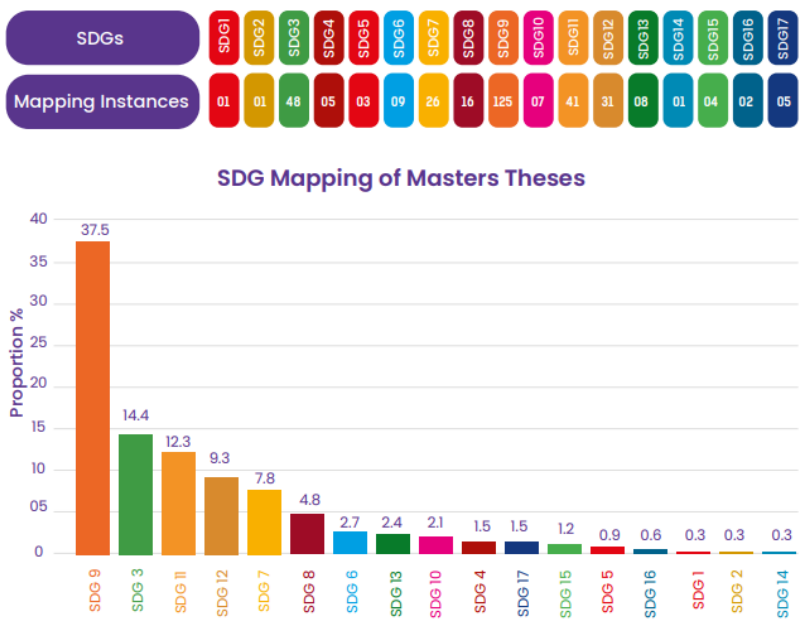
6.3 Undergraduate Projects (Final Year Design Projects)

543 Final year design projects (FYDPs) were carried out at undergraduate level during year 2021-22. There were 1,075 mapping instances on SDGs. The following table shows the numerical mapping while the proportions are visualized below:



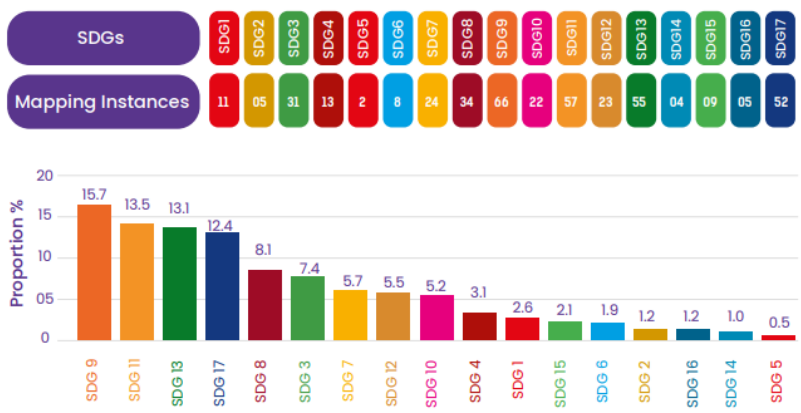
6.4 Postgraduate Projects / Thesis

136 postgraduate projects / theses were undertaken during the year 2021-22. There were 333 mapping instances on SDGs. The following table shows the numerical mapping while the proportions are visualized below:



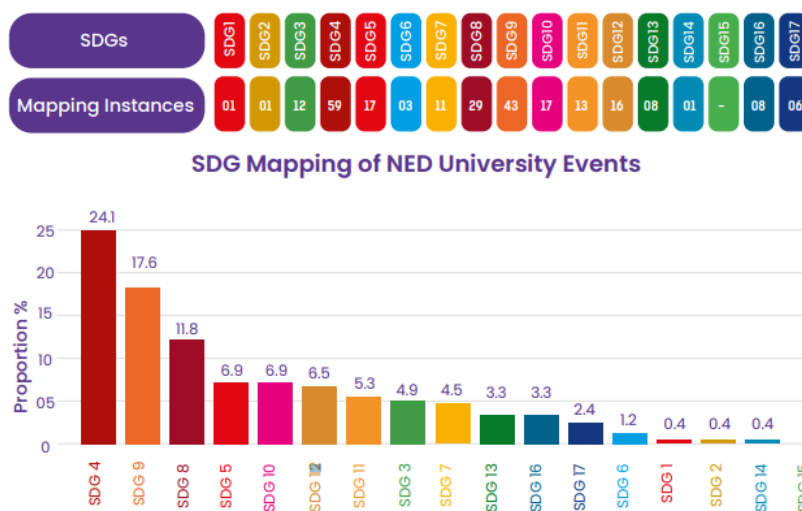
6.5 Externally Funded Research Projects

During year 2021-22, 98 externally funded projects were being actively pursued by faculty members. There were 421 mapping instances of these projects on SDGs. The following table shows the numerical mapping while the proportions are visualized below:



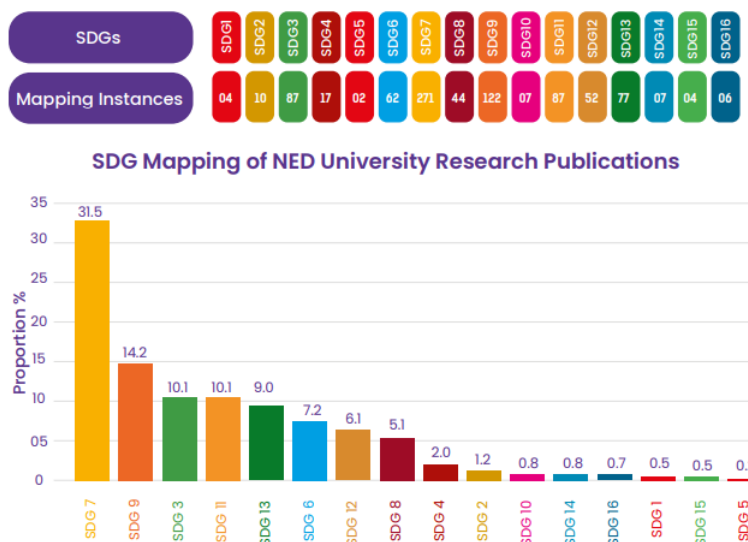
6.6 University Events

During year 2021-22, 113 activities including international conferences, seminars, workshops and other co- and extra-curricular activities were held across NED University campuses. These activities had 245 SDG mapping instances. The following table shows the numerical mapping while the proportions are visualized below:



6.7 Research Publications

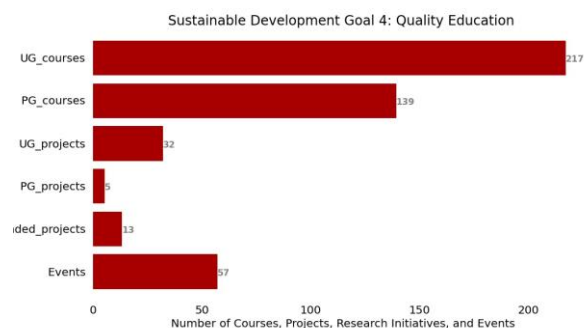
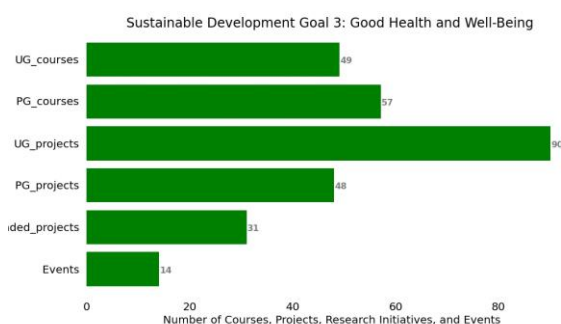
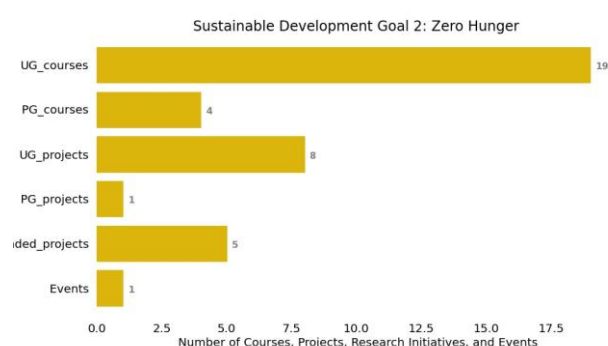
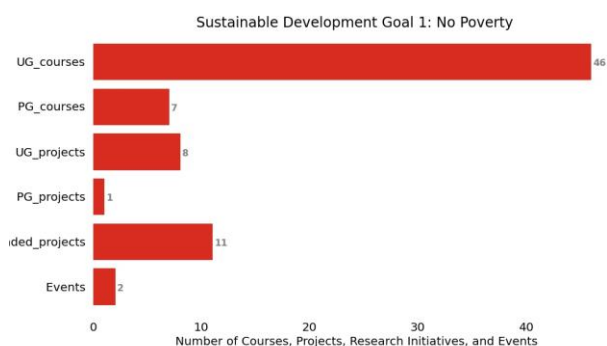
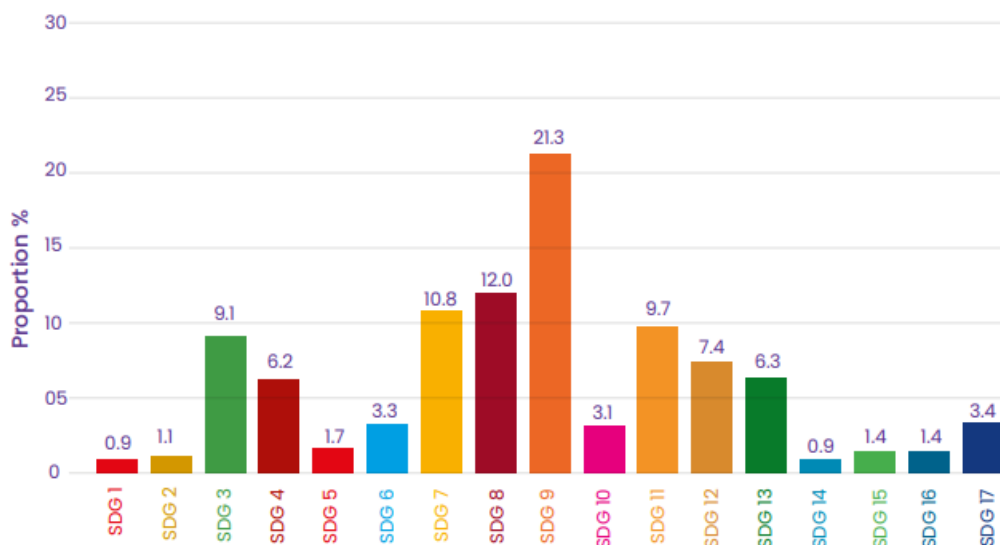
Mapping of NED University research publications across 1-16 sustainable development goals (SDGs) as per data provided by Scopus over the last five years is presented here. There were 859 publications mapping onto SDGs with 6,839 citations. The following table shows the numerical mapping while the proportions are visualized below:



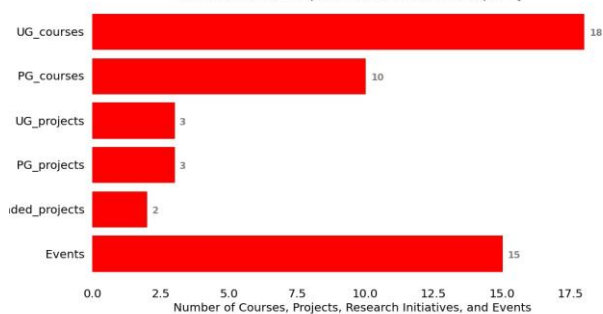
6.8 SDG-Wise Mapping

SDG-wise graphical summaries depicting contributions in these key components is as follow. The details of the same is available at <https://impact.neduet.edu.pk/>.

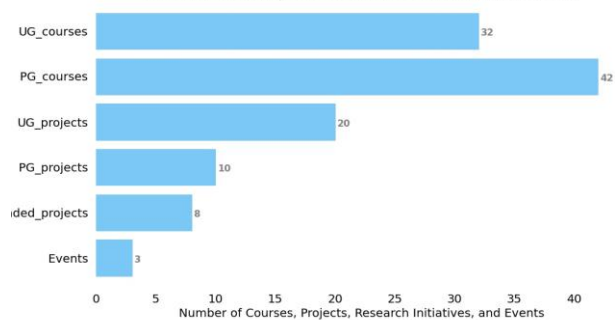
**Overall SDG Mapping of impact components
NED University**



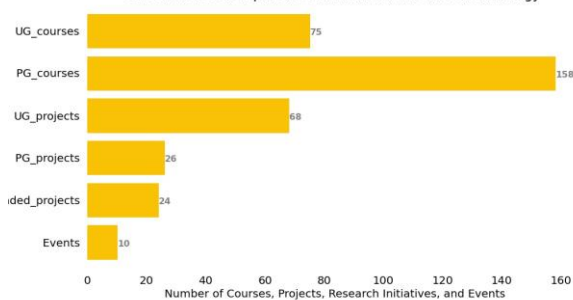
Sustainable Development Goal 5: Gender Equality



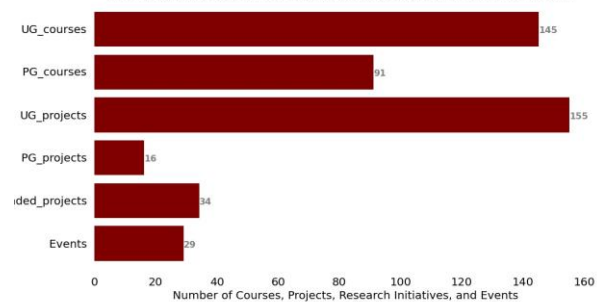
Sustainable Development Goal 6: Clean Water and Sanitation



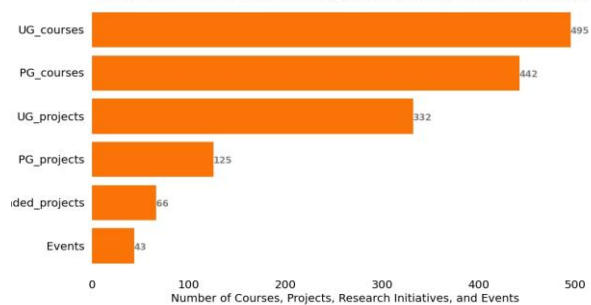
Sustainable Development Goal 7: Affordable and Clean Energy



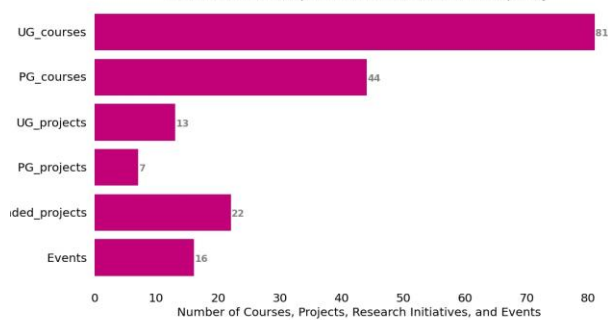
Sustainable Development Goal 8: Decent Work and Economic Growth



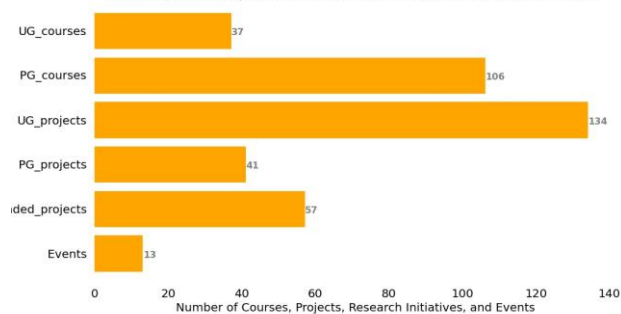
Sustainable Development Goal 9: Industry, Innovation and Infrastructure



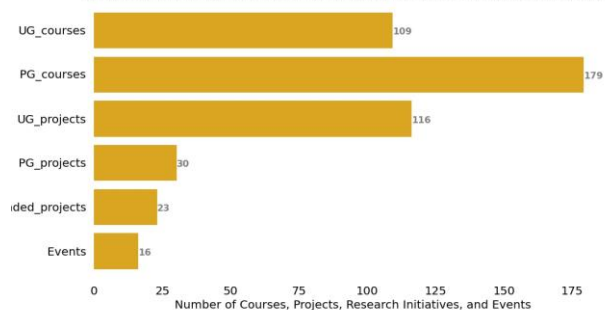
Sustainable Development Goal 10: Reduced Inequality



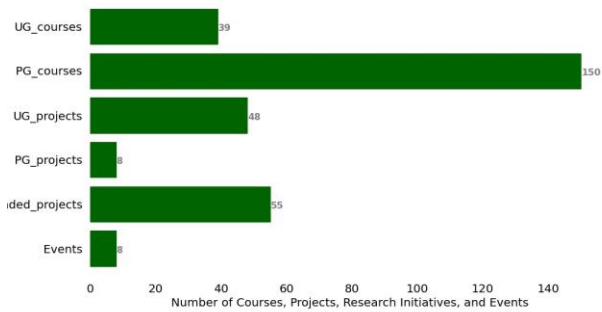
Sustainable Development Goal 11: Sustainable Cities and Communities



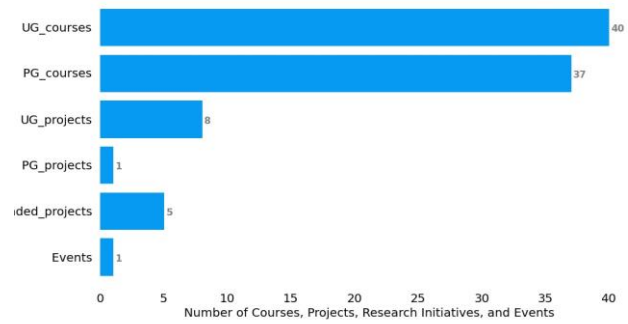
Sustainable Development Goal 12: Responsible Consumption and Production



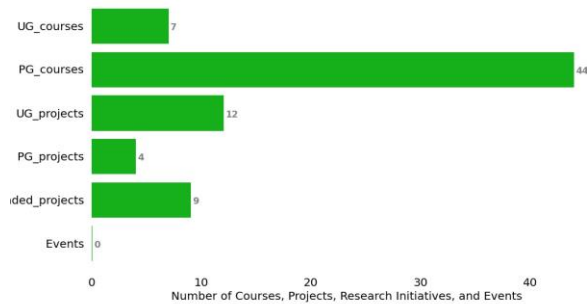
Sustainable Development Goal 13: Climate Action



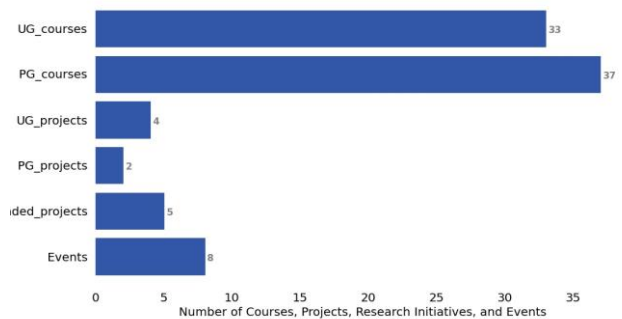
Sustainable Development Goal 14: Life Below Water



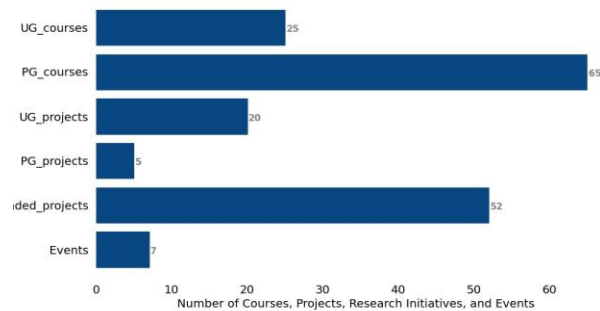
Sustainable Development Goal 15: Life on Land



Sustainable Development Goal 16: Peace and Justice Strong Institutions



Sustainable Development Goal 17: Partnerships to Achieve the Goal



7. Carbon Neural Campus Activities

7.1 CO₂ Emissions Calculation

The Campus Carbon Calculator (CCC) was originally developed by the former non-profit Clean Air - Cool Planet and the Sustainability Institute at University of New Hampshire (UNH), USA. Total Direct CO₂ Emissions recorded for the year 2021-22 is 3,100 MT eCO₂. The details of distribution of carbon emissions under the scope and activity heads is given as follow.

| Scope | Input Data | Estimated Amount | MT eCO ₂ | Total MT eCO ₂ Carbon Footprint (%) |
|---------|-----------------------------|------------------|---------------------|--|
| Scope 1 | Diesel for power generation | 1500 Gallons | 13 | ≈ 1600 (7.4%) |
| | Natural gas | 22000MMBtu | 1100 | |
| | Diesel for University buses | 21000 Gallons | 300 | |
| | Refrigerants | 250 lbs | 200 | |
| | Organic fertilizers | 6250 lbs | 1 | |
| Scope 2 | Purchased electricity | 3655 MWh | 1500 | ≈ 1500 (6.9%) |
| Scope 3 | Student and staff commute | 14.8 km one-way | 18100 | ≈ 18400 (85.6%) |
| | Solid waste | 10 tons | 30 | |
| | Paper | 100 tons | 270 | |

7.2 Plantation Drives

NED University has 8500+ Trees at Main Campus during the year 2021-22.



Plantation in Collaboration with Master Peace Karachi



Plantation in Collaboration with Telenor

7.3 Solarization of Buildings (Renewable Energy)

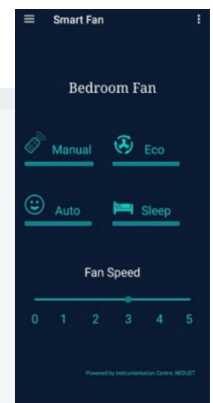
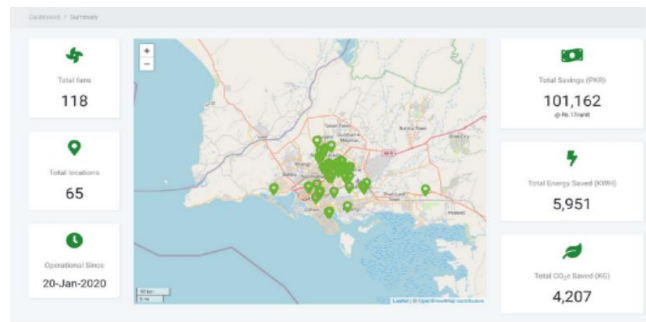
Currently the departments which are using solar sources include Department of Civil Engineering, Department of Electrical Engineering, Department of Mechanical Engineering, Department of Textile Engineering, and Engr. Abul Kalam Library.

So far 321 KW of solar power plants have been installed, which are capable of generating about 430,000 units annually. 16% of Carbon Footprint is being neutralized through the committed solarization.



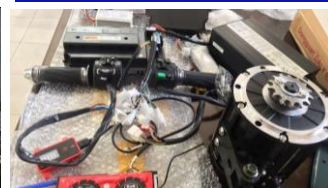
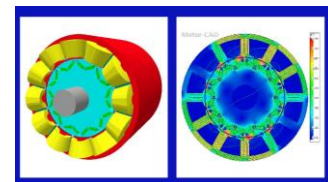
7.4 Energy Efficient Appliances

Energy efficient appliances usage are replacing conventional appliances. 100% of the computer monitors used at the NEDUET campuses are energy efficient LCD monitors. The lighting equipment is gradually being switched to LED bulbs while the ceiling fans are being modified to consume less electrical energy through their conversion to DC source. Smart energy efficient fans have been introduced, which use 50% less energy.



Some other related projects include:

- Li-ion Battery fabrication
- Design of Charging Stations
- High Efficiency Motor Design
- Vehicle Controllers
- Intelligent Battery Management System



7.5 Sewerage Disposal and Inorganic Waste Treatment

Major portion of the wastewater generated at the NED University main campus is aerobically treated at the wastewater treatment facility onsite and is then used for watering plants and vegetation.



Wastewater aerobic treatment and use for plant watering

The inorganic waste generated at the University is sorted and sorted in the junkyard and is periodically disposed-off via recycling and/or down-cycling.



Inorganic waste sorting

7.6 Carbon Neutral Conference

A conference with the theme “A Step towards Sustainable Future” was held on December 20-21, 2018, Karachi-Pakistan. There were more than 150 participants from different countries including UK, Australia, Iraq, and Pakistan. The conference proceedings published 18 paper.



7.7 Thar Karachi Student Mobility Campaign for Reducing Carbon Footprint

Thar Karachi Student Mobility Campaign for Reducing Carbon Footprint, was held in Tharparkar and Karachi, Sindh. 70 school students from ten schools of Tharparkar and Karachi participated in the campaign and planted geo-tagged trees on NED University soil and Thar.



7.8 Urban Forest Plantations

First Urban Forest in the University was inaugurated on July 12, 2019. Since then 17 Urban Forests (13 on campus, 4 off-campus) have been planted in different areas of the Karachi, providing 1,594 trees. About 8 tonnes of CO₂ emissions have been saved in the last two years. As the trees grow, the impact increases. One fully grown Urban Forest of 300 sq. ft. saves about two tonnes of CO₂ annually.

The details of these forests are as under.

| S. No. | Urban Forest Site | Sponsor | Dimension | No. of Plants | Inauguration Date |
|--------|--|---|---------------------|---------------|-------------------|
| 1 | Department. of Materials Engineering, NEDUET | Engr. Sohail Bashir Chairman IEP, Karachi Centre | ~ 28 m ² | 90 | 12-07-2019 |
| 2 | Gymnasium NEDUET (Right Side) | Pak Suzuki Motors | ~ 28 m ² | 90 | 15-11-2019 |
| 3 | Gymnasium NEDUET (Left Side) | Bank Al Habib Limited | ~ 28 m ² | 90 | 19-02-2020 |
| 4 | Department of Textile Engineering, NEDUET | Bank Al Habib Limited | ~ 56 m ² | 180 | 25-02-2020 |
| 5 | NEDUET Visitors Gate | Col.(R) Zafar Uddin Ahmed CEO Sigma Motors | ~ 28 m ² | 90 | 01-03-2020 |
| 6 | S.M.S. Agha Khan School | NEDUET Technical Sponsor | ~ 48 m ² | 154 | 02-11-2020 |
| 7 | Department. of Materials Engineering II, NEDUET | Col.(R) Zafar Uddin Ahmed CEO Sigma Motors | ~ 28 m ² | 90 | 25-03-2021 |
| 8 | Department. of Materials Engineering III, NEDUET | Col.(R) Zafar Uddin Ahmed CEO Sigma Motors | ~ 28 m ² | 90 | 25-03-2021 |
| 9 | KMC Abdullah Haroom Road | F M Associates | ~ 28 m ² | 90 | 13-04-2021 |
| 10 | KMC Shaheed Benazir Bhutto Park | Chotani Group | ~ 28 m ² | 90 | 06-11-2021 |
| 11 | NED Masjid, NEDUET | HYE Family A NEDAN-NA Project | ~ 28 m ² | 90 | 01-04-2022 |
| 12 | Abul Kalam Library, NEDUET | NEDA-DC A NEDAN-NA Project | ~ 28 m ² | 90 | 08-04-2022 |
| 13 | Mech Corner, NEDUET | Nayyar Iqbal Ahmad A NEDAN-NA Project | ~ 28 m ² | 90 | 07-04-2022 |



Some detail of the species planted in these forests is as follow.

| S. No. | Name of Tree | Latin Name | English Name | S. No. | Name of Tree | Latin Name | English Name |
|--------|--------------|----------------------------|---------------|--------|--------------|--------------------------|---------------|
| 1 | Sehtoot | <i>Morus nigra</i> | Mulberry | 8 | Citruc Tree | <i>Citrus limon</i> | Lemon |
| 2 | Jamun | <i>Syzygium cumini</i> | Java Plum | 9 | Curry Patta | <i>Murraya koenigii</i> | Curry Leaf |
| 3 | Badam | <i>Prunus dulcis</i> | Almond | 10 | Imli | <i>Tamarindus indica</i> | Tamarind |
| 4 | Anjeer | <i>Ficus carica</i> | Common Fig | 11 | Falsa | <i>Grewia asiatica</i> | Berry |
| 5 | Ber | <i>Ziziphus mauritiana</i> | Indian Jujube | 12 | Amaltas | <i>Cassia fistula</i> | Golden Shower |
| 6 | Amrood | <i>Psidium guajava</i> | Guava | 13 | Cheeko | <i>Manilkara zapota</i> | Sapodilla |
| 7 | Anar | <i>Punica granatum</i> | Pomegranate | 14 | Shareefa | <i>Annona squamosa</i> | Sugar Apple |

7.9 CO₂ Smart Executive Club

The University has started a project to record and report carbon footprint of the region. The project aims towards collaborative efforts to reduce this carbon footprint. The related data is available at <https://co2smart.neduet.edu.pk/>. The website continuously reports current status of carbon reduction contribution in kg.



7.10 Waste Water Recycling

As part of a living lab, NED has established a wastewater treatment facility on campus having capacity of 27,000 m³ annually; and gray water treatment facilities at Abul Kalam Library and NED mosque having 2,190 m³ annual processing capacity.



7.11 Water Filtering Units

The two water filtering Units with the capacity of 10,000 gallons per day and 5,000 gallons per day respectively are continuously providing safe and filtered water to the students, employees and the residents of University Staff Colony.



7.12 U-Inspire Pakistan

U-Inspire Pakistan is a society having vision to foster Pakistani youth and young professionals as the generator of innovation in Science, Engineering and Technology for disaster resilience at national and global level. The details are available at <https://uinspire.neduet.edu.pk/>.



7.13 Healthy Friday

The University has taken the initiative to declare every Friday as Healthy Friday. It is a vehicle free day, when no vehicle / motorbikes are allowed in the Campus during the day. The employees and the students are encouraged to use bicycles. Prominent figures have joined NED University during healthy Fridays.



7.14 Publish Sustainability Reports

The University is regularly publishing sustainability reports since 2018, with aim to report progress on the commitment and contributions of the University towards sustainable development agenda.

These reports are available at https://www.neduet.edu.pk/sustainability_reports.



7.15 Pedestrian Path Policy On Campus

As per the pedestrian path policy of the University, the following facilities are provided to the faculty, staff and students including the disabled.

- Railings and supports
- Street lamps for pedestrian in night
- Ramps and guiding blocks which have suitable design for pedestrian having physical disabilities



8. University Carbon Mitigation Targets

The carbon mitigation targets for the University are as follows. As can be seen from the table, for the year 2030 the forecasted net carbon emissions for Scope 1 and 2 are zero. The University is continuously striving to achieve this goal.

| Sources | Carbons Emissions MT eCO ₂ | | | | |
|--|---------------------------------------|--------------|--------------|------------|------------|
| | 2017 | 2021 | 2024 | 2027 | 2030 |
| | Measures | Forecasted | | | |
| Scope 1 | | | | | |
| Diesel for power generation (Gallons) | (1500) 13 | (900) 8 | (600) 5 | (200) 2 | (0) 0 |
| Natural gas (MMBtu) | (22,000) 1100 | (17,500) 875 | (13,000) 650 | (9000) 450 | (6500) 325 |
| Diesel for University buses (Gallons) | (21,000) 300 | (17,500) 250 | (12,000) 171 | (8000) 114 | (5000) 71 |
| Refrigerants (lbs) | (250) 200 | (250) 200 | (250) 200 | (250) 200 | (250) 200 |
| Organic fertilizers (lbs) | (6250) 1 | (6250) 1 | (6250) 1 | (6250) 1 | (6250) 1 |
| Scope 2 | | | | | |
| Purchased electricity | (3665) 1500 | (2800) 1149 | (2500) 1026 | (2200) 903 | (1800) 657 |
| Scope 3 | | | | | |
| Student and staff commute (km) | (14.8) 18,100 | (12) 14,676 | (10) 12,230 | (8) 9784 | (5) 6115 |
| Solid waste (tons) | (10) 13 | (10.5) 13 | (11) 14 | (12) 14 | (12.5) 15 |
| Paper (tons) | (100) 270 | (65) 176 | (60) 162 | (55) 149 | (50) 135 |
| Total carbon emissions (MT eCO₂) | | | | | |
| Scope 1 and 2 | 3114 | 2483 | 2054 | 1670 | 1255 |
| Scope 1, 2 and 3 | 21,497 | 17,347 | 14,459 | 11,617 | 7520 |
| Mitigation measures | | | | | |
| Plantation (number) | (6500) | (8700) | (1850) | (26,00) | (57,000) |
| (in and outside campus) | ~143 | ~191 | ~407 | ~572 | ~1255 |
| Net carbon emissions (MT eCO₂) | | | | | |
| Scope 1 and 2 | 2971 | 2292 | 1647 | 1098 | 0 |
| Scope 1, 2 and 3 | 21,497 | 17,347 | 14,459 | 11,617 | 7520 |

9. Water Consumption Details

Water consumption details within the University for the year are as follow.

| S. No. | Month | Water Connection Size (Diameter) in Inches | Water Quantity in Gallons | Sub-total Water Quantity in Gallons |
|---------------------------------|-----------|--|---------------------------|-------------------------------------|
| 1 | July | 3 | 2810720 | 6005120 |
| | | 8 | 3194400 | |
| 2 | August | 3 | 2810720 | 5580520 |
| | | 8 | 2769800 | |
| 3 | September | 3 | 2810720 | 5094320 |
| | | 8 | 2283600 | |
| 4 | October | 3 | 2810720 | 5448520 |
| | | 8 | 2637800 | |
| 5 | November | 3 | 2810720 | 6049120 |
| | | 8 | 3238400 | |
| 6 | December | 3 | 2810720 | 6108520 |
| | | 8 | 3297800 | |
| 7 | January | 3 | 2810720 | 6282320 |
| | | 8 | 3471600 | |
| 8 | February | 3 | 2810720 | 6040320 |
| | | 8 | 3229600 | |
| 9 | March | 3 | 2810720 | 5868720 |
| | | 8 | 3058000 | |
| 10 | April | 3 | 2810720 | 5191120 |
| | | 8 | 2380400 | |
| 11 | May | 3 | 2810720 | 6209720 |
| | | 8 | 3399000 | |
| 12 | June | 3 | 2810720 | 6702520 |
| | | 8 | 3891800 | |
| Total Water Quantity in Gallons | | | | 70580840 |
| Total Area of the Campus | | | | 264.17 |
| Total Water Quantity in Gallons | | | | 267179.61 m ³ |

10. Electricity Consumption Details

Electricity consumption detail within the University for the year are as follow.

| Location | Units Consumed (kWh) (A1-R tariff) | | | | | | | | | | | | Total |
|-------------------------|------------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------|
| | Jul 2021 | Aug 2021 | Sep 2021 | Oct 2021 | Nov 2021 | Dec 2021 | Jan 2022 | Feb 2022 | Mar 2022 | Apr 2022 | May 2022 | Jun 2022 | |
| Staff Colony S/S | 116,830 | 74,034 | 99,599 | 89,808 | 66,975 | 46,668 | 42,327 | 46,806 | 62,958 | 94,783 | 104,573 | 112,607 | 957,968 |
| Mech. & Elect. Dept.S/S | 43,746 | 19,177 | 39,322 | 35,645 | 29,592 | 22,629 | 18,469 | 19,976 | 25,069 | 27,737 | 30,768 | 46,167 | 358,297 |
| Civil Engg. Dept. S/S | 88,375 | 41,832 | 79,493 | 76,129 | 65,834 | 49,057 | 39,149 | 45,468 | 59,226 | 61,506 | 74,820 | 100,975 | 781,864 |
| Student Hostel S/S | 76,398 | 46,161 | 72,705 | 58,280 | 53,722 | 40,001 | 35,389 | 40,364 | 50,444 | 56,071 | 61,598 | 97,617 | 688,750 |
| New Mech. Lab. | 30,508 | 9,538 | 28,753 | 28,644 | 18,296 | 8,409 | 4,946 | 5,516 | 15,640 | 22,902 | 19,839 | 35,971 | 228,962 |
| New Elect. Lab. | 23,708 | 5,785 | 23,476 | 20,665 | 14,936 | 10,901 | 6,869 | 8,157 | 11,386 | 13,106 | 12,781 | 22,950 | 174,720 |
| NED Pump | 5,518 | 5,219 | 5,305 | 5,130 | 3,620 | 5,263 | 5,098 | 5,399 | 5,247 | 5,687 | 5,479 | 5,696 | 62,661 |
| City Campus | 11,401 | 4,660 | 8,321 | 7,043 | 8,844 | 7,610 | 5,183 | 5,502 | 6,642 | 7,380 | 7,689 | 11,421 | 91,696 |
| LEJ Campus | 17,711 | 6,816 | 7,368 | 9,878 | 8,551 | 6,124 | 4,401 | 4,957 | 5,736 | 8,741 | 6,108 | 12,086 | 98,477 |
| NED School | 987 | 357 | 2,076 | 1,427 | 1,483 | 958 | 527 | 793 | 1,236 | 1,577 | 720 | 0 | 12,141 |
| Admission Centre | 27,840 | 17,468 | 26,150 | 24,148 | 18,169 | 10,372 | 7,893 | 9,951 | 18,286 | 21,067 | 23,814 | 31,846 | 237,004 |
| CS & IT | 8,518 | 6,844 | 8,337 | 7,850 | 6,777 | 5,316 | 5,223 | 5,829 | 5,252 | 8,428 | 8,772 | 9,895 | 87,041 |
| Petrochemical | 22,803 | 8,955 | 25,725 | 20,524 | 17,463 | 12,884 | 11,105 | 12,249 | 15,300 | 18,663 | 19,892 | 29,125 | 214,688 |
| Automotive | 13,544 | 3,887 | 17,256 | 10,957 | 12,237 | 12,109 | 8,905 | 7,885 | 10,112 | 16,549 | 10,576 | 17,132 | 141,149 |
| Staff Colony S/S | 116,830 | 74,034 | 99,599 | 89,808 | 66,975 | 46,668 | 42,327 | 46,806 | 62,958 | 94,783 | 104,573 | 112,607 | 957,968 |
| Mech. & Elect. Dept.S/S | 43,746 | 19,177 | 39,322 | 35,645 | 29,592 | 22,629 | 18,469 | 19,976 | 25,069 | 27,737 | 30,768 | 46,167 | 358,297 |
| Civil Engg. Dept. S/S | 88,375 | 41,832 | 79,493 | 76,129 | 65,834 | 49,057 | 39,149 | 45,468 | 59,226 | 61,506 | 74,820 | 100,975 | 781,864 |
| Total Units | 487,887 | 250,733 | 443,886 | 396,128 | 326,499 | 238,301 | 195,484 | 218,852 | 292,534 | 364,197 | 387,429 | 420,881 | 4,022,811 |
| Solar Units | 17,100 | 17,900 | 18,220 | 18,110 | 17,950 | 17,660 | 17,900 | 19,100 | 22,540 | 23,400 | 23,620 | 23,940 | 237,440 |
| Renewable Proportion | 4% | 7% | 4% | 5% | 5% | 7% | 9% | 9% | 8% | 6% | 6% | 6% | 6% |

11. Summary of Consumed and Sustained Commodities

The following are some statistics of the commodities consumed and sustained in the University during the year 2022-23.

| | | |
|--|---|-----------|
| Electricity | | |
| 1 | Total number of units consumed in Main, LEJ, City Campus, Staff Colony and Hostel (kWH) | 4,022,811 |
| 2 | Total number of units generated by Solar Systems (kWH) | 237,440 |
| 3 | Renewable Proportion | 6% |
| Water | | |
| 4 | Total amount of water consumed at the Main Campus (Gallons) | 70580840 |
| 5 | Re-cycled water (Gallons) | 1,298,150 |
| Waste | | |
| 6 | Total solid waste (Tons) | 213 |
| MT eCO₂ Carbon Footprint (%) | | |
| 7 | Scope 1 | 7.4 |
| 8 | Scope 2 | 6.9 |
| Shuttle Ride Commute | | |
| 9 | Total number of Shuttle rides | 4,977 |
| 10 | Number of students per ride | 70 |
| 11 | Total number of commuting personals (students + staff) | 348390 |
| Plantation | | |
| 12 | Total number of Urban Forest | 13 |
| 13 | Total number of trees in Urban Forests | 1324 |
| 14 | Approximate total number of trees and plants including Urban Forests | 10,000 |

12. Health and Well-Being Facilities

12.1 Medical Department

Medical Department is located next to Humanities Department of this University and is administered by Principal Medical Officer, accompanied by two Senior Medical Officers and One Lady Medical Officer, all are posted at main Campus. One male and two female nurses are also present in Main Campus. Medical Sub Centre is located at each LEJ, City Campus and Thar Campus, dispenser is available at LEJ while Female Nurse at City Campus.

There are numerous diagnostic and therapeutic modalities available free of charge for the students and staff at the Main Campus. Emergency/routine Outpatient Department Service (OPD), Pathological, Radiological and Electrocardiographic facilities are also available. Similarly therapeutic support in the form of Airway, Breathing and Circulatory (ABC) assistance are available. Besides that Outpatient facilities are also available at peripheral Medical Sub-Centres, i.e. City and LEJ Campus. However, X-Ray, Pathological Laboratory and Ambulance facility are restricted to Main Campus only. Further details are available at https://www.neduet.edu.pk/medical_department.

12.2 Sports Facilities

Sports Section was established at NED University in 1978, that is functioning under the control of Students Affairs Department. The facilities provided by this section include boys gymnasium, girls gymnasium, squash complex, two outdoor basketball courts, one tennis court, cricket ground with turf wicket, football ground, fitness centre, table tennis, volley ball, and badminton.

The Sports Section also organizes NED Interdepartmental Games and Inter Faculty Games every year for the Student of NED University, while, NED University teams participate in Intervarsity Championships that are scheduled under auspices of Higher Education Commission, Islamabad i.e. (Badminton, Basketball, Cricket, Table Tennis, Football, Volleyball, Squash etc.).



13. Gender Equality

The University always strives to provide equal facilities to all genders. Some supporting statistics are given in the following.

13.1 Students

The following are the gender-wise student statistics for admissions, enrollment and graduation, for the year 2021-22.

| | | Male | Female | Total |
|------------|--------------------------|--------|-------------|--------|
| Applicants | Undergraduate Programmes | 10,949 | 4,859 (31%) | 15,808 |
| | Masters Programmes | 1,794 | 512 (22%) | 2,306 |
| | PhD Programmes | 121 | 75 (38%) | 196 |
| | Total Applicants | 12,864 | 5,446 (30%) | 18,310 |
| Admissions | Undergraduate Programmes | 1,464 | 1,098 (43%) | 2,562 |
| | Masters Programmes | 903 | 284 (24%) | 1,187 |
| | PhD Programmes | 29 | 28 (49%) | 57 |
| | Total Applicants | 2,396 | 1,410 (37%) | 3,805 |
| Enrollment | Undergraduate Programmes | 5,634 | 3,720 (40%) | 9,354 |
| | Masters Programmes | 1,953 | 635 (25%) | 2,588 |
| | PhD Programmes | 123 | 82 (40%) | 205 |
| | Total Applicants | 7,772 | 4,437 (36%) | 12,209 |
| Graduation | Undergraduate Programmes | 1,411 | 881 (38%) | 2,292 |
| | Masters Programmes | 634 | 265 (29%) | 899 |
| | PhD Programmes | 10 | 8 (44%) | 18 |
| | Total Applicants | 2,055 | 1,154 (36%) | 3,209 |

Scholarships and financial assistance is also provided equally to all genders. Statistics for the year 2021-22 are given below.

| | Male | Female | Total | Amount (PKR) |
|------------------|------|-----------|-------|--------------|
| Private Funded | 587 | 481 (45%) | 1068 | 88,451,261 |
| Ehsaas Programme | 369 | 246 (40%) | 615 | 70,323,250 |
| HEC Scholarship | 130 | 96 (42%) | 226 | 26,586,000 |
| Zakat and Ushr | 42 | 57 (57%) | 99 | 10,039,000 |
| Sindh HEC | 6 | 9 (60%) | 15 | 3,450,000 |
| Duty Society | 358 | 124 (26%) | 482 | 8,289,620 |

13.2 Faculty and Staff

The University provides equal teaching, research and administrative opportunities to everyone irrespective of the gender. Gender-wise employment statistics for teaching departments are given below. The administrative posts include Chairperson, Co-Chairperson, and Postgrad Coordinator.

| Department Name | Teaching Staff (Number) | | | | Non-teaching Staff (Number) | | |
|--|-------------------------|------------|------------|-------------------------------------|-----------------------------|------------|-----------|
| | Total | Male | Female | Female holding Administrative Post* | Total | Male | Female |
| Civil Engineering | 47 | 31 | 16 | | 49 | 43 | 6 |
| Urban and Infrastructure Engineering | 8 | 1 | 7 | | 29 | 21 | 8 |
| Petroleum Engineering | 14 | 13 | 1 | | 18 | 16 | 2 |
| Earthquake Engineering | 4 | 4 | 0 | | 18 | 14 | 4 |
| Mechanical Engineering | 56 | 50 | 6 | | 66 | 66 | 0 |
| Textile Engineering | 21 | 10 | 11 | | 37 | 35 | 2 |
| Industrial and Manufacturing Engineering | 24 | 16 | 8 | | 40 | 38 | 2 |
| Automotive and Marine Engineering | 8 | 7 | 1 | | 29 | 27 | 2 |
| Electrical Engineering | 48 | 31 | 17 | | 56 | 55 | 1 |
| Computer and Information Systems Engineering | 30 | 14 | 16 | | 40 | 39 | 1 |
| Electronic Engineering | 27 | 12 | 15 | | 35 | 34 | 1 |
| Bio-Medical Engineering | 19 | 11 | 8 | 1 | 30 | 28 | 2 |
| Telecommunications Engineering | 16 | 7 | 9 | | 16 | 16 | 0 |
| Software Engineering | 16 | 5 | 11 | 2 | 0 | 0 | 0 |
| Computer Science and Information Technology | 9 | 8 | 1 | 1 | 0 | 0 | 0 |
| Mathematics | 32 | 19 | 13 | | 7 | 7 | 0 |
| Physics | 14 | 10 | 4 | | 10 | 10 | 0 |
| Chemistry | 14 | 3 | 11 | 1 | 11 | 9 | 2 |
| English Linguistics and Allied Studies | 14 | 2 | 12 | 1 | 8 | 7 | 1 |
| Essential Studies | 8 | 5 | 3 | | 8 | 5 | 3 |
| Chemical Engineering | 19 | 16 | 3 | | 21 | 17 | 4 |
| Materials Engineering | 11 | 10 | 1 | | 25 | 25 | 0 |
| Metallurgical Engineering | 15 | 12 | 3 | | 34 | 33 | 1 |
| Polymer and Petrochemical Engineering | 8 | 4 | 4 | 1 | 20 | 19 | 1 |
| Food Engineering | 10 | 6 | 4 | | 11 | 10 | 1 |
| Environmental Engineering | 5 | 4 | 1 | | 18 | 17 | 1 |
| Architecture and Planning | 25 | 5 | 20 | 1 | 27 | 25 | 2 |
| Economics and Management Sciences | 16 | 12 | 4 | | 7 | 7 | 0 |
| Civil Engineering [TIEST] | 10 | 8 | 2 | 1 | 2 | 2 | 0 |
| Computer Science and Technology [TIEST] | 9 | 8 | 1 | | 27 | 27 | 0 |
| Total | 557 | 344 | 213 | 9 | 699 | 652 | 47 |

Likewise, gender-wise employment statistics for administrative departments and research centres are given below. Administrative posts include Vice Chancellor, Pro-Vice Chancellor, Registrar, Deputy Registrar, Director, and Deputy Director.

| Department Name | Total Employees | Male | Female | Female holding administrative Post* |
|---|-----------------|------------|-----------|-------------------------------------|
| VC Secretariat | 11 | 11 | 0 | |
| P.V.C Secretariat | 7 | 7 | | |
| Dean Office (Faculty of Civil and Petroleum Engineering) | 3 | 3 | 0 | |
| Dean Office (Faculty of Mechanical and Manufacturing Engineering) | 5 | 5 | 0 | |
| Dean Office (Faculty of Electrical and Computer Engineering) | 4 | 4 | 0 | |
| Dean Office (Faculty of Information Sciences and Humanities) | 4 | 4 | 0 | |
| Dean Office (Faculty of Chemical & Process Engineering) | 9 | 8 | 1 | |
| Dean Office (Faculty of Architecture & Management Sciences) | 1 | 1 | 0 | |
| Registrar Office | 223 | 216 | 7 | |
| Finance | 46 | 41 | 5 | |
| Examination | 53 | 48 | 5 | |
| Services | 234 | 222 | 12 | |
| Information Technology (IT Department) | 40 | 34 | 6 | |
| University Advancement and Financial Assistance (UA & FA) | 4 | 4 | 0 | |
| Student Affairs | 35 | 29 | 6 | |
| Industrial Liaison | 8 | 8 | 0 | |
| Planning & Projects | 21 | 21 | 0 | |
| Advanced Studies Research Board (ASRB) | 4 | 4 | 0 | |
| Quality Management Cell (QMC) / Quality Enhancement Cell (QEC) | 5 | 5 | 0 | |
| Medical Department | 25 | 21 | 4 | |
| Audit Department | 8 | 8 | 0 | |
| Office of Research, Innovation and Commercialization (ORIC) | 4 | 3 | 1 | |
| Technology Innovation Support Centre | 0 | 0 | 0 | |
| Procurement Cell | 17 | 17 | 0 | |
| Planning and Development | 13 | 13 | | |
| Engr. Abul Kalam Library | 57 | 44 | 13 | 2 |
| High Performance Computing Centre | 2 | 2 | | |
| Instrumentation Centre | 5 | 5 | | |
| MR ISO Office | 12 | 12 | | |
| NED Academy | 4 | 4 | | |
| Panjwani - Hissar Water Institute | 1 | 1 | | |
| Project Directorate Mega IV | 1 | 1 | | |
| Project Directorate Mega V | 1 | 1 | | |
| Sultan Qaboos Oman I.T. Chair | 4 | 3 | 1 | |
| Total | 871 | 810 | 61 | 2 |

A 'Daycare Centre' is facilitating the female university employees. The University has recently approved Rs. 5 million for construction of an additional block for the Centre; its stone laying Ceremony was held in December 2019 by Justice (Rtd.) Nasira Iqbal.

14. Ethnic and Religious Equality

14.1 Students

The University does not discriminate admissions on the basis of religion. All students who meet the merit criteria are eligible for admission, irrespective of caste, creed or religion. Religion-wise statistics of the students admitted in batches from 2019 till 2022 are as follows. The table also shows the number of foreign national students admitted in the University in the same batches.

| Batch | Total Registrations | Non-Muslims | Foreign Nationals |
|-------|---------------------|-------------|-------------------|
| 2019 | 2348 | 38 | 10 |
| 2020 | 2248 | 20 | 5 |
| 2021 | 2299 | 19 | 17 |
| 2022 | 2442 | 21 | 18 |

Major number of seats are reserved for the local students of home-city Karachi, however sufficient proportion of seats is kept for other ethnicities as well. The details of the distribution of seats can be found in the University Undergraduate Prospectus available at https://www.neduet.edu.pk/sites/default/files/Admissions-2023/UGProspectus_2023.pdf.

14.2 Faculty and Staff

The University provides equal employment opportunities including teaching, research and administrative positions to everyone who is eligible for the post on merit. The religion-wise statistics for the faculty are as follows.

| Department Name | Teaching Staff (Number) | | Non-teaching Staff (Number) | |
|--|-------------------------|-------------|-----------------------------|-------------|
| | Total | Non-Muslims | Total | Non-Muslims |
| Civil Engineering | 47 | | 49 | 1 |
| Urban and Infrastructure Engineering | 8 | | 29 | |
| Petroleum Engineering | 14 | 1 | 18 | |
| Earthquake Engineering | 4 | 1 | 18 | 1 |
| Mechanical Engineering | 56 | | 66 | |
| Textile Engineering | 21 | | 37 | |
| Industrial and Manufacturing Engineering | 24 | | 40 | |
| Automotive and Marine Engineering | 8 | | 29 | |
| Electrical Engineering | 48 | 1 | 56 | |
| Computer and Information Systems Engineering | 30 | | 40 | |
| Electronic Engineering | 27 | | 35 | 2 |
| Bio-Medical Engineering | 19 | | 30 | 1 |
| Telecommunications Engineering | 16 | | 16 | |
| Software Engineering | 16 | | 0 | |
| Computer Science and Information Technology | 9 | | 0 | |
| Mathematics | 32 | | 7 | |
| Physics | 14 | | 10 | |
| Chemistry | 14 | | 11 | |
| English Linguistics and Allied Studies | 14 | | 8 | |
| Essential Studies | 8 | | 8 | |
| Chemical Engineering | 19 | | 21 | |
| Materials Engineering | 11 | | 25 | 1 |
| Metallurgical Engineering | 15 | | 34 | |
| Polymer and Petrochemical Engineering | 8 | | 20 | |
| Food Engineering | 10 | | 11 | |
| Environmental Engineering | 5 | | 18 | |
| Architecture and Planning | 25 | 1 | 27 | 1 |
| Economics and Management Sciences | 16 | | 7 | |
| Civil Engineering [TIEST] | 10 | | 2 | |
| Computer Science and Technology [TIEST] | 9 | 4 | 27 | 3 |
| Total | 557 | 8 | 699 | 10 |

Likewise, the religion-wise statistics for the staff of administrative departments and research centres are as follows.

| Department Name | Total Employees | Non-Muslims |
|---|-----------------|-------------|
| VC Secretariat | 11 | |
| P.V.C Secretariat | 7 | |
| Dean Office (Faculty of Civil and Petroleum Engineering) | 3 | |
| Dean Office (Faculty of Mechanical and Manufacturing Engineering) | 5 | |
| Dean Office (Faculty of Electrical and Computer Engineering) | 4 | |
| Dean Office (Faculty of Information Sciences and Humanities) | 4 | |
| Dean Office (Faculty of Chemical & Process Engineering) | 9 | |
| Dean Office (Faculty of Architecture & Management Sciences) | 1 | |
| Registrar Office | 223 | |
| Finance | 46 | |
| Examination | 53 | |
| Services | 234 | 19 |
| Information Technology (IT Department) | 40 | |
| University Advancement and Financial Assistance (UA & FA) | 4 | |
| Student Affairs | 35 | |
| Industrial Liaison | 8 | |
| Planning & Projects | 21 | |
| Advanced Studies Research Board (ASRB) | 4 | |
| Quality Management Cell (QMC) / Quality Enhancement Cell (QEC) | 5 | |
| Medical Department | 25 | |
| Audit Department | 8 | |
| Office of Research, Innovation and Commercialization (ORIC) | 4 | |
| Technology Innovation Support Centre | 0 | |
| Procurement Cell | 17 | |
| Planning and Development | 13 | |
| Engr. Abul Kalam Library | 57 | |
| High Performance Computing Centre | 2 | |
| Instrumentation Centre | 5 | |
| MR ISO Office | 12 | |
| NED Academy | 4 | |
| Panjwani - Hissar Water Institute | 1 | |
| Project Directorate Mega IV | 1 | |
| Project Directorate Mega V | 1 | |
| Sultan Qaboos Oman I.T. Chair | 4 | |
| Total | 871 | 19 |

15. Research Centres

Currently a total of 24 research centre are working the University.

15.1 Advanced Traffic Lab for Analytics And Simulation (ATLAS)

Pakistan needs to catch up in use of technology for operations of transportation systems and traffic management. Pakistan is on its way in improving its transportation infrastructure, therefore, a well-developed traffic operational plan is essential to make the infrastructure, efficient, economical and sustainable. This research centre is a pioneer in Pakistan in developing suitable traffic flow models, real-time measurement system, smart (adaptive) traffic controls and ITS for mass transit system in different cities of Pakistan. For more information visit <https://atlas.neduet.edu.pk/>.

15.2 Centre for Smart Grid Studies

A smart grid system is a self-sufficient electricity network system based on digital automation technology for monitoring, control, and analysis. It helps utilities conserve energy, reduce costs, increase reliability and transparency, and make processes more efficient. It also allows for easy integration and reliable service to the consumers. The implementation of smart grid technology in the developed world has allowed prevention of large-scale blackouts, better grid infrastructure planning and energy consumption, generation and delivery and also provide timely and accurate inputs for policy directions. The role of a smart grid study centre is multi-fold. It not only focuses on human resource development, but also provides the government, industry and utility necessary awareness and guidance needed for absorption of new technologies under an effective regulatory framework.

15.3 Centre for Affordable Housing And Sustainable Built Environment (CAHSBE)

In order to move towards creating a capable and viable local construction sector, which is able to respond to the demands of sustainable infrastructure and housing development, through a rational and mutually agreeable strategic process, Centre for Affordable Housing & Sustainable Built Environment is established at NED University. This centre would help develop strategies that involve all stakeholders to deliver capital-intensive infrastructure as well as energy-efficient and low-cost housing facilities in a sustainable way. For more information visit <https://cahsbe.neduet.edu.pk/>.

15.4 Centre for Advanced Studies In Renewable Energy (ASURE)

ASURE centre envisages to essentially cover multifaceted aspects related to alternative energy. They could cover the testing, certification, training and research aspects on a broader scale and

take up specific projects of smaller size benefitting a larger populace. On the broader scale the areas which could be taken up are: 1) To provide testing facility related to renewable energy equipment, 2) To issue certificates and compliance report to the consignee, 3) To create awareness session related to renewable energy to the local industries and residential consumer, 4) Act as a long-term node to ensure the continuity of efforts on sustainable basis, 5) To bridge the gap between academia and industry through research, consultation and providing customized smart energy solutions. For more information visit <https://asure.neduet.edu.pk/>.

15.5 Norwegian Centre of Petroleum Studies

The Norwegian Centre of Excellence in Petroleum Studies (NCEPS) is established with the cost of PKR 44.924 M in collaboration with Government of Kingdom of Norway. The Centre is the foremost facility in the country aimed to develop expertise for teaching and research in Petroleum Engineering discipline. Through the establishment of this centre a significant capacity building in teaching and research have been achieved. Four faculty members have received MS degree from NTNU, training of faculty in teaching and research at NTNU. It is strongly believed that the outcome of NCEPS will benefit the industry, the country and the region and will contribute in the improvement of the socio-economic conditions of the common people of Pakistan.

15.6 Panjwani Hisaar Water Institute

The ground breaking ceremony of the Panjwani Hisaar Water Institute at NED University was held on 4th May 2018 by the Chief Guest Mr. Muhammad Zubair, Governor Sindh. The institute is a collaborated effort of NED University, Panjwani Charitable Foundation and Hisaar Foundation. The institute will provide multidisciplinary research facility that will not be restricted to just water engineering but aims to integrate the currently isolated nodes of engineering, natural sciences, economics and social sciences to bring forth a new generation of water professionals. The institute will be home to advanced social and scientific water labs and be the hub of all cutting edge water related research which would be driven by the real world issues and hence bridge the gap between the world of academia and market demand.

15.7 National Incubation Centre

NED University in collaboration with LMKT is hosting the National Incubation Centre; Karachi which was inaugurated the Prime Minister of Pakistan, Mr. Shahid Khaqan Abbasi on 11th May 2018. The centre will offer talented entrepreneurs and promising start-ups of Sindh quality incubation programmes, access to mentor and investor networks as well as technical resources.

15.8 Building Information Modeling Centre (BIM)

BIM is a state of the art Centre, which provides free service to industrialists for resolving pre-construction issues of high rise and complex structured buildings related to wind zones, emergency exits and temperature through developing visual models of the projects. The Centre is providing a platform to bring all engineers including civil, mechanical, electrical, structural and material to work together under the same umbrella while preparing building modeling using software that adds everything. This is first Centre of its kind in Pakistan established in collaboration with NED Alumni Association of Tri-State (NEDATS) with the total cost of Rs 3.5 million.

15.9 NED Virtual Reality Centre (VR Centre)

The NED University has recently established a state-of-the art facility for integrating virtual reality in the education, research and practice. The facility that is housed at the Department of Civil Engineering is named as “NED University Virtual Reality Centre” is the first of its kind in the entire region (sub-continent). The facility houses three major system including, virtual teaming system, walking VR systems, and Projection VR system. The virtual teaming system is equipped with latest interactive panel, video conferencing and webcasting equipment and software. There are multiple walking VR systems available at the centre to provide virtual immersive environment to the user specifically for VR designing, and VR based individual training, as per customized needs of the trainee. The project VR system is based on a Corner Cave-in concept that has the capability (both from software and hardware perspective) to provide a virtual-cum-immersive experience to a group of people. The centre is equipped with VR designing and development software, Building Information Modeling platforms, 3D to VR transformation platforms, and VR experience software platforms etc. The centre was indigenously designed for customized needs and has the capacity to be integrated and expanded towards Augmented Reality in near future. For more information visit <https://vrc.neduet.edu.pk/>.

15.10 Instrumentation Centre (IC)

The Instrumentation Centre at NED University of Engineering and Technology, an ISO 9001 certified organization, was established in 2005 by HEC funding and ever since, it is providing valuable and high quality engineering services internally and externally to industrial, academic, public and commercial organizations for diversified applications. The aim of Instrumentation Centre is to serve as Centre of Excellence focusing on testing, calibration and engineering services, traceable to National and International standards in accordance to ISO/IEC 17025:2005 standard. It also aims to provide continuing education and training in support of the University’s strategic goal to become the leading provider of professional and continuing education programme, establish state-of-the-art laboratories to provide test &

calibration facilities, and provide R&D solutions and consultancy to Industrial problems and helping them to reduce the waste and increase the productivity. For more information visit <https://ic.neduet.edu.pk/>.

15.11 High Performance Computing Centre (HPCC)

High Performance Computing Centre at NED University of Engineering & Technology manages high performance computational resources to address the miscellaneous computational needs. With 10 TFLOPS of computational power and various scientific software along with related expertise, the centre provides an excellent state-of-the-art R&D and business opportunities for its users. For more information visit <https://hpcc.neduet.edu.pk/>.

15.12 Advanced Material Testing Facility

The Advance Material Testing laboratory is another state of the art facility. The facility is used to conduct full scale static and pseudo dynamic testing of various structural components of buildings and bridges. This facility is collection of various state of the art advance lab facilities for research and advance materials including Rapid Alloy Analysis Lab; Composite Materials Lab; Magnetic Materials Lab; Thermal Analysis Lab; Nano Materials Lab; Advanced Coatings Lab; Surface Engineering; XRD Lab; Advanced Ceramic Materials Lab; Powder Materials Characterization Lab; Advanced Materials Processing Lab; Scanning Electron Microscopy Lab and Transmission Electron Microscopy Lab.

15.13 Centre for Software Research and Development (CSR D)

Center for Software Research and Development (CSR D) is an organization, based on the exploration and testing of upcoming technologies regarding Computer Science, which results in the enlightenment of the younger generation of researchers. In order to introduce something unique in Pakistan, current research projects of CSR D include AR, VR and MR; being analyzed to modernize the curriculum of teaching and learning. Similarly, worldwide prevailing technological companies, like Google, Facebook and Microsoft, etc. provide a platform for the youth to review and initiate work in this domain. CSR D aims to expand the work of Research and Development to an advanced extent, more specifically in the departments of Information Technology & Telecommunication. The center provides assets to not only developers market but also welcomes the student body to learn teaching pedagogy. The central aims and objectives include undertaking industrial research projects, producing Ph.Ds. and M.Eng/M.S (Computer Science), strengthening Postgraduate Research Programmes, and establishing the University-Industry Consortium. For more information visit <https://csrd.neduet.edu.pk/>.

15.14 DICE Energy Innovation Centre

NED-DICE is a joint collaborative initiative of NED University of Engineering and Technology and DICE Foundation. NED-DICE provides a platform for energy related innovations and for collaboration among academia, industry, government, entrepreneurs and expatriates to integrate science, technology and policy solutions to solve pressing energy challenges faced by Pakistan. NED-DICE aims to mobilize Energy Professionals of Pakistani origin around the world, to take advantage of their expertise and experiences for growth of energy sector in Pakistan. For more information visit <https://dice.neduet.edu.pk/>.

15.15 K Electric Lab

K-Electric has partnered with NED University to establish its Electrical Engineering lab along with the provision of integrated equipment so as to further strengthening the platform for engineering students. The Lab equipment includes modified relays, test benches, transformers and various other valuable devices used in grid stations. Moreover, separate areas for lectures and experiments have been established as well. This lab is enabling electrical engineering students to gain first-hand access to complex electrical equipment, while enhancing R&D activities in line with the utility's research driven approach.

15.16 Electronics Design Centre (EDC)

Electronics Design Centre performs cutting-edge fundamental and commercially driven research in electronic devices and circuits, radio frequency and microwave integrated circuits. Since its inception (January 2011), EDC's primary objectives have been to investigate scientific fundamentals necessary to obtain incessant improvements in ultimate miniaturization, increased functionality, enhanced bandwidth and improved efficiency. EDC has several international linkages in US, Europe and Asia pertaining to its expertise. The Centre has produced three PhDs so far, and continues to enhance NED University's reputation for quality research output. At present, EDC consists of a RF (Radio Frequency) Lab, DC (Device Characterization) Lab, Design Tools and expertise including Sonnet, Cadence, Mentor Graphics, MicroTech (TCAD) and AWR Microwave. For more information visit <https://edc.neduet.edu.pk/>.

15.17 Product Development Centre

This Centre is fully equipped with complete range of sophisticated equipment and software to be used for re-engineering. Faro Arm scanning system along with Fused Deposition Moulding machine is available in the centre where reverse engineering of any product can be obtained and its prototype developed. The centre facilitates the industry for developing the prototypes.

15.18 Cowasjee Earthquake Study Centre

Cowasjee Earthquake Study Centre (CESNED) was established in 2001 after the devastating Bhuj earthquake. The Centre is currently administered by the Department of Earthquake Engineering. The objectives of this Centre include (a) housing national and global data pertaining to earthquake; (b) to act as a Centre for disseminating accumulated knowledge; (c) to respond to the emergency needs; and (d) be able to providing guiding principles for pre and post disaster earthquake mitigation. It has become a hub of the earthquake related activities with time. The vital role played by CESNED after 8th October, 2005 Kashmir earthquake led to its recognition as one of the two earthquake study centres in the Country. For more information visit <https://eqd.neduet.edu.pk/CESNED>.

15.19 Water Modeling Centre (WMC)

The Water Modeling Centre (WMC) was inaugurated on May 21, 2013. This Centre serves as a research institute with urge of providing better understanding of private and public water resources and management strategies. Research and outsourced projects are conducted by the team of WMC. WMC is equipped with various computer based models for performing water supply analysis flood plain mapping, drainage system design, groundwater assessment, watershed simulation, climate change, computational fluid dynamics (CFD), irrigation system design, and many more related tasks. For more information visit <https://ced.neduet.edu.pk/water-modeling-center>.

15.20 National Centre for Data Analytics and Cloud Computing (NCBC)

National Centre for Data Analytics and Cloud Computing is a unique public private partnership concept which will provide framework through which NEDUET can collaborate with leading ICT companies and national and international academia to accelerate the development and deployment of the cutting edge ICT solutions related to big data and its analytics on cloud using Open source platforms. For more information visit <https://ncbc.neduet.edu.pk/>.

15.21 National Centre for Cyber Security (NCCS)

The centre aims to develop a unified security framework which will be useful for stakeholders from all the related areas of computing (software, operating systems, network, Internet, databases, mobile, cloud, etc.). The unified security framework will be based on joint research in the four application domains which are End Point Protection, Internet Security, Digital Forensics, and Quantum Technology. The main focus of the centre is to develop defensive framework from malware and other Cyber threats by understanding their development, evolution, proliferation, prediction, damage, forensics and ensuring data security by efficient

quantum based cryptographic methods. The Higher Education Commission has approved 118.04 Million PKR for the establishment of this centre. For more information visit <https://nccs.neduet.edu.pk/>.

15.22 National Centre for Artificial Intelligence (NCAI)

Through a long competitive process HEC has selected 06 national universities to establish affiliated labs of National Centre for Artificial Intelligence (NCAI). NED University won funding of two affiliated labs of NCAI that will be established and will constitute Research Centre for at Artificial Intelligence NED. Total funding of 167 Million will be used to establish two labs namely Neurocomputation Lab and Smart City Lab. For more information visit <https://ncai.neduet.edu.pk/>.

15.23 National Centre for Robotics and Automations (NCRA)

Higher Education Commission (HEC) and Planning Commission (PC), Pakistan invited to establish top-tier research-oriented National Centre of Robotics & Automation (NCRA). NCRA is designed to create national capacity in key emerging areas of Robotics and Automation that have received a lot of attention and focus in the recent years. NED University is selected for the Haptics, Human-Robotics and Condition Monitoring Lab (combined Lab of NED and MUET) worth Rs. 90 Million which is one of the 11 selected labs across the country. However, the Haptics and Human-Robotics Lab is going to be separately established at NEDUET worth Rs. 45 Million. The lab will specifically focus on the design and development of Haptics and Teleoperation Setups for disaster management and tele-surgery etc. In addition, the lab will also research in the design of the STEM-based education and assistive robots. For more information visit <https://ncra.neduet.edu.pk/>.

15.24 Heritage Cell

The Heritage cell at Department of Architecture and Planning, NEDUET, is a research unit established in 2006 to support and sustain DAPNED's ongoing efforts towards creating general awareness of issues related to heritage conservation in Pakistan. Since its establishment in 1998 the department has endeavoured to develop technical support and professional capacity building in the field of heritage conservation through its activities of focused research, training and advocacy. Heritage Cell functions as a full-fledged research unit housed within NED University's historic 'City Campus'. For more information visit https://www.neduet.edu.pk/arch_planning/Heritage/webpages/heritage.html#ad-image-1.

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