BIRUNI UNIVERSITY

"Future of Science"

13 CLIMATE ACTION

SUSTAINABLE DEVELOPMENT GOALS

Message From the Rector

In an era when the world faces mounting environmental, social, and economic challenges, the role of universities has become more vital than ever. Institutions of higher education are not only centers of learning but also agents of transformation — shaping knowledge, values, and actions that define the future of our planet and humanity.

At Biruni University, we embrace this global responsibility with determination and vision. Guided by the United Nations Sustainable Development Goals (SDGs), we are committed to advancing sustainability through excellence in education, innovative research, and community-centered impact.

Our mission extends beyond academic achievement; it is about producing knowledge that heals, transforms, and sustains life in all its forms.

As a pioneering health sciences university, we channel our scientific expertise toward creating solutions that enhance well-being and social equity. Our multidisciplinary approach allows us to integrate health, innovation, and sustainability — transforming research into real-world benefits for people and communities. The projects and studies we carry out, particularly in the fields of medicine, health, and technology, stand as concrete reflections of this commitment.

Our understanding of sustainability transcends academic boundaries. It is woven into the fabric of our campuses, hospitals, and community initiatives — from energy efficiency and environmentally friendly infrastructure to nurturing students with the awareness and capacity to become responsible global citizens.

Through the dedication of our academic and administrative teams, and the unwavering support of our partners, Biruni University continues to build a resilient, inclusive, and sustainable future. Together, we reaffirm our pledge to serve humanity through science and compassion — today and for generations to come.

Prof. Dr. Adnan Yüksel
Rector, Biruni University

Message From the Editor

The world is entering an age of profound transformation — one that demands wisdom as much as it demands action. Climate disruption, social fragmentation, and economic imbalance have made it clear that the systems which once defined progress can no longer sustain it. Humanity needs a new compass — one that points toward balance, compassion, and collective renewal.

Universities stand at the very heart of this change. They are not merely institutions of teaching and research; they are the laboratories of humanity's future — places where science, conscience, and purpose must meet.

At Biruni University, we see sustainability not as a goal to be reached, but as a way of being. It is the thread that weaves through our research, our classrooms, our hospitals, and our partnerships. It is how we measure success — by the difference we make in people's lives and the legacy we leave for the generations to come.

Guided by the **United Nations Sustainable Development Goals,** we are reimagining higher education as a force for healing — for reconnecting human progress with planetary well-being, for bridging innovation with empathy, and for transforming knowledge into impact.

Our mission is both scientific and moral: to cultivate minds that create, question, and care; to generate ideas that build a more equitable, peaceful, and sustainable world. Every discovery, every collaboration, every act of learning becomes part of a larger story — the story of humanity's renewal through knowledge.

This report is more than an evaluation of where we stand; it is a reflection of who we choose to be. Biruni University stands as a living commitment to the idea that education can heal, science can serve, and together we can build a future worthy of hope.

Aslıhan Güzin ALSAN, P.h.D. FHEA
Director of Institutional Impact,
Visibility and Corporate Reputation

BİRUNİ UNIVERSITY COMMITMENT TO CLIMATE ACTION

The climate crisis is not a distant threat - it is the defining reality of our time. Its impact is written across every landscape, every ecosystem, and every human life. To take climate action is not only to protect the planet; it is to safeguard the very conditions that make human existence possible.

At Biruni University, we recognize Sustainable Development Goal 13: Climate Action as a moral and scientific imperative. We believe that responding to the climate emergency requires more than innovation — it demands awareness, accountability, and collective courage. The choices we make today will determine not just the state of our environment, but the story of our civilization.

Our mission is to advance climate consciousness through education, research, and responsible practice. As a university rooted in the health sciences, we understand that the climate crisis is, at its core, a health crisis - one that affects air, water, food, and psychological well-being. Protecting the environment, therefore, is not separate from protecting life itself.

We are committed to building an institutional culture that reflects ecological intelligence - one that measures success not only by growth, but by regeneration. Through our sustainability initiatives, data-driven systems, and community partnerships, we aim to reduce our carbon footprint, strengthen resilience, and inspire change within and beyond our campus.

This report embodies our belief that climate action begins with consciousness - and that education is the most powerful tool we have to change the trajectory of our planet's future.

Our Approach: Leading with Awareness, Science, and Responsibility

At Biruni University, our approach to climate action integrates science with ethics and systems thinking. We view climate responsibility as a continuum - from individual awareness to institutional transformation and global cooperation.
Our philosophy is built on three pillars: Mitigation, Adaptation, and Education.

- Mitigation: We actively reduce greenhouse gas emissions through sustainable energy use, efficient campus design, and low-carbon operations.
- Adaptation: We develop strategies to strengthen institutional resilience against climate risks, ensuring continuity and safety in all operations.
- Education: We integrate climate literacy across disciplines, empowering students and staff to understand, innovate, and act toward climate solutions.

Through this approach, Biruni University positions itself as both a laboratory and a living model of climate responsibility - transforming data into insight, insight into policy, and policy into tangible impact.

Institutional Framework: Embedding Climate Consciousness in the University System

Our institutional framework translates climate awareness into measurable action across teaching, research, and governance.

- Carbon Management and Reporting: Regular monitoring of energy consumption, waste, and transportation informs our emission-reduction strategies and sustainability dashboards.
- Green Infrastructure: New buildings and renovations follow sustainable design standards, prioritizing natural lighting, efficient insulation, and renewable energy integration.
- Research for Resilience: Faculty-led projects explore climate-health interactions, urban resilience, renewable energy systems, and behavioral change in sustainability.
- Sustainable Mobility: Policies promoting public transport, cycling, and shared commuting reduce environmental impact while promoting health and community connection.
- Community and Policy Engagement: We collaborate with local governments, NGOs, and international networks to support climate adaptation planning and awareness campaigns.

At Biruni University, climate action is not a department or a project - it is a principle guiding every decision, every policy, and every partnership.

OUR STORY

2014

Inspired by Abu Rayhan al-Biruni, the university began its academic activities in the 2014 academic year with 6 faculties and 1 vocational school.

2016

Biruni Hospital was establishe d in 2016 to serve healthcare guests both locally and from around the world.

2019

The Graduate Education Institute was founded to meet the need for scientists and to provide the potential to guide research and practice.

2021

Biruni Technopark was established with the aim of making a difference in technology and innovation on an international level and leading numerous projects.

2023

Within the scope of the 2023 Institutional Accreditatio n Program carried out by the Higher Education Quality Council, all our faculties and departments have been accredited.

2024

BAMER (Biruni Scientific Research Center) was founded to encourage scientific research within the university, support high-quality academic production, and contribute to the development of competitive projects at national and international levels.

2024

B-eAraC, the Laboratory Animals Application and Research Center, was established to provide a major service to researchers in Türkiye by implementing experimental animal models, particularly in rodents (mice and rats).

2024

A student dormitory for both female and male students was established to bring together all the social facilities students may need—faciliti es that cannot be provided in a home environment.

2025

Continuing its education with the principle of "The Future of Science," our university aims to be a center of happiness, tolerance, and success for its students and staff, striving for excellence in its services. With its innovative practices and achievements that add value to learning and society, it continues to be a pioneering university that leaves a mark, both in Türkiye and internationally—tru e to its name.

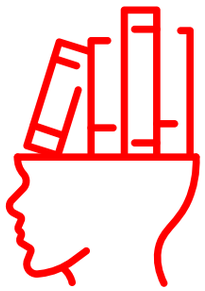
Our Vision

To be a pioneering university that, true to its name, leaves a lasting mark — leading change through knowledge, innovation, and impact.

Our Mission

To be an innovative and leading university that cultivates qualified individuals through transformative education, produces original knowledge at both national and international levels, and contributes to solving societal challenges with scientific and ethical responsibility.

CORE VALUES



Knowledge

Commitment to learning, discovery, and the pursuit of truth as the foundation of progress.

Wisdom

Using knowledge with depth, reflection, and ethical judgment to serve humanity.

Humanity

Placing human dignity, empathy, and compassion at the heart of education, research, and service.

Academic Freedom

Protecting the right to think, question, and create freely within an environment of respect and integrity.

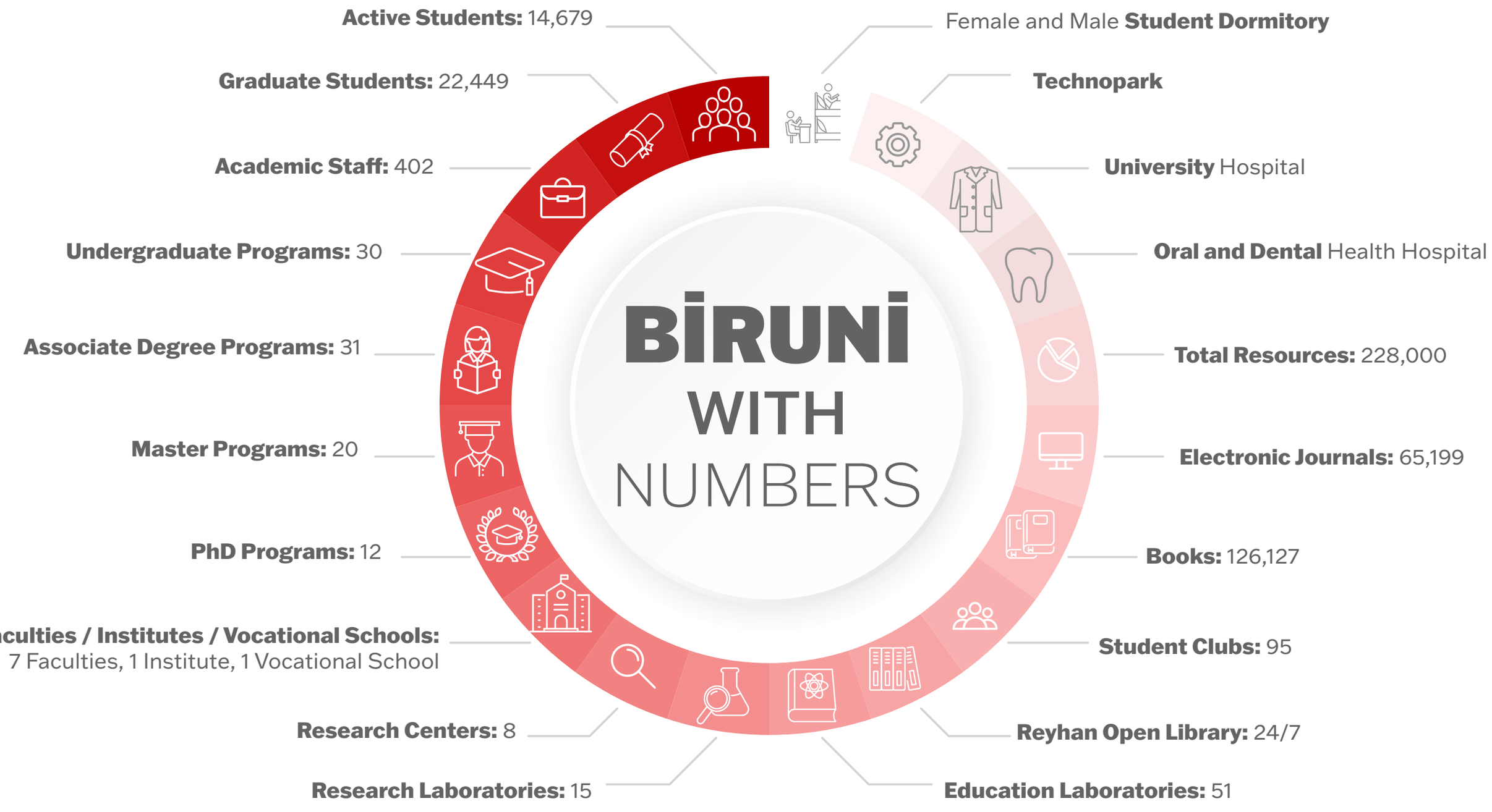
Pioneering Spirit

Challenging conventions with creativity and vision; leading transformative change in education and science.

Courage

Acting with integrity and resilience in the face of uncertainty — daring to stand for what is right and meaningful.

BİRUNİ WITH NUMBERS



11.364 GJ
Total energy used

2.640 GJ
Total energy used
from low-carbon sources

Ecological Campus Policy

Biruni University is an educational institution committed to creating an environmentally sensitive campus and preserving ecosystem balance . To this end, our university has adopted and implemented an ecological campus policy based on sustainability principles. Campus-wide activities are planned to minimize environmental impact, protect natural resources, and contribute to ecological balance .

Core Values

Biruni University Ecological Campus Policy is based on the following core values:

1.Conservation of Natural Resources: Our university is committed to using natural resources responsibly and ensuring their sustainability. The conscious and efficient use of vital resources such as water, energy, and land is encouraged.

2. Respect for Ecosystem Balance: Protecting green spaces and supporting biodiversity on campus is part of the goal of maintaining ecosystem balance. The university aims to create a campus environment that respects nature.

3. Environmentally Friendly Design and Structures: Environmentally friendly architectural and engineering solutions are used throughout the university's buildings and facilities. Green buildings, energy-efficient systems, and natural lighting/ ventilation are utilized to reduce negative environmental impacts.

4. Zero Waste Approach: Separating waste at its source, recycling it and adopting a zero waste target whenever possible are among the main priorities of our university.

5.Environmental Awareness and Participation: Biruni University aims to raise environmental awareness among students, staff and society at large, to spread sustainability awareness and to encourage environmentally friendly behavior.

Ecological Campus Policy Strategies

Biruni University implements its ecological campus policy with the following strategies:

1. Protecting and Expanding Green Spaces: Protecting existing green spaces and creating new ones on campus is a priority strategy. Afforestation efforts and biodiversity-enhancing projects will be carried out regularly.

2. Water and Energy Management: Projects will be implemented to reduce water consumption and increase energy efficiency. Rainwater harvesting systems, low-water

plumbing fixtures, and energy-saving lighting systems will be installed throughout the campus.
3. Waste Management and Recycling: Our university will expand recycling and composting systems across campus to minimize waste production. Waste management processes will be continuously improved to achieve the zero-waste goal.
4. Environmentally Friendly Transportation: The university will encourage environmentally friendly transportation on campus. Necessary infrastructure will be strengthened to increase the use of bicycle paths, electric vehicle charging stations, and public transportation.
5. Environmentally Friendly Building Design: Environmentally friendly, energy-efficient, and carbon-emission-reducing design standards will be implemented in new buildings and renovations of existing structures. Environmentally friendly practices such as green roofs and solar panels will be expanded.
6. Biodiversity Conservation Programs: Biodiversity programs will be developed to protect and support local plant and animal species within the university campus . Natural habitats within the campus will be preserved, thereby increasing ecological diversity.
7. Sustainable Education and Research: Courses, seminars, and workshops will be held at the undergraduate and graduate levels to raise ecological awareness and encourage research on environmental sustainability. Academic projects will aim to contribute to ecological balance .
8. Community and Environmental Collaboration: The University will continue to conduct public awareness-raising activities on environmental issues and collaborate with local governments and civil society organizations. Community participation in the University's environmentally friendly projects will be encouraged.

Goals
Biruni University Ecological Campus Policy are:
1. Increasing Green Areas: Expanding green areas within the campus by 20% and carrying out vegetation and afforestation activities to increase biodiversity .
2. Reducing Water Consumption: Saving water by reducing campus water consumption by 25%. Achieving this goal through rainwater harvesting systems.
3. Increasing Energy Efficiency: Reducing energy consumption on campus by 30% through energy efficiency projects.
4. Improving Waste Management: Within the framework of the zero waste policy, minimizing waste production, increasing recycling rates by 50% and expanding composting practices.
5. Environmentally Friendly Transportation: Reducing carbon emissions from on-campus transportation by 40% by encouraging the use of public transportation, bicycles, and electric vehicles .
6. Creating Ecological Awareness: Organizing regular environmental education programs and events on an annual basis to raise the level of ecological awareness among all students and staff .
7.Strengthening Social Collaborations: Developing social awareness projects and

actively participating in these projects by collaborating with local governments, environmental non-governmental organizations and other universities.
These goals will be regularly monitored, the success of the activities undertaken will be measured, and corrective and remedial measures will be implemented as necessary. Biruni University will continue to promote environmental responsibility by taking decisive steps toward achieving its ecological campus goals.

Ecological Campus Policy

Biruni University is committed to contributing to sustainable development goals and combating climate change. Our university implements a comprehensive carbon management strategy across campus to reduce carbon emissions , increase energy efficiency, utilize renewable energy sources, and raise environmental awareness. This policy aims to promote environmental responsibility both within the university and throughout society.

Core Values

Biruni University Campus Carbon Management Policy is based on the following core values:

1. Sustainability: Our university, with its mission to leave a livable world for future generations , promotes sustainable practices in all its activities. In this context, it prioritizes environmentally friendly energy use and resource management.
2. Climate Justice: The University adheres to the principle of social justice while combating climate change by reducing its carbon footprint. It aims to mitigate the impacts of climate change on the most vulnerable.
3. Energy Efficiency: Reducing energy consumption and improving energy efficiency across campus is a top priority. To this end, the university maintains a continuous improvement process in its technology and infrastructure investments.
4. Environmental Awareness: Biruni University aims to raise environmental awareness among all students and staff. Environmentally friendly behavior is encouraged by raising individual and societal awareness through educational programs and campaigns.
5. Renewable Energy Use: The university aims to increase the use of renewable energy sources to reduce carbon emissions . It develops strategies to accelerate the transition to solar, wind , and other green energy sources.

Campus Carbon Management Strategies

Biruni University is adopting a forward-looking and comprehensive approach to carbon management. In line with this strategy, the following steps will be taken:

1. Energy Efficiency and Conservation: Insulation, lighting, and heating systems will be modernized to improve energy efficiency in all buildings on campus. Additionally, we aim to raise awareness among students and staff about energy conservation on campus.
2. Renewable Energy Projects: The

university campus will increase its capacity to utilize renewable energy sources. Solar panels, wind turbines, and other renewable energy technologies will be installed and integrated into existing energy infrastructure .

3. Carbon Footprint Measurement and Reporting: The University will develop the necessary tools to measure and assess its carbon footprint annually. Detailed reporting of carbon emissions will be ensured, and these reports will be shared transparently.

4. Carbon Reduction Targets: The university has clearly defined annual carbon emission reduction targets and will be monitored annually. Achieving these targets will include reducing energy consumption, improving waste management, and promoting environmentally friendly transportation options.

5. Sustainable Transportation: The university will develop infrastructure such as bike paths and electric vehicle charging stations to reduce carbon emissions on and around campus , and will encourage the use of public transportation. Furthermore, the use of environmentally friendly vehicles will be expanded on university shuttles.

6. Waste Management and Recycling: The university will implement measures to reduce carbon emissions through waste management and recycling processes. Recycling rates will be increased and waste generation on campus will be minimized within the framework of a zero-waste policy.

7. Environmental Awareness Training: Environmental awareness training and workshops for students and staff will be an important component of the implementation of carbon management policies. These trainings will encourage the university community to adopt sustainable living habits.

Goals

Biruni University Campus Carbon Management Policy are:

1. Creating a Carbon Neutral Campus: In the long term, develop and implement strategies to neutralize the university's carbon footprint and achieve the goal of becoming a carbon neutral campus.

2. Increasing the Use of Renewable Energy: Maximizing the share of renewable energy sources in the university's energy consumption and reducing dependence on traditional energy sources.

3. Reducing Energy Consumption: Minimizing negative environmental impacts by reducing energy consumption on the university campus by 30%.

4. Raising Social Awareness: Raising awareness among all students and staff on carbon management and sustainability issues and extending this awareness beyond the university. Contributing to social transformation through environmental awareness activities.

5. Promoting Sustainable Transportation: Reducing fossil fuel use in campus transportation by 50% by increasing cycling and public transportation.

6. Achieving the Zero Waste Goal: To minimize

the university's waste production, increase recycling rates in line with the zero waste target, and implement sustainable practices in waste management.

The degree to which these goals are achieved will be regularly monitored, and necessary measures will be taken and improvement processes implemented. Our university will continue to develop sustainable development and develop innovative solutions in the field of carbon management.

Sustainable Campus Design, Renovation And Construction Policy

Biruni University is committed to embracing sustainability criteria in its campus design, renovation, and construction processes to ensure that its students, faculty, and administrative staff learn and work in accordance with the principles of environmental, social, and economic sustainability . This policy aims to increase the campus's energy efficiency, reduce environmental impact, and provide a healthy and sustainable environment for all community members. Our university prioritizes sustainability principles in all campus projects in line with its responsibility to leave a more livable world for future generations.

Core Values

Biruni University's Sustainable Campus Design, Renovation and Construction Policy is based on the following core values:

1. Environmental Sustainability: Our university minimizes its impact on the environment by using environmentally friendly materials in its campus projects. It ensures the protection of natural resources through the integration of renewable energy sources and water management strategies.
2. Energy and Resource Efficiency: Our university aims to reduce energy consumption and lower its carbon footprint by using innovative technologies that increase energy efficiency in campus areas.
3. Green and Social Living Spaces: Our university promotes biodiversity by increasing green spaces on campus, while also creating sustainable living spaces that support social interaction among community members.
4. Accessible and Inclusive Design: Infrastructures that can be used comfortably by individuals with disabilities are developed with the priority of creating accessible, safe and inclusive spaces for all individuals.
5. Waste Management and Recycling: Waste management strategies are developed across campus projects, and recycling processes are expanded. Waste generation is minimized during construction and renovation processes.

Sustainable Campus Design, Renovation and Construction Policy Strategies

Biruni University implements the following strategies to create sustainable campus areas:

1. Energy-Efficient Building Design: Newly constructed or renovated buildings are equipped with systems that increase energy efficiency. Energy efficiency is achieved through solar

panels, structures that optimize natural light use, and insulation technologies.

2. Sustainable Renovation Programs: Renovating existing buildings utilizes recyclable materials that reduce environmental impact. Furthermore, buildings are continuously improved in terms of energy performance and restructured according to sustainability criteria .

3. Expanding Green Spaces: Existing green spaces are preserved and new ones are created throughout the campus. By choosing native plant species in landscaping, biodiversity is preserved and sustainable ecosystems are created.

4. Smart Building Technologies: Smart building technologies are used throughout the campus to optimize energy, water, and waste management. These systems contribute to efficient energy management by monitoring resource usage.

5. Water Management Strategies: Water consumption is reduced through water-saving practices such as rainwater collection and gray water use. Sustainable water management policies are implemented in irrigation and landscaping.

6. Use of Environmentally Friendly Materials: Environmentally friendly, recyclable, and locally sourced materials are used throughout the construction and renovation processes. This minimizes environmental impact and contributes to the local economy.

7. Waste Management and Recycling: Waste generated during construction processes is recycled through effective waste management systems. Environmental pollution is prevented by establishing waste separation points at construction sites.

8. Sustainable Transportation: Sustainable transportation solutions are developed on and around campus. Carbon emissions are reduced by increasing bike paths, electric vehicle charging stations, and public transportation access points.

Goals

Biruni University's Sustainable Campus Design, Renovation and Construction Policy are:

1. Increasing Energy Savings: Reducing energy consumption by 30% through energy efficiency projects on campus.

2. Expansion of Green Areas: Increasing green areas within the campus by 20% and preserving local vegetation.

3. Increasing the Recycling Rate: Increasing the recycled waste rate in construction and renovation processes to 50%.

4. Expanding the Use of Environmentally Friendly Materials: 75% of construction materials should be environmentally friendly and recyclable.

5. Increasing Sustainability Awareness: Increasing participation in training programs to raise sustainability awareness among students and staff by 50%.

renovation , and construction, Biruni University aims to provide a healthy and sustainable environment for its students and staff while minimizing its environmental impact. The university is committed to the effective implementation and continuous improvement of this policy.

Enhancing Real-Time Earth–Air Heat Exchanger Outlet Temperature Forecasting in Arid Climates Using Artificial Neural Network: A Case Study from Bechar, Algeria

Research Outcomes:
This study presents a novel approach to improving the accuracy of real-time temperature forecasting in earth–air heat exchanger (EAHE) systems operating in arid climates. Using artificial neural networks (ANN), the research models complex nonlinear interactions between environmental parameters—such as soil temperature, air humidity, and wind speed—to optimize thermal performance predictions. The Bechar (Algeria) case study demonstrates that ANN-based forecasting significantly enhances energy efficiency, reduces computational error, and allows for adaptive control in sustainable building systems.

Relevance to SDG 13:
The study directly supports SDG 13: Climate Action by advancing climate-resilient technologies and improving energy system performance under extreme environmental conditions. By enabling smarter use of renewable ground energy and optimizing thermal management, the research contributes to both mitigation and adaptation strategies for climate change.

Impact Area:
Promotes the integration of artificial intelligence in sustainable climate technologies, supports green infrastructure design in arid and semi-arid regions, and provides scalable models for energy-efficient construction. This research offers actionable insights for engineers, policymakers, and urban planners seeking data-driven approaches to reduce carbon emissions and enhance environmental sustainability.

From Children's Books to Nature - An Environmental Awareness Program

Aim:
To cultivate environmental and climate awareness among children through literature-based education, using children's books as a tool to inspire empathy toward nature and encourage climate-conscious behaviors from an early age.

Description:
This project designs and implements an interactive environmental awareness program that integrates children's literature, storytelling, and experiential learning activities. By selecting storybooks that highlight nature, ecosystems, and sustainability themes, the program encourages children to reflect on environmental issues such as pollution, deforestation, and climate change. Workshops, art projects, and outdoor activities accompany reading sessions to reinforce practical understanding and emotional connection to the natural world.

Impact:
The initiative promotes climate literacy and behavioral change among younger generations, helping children understand the value of environmental stewardship. It strengthens the role of education and culture in addressing climate change and supports intergenerational sustainability awareness. By engaging educators, parents, and local communities, the project contributes to building social resilience and a shared sense of environmental responsibility.

SDG 13 Contribution:
Aligned with SDG 13: Climate Action, this project directly supports Target 13.3 - improving education, awareness, and human capacity on climate change mitigation and adaptation. It demonstrates how creative, education-based initiatives can empower children to become future advocates of sustainable living and climate action, reinforcing the importance of early environmental education as a cornerstone of global climate resilience.

Water Efficiency Awareness Conference

The “Water Efficiency Awareness Conference,” organized by the Biruni University Climate and Energy Community, underscores the university’s commitment to operational sustainability principles in environmental management, extending beyond its mission of generating theoretical knowledge. Held with contributions from Prof. Dr. İzzet Öztürk and Prof. Dr. Hüseyin Selçuk, this event highlighted the importance of efficient water use within institutional campus operations, thereby directly aligning with SDG 13: Climate Action.

By promoting water-saving policies and technologies across operational domains, the university strengthens its institutional resilience against water stress and drought risks arising from climate change, offering a tangible example of social impact. The conference also enhanced experiential learning by providing students with practical knowledge about existing water infrastructure and management systems, thus increasing community-wide awareness.

This holistic approach demonstrates how Biruni University reinforces its vision of inclusivity and sustainability through concrete, operational climate action steps centered on student engagement.

Forest Volunteer Training

The Forest Volunteer Training, organized by the Search and Nature Sports Community on 31 October 2024, focused on enhancing students' abilities to protect natural habitats, act in harmony with the environment, and serve effectively as volunteers during disaster situations. Participants received training on sustainable forest management, ecosystem restoration, and nature-based solutions.

The event contributed to raising environmental awareness within the scope of Sustainable Development Goal 13: Climate Action, encouraging active civic responsibility in combating climate change.

Transforming Seeds Workshop

The “Transforming Seeds Workshop,” organized by the Biruni University Climate and Energy Community on 13 December 2024, aimed to raise awareness on climate-resilient agricultural practices and responsible production processes. Participants were informed about the preservation of local seed varieties, sustainable agriculture, and strategies for reducing carbon footprints.

Within the framework of Sustainable Development Goal 13: Climate Action, the event contributed to the promotion of climate-friendly production models and the strengthening of a culture of environmental sustainability.

The Voice of Nature Piano Recital

Organized by the Climate and Energy Community on 15 May 2025, the “Voice of Nature” Piano Recital served as a unique social responsibility event that combined art with environmental awareness to strengthen community sensitivity. The performance, featuring original compositions by a visually impaired student, provided a meaningful example of inclusive education and environmental consciousness. During the recital, audience members participated in a waste-sorting activity by placing recyclable materials into designated recycling bins to reinforce the sustainability message. This impactful event contributed significantly to raising environmental awareness and encouraging social participation within the framework of Sustainable Development Goal 13: Climate Action.

EcoLife Information Booth and Awareness Activity

Held on 22 May 2025 by the EcoLife Community, the EcoLife Information Booth and Awareness Activity promoted the adoption of environmentally friendly lifestyles and the sustainable use of natural resources among students. Organic seeds were distributed, and informational sessions were provided on sustainable agriculture, zero-waste living, and environmental conservation.

This awareness initiative contributed to fostering climate-conscious behaviors within the university community under Sustainable Development Goal 13: Climate Action, while reinforcing Biruni University's environmental sustainability-focused social impact approach.

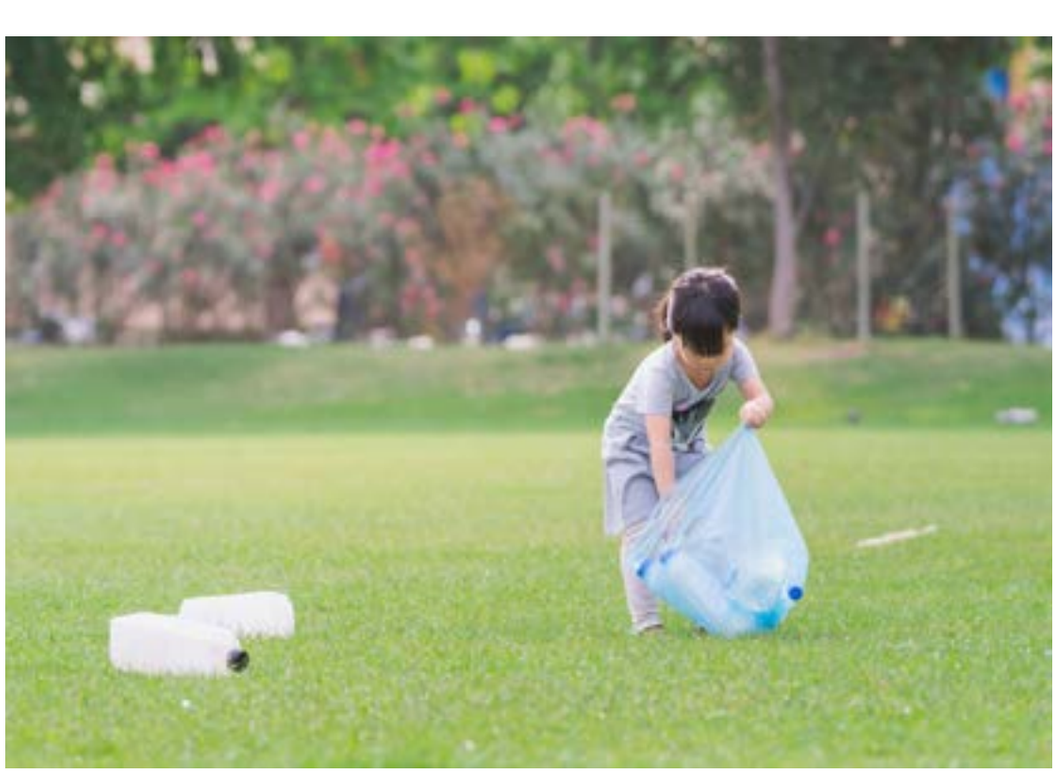
Membership in the North American Association for Environmental Education

The membership of Biruni University faculty member Firdevs Burçak in the North American Association for Environmental Education (NAAEE), which began in 2023, represents a strategic academic engagement that strengthens international knowledge exchange in the fields of climate change mitigation and environment-based learning. Through this membership, global experience and best practices related to environmental education policies, climate literacy, and sustainable teaching approaches have been integrated into the academic environment of Biruni University.

Evaluated within the scope of Sustainable Development Goal 13: Climate Action, this membership has made a significant contribution to broadening environmental awareness, developing educational content aimed at reducing carbon footprints, and integrating climate-responsive pedagogical approaches at the university level. Through this international network, Biruni University has reinforced its academic leadership in climate action and solidified its vision for a sustainable future on a global scale.

SDG RELATED COURSES

Early Childhood Environmental Education Program: Social Action and Inclusivity within the Scope of Sustainable Development Goal 13



By integrating its institutional sustainability mission with a tangible social impact initiative for future generations, Biruni University has demonstrated its strong commitment to Sustainable Development Goal (SDG) 13: Climate Action. Within this framework, the university implemented the "Early Childhood Environmental Education" activity through an innovative experiential learning model designed to build resilience to global challenges from an early age.

The program's pedagogical methodology adapted the fundamental principles of climate change and practical adaptation strategies to early childhood cognitive development, using hands-on educational materials, art-based activities, and play-centered interactive workshops. The most valuable institutional outcome of the event lies in its seamless integration of environmental education with the principle of inclusivity: In addition to university staff and volunteer student participation, the program offered active engagement opportunities for individuals requiring personalized support, ensuring that all participants were meaningfully included in learning and interaction processes.

This multidimensional participation model strengthened not only students' and staff members' competencies in climate science but also their capacity for empathy-based social awareness, demonstrating how knowledge can serve as a tool supporting social justice. As a result, through this initiative, Biruni University not only enhanced early intervention capacity regarding environmental issues (SDG 13) but also provided a holistic example of institutional responsibility aligned with SDG 4 (Quality Education) and SDG 10 (Reduced Inequalities) by advancing equity in education and social impact simultaneously.

Advancing Social Awareness through Climate Action–Focused Education and Social Inclusion: Sustainable Development Goal 13

Biruni University demonstrated its unwavering commitment to the global Sustainable Development Goals (SDGs) through the “Sustainable Development and Education” activity focused on SDG 13: Climate Action. As one of the most compelling examples of the university’s sustainability vision, this event provided students with an in-depth academic foundation, covering the core principles of climate science, regional climate change scenarios, and proactive adaptation strategies.

This experiential learning model reinforced not only knowledge transfer but also the ability to address problems from an interdisciplinary perspective. The high level of social impact achieved by the event stems from its embedded commitment to inclusivity: All educational modules and interactive sessions were meticulously designed to ensure full access and meaningful participation for individuals requiring personalized support.

This strategic integration increased participants’ social awareness not only at a theoretical level but also through practical interactions, giving tangible meaning to the concept of climate justice. Implemented with high student engagement, this innovative program demonstrated how academic knowledge can serve as a powerful catalyst for environmental protection and social equity. It further solidified Biruni University’s pioneering role—on international platforms—in cultivating future climate leaders and fostering an institutional culture centered on collective responsibility and equitable access.

COMMUNITY LIFE-LONG LEARNING

Roots of Resilience: The Power of Nature in Inclusive Education - Nigeria, 09 April 2025

The seminar titled “Roots of Resilience: The Power of Nature in Inclusive Education,” conducted by Biruni University faculty members in collaboration with Lilysoya Childcare in Nigeria, highlighted the critical role of nature-based educational approaches in combating climate change and fostering inclusive learning environments. The event examined, within a scientific framework, the importance of enabling students to develop psychological resilience, environmental awareness, and sustainable life skills through interaction with nature. Directly linked to Sustainable Development Goal 13: Climate Action, this seminar made a tangible contribution to the promotion of environmentally conscious educational models and the early cultivation of climate awareness. Through this initiative, Biruni University assumed an influential academic role in advancing climate-responsive education at a global scale.

Outdoor Learning in Action: Case Studies from Turkey & U.S. – Copenhagen KP International Week 2025, 08 April 2025

The seminar titled “Outdoor Learning in Action: Case Studies from Turkey & U.S.,” presented by Biruni University faculty during the Copenhagen KP International Week 2025, demonstrated through scientific case studies the effects of outdoor learning practices on environmental awareness and climate consciousness. The presentation discussed the positive outcomes of nature-integrated learning methods on climate change adaptation, the strengthening of ecological behaviors, and the development of sustainable lifestyle habits. Evaluated within the scope of Sustainable Development Goal 13: Climate Action, this academic contribution reinforced Biruni University’s international leadership in climate change mitigation, sustainable education, and environmental awareness.

Earthquake Awareness Training - 31 July 2025

The Earthquake Awareness Training organized by Biruni University on 31 July 2025 aimed to educate students and staff on the necessary measures and correct behavioral strategies before, during, and after earthquakes, thereby enhancing disaster awareness across the university. The training emphasized themes such as sustainable urban planning, a culture of safe building practices, and post-disaster resilience. Within the framework of Sustainable Development Goal 13: Climate Action, this initiative strengthened preparedness for climate-related disaster risks and supported Biruni University's educational mission focused on contributing to community resilience.

Carbon Footprint Calculation and Reduction Training

In line with the principles of transparency and accountability—core pillars of its institutional sustainability strategy—Biruni University implemented the "Carbon Footprint Calculation and Reduction Training," a program that directly contributes to Sustainable Development Goal (SDG) 13: Climate Action, using a rigorous methodological framework. This comprehensive experiential learning initiative aimed to deepen participants' competencies in analyzing greenhouse gas emissions at both the individual (Scope 3) and institutional (Scopes 1 and 2) levels in accordance with internationally recognized standards (ISO 14064, GHG Protocol).

A defining institutional outcome of the program was its inclusivity component, which solidifies the university's commitment to social impact: All training materials, calculation software, and interactive case studies were optimized to ensure full access and effective participation for individuals requiring personalized support, thereby reinforcing equal access to climate data and decision-making processes.

High student participation from the Faculties of Engineering, Economics, and Administrative Sciences enabled the interdisciplinary interpretation of generated data. The resulting analyses produced concrete mitigation strategies for university leadership in areas such as energy efficiency, sustainable transportation, and waste management.

This holistic initiative not only expanded Biruni University's environmental capacity in alignment with SDG 13 but also continuously elevated social awareness, demonstrating the university's scientifically grounded, ethical, and socially responsible position in addressing the climate crisis.

Water Footprint Calculation and Management Training

Biruni University strengthened its institutional sustainability strategy by prioritizing natural resource management and climate resilience through the implementation of the Water Footprint Calculation and Management Training. While the program addressed the impacts of Sustainable Development Goal (SDG) 13: Climate Action on water resources, it simultaneously aligned with SDG 6: Clean Water and Sanitation—making it a dual-focused initiative.

The program's methodology provided an applied experiential learning platform enabling participants to measure, analyze, and develop reduction strategies related to the "blue," "green," and "grey" water footprint components used in individual, institutional, and industrial processes.
Reflecting the university's distinctive social impact commitment, all training modules and interactive water-management simulations were adapted to allow full access and equal participation for individuals requiring personalized support. This approach deepened community awareness regarding the equitable distribution and protection of water resources.

Supported by high student engagement, the training not only enhanced participants' environmental awareness but also fostered an ethical sense of social responsibility concerning the impact of climate change on water stress and water justice. Through this initiative, Biruni University strengthened its scientific capacity for environmental solutions and demonstrated a holistic institutional model aligned with global goals, prioritizing equity in governance and education.

Renewable Energy, Climate Change, and Resource Development

Integrating technical expertise with social impact, Biruni University delivered an advanced experiential learning program titled “Renewable Energy, Climate Change, and Resource Development” for undergraduate and graduate engineering students. This critical training adopted a dual-focus approach that combines the technical applicability of Sustainable Development Goal (SDG) 7: Affordable and Clean Energy with the urgent strategic imperatives of SDG 13: Climate Action.

The curriculum covered advanced engineering design of Solar Power Plants (SPP) and Wind Power Plants (WPP), energy storage systems, and the contributions of these technologies to climate change mitigation. What distinguishes the program is its emphasis beyond technical instruction: Students received strategic training on the financing of renewable energy projects, green bond mechanisms, and the development and governance of sustainable energy resources through national and international regulatory frameworks.

To actualize the university’s institutional commitment to inclusivity, course content, field simulations, and technical guides were optimized in both digital and physical formats to ensure full access and equal participation for individuals requiring personalized support. This meticulous integration enabled the education of engineers who not only possess technical proficiency but also uphold climate justice and accessibility as core ethical values.

Through this comprehensive training, Biruni University strengthened its capacity to generate scientific and technical solutions to environmental challenges while documenting its institutional social responsibility in alignment with global sustainability goals.

Renewable Energy Facilities Field Trip

To reinforce its sustainability commitment and social impact mission, Biruni University organized a high-standard experiential learning activity: the Renewable Energy Facilities Field Trip. This significant initiative enabled students to observe real-world applications of Sustainable Development Goal (SDG) 7: Affordable and Clean Energy, while also experiencing firsthand the operational dimensions of achieving SDG 13: Climate Action.

The trip allowed students to examine the complex engineering principles behind the installation, operation, and maintenance of renewable energy power plants (such as wind farms and solar energy plants). This hands-on exposure aimed to advance their technical proficiency beyond classroom learning.

Reflecting the university's inclusive philosophy, transportation arrangements, on-site accessibility pathways, and informational materials (including audio descriptions and large-format visual aids) were meticulously adapted to ensure full participation for individuals requiring personalized support. This approach increased overall student engagement and fostered strong social awareness among future engineers regarding the importance of designing energy solutions grounded in equity and accessibility.

Guided by facility experts and academic staff, this site-based social responsibility project demonstrated Biruni University's multi-layered and documentable contribution to global sustainability goals through the integration of theoretical knowledge with applied environmental management and social justice practices.

Energy Conservation and Climate Responsibility Training

Biruni University strengthened its commitment to Sustainable Development Goal (SDG) 13: Climate Action through a comprehensive Energy Conservation and Climate Responsibility Training specifically designed for administrative staff—key actors in enhancing campus operational efficiency. This training represented a significant institutional social impact effort aimed at reducing the university's total carbon footprint (Institutional Carbon Footprint, Scope 2) by optimizing energy consumption within administrative processes and building management.

Moving beyond simple energy-saving tips, the program delivered a detailed experiential learning module that encompassed smart usage strategies for office technologies, the management of heating and cooling systems, and the prioritization of energy-efficient (A+++) devices within procurement processes.

The university operationalized its inclusivity principle by designing all instructional materials and presentations to ensure equal accessibility for the entire administrative personnel cohort, including individuals requiring personalized support. The strategic combination of student participation (students collaborating with staff on efficiency assessments) and staff training aimed to transform institutional culture.

Consequently, this tailored training empowered administrative personnel to transition from passive users to socially aware stakeholders who actively contribute to climate change mitigation. It also strengthened Biruni University's institutional capacity and accountability toward achieving SDG 13.

Definition, Measurement, and Management Approach for Low-Carbon Energy

Biruni University defines low-carbon energy not merely as an alternative source but as a core component of sustainable development and climate responsibility. In this context, low-carbon energy includes all energy generation methods and technologies that significantly reduce greenhouse gas emissions compared to conventional fossil fuels.

Low-carbon energy sources at the University include renewable electricity generation (solar PV, wind), high-efficiency heat pumps, waste heat recovery systems, and cogeneration units.

Energy management processes are digitally monitored through the Biruni DataHub Energy Module, with data on renewable electricity procurement, on-campus solar energy production, heat pump performance, and waste heat recovery regularly recorded.

All data are collected quarterly by the Department of Construction and Technical Services and analyzed and reported by the Sustainability and Data Assessment Office.

The share of low-carbon energy within total energy consumption is monitored annually, and progress is measured against targets:

- 2024: 15% (Base year)
- 2026: 25% (Integration of renewable energy procurement)
- 2030: 50% (On-campus PV systems and waste heat recovery)

All measurements are in kWh/MWh and included in the annual greenhouse gas inventory report. Results are also shared publicly through the annual Climate and Energy Performance Report.

University Climate Action Plan (2024–2030)

Biruni University approaches climate change not only as an environmental obligation but also as a corporate responsibility. The Biruni University Climate Action Plan (2024–2030) is a comprehensive roadmap integrating mitigation, adaptation, resilience, and governance strategies.

The plan aligns fully with the Turkey Climate Change Action Plan (2023–2030) and the European Green Deal.

Key Components:

1. Mitigation: Reducing carbon emissions in energy, transport, waste, water, and procurement.
2. Adaptation: Reducing urban heat island effects and developing flood-resilient campus designs.
3. Resilience: Establishing resilient systems to ensure business continuity in the university hospital and IT infrastructure.
4. Governance: Comprehensive stakeholder reporting every three years.
5. Financing: Establishing a corporate Sustainability Fund to support climate projects.

Preparation Process:

The plan was developed through a participatory process involving Istanbul Metropolitan Municipality (IMM), AFAD, local NGOs, and neighborhood representatives.

Sectoral Targets:

- Energy: 50% low-carbon energy by 2030
- Transport: Full electric campus fleet by 2035
- Waste: 80% recycling rate by 2027
- Water: 20% water consumption reduction by 2030
- Procurement: 100% green procurement policy by 2030

Implementation, monitoring, and evaluation are carried out by the Sustainability and Data Assessment Office, with annual progress reviewed and publicly reported.

Climate Disaster Preparedness and Corporate Resilience

Biruni University has adopted a robust climate resilience strategy to mitigate the impacts of climate-related disasters (floods, heatwaves, storms, air pollution, etc.).

This strategy is supported through annual drills, awareness campaigns, and coordination activities conducted in cooperation with AFAD, the Red Crescent, Provincial Health Directorate, and Governor's Office.

Key Activities:

- SMS and email-based early warning system for staff and students
- Designated safe gathering and shelter areas on campus
- Backup energy systems for hospital and data center continuity
- Multilingual informational materials for vulnerable groups (disabled, elderly, international students)
- Annual inter-agency simulation drills followed by evaluation reports

These activities aim to increase climate resilience and disaster awareness both on campus and in surrounding communities.

Carbon Inventory, Reduction Targets, and Verification

Biruni University calculates and monitors its corporate carbon footprint according to the GHG Protocol and ISO 14064 standards.

Scope Definition:
- Scope 1: Direct emissions from fuel use and University-owned vehicles
- Scope 2: Indirect emissions from purchased electricity
- Scope 3: Indirect emissions from transportation, supply chain, and waste management (priority categories)

Timeline:
- Base Year: 2023
- Target Year: 2040 – Net Zero Emissions

Reduction Roadmap:
- 2026 – 15% Reduction: Energy efficiency and LED conversion projects
- 2030 – 35% Reduction: Renewable energy procurement and transition to electric vehicle fleet
- 2035 – 60% Reduction: Green procurement policy and building modernization
- 2040 – 100% Net Zero: Certified carbon offsets for remaining emissions

Monitoring and Verification:
The annual carbon inventory undergoes internal verification by the Sustainability and Data Assessment Office, with results published on the University website. Independent verification is conducted as needed to ensure ISO compliance.

Community Engagement and Climate Awareness Education

Biruni University aims to build climate awareness and action capacity beyond the campus. Community-based education and awareness programs are organized.
Target Groups:
Schools, healthcare workers, municipal staff, SMEs, and neighborhood associations
Program Types:

- Certification Program: “Climate Change and Health Resilience” for healthcare professionals
- Workshops: Flood preparedness, energy efficiency, sustainable urban living
- Public Seminars: Awareness on heatwaves, water conservation, early warning systems
- Educational Materials: Multilingual guides, posters, digital content
- Main Event: “Biruni Climate Week” – student exhibitions, expert panels, campus-wide climate awareness campaigns

These initiatives aim to translate knowledge into action and awareness into resilience, fostering a sustainable climate culture in the community.
Biruni University actively participates in collaborative planning for climate change-related disasters and emergency situations. The University works in coordination with AFAD, Istanbul Metropolitan Municipality, the Governor’s Office, Red Crescent, and other relevant governmental agencies, taking into account the needs of both domestically and cross-border displaced communities.
Through disaster preparedness drills, early warning systems, awareness campaigns, and resilience training, the University translates these collaborations into concrete actions. These initiatives aim to enhance disaster readiness on campus and in surrounding communities while also ensuring protection and support for displaced populations.

Governance, Monitoring, and Partnership Framework

The Sustainability and Data Assessment Office is the central unit responsible for coordinating, monitoring, verifying, and reporting all climate action activities.
Data from energy, water, transport, and waste modules are consolidated in the Biruni DataHub system.

Reporting Periods:
- Quarterly: Data review and verification
- Annual: Publication of the Climate and Energy Performance Report
- Triennial: Comprehensive Climate Action Progress Report

Partnerships and Oversight:
Inter-agency coordination and audits are conducted under protocols signed with AFAD, IMM, Red Crescent, and Provincial Health Directorate.

“Biruni University transforms climate responsibility into a permanent institutional culture through measurable actions, transparent data management, and strong partnerships.”