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**Beaconhouse National University**

Annual Sustainability Initiatives Report: 2024

WWF - Pakistan

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## Chapter 1: Introduction & Key Initiatives

Beaconhouse National University has pioneered an innovative, multi-sectoral, inter-provincial, and internationally oriented Climate Change, Environment, and Sustainability (CCES) initiative. As the first university in Pakistan to launch a comprehensive Vision and Strategic Framework for Environmental Sustainability, BNU aims to become ‘Pakistan’s First Green University,’ the nation’s first WWF Certified Green Campus, and a global hub for climate action through its Green Experience Lab (GEC).

CCES at BNU operates through three key domains:

1. **Amplifying Action – Campus and Communities:** Implementing sustainability initiatives that drive direct environmental impact and community engagement.
2. **Mobilizing Knowledge for Action:** A collaborative framework integrating academic research, policy formulation, and sustainable innovation to drive actionable change.
3. **Walking the Talk in Operations:** Positioning BNU as a model of sustainability by embedding eco-conscious practices into institutional operations and infrastructure.

Our initiative extends beyond academia, fostering partnerships with corporate, industrial, civil society, and governmental entities to catalyze systemic environmental change. With Memorandums of Understanding (MOUs) in progress with over 60 universities, BNU is leading a collective effort to implement an evolving Climate Action Charter at governance, policy, and community levels.

Furthermore, BNU is integrating AI-driven environmental analytics to optimize carbon intensity, map climate change impacts, predict global disease burdens linked to environmental shifts, and advance sustainable water resource management strategies. This technological approach enhances the predictive capabilities of climate action and resilience planning. Key focus areas over the past year encompassed:

### 1. Embedding Sustainability at the Core of Academic Excellence

BNU has integrated sustainability as a foundational pillar across all academic programs. Two specialized introductory courses, each comprising eight modules, have been introduced for first-year students to instill a comprehensive understanding of climate change, environmental ethics, and sustainability. These courses critically examine human-environment interactions, ecological resilience, and sustainable development, equipping students with interdisciplinary analytical frameworks to address global environmental challenges effectively.

Over the past year, BNU has dedicated significant efforts to fostering interdepartmental synergies, ensuring that sustainability is embraced across all disciplines. This has involved comprehensive faculty training, curriculum integration, research and collaborative projects aimed at embedding environmental consciousness into the university's academic and operational frameworks. The department-led initiatives detailed in the following sections showcase the tangible outcomes of these efforts.

## 2. Environmental Management Plan – WWF Collaboration

BNU is actively implementing WWF's comprehensive Environmental Management Plan (EMP) to institutionalize sustainable operational practices and strengthen its environmental stewardship. With a strategic focus on reducing water and electricity consumption, optimizing paper usage, integrating renewable energy solutions, and significantly curbing carbon emissions, the university is committed to measurable, long-term sustainability outcomes. In 2025, BNU is intensifying its commitment to sustainability by transitioning all vendors to WWF-certified sustainable suppliers, ensuring that procurement and resource management align with the highest environmental standards. With a reinforced focus on expanding renewable energy adoption, strengthening conservation strategies, and further institutionalizing climate-conscious policies, the university is scaling up its impact-driven initiatives. By prioritizing data-driven decision-making and deepening its environmental commitments, BNU remains dedicated to setting new benchmarks in institutional sustainability and contributing meaningfully to global climate action.

## 3. Sustainable Transportation & BNU's carpooling policy

As part of its unwavering commitment to achieving carbon neutrality by 2028, BNU has institutionalized a comprehensive sustainable mobility framework, embedding eco-conscious transportation policies into campus operations. A key component of this initiative is the university's stringent **carpooling policy**, which mandates that no student may bring a personal vehicle to campus unless participating in a verified carpool. This policy has successfully minimized single-occupancy vehicle usage, significantly reducing traffic congestion and overall carbon emissions. Plans are already underway to extend this requirement to faculty and staff, reinforcing BNU's leadership in climate-conscious institutional governance.

Further advancing its low-emission transit strategy, BNU has also partnered with BOP to integrate bicycles as a primary mode of on-campus commuting. With cycling now a widespread practice, students

actively contribute to carbon offsetting while promoting sustainable urban mobility and personal well-being. By operationalizing these alternative transportation solutions, BNU exemplifies a holistic approach to sustainability, ensuring that environmental stewardship is not just encouraged but embedded into everyday campus life.

#### 4. BNU's Afforestation and Biodiversity Conservation Efforts

BNU has implemented a dynamic afforestation and biodiversity conservation initiative, continuously expanding its green footprint across campus. Through sustained collaborations with partners such as Total Parco and Synergy, the university has conducted large-scale plantation drives at key sites, culminating in the establishment of a dedicated Biodiversity Hub. A targeted bamboo afforestation strategy remains integral to these efforts, serving as both a high-impact carbon sequestration solution and a renewable material resource for architectural education. Additionally, carefully selected indigenous flora are systematically integrated to enhance ecological resilience and promote biodiversity. With ongoing plantation drives and strategic partnerships, BNU remains at the forefront of ecosystem restoration and climate resilience, reinforcing its commitment to long-term environmental sustainability.

#### 5. Green Experience Center (GEC)

The BNU Green Experience Center (GEC) is conceptualized as an interdisciplinary hub fostering innovation in green architecture, sustainable technology, and environmental education. The center will encompass:

- **Sustainable Architectural Pavilion:** Designed by SVAD and RHSA, the pavilion will be an eco-friendly structure utilizing renewable and recyclable materials, serving as a nexus for sustainability-themed exhibitions, workshops, and academic collaboration.
- **Green Art & Design Installations:** GEC will host a dynamic array of student, alumni, and faculty-led installations, fostering global recognition for indigenous green design initiatives.
- **Interactive Sustainability Labs:** These immersive spaces will facilitate experiential learning in green science, environmental policy, and climate resilience strategies.
- **Community Engagement Hub:** Functioning as a transdisciplinary platform, the space will support workshops, knowledge-sharing sessions, and applied sustainability experiments.

- **Educational & Public Outreach Programs:** The GEC will be positioned as a national and international center for climate education, hosting institutional visits, guided tours, and academic conferences. The facility, designed by lead architect and RHSA Dean Omar Hassan, is under construction and slated for full operationalization by early 2026.

## 6. **GROW (Green, Resilient, and Optimized World)**

Under the aegis of the Center for Urban and Rural Environment (CURE) at the Razia Hassan School of Architecture and the Climate Change and Environmental Sustainability (CCES) initiative at BNU, GROW serves as a dynamic platform for fostering climate literacy, sustainability research, and impactful environmental action.

Key developments began with:

- The establishment of a fourth-year studio project integrating research, industry-led guest lectures, experiential workshops, and field studies, equipping students with the expertise to conceptualize and implement sustainable design solutions.
- A curated Earth Day exhibition, featuring interdisciplinary environmental projects from the RHSA, MDSVAD, and SMC-TFT departments, underscoring the university's commitment to climate-focused academic inquiry and artistic expression.
- The formation of a core GROW team dedicated to advancing sustainability research and executing on-ground climate action strategies.

Building on this foundation, GROW continues to expand its impact by launching new research collaborations, developing climate-responsive urban planning frameworks, and spearheading regenerative design initiatives. Future endeavors include the introduction of sustainability-focused coursework, expanded industry partnerships, and enhanced student-led environmental interventions, ensuring that BNU remains a leader in climate-conscious education and innovation.

## 7. **Charter for Climate Advocacy**

A comprehensive Climate Action Charter has been developed and is currently under implementation to formalize BNU's climate action roadmap. This document serves as the foundational framework for an

institution-wide social mobilization campaign, outlining policy directives, institutional commitments, and strategic partnerships to drive sustained environmental impact. As implementation progresses, the charter continues to guide BNU's transition toward a greener, more sustainable future.

## **8. JS Chair for Sustainable Finance and Fintech**

The JS Chair for Green Finance and Fintech at BNU, launched in collaboration with JS Bank, is nearing the successful completion of its inaugural year, solidifying BNU's role as a leader in sustainable finance education. This initiative has been instrumental in shaping financial sustainability discourse, equipping students and professionals with the expertise to drive systemic change in the industry.

A specialized course on sustainable finance has been established as a cornerstone of BNU's academic offerings, ensuring continued engagement with critical financial sustainability challenges. The initiative has also led to the development of policy papers on sustainable finance strategies and the successful execution of an executive training program designed to enhance industry professionals' capacity for responsible financial decision-making. By embedding sustainability into financial education, BNU is actively contributing to the evolution of green financial systems and regulatory frameworks.

Looking ahead, BNU remains committed to expanding its efforts in green finance education, fostering industry-academic collaborations, and cultivating future leaders who will drive sustainable economic transformation.

## **9. BNU Climate Action Coalition (CAC)**

The Climate Action Coalition (CAC) is a student-driven initiative committed to mobilizing youth for climate resilience through advocacy, education, and policy engagement. Its core objectives include capacity-building programs, awareness campaigns, and impact-driven projects that promote sustainability at BNU and beyond.

Over the past year, CAC has played a pivotal role in advancing environmental responsibility across campus by spearheading waste reduction drives, tree plantation campaigns, and water conservation awareness programs. The coalition has also worked closely with faculty and administration to embed sustainability principles into daily campus life, fostering a culture of environmental consciousness. One of

its most notable achievements has been the successful adoption of sustainable transportation, with universal carpooling now a standard practice among BNU students and staff.

As part of its commitment to achieving carbon neutrality by 2028, BNU, in collaboration with the Lahore Conservation Society, organized extensive Earth Day celebrations and plans to host similar large-scale sustainability events, including Climate Action Week, Green Innovation Summit, and EcoFest. These initiatives will continue to highlight ecological restoration, urban greening, and community-driven sustainability efforts. The Earth Day program featured expert panel discussions, student-led research presentations, and immersive experiences showcasing cutting-edge climate solutions.

Throughout the year, CAC has remained actively engaged, driving impactful environmental initiatives across campus and reinforcing BNU's position as a leader in climate action and sustainability.

BNU's collaboration with WWF underscores its commitment to achieving net-zero emissions, eliminating paper and plastic waste, and sharing its sustainability model with institutions across Pakistan and internationally. Attached herewith are details on our initiatives, collaborations, vision, and action plan for a sustainable and environmentally responsible future.

## **Chapter 2: Department Wise Contributions**

Over the past year, BNU has undertaken a concerted effort to embed sustainability as a fundamental pillar across interdepartmental and interdisciplinary research and academic endeavors. The following provides an overview of our initial contributions, which we aim to further expand and build upon through training initiatives and environmental awareness programs.

### **1. Mariam Dawood School of Visual Arts & Design (MDSVAD), BNU**

BNU's Mariam Dawood School of Visual Arts & Design (MDSVAD) is renowned for its innovative, interdisciplinary approach to art and design. With a globally aligned curriculum and a diverse faculty, it fosters experimentation, excellence, and cross-disciplinary collaboration. Hosting students from SAARC nations, MDSVAD offers a unique and inclusive educational experience.

#### **Sustainability Initiatives at IEDA & UNESCO Chair for Inclusion through Art**

Through the Interdisciplinary Expanded Design & Art (IEDA) program, in collaboration with the UNESCO Chair for Inclusion through Art, MDSVAD advances sustainability by integrating interdisciplinary research and education to address socio-economic and environmental challenges in South Asia. Through an integrated approach that merges art, design, humanities, creative technologies, and scientific inquiry, the initiative promotes sustainable knowledge production and inclusive innovation. By establishing maker spaces, fostering international collaborations, and encouraging community engagement, IEDA and the UNESCO Chair are developing resilient creative ecosystems that support sustainable practices in design and art.

Additionally, the program emphasizes:

- Responsible material use
- Ethical production methods
- Long-term social impact

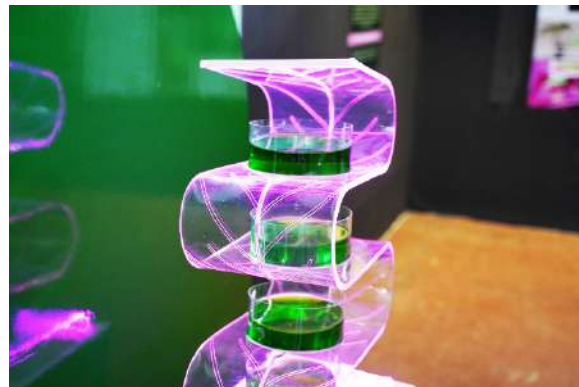
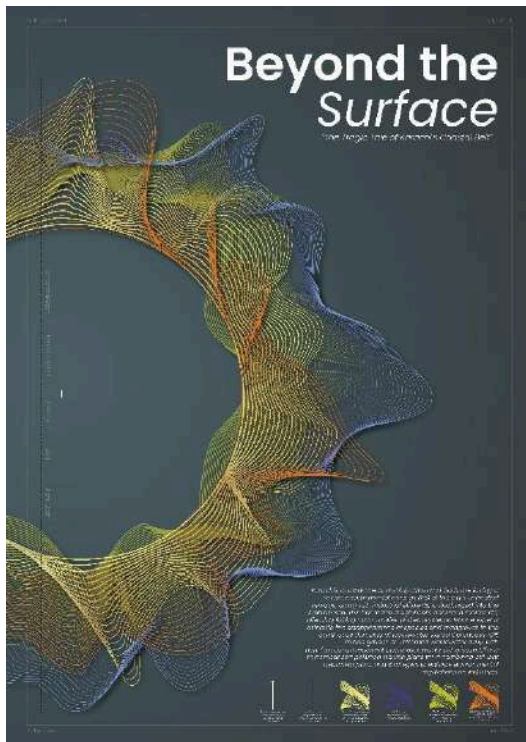
This ensures that artistic and design interventions contribute meaningfully to ecological and cultural sustainability.

## Student-Led Sustainability Projects

1. Muhammad Bux – Manchhar Lake
2. Meer Muhammad – Healthcare in Sindh
3. Arshiya Imran – Folktales for Education
4. Aaleen – Carbon Credits
5. Zuha Farooq – Spirulina House Plants

## Featured Student Research

### 1. Zuha Farooq – Spirulina House Plants



While trees are often credited for oxygen production, an often-overlooked contributor is algae, responsible for 70% of global oxygen. Zuha's thesis explores the potential of algae as a carbon dioxide scrubber, advocating for its cultivation in homes via photobioreactors.

The project also examines regulatory frameworks for integrating algae cultivation into industrial practices, particularly in cement factories. The research envisions a future where algae-based products mitigate carbon emissions, highlighting the role of living organisms in climate crisis solutions.

## **2. Muhammad Bux – Manchhar Lake Project**

Muhammad Bux's thesis involves working as a Data Visualization Specialist, collaborating with environmental organizations to convey critical ecological insights about Manchhar Lake, Sindh.

Key project outputs include:

- An interactive web portal
- An immersive aquarium experience
- A large-scale animated storytelling video

His work merges climate and ecology data with environmental activism to inspire tangible action.

## **Faculty-Led Research & Initiatives**

### **1. Manal Abdullah – Architectural Modules & Posthuman Urban Design**

Manal Abdullah's ongoing research explores posthuman urban design and its impact on endangered bird species in Islamabad.

#### **Research Projects:**

- The Unzoo Alternative (THAAP Conference 2017)
- Multiscale Posthuman Architecture: A Solution for the Endangered Birds of Islamabad (IAPEX 2024 Forums)

Additionally, Manal has integrated sustainability into education by:

- Teaching two digital electives since Fall 2023, eliminating paper-based submissions.
- Developing SLR (Self-Learning Resources), a paper-free initiative that provides students with

digital access to research, AI platforms, course materials, and multimedia resources via Google Drive.

## 2. Rohma Khan – Sustainable Textile & Fashion Practices

LIFECYCLE THINKING	CREATIVE LEARNING	VALUES MAPPING
A fashion product has impacts across all stage of Life Cycle. The Lifecycle framework offers a systems- wide perspective to the key issues and is useful for identifying opportunities for innovation and improvements	Creative thinking has never been more important. Both left and right side of the brain need to be engaged to come up creative sustainable solutions. Education needs to address this creative use of materials and understand the crisis.	An engagement with sustainability taps into our most fundamental human-ness A range of tools for reflective mindful practice need to be developed that support a deep dive into personal values and purpose



Rohma Khan has designed interdisciplinary projects that encourage sustainable thinking in textile, fashion, and IEDA students, responding to climate impact through cultural and geographic data.

### 1. Social Fabric Project

Inspired by bell hooks' A Pedagogy of Hope, this project envisions the classroom as a space for life-sustaining, mind-expanding, and liberating ideas, where students and teachers collaborate to create thoughtful design practices.

Aligned with the UN Sustainable Development Goals (2030), this initiative seeks to:

- Confront feelings of loss and restore a sense of connection.
- Bridge social gaps through creative and communication skills.
- Empower students with personal autonomy via skill development.

## **2. Nature Project**

This initiative fosters knowledge about environmental sensitivity, sustainability, and the role of nature in art and design.

“Nature has been a rich source of inspiration for artists and designers, influencing imagery, patterns, textures, and forms. These interpretations shift based on contemporary culture, trends, and individual creativity.”

Students explore how to translate and execute a thematic environmental concern through diverse artistic processes.

## **2. Razia Hassan School of Architecture (RHSA), BNU**

### **Overview**

At the Razia Hassan School of Architecture, sustainability remains one of our central tenants. Our compliance with the WWF standards does not only follow our buildings’ day to day functions, it extends to our educational and public discourse as well. Being one of the finest design and architecture schools in the country, we believe it is our responsibility to contribute to the critical discourse of environmental conservation, climate change, energy optimization, resource management, and the future of our natural and built environment.

Following Beaconhouse National University’s collaboration with WWF – Pakistan, there has been a renewed and explicit focus on the aforementioned subjects. Below are the details of the initiatives taken in the year 2024/ 2025.

### **List of Initiatives**

1. Establishment of Research Centers
2. Seminars Conducted

3. Energy Optimization
4. Courses Taught
5. Collaborations

## **1. Establishment of Research Centers**

At RHSA, we believe as an institution we not only have the responsibility to disseminate knowledge but to produce it as well. Establishment of dedicated research centers was part of that effort. A total of 4 research centers have been setup.

- o CURE – Centre for Urban & Rural Environment at RHSA
- o ET Lab – Emerging Tech Lab at RHSA
- o Heritage Centre at RHSA
- o Sustainability & Materials Lab at RHSA

### **CURE – Centre for Urban & Rural Environment at RHSA**

CURE has successfully hosted 3 seminars in 2024/ 2025 in collaboration with public-private entities. It has also secured a grant from American Institute for Pakistan Studies to conduct exploratory research on the subject of Ravi Riverfront Urban Development Project. The grant research and seminars captured both national and international participants, capturing diverse audience.

### **ET Lab – Emerging Tech Lab at RHSA**

The pace of technological advancement in design and architecture is overwhelmingly fast. We believe that in order to be a globally competitive school, we must embrace the change and keep up with these advancements. The ET focuses on 3-D printing, AI, and parametric designs. However, opting for sustainable and non-toxic materials is essential along with proper ventilation of the lab.

Safety gear such as breathing mask, hand gloves, and eye protection is mandatory. Such measure allows the ET Lab to comply with global health standards and of course, contribute to our testament as a sustainability-oriented school.

### **Heritage Center at RHSA**

At RHSA, we recognize the immense need to recognize, protect, and advocate for the built and natural heritage of Pakistan. The heritage center at RHSA is entirely dedicated to the

preservation of such fragile landscapes from forces that are tempted by economic or social opportunities. Heritage center in the past year applied for multiple grants for was not successful in securing any. Nevertheless, it signed MOUs with organizations such as THAAP, AKDN, and WCLA to advance our shared concerns and larger agenda.

### **Sustainability and Material Lab at RHSA**

It is essential as an architecture school to identify building materials that are low-tech and work in a sustainable manner for our built environment. There are quite a few examples that have gained global attention, such as the work of Yasmeeen Lari. The sustainability lab is quite a recent initiative, launched in 2025 that is dedicated to expand our partnership network, develop materials that work in harmony with the environment, and test in a scientific manner the durability and strength of any material. As the project is still in its infancy, the aim is to expand on the idea in the following years and turn this into a state-of-the-art lab for all building material efficiency concerns.

## **2. Seminars Conducted**

RHSA routinely conducts seminars and provide the students to engage in public discourses by having public and private officials as guests and present their findings, arguments, and advocate for whatever it is that may align with the philosophy of this school. Below are some of those that specifically focus on the subject of environment and sustainability.

### **Seminar 1: AIPS – Rethinking Urbanization along the Ravi**

#### **- Panel A: RRUDP's sociocultural & economic potential and challenges**

##### **Panelists:**

Mr. Imran Amin, CEO Ravi Urban Development Authority (RUDA) & Punjab Central Business District Development Authority. Govt of Punjab.

Dr. Ijaz Nabi, Country Director International Growth Centre and Prof. at Lahore University of Management Sciences.

**Moderated by:** Syed Mohammad Ali, PhD. Lecturer at The Johns Hopkins University and Visiting Fellow at Beaconhouse National University (BNU).

#### **- Panel B: RRUDP and the environment**

**Panelists:**

Mr. Hammad Naqi Khan, Director General WWF - Pakistan.

Ms. Aaminah Qadir, Lawyer and activist, founder of She-her Pakistan.

Mr. Imran Aqeel Daultana, Member of the National Assembly of Pakistan.

**Moderated by:** Mr. Saleem H. Ali, Professor and Chair at the department of Geography, University of Delaware.

- **Panel C:** Urban development, green transition imperatives & RRUDP

**Panelists:**

Mr. Feisal Naqvi, Commercial Law Expert & Senior Partner at Bhandari Naqvi Riaz.

Mr. Rafay Alam, Environmental Lawyer & Member of Pakistan Climate Change Council. Mr. Ghammaz H. Sandhu, Architect & Urbanist, Asst. Prof at Razia Hassan School of Architecture RHSA & Director of CURE at RHSA.

**Moderated by:** Ms. Imrana Tiwana, Head of Climate Change, Environment & Sustainability (CCES) Initiative at BNU.



**Seminar 2:** Beyond the Landfill – Understanding Waste Management in Pakistan

Roundtable session held at RHSA. Presentation by Frans Föllings and Mian Imran Daultana. Participants included representatives from, WWF Pakistan, Sundar Industrial Estate, Lion's Club, OWS Consulting, CCES at BNU, BCPR, and RHSA Faculty.



**Seminar 3:** OTIUM – Smart Waste Management app launch

Seminar held by OTIUM Consulting Services at RHSA. OTIUM is an app that helps small vendors to purchase waste products that have the potential to be recycled. It allows the seller to also interact with multiple vendors and secure a deal that may be the best option available or even donate materials such as plastic bottles that can prove to be used by individuals in rural environments. The participants included students, Ms. Imrana Tiwana of CCES, Mr. Imran Daultana an MNA, and faculty of RHSA.

**Seminar 4:** Artiago – Introspection series featuring Raza Ali Dada

Raza Ali Dada’s ‘Introspection’ talk was a deep dive into the power of context-based design and the revival of urban spaces. His insights on giving back to the city through architecture left a lasting impact on us all. An emphasis on tangible and intangible heritage along with a nuanced focus on environment was one of the central themes of the talk

**Sponsored by:** Interwood

**Moderator:** Asst. Prof. Usman Saqib Zuberi.



### Seminar 5: Architecture Design & Art Seminar – ADA Awards

One of Pakistan’s leading magazines that focus on Architecture Design and Art had its seminar at RHSA in collaboration with SVAD. The discussions ranged from heritage, environment, and design.



**Note:** The faculty members at RHSA routinely participate in public discourses outside BNU. As part of our school’s philosophy, we actively advocate for the built and natural environment with a specific focus on sustainability. Details of those sessions are not mentioned in this report and can be provided upon request as it is deemed out of scope for the purposes of an annual report.



### 3. Energy Optimization

The use of energy and its optimization has been a key focus of our school. Following 2024, there are a couple of initiatives we have taken that will prove to be of a lot of cumulative value annually. Following is a list that outlines:

- Air Conditioning and heating set at 26 degrees throughout the school.
- Natural ventilation is prioritized to limit the use of electronic air conditioning.
- Proper ventilation and limiting use of toxic materials at venues such as ET Lab.
- Excessive water use is discouraged in bathrooms and kitchens.
- Natural Lighting is prioritized in the studios and offices instead of artificial light.
- Paper usage is discouraged and an active effort is being made to move to digital mediums.
- Sweeping instead of washing is preferred for cleaning purposes.
- Limiting the use of water to wash courtyard, opted for only when necessary.

### 4. Courses Taught

As mentioned previously, sustainability remains one of our central tenets in architecture training. Therefore, almost all of our courses and studios have this component as an integrated component. At the risk of excluding some, while not necessary, still, two courses that have specifically focused on the subject of energy optimization and environment are as follow:

- GIS and AI for architectural inquiry: Elective Course for 3<sup>rd</sup> Yr.

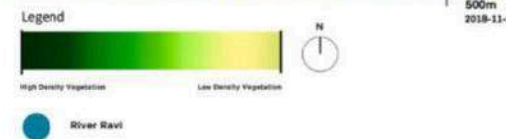
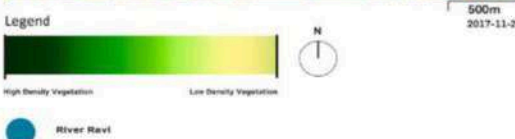
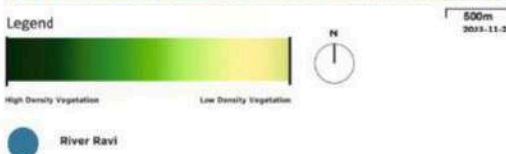
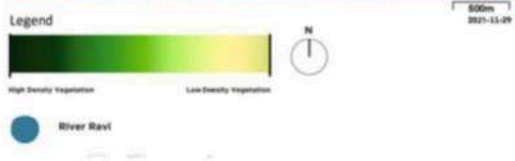
To understand the importance of GIS and Remote Sensing when it comes to shaping smart

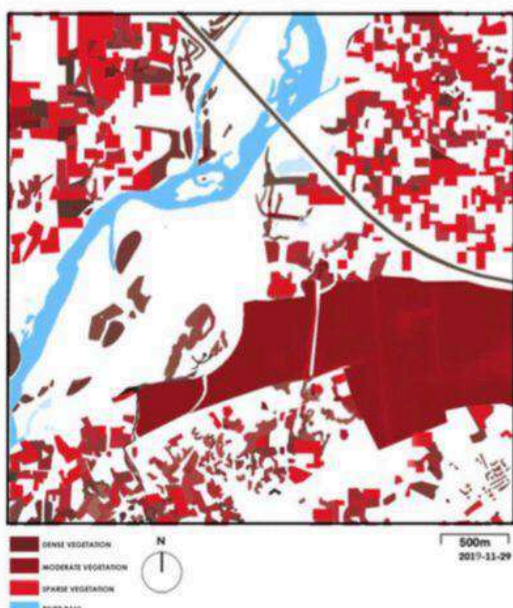
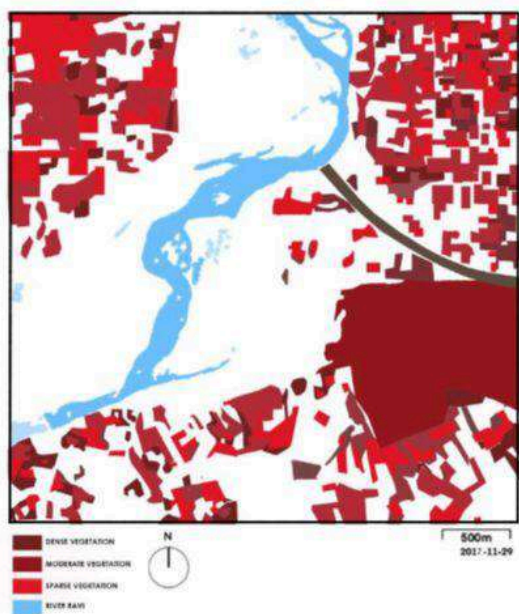
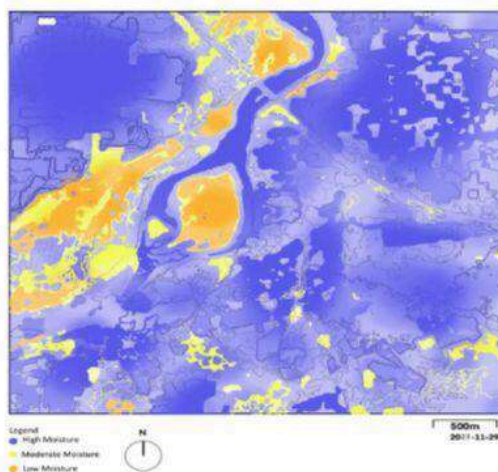
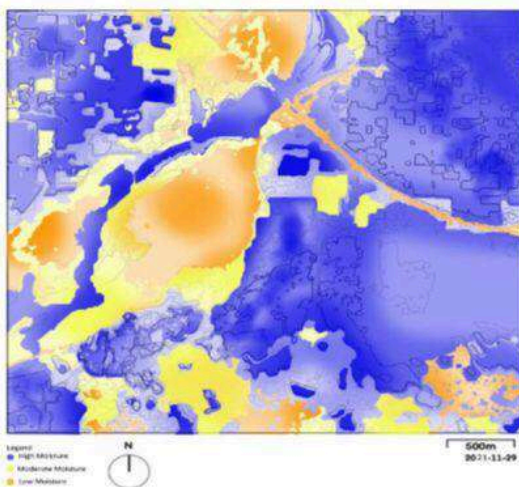
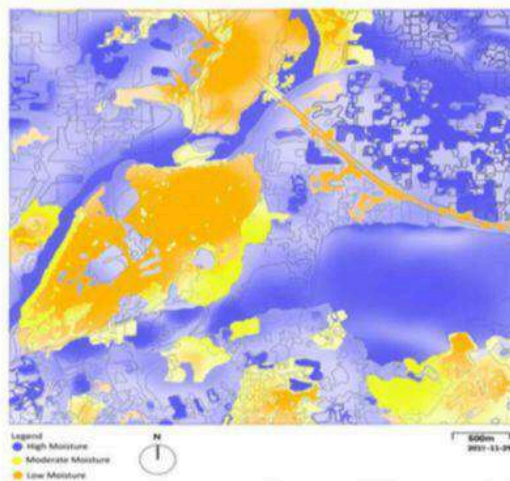
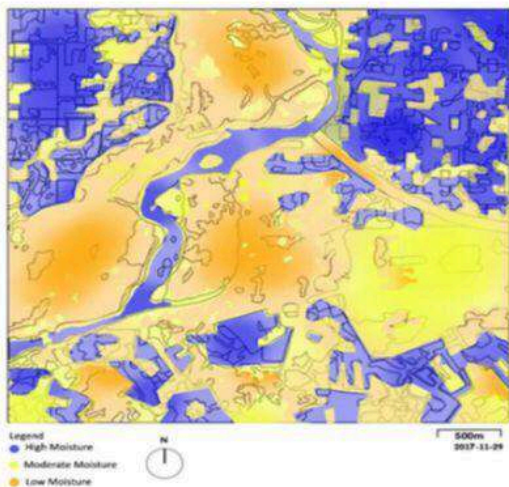
urbanities, may it be an exercise of advocacy, visualization, planning or architectural design, scholars have recognized the critical role these technologies can play. Over the past decade, GIS has evolved into a powerful and accurate analytical tool, allowing designers, planners and policymakers to integrate spatial information to make informed decisions. At the same time, the integration of AI into urban studies has also been subject to attention. It has the potential to revolutionize our approach to re-imagine our surroundings by processing vast datasets and generating predictive models. The course structure is designed to guide participants through the foundational principles of GIS and AI, ensuring that even those unfamiliar with these technologies can engage meaningfully.

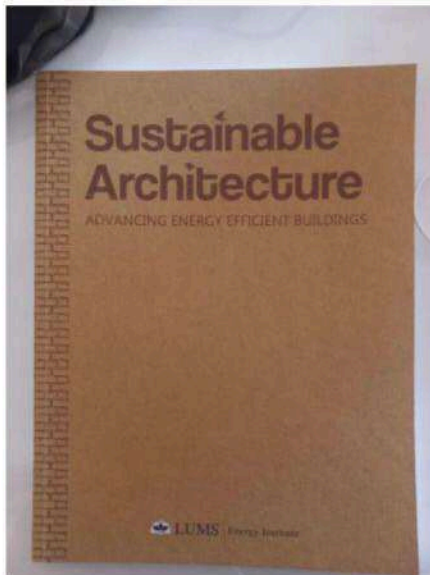
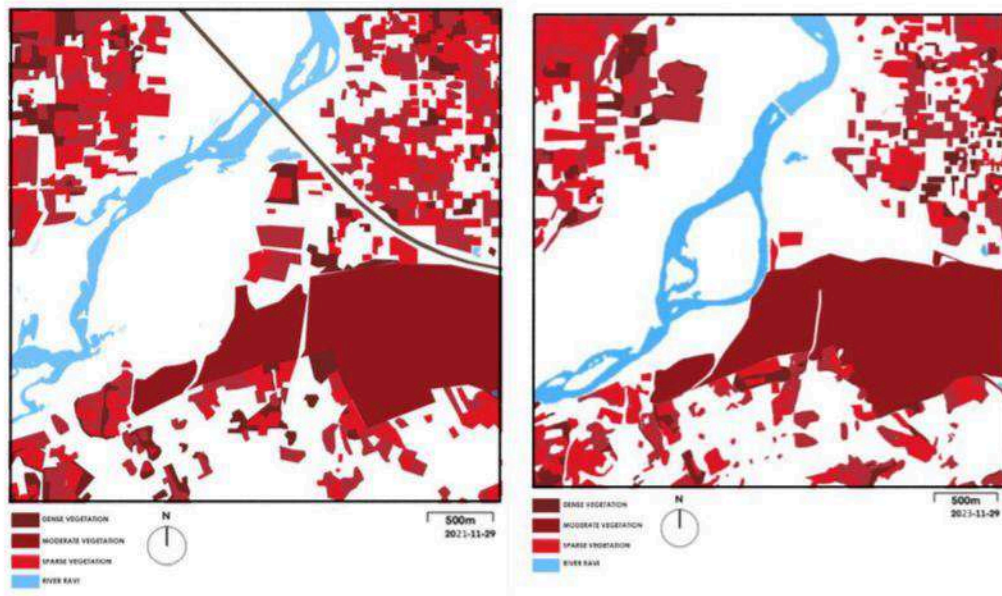
#### - Architecture, Form and Environment: Systems Integration

At RHSA, Systems Integration is one of our core courses. It specifically focuses on the subject of mechanical, electrical, and plumbing systems with a deep consideration for our contemporary challenges such as climate change and depletion of natural resources. Given the technical nature of the course, the participants engage in measurable and evidence-based research for further the design exploration. As part of the course, the participants also collaborated with LUMS Energy Institute. The team at the Energy Institute shared their recent publication with the faculty members that serves as one of the best resources on how to design energy efficient buildings. In addition, a seminar was conducted to talk about the energy landscape and larger challenges of Pakistan. Covering climate change, use of electricity, generation of it and tax mechanisms.

**NOTE:** Some outcomes from the aforementioned courses are shared below. Further information can be shared upon request.







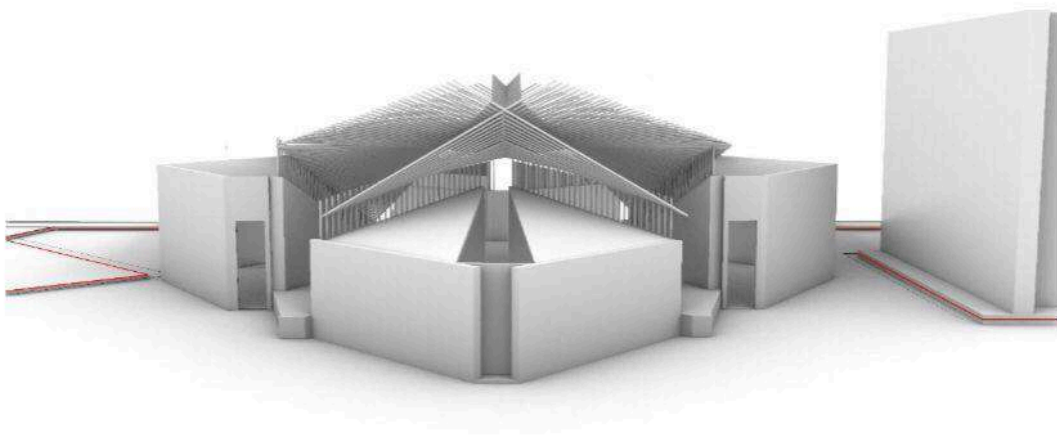
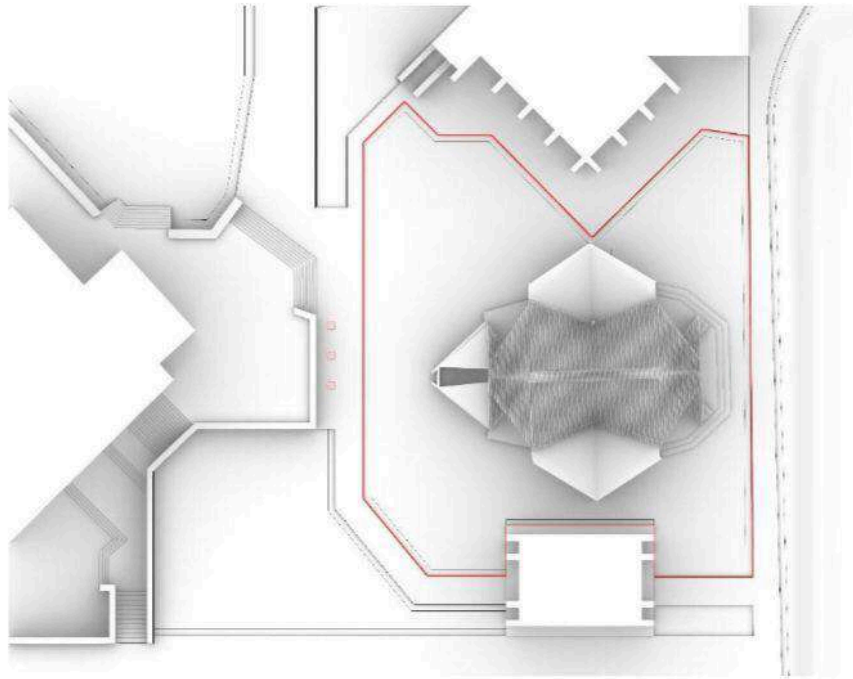
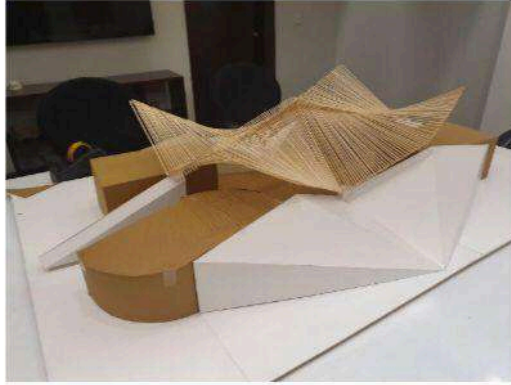
## 5. Collaborations

At RHSA, we understand the immense need to work in a collaborative manner. The future is increasingly interdisciplinary and architecture to begin with is a team sport. To advance our agenda and increase the span of our intellectual and on-ground contribution, in the year 2024/2025 we have collaborated with government entities such as the Central Business District of Punjab, Ravi Urban Development Authority of Lahore and so on. Our students have completed their internships at public and private offices such as Infrastructure Development Authority

Punjab, Walled City Authority of Punjab, Aga Khan Development Network, and Zameen Developers to name a few.

To take a broader view of our vision, our alumni and current students continue to make meaningful contributions that foster a sustainable future for Pakistan. As part of our on-going faculty contribution, we are looking forward to breaking ground for an ambitious project on the BNU campus

called the BNU – Green Experience Centre sponsored by OGDCL. The center will stand as a testament to BNU’s commitment to fostering sustainable development.



### 3. School of Computer and IT (SCIT), BNU

#### 1. Selected Publications (2024)

The School of Computer and IT (SCIT) at BNU's research in climate and sustainability has advanced environmental monitoring, healthcare accessibility, and disaster impact assessment. Key contributions include:

1. **Mapping Air Pollution Sources with Sequential Transformer Chaining: A Case Study in South Asia** (*NeurIPS Workshop 2024*) – This study employs deep learning techniques to identify and analyze air pollution sources across South Asia, enhancing data-driven environmental policy formulation, linked [here](#).
2. **Data-Driven Approach to Assess and Identify Gaps in Healthcare Setup in South Asia** (*ICONIP 2024*) – Using large-scale data analysis, this research identifies disparities in healthcare infrastructure, particularly in climate-affected regions, linked [here](#).
3. **2022 Flood Impact in Pakistan: Remote Sensing Assessment of Agricultural and Urban Damage** (*AAAI Symposium 2024*) – This study leverages satellite data to assess the extent of agricultural and urban damage caused by the 2022 floods, contributing to disaster resilience planning. The [link](#) is attached for your perusal.
4. **Predicting Malaria Outbreaks Using Earth Observation Measurements and Spatio-Temporal Deep Learning Modelling: A South Asian Case Study (2000–2017)** (*The Lancet Planetary Health 2024*) – This [research](#) examines climate-driven health risks by integrating Earth observation data with AI-based predictive modeling for malaria outbreaks.
5. **ThinkFest 2025** – Four research papers have been accepted, further extending BNU's contributions to sustainability discourse.

#### 2. Integration of Sustainability in Academic Programs

The School of Computer and IT at BNU has embedded sustainability principles into its academic framework through curriculum development and interdisciplinary research. Key initiatives include:

1. **Sustainability in Computing Education** – Courses such as *Introduction to Data Science*, *Artificial Intelligence*, and *Python for AI* now include sustainability-focused modules. These emphasize energy-efficient computing, responsible data handling, and environmentally aware algorithmic design.
2. **Interdisciplinary Research on Poverty Mapping and Climate Crisis Mitigation** – In collaboration with the University of Oxford and the University of London, research projects utilize remote sensing to assess socio-economic vulnerabilities and environmental degradation, offering data-driven insights for climate policy interventions.
3. **Seminar on Remote Sensing and Climate Data Analysis** – A dedicated seminar featuring international experts explored advanced methodologies for assessing climate change impacts using satellite data, reinforcing BNU's role in climate research dissemination.

### 3. Ongoing Research and Strategic Directions

BNU's current research focuses on leveraging artificial intelligence, remote sensing, and environmental data analytics to develop sustainable solutions. Key projects include:

1. **AI-Driven Carbon Optimization** – Research on intelligent AI agents seeks to optimize energy consumption in research laboratories and IT infrastructures, contributing to energy-efficient computing.
2. **Climate Impact Mapping** – Machine learning models are applied to satellite imagery for assessing flood risks and agricultural damage, enhancing climate adaptation strategies.
3. **Climate-Linked Health Predictions** – Ongoing studies examine the correlation between climate variables and the prevalence of respiratory infections and malaria, utilizing Earth observation data to develop predictive healthcare models.
4. **Sustainable Industrial Practices** – Research on emissions from small-scale industries, particularly brick kilns and factories, focuses on identifying mitigation strategies to reduce environmental and health impacts.

#### 4. Collaborative Research and Institutional Partnerships

The School of Computer and Information Technology (SCIT) is actively engaged in collaborative research with leading institutions to advance interdisciplinary knowledge exchange and enhance the scalability of climate solutions. In partnership with Dr. Sara Khalid from the **University of Oxford** and **CITY at LUMS**, BNU is integrating Earth observation data into climate and health research, contributing to the development of data-driven, evidence-based policy frameworks.

#### 5. Future Directions in Sustainability Integration

BNU aims to further institutionalize sustainability in academic programs and research. Planned initiatives include:

1. **Integration of Sustainability in the BS Computer Science Curriculum** – New courses, including *Environmental AI* and *Green Computing*, will equip students with computational skills to design sustainable technological solutions.
2. **Expansion of Climate and Sustainability Research** – Future projects will focus on climate-resilient urban planning, sustainable agriculture, and AI-driven environmental monitoring, reinforcing BNU's commitment to sustainability leadership.

These initiatives collectively position BNU as a key contributor to climate resilience, environmental sustainability, and data-driven policy innovation in South Asia.

#### 4. School of Management Sciences (SMS)

The School of Management Sciences (SMS) has strengthened its commitment to sustainability and responsible business education by introducing two specialized courses in the Spring 2025 semester:

1. **Sustainable Finance** – Focused on integrating environmental, social, and governance (ESG) considerations into financial decision-making, this course explores sustainable investment strategies, green financial instruments, and regulatory frameworks shaping sustainable economic development.
2. **Agripreneurship (Green/Agricultural Entrepreneurship)** – Designed to equip students with the knowledge and skills required to develop sustainable agricultural enterprises, this course

emphasizes climate-resilient farming practices, agroecology, and innovative business models for green entrepreneurship.

In addition to curriculum expansion, SMS has undertaken broader sustainability initiatives, including:

1. **Integration of Environmental Sciences in General Education** – Recognizing the interdisciplinary nature of sustainability, an Environmental Sciences course has been incorporated into the general education framework to provide students with foundational knowledge on ecological systems, climate change, and sustainability challenges.
2. **Embedding ESG Principles Across the Curriculum** – SMS aims to systematically integrate ESG-related topics within existing courses, ensuring that sustainability considerations become an integral part of business education. This initiative seeks to enhance students' understanding of corporate sustainability, ethical leadership, and impact-driven decision-making.
3. **Sustainable Resource Management Initiative** – In alignment with institutional sustainability goals, SMS has set a target to reduce paper consumption by 20%, promoting digital alternatives and fostering environmentally responsible operational practices.

Furthermore, SMS houses the **JS Chair for Sustainable Finance and Fintech**, who plays a pivotal role in advancing research, policy discourse, and industry engagement in the domain of sustainable finance. The Chair's contributions, previously outlined, underscore SMS's strategic focus on fostering financial innovation that aligns with global sustainability imperatives.

## 5. Institute of Psychology (IP)

### **Sustainability Initiatives at the Institute of Psychology (IP), BNU**

The Institute of Psychology (IP) at BNU integrates environmental sustainability into its academic framework, operational practices, and community engagement efforts, fostering a holistic approach to ecological responsibility and behavioral change:

1. **Paper Consumption Optimization** – IP has achieved a one-third reduction in paper usage by institutionalizing digital submission protocols through Turnitin and implementing sustainable printing practices, including double-sided printing. This transition supports waste minimization and promotes resource-efficient academic workflows.
2. **Eco-Psychological Community Interventions** – IP students have engaged in applied environmental psychology initiatives through outreach programs at Fountain House and the Mental Health Institute for Children. These interventions included mental health awareness sessions alongside afforestation efforts, underscoring the intrinsic link between ecological sustainability and psychological well-being.
3. **Energy Efficiency and Sustainable Infrastructure Use** – Faculty and students actively employ passive design strategies to enhance energy efficiency, such as maximizing daylight utilization, maintaining optimal natural ventilation, and minimizing reliance on artificial lighting, thereby reducing the institute’s carbon footprint.
4. **Integration of Environmental Psychology in Curriculum** – IP has introduced a specialized course on **Environmental Psychology** within the BS program, critically examining human-environment interactions, ecological behavior, and the psychological determinants of sustainable practices. This course equips students with interdisciplinary insights into climate resilience, environmental cognition, and pro-environmental behavior.
5. **Green Campus and Sustainability Advocacy** – IP faculty and students play an active role in institutional sustainability initiatives, participating in afforestation drives, biodiversity conservation efforts, and campus-wide environmental stewardship programs that align with BNU’s broader commitment to climate action and ecological resilience.

## 6. School of Education (SE)

The School of Education is committed to integrating sustainability into its curriculum and operations, fostering a sustainable mindset among its community. Below is a summary of our ongoing initiatives and future plans to further this commitment.

## Ongoing Initiatives

### 1. Energy Conservation:

- o Reminder tags are being placed encouraging users to turn off lights and fans when not in use, fostering energy-saving habits.
- o Paper use for printing and photocopying has been significantly reduced to minimize waste and conserve resources.



### 2. Sustainable Resources:

- o Reusable crockery has been procured:
  - Jugs and glasses for serving water.
  - Reusable crockery to minimize reliance on single-use items, such as plastic water bottles.



### 3. Inclusivity in Quality Education (SDG 4)

- o Our commitment to inclusivity is embedded in our approach to quality education. We ensure the use of inclusive language in teaching, discussions, and materials while adopting equitable teaching practices that consider diverse learning needs and perspectives.
  - Since many of our students include both practicing and aspiring teachers, the impact of these efforts extends beyond our classrooms, influencing schools and educational spaces where they teach. By equipping educators with the tools to foster inclusive learning environments, we contribute to a broader cultural shift towards accessibility and equity in education.

### 4. Curriculum Integration

- o Incorporating Education for Sustainable Development (ESD) into English language courses on an experimental basis, with a long-term vision to teach all English courses through sustainability themes across the university.
- On an experimental basis, we have been incorporating themes identified in UNESCO's ESD frameworks into the teaching of Functional English. Additionally, in the previous semester, the Expository English course was delivered using a Project-Based Learning (PBL) approach, where students developed projects aligned with the Sustainable Development Goals (SDGs).



## 5. Awareness Initiative – Expert Edge Series

- o We are committed to dedicating multiple Expert Edge Series sessions to sustainability, featuring talks and panel discussions on the Sustainable Development Goals (SDGs).
- Previously, we successfully hosted a session on SDG 12 – Responsible Consumption and Production, titled *Fashion Footprint*, which explored the environmental and social impacts of the fashion industry. The discussion highlighted the hazards of unsustainable production practices and promoted awareness of sustainable consumption within the sector.



- o Dr. Amra Raza presented a paper titled "*Photo-Poetic Intersections: Pakistani English Poetry and Sustainability*" at the One-Day International Conference on Pakistani Literature and the UN 2030 Agenda, held on February 20, 2025. The conference was organized by the Department of English Literature, Government College University, Faisalabad, Pakistan.



- o A Health and Well-being (SDG 3) awareness session on family planning was conducted for the support staff at BNU on February 26, 2025. The session highlighted the significance of family planning, with the presenter outlining practical, accessible, and effective strategies to support informed decision-making.



## Future Plans

### 1. Collaborative Partnerships

- o Plans are underway to establish an MOU with *Fruit of Sustainability*, an organization dedicated to labor rights and other sustainability-focused initiatives. This collaboration aims to enhance the university's engagement with sustainable and equitable practices.

### 2. Awareness Initiative - Expert Edge Sessions

- o One of our upcoming sessions will focus on SDG 5 – Gender Equality, addressing key challenges and strategies for fostering gender equity and inclusivity in education, workplaces, and communities.

## **7. School of Media and Communication (SMC), BNU**

The School of Media and Mass Communication (SMC) at Beaconhouse National University (BNU) plays a pivotal role in fostering awareness and discourse on climate change and environmental sustainability. Through interdisciplinary research, thought-provoking theatre and film productions, and academic inquiry, SMC explores the intersection of media, storytelling, and environmental responsibility. Student-led initiatives, performances, and thesis projects contribute to a broader dialogue on sustainability, using creative and journalistic platforms to advocate for change.

The students of Journalism (SMC) held *The Eco March* at the start of this year, introducing a meaningful tradition to celebrate the New Year by sharing planters as a gesture to promote the *BNU Green Initiative*.

## **8. School of Liberal Arts and Social Sciences (SLASS), BNU**

The School of Liberal Arts and Social Sciences (SLASS) at Beaconhouse National University (BNU) engages with climate change and environmental sustainability through a literary, philosophical, and social lens. Through critical inquiry, research, and academic discourse, the school explores how narratives, history, and cultural perspectives shape our understanding of the environment. Faculty and students examine ecological themes in literature, philosophy, and the social sciences, fostering a deeper engagement with the ethical and ideological dimensions of sustainability. Through essays, creative writing, and interdisciplinary research, SLASS encourages new ways of thinking about humanity's relationship with nature, advocating for intellectual and imaginative approaches to environmental responsibility.

## Chapter 3: Sustainable Procurement and Environmental Stewardship at BNU

### Advancing Sustainable Procurement Practices

Beaconhouse National University (BNU) remains steadfast in its commitment to climate action and environmental sustainability, actively transitioning to sustainable procurement as outlined in its Environmental Management Plan (EMP). With guidance from WWF, BNU has successfully procured FSC-certified paper from BLC - Shan Printers, ensuring responsible forestry and resource management. Additionally, the university has engaged Aabroo for waste management, introduced bamboo waste bins, and repurposed existing campus bins to improve waste segregation. Air Quality Index (AQI) monitoring devices, received from UOL, are being integrated into environmental assessments to support data-driven interventions.

Further advancing its sustainability agenda, BNU is in the final stages of procuring non-toxic cleaning products from SEEP, reinforcing its commitment to reducing harmful chemical exposure. The university is also working closely with procurement and administrative departments to ensure a complete transition to sustainable vendors for eco-friendly alternatives (Think Eco, Green Upshot, Trash It), upcycled products (Bazyaft, RLCC, Paper Miracles, HY Printing), biodegradable packaging (EcoPak Online), and non-toxic paint (Graphenstone). These transitions are critical in minimizing environmental impact, reducing waste, and fostering responsible consumption.

Each of these sustainable alternatives supports BNU's broader environmental objectives:

- FSC-Certified Paper (BLC - Shan Printers): Ensures responsible forestry and sustainable resource management, reducing deforestation.
- Non-Toxic Cleaning Products (SEEP - Near Completion): Eliminates hazardous chemicals, reducing water pollution and air contamination.
- Waste Management (Aabroo): Promotes recycling, diverts waste from landfills, and lowers carbon emissions.
- AQI Monitoring Devices (UOL): Provides real-time air quality data for improved environmental policy and mitigation strategies.
- Eco-Friendly Alternatives (Think Eco, Green Upshot, Trash It - Procurement in Process): Reduces reliance on single-use plastics and harmful materials.
- Upcycled Products (Bazyaft, RLCC, Paper Miracles, HY Printing - Procurement in Process): Supports circular economy principles by repurposing waste into functional goods.

- Eco-Friendly Packaging (EcoPak Online - Procurement in Process): Reduces plastic pollution by adopting biodegradable alternatives.
- Non-Toxic Paint (Graphenstone - Procurement in Process): Prevents VOC emissions, ensuring safer indoor and outdoor environments.

Looking Ahead to 2025: BNU remains committed to fully transitioning to sustainable vendors and prioritizing climate-conscious procurement. As part of this commitment, the university will replace all non-sustainable vendors with WWF-certified alternatives, further embedding sustainability into its operations.

### **Enhancing Environmental Monitoring**

BNU continues to strengthen its climate resilience strategies through advanced environmental monitoring. Air Quality Index (AQI) monitors play a crucial role in tracking atmospheric pollutants, providing real-time data on particulate matter, carbon emissions, and other airborne contaminants that impact climate change. These devices support data-driven research, environmental assessments, and policy development, positioning BNU as a leader in academic-driven sustainability initiatives.

In collaboration with the University of Lahore (UOL), BNU expanded its monitoring capabilities with the handover of two state-of-the-art AQI monitors on January 29, 2025. This strategic partnership enhances BNU's #GreenBNU – Eco Smart Campus initiative, equipping researchers, policymakers, and students with critical environmental data. By leveraging cutting-edge monitoring technology, BNU remains committed to integrating scientific research into sustainability efforts, reinforcing its leadership in institutional climate action.

### **Advancing Waste Management Through Composting**

As part of its holistic approach to sustainability, BNU has established its first composting pit, further aligning with its commitment to responsible waste management. Composting is an essential solution for organic waste disposal, reducing methane emissions from landfills and transforming biodegradable materials into nutrient-rich soil amendments.

On January 17, 2025, under the BNU ECO-Smart Campus project, the Climate Change and Environmental Sustainability (CCES) Initiative inaugurated the university's first composting pit. This initiative marks a significant milestone in BNU's sustainability journey by:

- Minimizing organic waste and reducing the university's overall ecological footprint.

- Enhancing soil health through composting, supporting sustainable landscaping and green campus initiatives.
- Reinforcing the 3Rs principle (Reduce, Reuse, Recycle) to instill responsible waste management practices across the university community.
- Serving as an educational tool for research and coursework in environmental science and circular economy studies.

By efficiently processing organic waste on campus, BNU is setting a national benchmark for institutional sustainability, demonstrating that environmental stewardship and innovation go hand in hand. The composting initiative not only reduces waste but also fosters a culture of environmental responsibility, inspiring students and faculty to adopt sustainable habits and drive meaningful ecological change.

### **Paving the Way for a Greener Future**

As BNU moves forward, 2025 will be a defining year for scaling sustainability initiatives. The university will intensify its efforts in sustainable procurement, environmental monitoring, and waste management, reinforcing its leadership in climate action. By continuously integrating eco-conscious practices into its academic and operational framework, BNU remains dedicated to setting new standards for institutional environmental responsibility and inspiring the next generation of sustainability leaders.

## **Chapter 4: Strengthening Global and Local Collaborations for Sustainability**

BNU's Climate Change and Environmental Sustainability (CCES) Initiative is committed to fostering impactful partnerships that drive meaningful environmental action. The university has cultivated strategic alliances with local and international organizations, strengthening its role as a sustainability leader in Pakistan. Collaborations with Synergy, Lahore Conservation Society, Total PARCO, NEDUET, UOL, and Akhuwat have facilitated knowledge-sharing, capacity-building, and community-driven environmental initiatives.

On the global front, BNU is an active participant in the Sustainable Development Solutions Network (SDSN)—a prestigious international network established by the United Nations to advance the Sustainable Development Goals (SDGs) through research, education, and policy innovation. Through SDSN, BNU aligns its sustainability agenda with global best practices, engaging in climate research, sustainable development projects, and cross-border collaborations to contribute to evidence-based climate solutions.

Looking ahead, BNU aims to expand its partnerships, scale up research-driven sustainability projects, and intensify efforts to enhance its sustainability rankings in THE (Times Higher Education), QS, and GGI (Global Green Index). With a clear vision for the future, BNU remains dedicated to setting new benchmarks in environmental stewardship, reinforcing its commitment to a greener, more sustainable world.