YILDIZ TECHNICAL UNIVERSITY

— 2023 —

SUSTAINABILITY REPORT

SMART GREEN CAMPUS





Reporters

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A UNIVERSITY EMBRACING SUSTAINABLE HORIZONS

Join us as we embark on this journey - a journey towards embracing sustainable horizons. We invite you to explore the university's ongoing intitiatives, achievements, and aspirations.

YTU YILDIZ TECHNICAL UNIVERSITY

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A UNIVERSITY DEDICATED TO ACHIEVING A SUSTAINABLE FUTURE

THE COMMITMENT TO SDGs

In the pursuit of a better world, where the harmony between humanity and the environment is paramount, Yildiz Technical University stands as a beacon of commitment to sustainable development goals.

As we navigate the complexities of the 21st century, the imperative to address environmental challenges has never been more pressing. Climate change, resource depletion, and ecological degradation loom as formidable threats to our planet's future. However, in the face of these challenges, Yildiz Technical University emerges not as a passive bystander, but as an active protagonist in the narrative of sustainability.

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THE LAYOUT

This report is structured to provide a clear and comprehensive overview of our sustainability initiatives. Each section has been thoughtfully designed to guide the reader through our diverse range of activities and achievements.



Also, the university's sustainability initiatives to provide a clear and thorough understanding of its progress and impacts are meticulously organized and detailed. Each section is crafted to navigate the reader through our extensive array of projects, showcasing both our achievements and our ongoing commitment to environmental excellence.

From innovative research developments to community engagement efforts, the structure of this report aims to illuminate every aspect of our journey towards a more sustainable future.

First, this report provides brief introductory and background information regarding sustainability.

Then, the report features a message from the Rector and a preface from the Vice-Rector.

After introductions, key insights into the research advancements made in sustainable technologies.

Before the SDGs, key improvement areas in global sustainability rankings are identified.

A great amount of this report is dedicated to the university's contributions to the SDGs.



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SECTION

1 BACKGROUND TO THE REPORT

SUSTAINABILITY REPORT 2023

WHY WE DO WHAT WE DO

This section features the motivation behind the commitment to the realization of the sustainable development goals, a message from the rector of the university along with a preface prepared by the editor of this report with specific reference to a sustainable future.




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INTRODUCTION TO THE REPORT

This report not only highlights our achievements but also sets the stage for the ambitious goals we aim to reach in the coming years, fostering a culture of innovation and responsibility that propels us toward a sustainable future.

This report features the highlights the university's achievements towards a greener and more sustainable future.

> A prominent university in the age of science.

This document is a detailed narrative of our steadfast commitment to integrating sustainable practices across all facets of our university operations. Over the past year, we have undertaken significant initiatives that not only underscore our dedication to the environment but also our role as leaders in the academic community for driving change.This report captures the essence of our efforts, showcasing the impactful projects, innovative research, and community engagements that define our sustainable journey.

MESSAGE FROM THE RECTOR



PROF. DR. TAMER YILMAZ

THE RECTOR

We believe in leading with vision. We are deeply committed to creating a sustainable future and building a resilient community.

As we navigate through an era of significant global challenges and opportunities, our commitment to sustainable development remains steadfast. At Yildiz Technical University, we understand the critical role that education, research, and community engagement play in addressing the pressing issues of our time.

In this report, we highlight our progress and initiatives related to various SDGs, showcasing our efforts to create a more sustainable and equitable world. From promoting affordable and clean energy to advancing quality education and fostering decent work and economic growth, our university community is actively involved in making a positive impact.

Our achievements in sustainable practices, innovative research, and student-led activities are a testament to the collective efforts of our academic and administrative staff, students, and partners. Together, we are building a resilient and inclusive campus environment that not only addresses the needs of today but also anticipates the challenges of tomorrow.

Yildiz Technical University is going out of its way in order to set an example in the region in terms of becoming a self-sustaining university by promoting smart, green, barrier-free and sustainable campuses.

In this context, the university always pays attention to sticking to the environmental, social and economic sustainability principles in all the endeavors it gets involved in.

Also, we are well aware that one key factor of success is to always keep moving forward. Adopting a proactive attitude towards the fulfillment of attaining the sustainable development goals, the university's philosophy is always to create awareness in campus residents from students to academics as well as from service providers to stakeholders of any kind.

In order to make its efforts and endeavors public, one of the very first attempts was to initiate the website for the Smart and Green Campus.

PROF. DR. TAMER YILMAZ
THE RECTOR

2023

YILDIZ TECHNICAL UNIVERSITY

This report emphasizes our dedication to sustainability and our collective efforts towards achieving global goals.

https://kampus.yildiz.edu.tr



Today, the website for the Smart and Green Campus has become the showcase of the university's commitment to the sustainable development goals and a platform where a sense of sustainable community culture has been thriving on new ideas every day.

On the other hand, depleting resources, increasing need for energy resources, and the increase in greenhouse emissions raises the question of efficient use of resources. In this context, Yildiz Technical University has put new policies into practice where the university is constantly revising the energy strategies as well as adjusting the strategies currently in place, setting new goals, and putting together action plans.

The university leverages its research capacities to develop sustainable solutions that address critical challenges in energy consumption and resource management.

INNOVATIVE SUSTAINABILITY

These are part of a broader commitment to sustainability that embraces innovative technologies and collaborative projects aimed at reducing our environmental footprint.

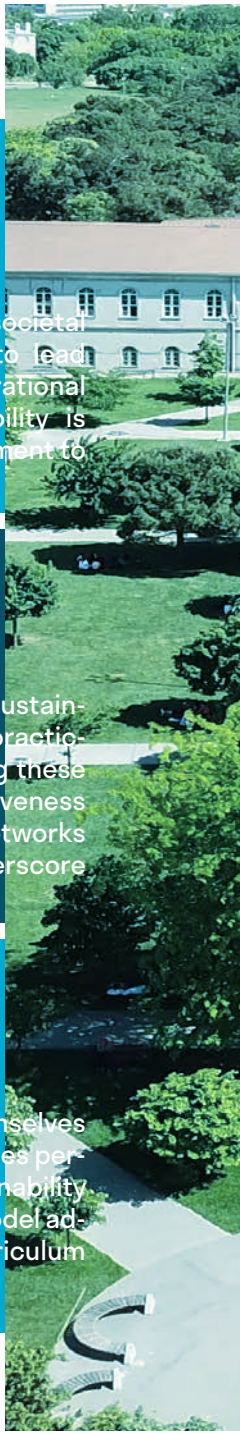
SUSTAINABLE LEADERSHIP

By integrating sustainability into our core activities, we aim to lead by example in the academic community and contribute significantly to global efforts in combating climate change.

THE EDITOR'S PREFACE

Prof. Dr. Bestami Özkaya

**Vice Rector,
for Research and Planning**



"Innovate"

Universities as Pioneers in the Global Sustainability Agenda

Universities today are not just centers of learning; they are catalysts for societal transformation towards sustainable practices. They are uniquely positioned to lead by example, demonstrating how integrated sustainability can shape both operational frameworks and academic pursuits. At Yıldız Technical University, sustainability is embedded in every facet of university life, from research and technology development to campus operations and community outreach.

"Educate"

Elevating Academic Reputation through Commitment to Sustainability

Global university rankings increasingly reflect an institution's engagement in sustainability. This emphasis on environmental stewardship and sustainable research practices elevates a university's academic reputation and global standing. By prioritizing these aspects, Yıldız Technical University enhances its academic appeal and competitiveness on the international stage. The institution's active participation in sustainability networks and strategic focus on environmental metrics in its operations and research underscore its role in shaping a sustainable future.

"Transform"

Redefining University Governance through the Lens of Sustainability

The contemporary educational landscape demands that universities reinvent themselves as leaders in sustainability. This transformation requires that sustainability principles permeate all levels of governance and operation. At Yıldız Technical University, sustainability is a core consideration in every policy and process. The university's governance model advocates for sustainable practices across all domains, from infrastructure to curriculum development, setting a standard for environmental and community stewardship.

YTU AS A KEY PLAYER



Strategic integration of sustainability in education

At Yildiz Technical University, sustainability is not just an operational strategy but a core academic value. We integrate sustainable principles across all educational programs to ensure that every student graduates with a keen understanding of their role in a sustainable future. This approach spans various disciplines, enabling students to tackle real-world challenges with sustainable solutions, thus preparing them for leadership in a green economy.

Research innovation and sustainability

Our university's research agenda is deeply entrenched in sustainability. By fostering innovative research in areas such as renewable energy technologies and sustainable urban development, we aim to contribute substantial advancements towards global sustainability goals. Our researchers are encouraged to lead projects that not only push the boundaries of scientific inquiry but also provide tangible, eco-friendly benefits to society.

Campus sustainability initiatives

The commitment to a sustainable campus is evident through our comprehensive initiatives ranging from energy-efficient building designs to robust recycling programs. These efforts reduce the university's environmental footprint and serve as a living laboratory for sustainability education. Furthermore, these initiatives are regularly reviewed and optimized to adapt to evolving environmental standards and innovations.

Community engagement and colloboration

Recognizing the importance of community involvement in sustainability, Yıldız Technical University actively engages with local and international partners. Through workshops, seminars, and collaborative projects, we extend our impact beyond the campus, contributing to sustainable community practices and educating the public on environmental issues. This outreach fosters a broader cultural shift towards sustainability in our surrounding community and beyond.

SECTION

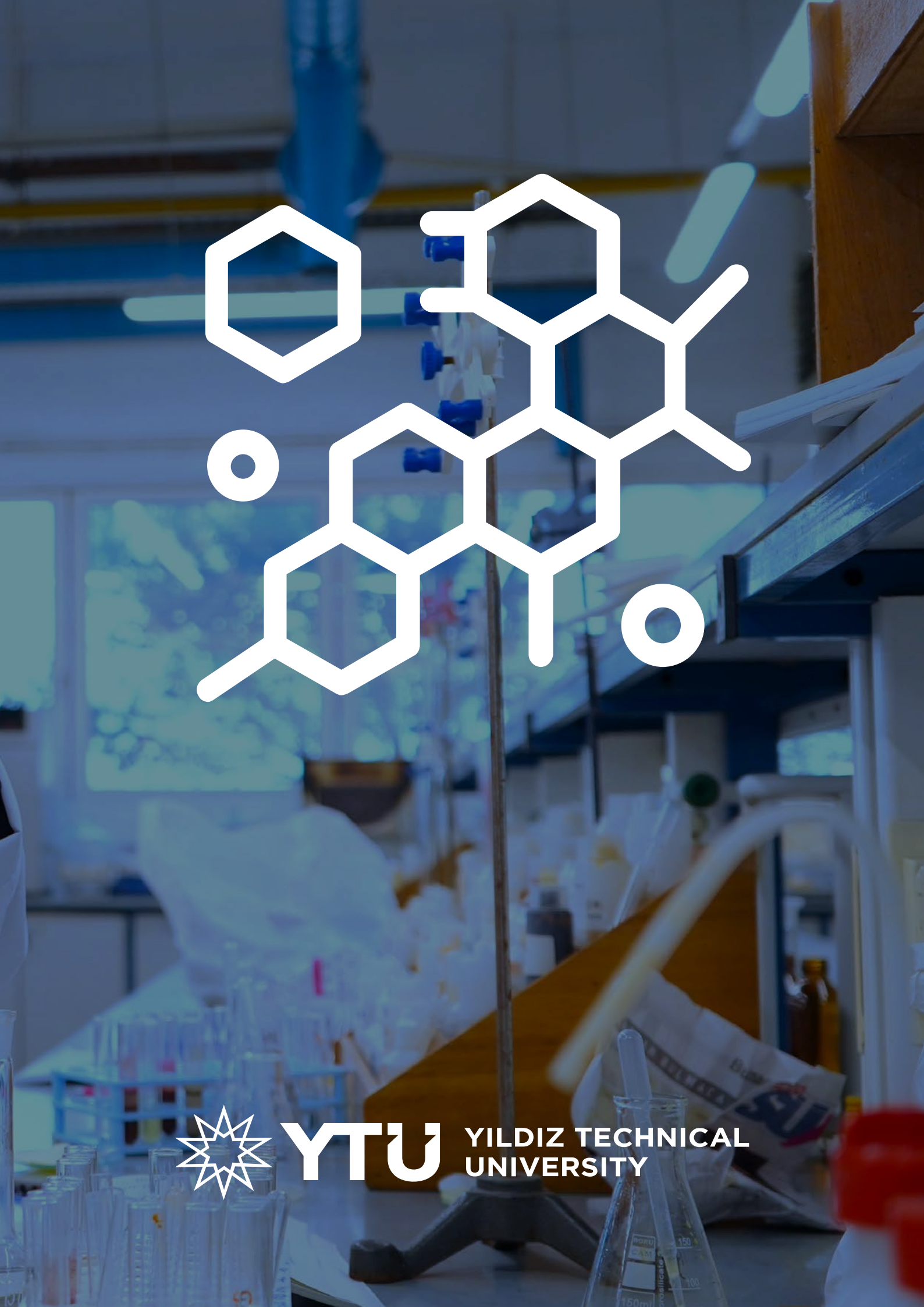
2 KEY RESEARCH PROJECTS

SUSTAINABILITY REPORT 2023

RESEARCH LEADS THE WAY

This section involves significant research and development projects that are under way on university campuses. These projects are directly targeted at creating change towards a more sustainable and greener campus environment for all campus residents.




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THE KABEV PROJECT

The KABEV Project at Yıldız Technical University is an ambitious initiative aimed at enhancing energy efficiency and promoting renewable energy across the university's camouses. The project identified significant opportunities for energy saving and set YTU buildings on a path toward environmental sustainability.
Through KABEV, 11 buildings on the Davutpaşa Campus is undergoing extensive renovations to improve energy efficiency, which, in turn, reduced greenhouse gas emissions and enhanced comfort for the university community. The KABEV Project not only reflects YTU's dedication to energy conservation and environmental stewardship but also sets an example for public buildings across Türkiye, potentially inspiring similar initiatives nationwide.

2020

ENERGY FEASIBILITY WORK

- All YTU buildings were assessed.
- Energy performance classification study rated YTU buildings as Class C.
- Greenhose gas emission study rated YTU buildings as CLass B.
- Energy identity certificates were obtained for all the buildings.

2021

GRANT RECEPTION

- 11 buildings on Davutpaşa Campus were found elligible for KABEV grants.
- The project was also endorsed by the General Directorate of Construction Affairs at the Ministry of Culture and Tourism, the Ministry of Environment, Urbanization, and Climate Change, and funded by the World Bank.

2022

RENOVATION PLANS

- The project was contracted for on-campus renewable enegy production.
- During the design phase, consultancy service agreement was executed for the renovations of the 11 buildings located on Davutpaşa Campus.

2023

COORDINATION OF THE WORK

- YTU Energy Efficiency Coordination Office was established.
- YTU's energy data were incorporated into the digital systems of the Ministry of Energy and Natural Resources.
- To highlight the importance of the project for the community, a Stakeholder Participation Meering was held.

2024

CONSTRUCTION KICK-OFF

- The construction of the energy efficient-systems and planned building renovations is scheduled to start around April.

UV COATINGS

UV coatings will be applied to campus buildings to enhance energy efficiency and block harmful UV rays.

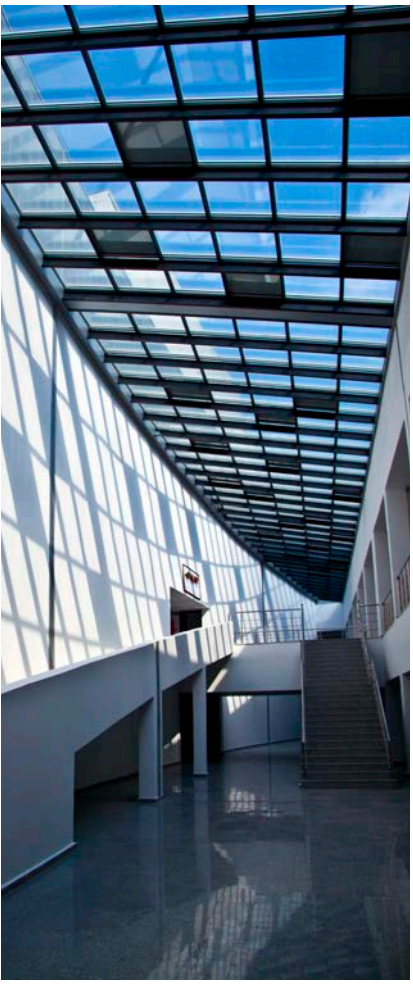


SOLAR PANEL INSTALLATIONS

Solar panels will be installed on building rooftops to generate electricity for both campus use and to store excess energy.







WHAT DOES KABEV STAND FOR?

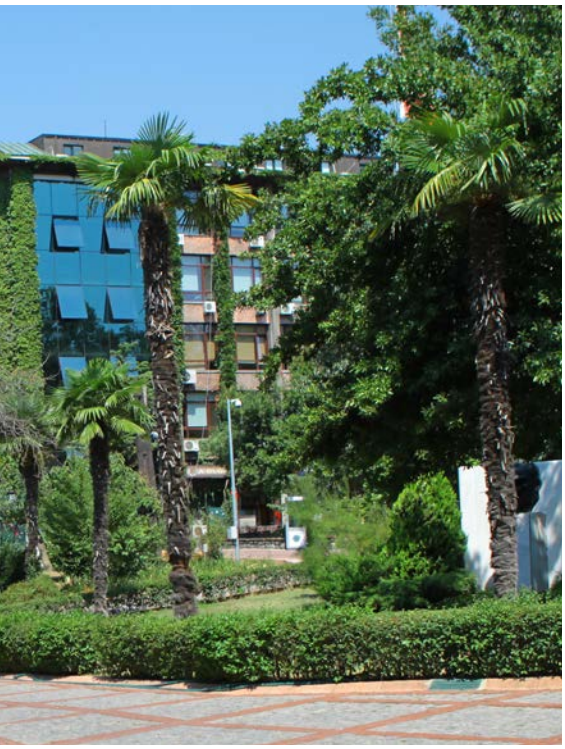
KABEV is an acronym for the Turkish equivalent of "Kamu Binalarında Enerji Verimliliği", which stands for "Energy Efficiency in Public Buildings".

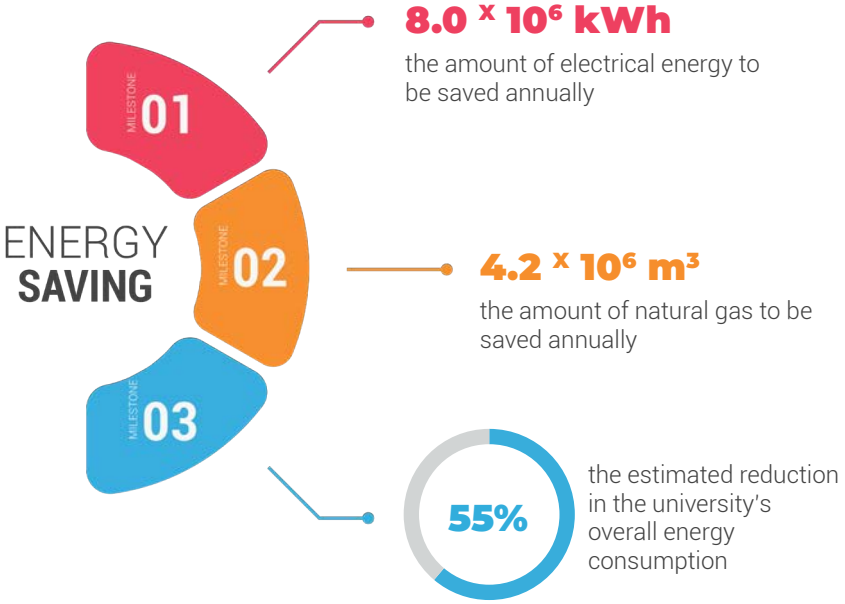
PROJECT COMPONENTS

1. Energy efficiency investments in public buildings
2. Technical assistance and application support

KABEV







THE GETAM PROJECT



The GETAM Project, supported by ISTKA and in collaboration with Çevko and Unilever, establishes the Recovery Testing and Research Center dedicated to advancing recycling technologies and methods. This center aims to bolster academic and industrial practices by enhancing the recyclability of materials through rigorous testing and research.

GETAM: REVOLUTIONIZING RECYCLING RESEARCH

At GETAM, the focus is on bridging the gap between academic knowledge and industrial application, specifically in the field of recyclable materials. This center is not just a testing ground for material recyclability but also a birthplace for pioneering research in developing new, sustainable materials that promise a greener future.

In its state-of-the-art facilities, GETAM employs advanced recycling lines and sophisticated testing equipment to assess and enhance the recyclability of various materials. By adhering to stringent international and domestic standards, the center ensures that its research meets global benchmarks.

> **Recycyle, Innovate, and Sustain: Shaping Tomorrow's Solutions**

RECOVERY TESTING AND RESEARCH CENTER

Since its inauguration on April 1st, 2023, GETAM has quickly become a hub for cutting-edge research and testing in recycling. The center not only supports the academic community but also closely works with industry leaders to translate scientific research into practical, scalable recycling solutions.

By combining rigorous testing procedures with innovative research, GETAM is shaping the future of recyclable material development and sustainable product innovation.







INNOVATIVE RECYCLING

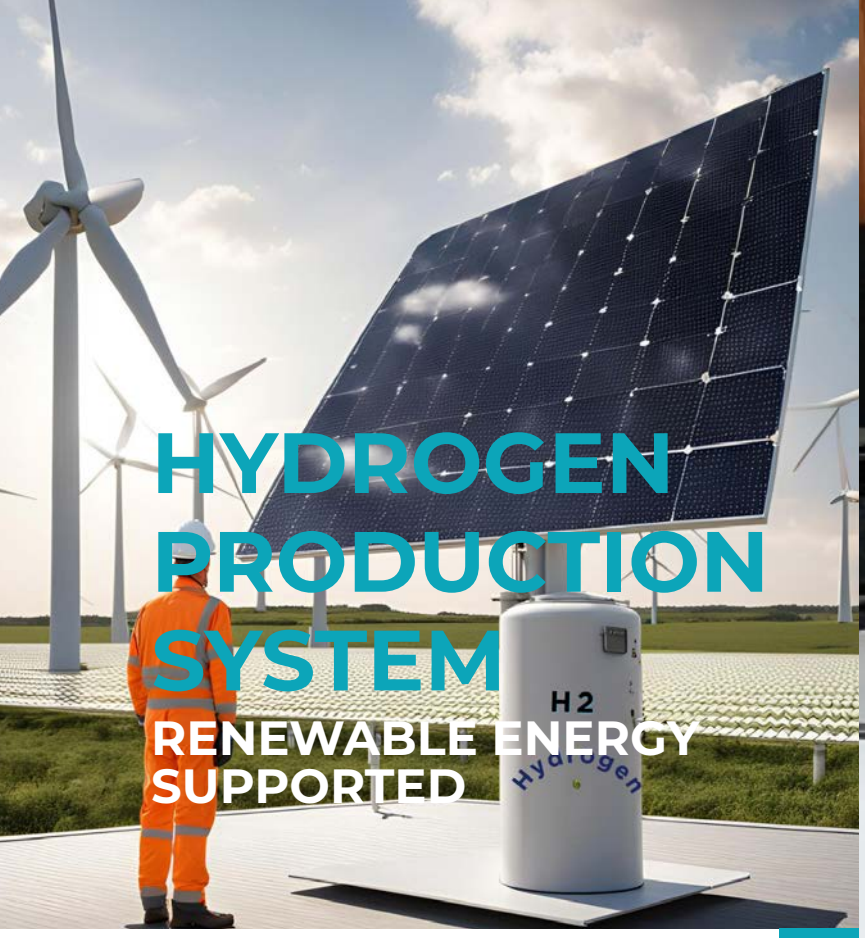
This initiative not only tests existing materials but also drives the R&D for next-generation recyclable materials, ensuring sustainability is at the core of material innovation.

SETTING NEW STANDARDS

The center uses developed national algorithms to yield more accurate testing results, positioning it among the few facilities in the European Union with such capabilities.

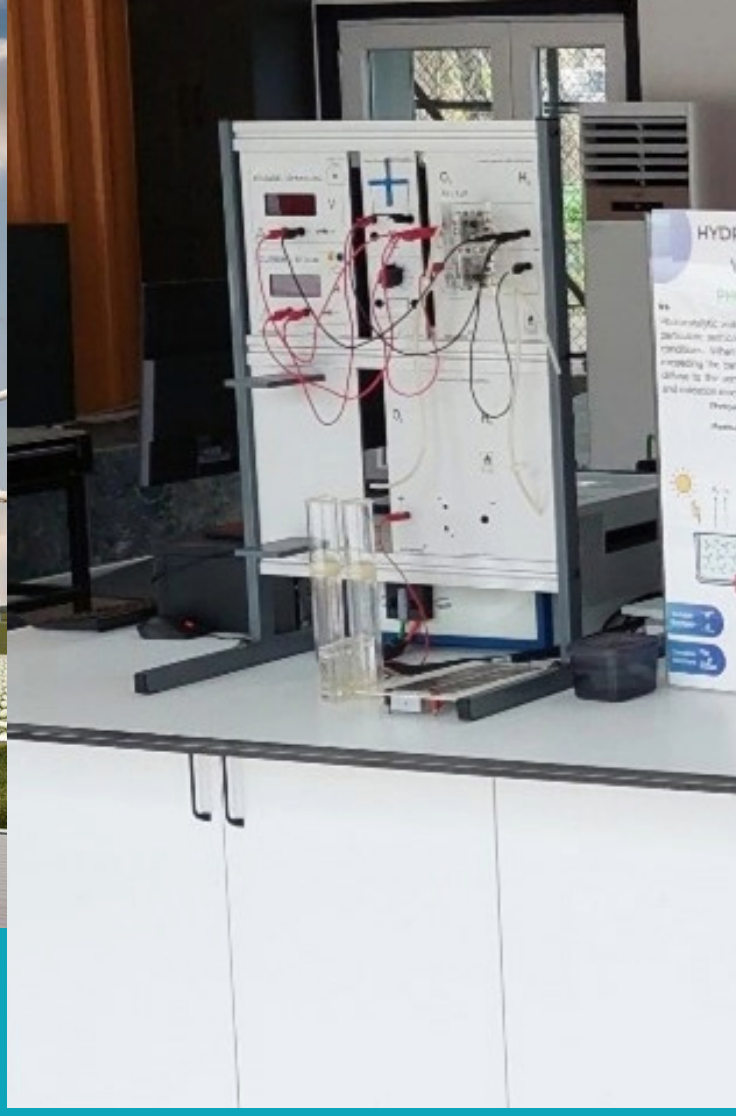
SUSTAINABLE PRODUCTS

Through comprehensive testing, the center contributes to the development of innovative and environmentally friendly products, aligning with global sustainability goals.



HYDROGEN PRODUCTION SYSTEM

RENEWABLE ENERGY SUPPORTED



the potential of integrating renewable energy sources like solar power into urban settings



promoting sustainability and energy independence



THE EXTENSIVE COMPONENTS OF RENEWABLE ENERGY

01 Project Objective

The project aims to harness renewable solar energy to power an electrolysis system, producing hydrogen as a clean fuel alternative.

- high-efficiency solar panels
- converting sunlight directly into electricity
- powering an advanced electrolysis unit
- splitting water into hydrogen and oxygen

02 Strategic Importance

The university's proactive approach demonstrates how academic institutions can lead in the transition to a greener economy by integrating cutting-edge technology with existing urban landscapes.

- a significant model for renewable energy projects
- the university's unique proactive approach
- an academic institution undertaking the transition
- creating a novel economic model



Editorial III - Hydrogen Production System Project

PROJECT OVERVIEW

Yıldız Technical University's Hydrogen Research Center has initiated a pioneering project to produce hydrogen using renewable energy. The project utilizes the extensive rooftop spaces of buildings around the university for solar panel installation.

This initiative is part of a broader effort to incorporate clean energy technologies into urban infrastructure, aligning with global trends towards energy sustainability and environmental responsibility.

The following are the key components involved in the project:

- Feasibility study
- Installation of the solar panels
- Energy production and usage
- Hydrogen production and storage

leading the transition to a greener economy

a significant model for renewable energy projects in Türkiye and in the region

SUPPORTED HYDROGEN PRODUCTION SYSTEM PROJECT

03 Solar Panel Installation

Total Rooftop Area: 1896.8 m^2
Usable Area: 1517.4 m^2
Active PV Area:: 121.9 m^2

» The layout of the solar panels is strategically planned to avoid shading, maximizing sunlight exposure. Solar panels chosen for this project are the Kalyon PV M10-144 CAM-CAM models, boasting an efficiency rate of 21.4%.

04 Energy Production & Storage Projections

Annual Expected Amounts

Average DNI: 164.0 W/m^2
Electricity Production: 373,216.6 kWh/year

93% Inverter Efficiency

67% Electrolyzer Efficiency

» The electricity will be primarily used to power an electrolyzer for hydrogen production.

Hydrogen Production Scenarios

Scenario I: All produced electricity is used - resulting in 59.1 kW capacity and 6941.8 kg/year of hydrogen.
Scenario II: Half the produced electricity is used — resulting in 29.6 kW capacity and 3470.9 kg/year of hydrogen.

CENTERS FOR RESEARCH AND DEVELOPMENT

NEWLY ESTABLISHED RESEARCH FACILITIES



"CLEAN ENERGY" FOR A SUSTAINABLE FUTURE

Expanding frontiers in clean energy, medical implants, and radiation technology innovations.

Yildiz Technical University has significantly bolstered its research capabilities with the establishment of several state-of-the-art research centers. The Hydrogen Technologies Research Center, operating under the Institute for Clean Energy Technologies, pioneers pivotal advancements in the realm of sustainable energy. This center, together with the Radiation Technologies Research Center, which focuses on advanced medical imaging and sensor technologies, and the Artificial Intelligence Research Center, which propels developments in smart technology applications, places YTU at the forefront of interdisciplinary research and innovation. Complemented by initiatives in Clean Energy and Biotechnology, these centers underscore YTU's commitment to leading transformative research efforts on both national and international levels in the path towards becoming a carbon neutrel university.

01
Hydrogen Technologies Research Center

02
Radiation Technologies Research and Innovation Center

03
Battery Second Life and Aging Analysis Laboratory

04
Medical Implants Research and Layered Manufacturing Center

SOME HIGHLIGTS OF THE MOST-APPRECIATED PROJECTS

TAKE A LOOK AT YTU'S STRONG CLEAN ENERGY RESEARCH INFRASTRUCTURE!

HYDROGEN TECHNOLOGIES

Research center

The center focuses on creating a 'renewable energy supported hydrogen park' for research, prototype design, and pilot applications across residential, industrial, and transport sectors. It also progresses the establishment of a lab for hydrogen research as aircraft fuel and prioritizes green hydrogen and alternative hydrogen-based fuels for industrial processes, transport, building, and power sectors.

Link: https://bit.ly/3xIzuVj



RADIATION TECHNOLOGIES

Research and innovation center

This research and innovation Center advances medical imaging, device design, and sensor technologies. It leads the commercialization of innovative radiation technologies, aiming to reduce external dependencies and enhance product quality and cost-efficiency. Established in 2023, the center is dedicated to improving health, safety, and quality of life through cutting-edge research and development in radiation technology applications.

Link: https://raterlab.yildiz.edu.tr/







BATTERY SECOND LIFE AND AGING

Analysis laboratory

The laboratory integrates battery analysis, design, and visualization from production to recycling. It establishes an ecosystem for second-life batteries, reducing external dependency in battery testing and enhancing YTÜ's new revenue streams from tests and analyses. The lab also contributes to high-value product manufacturing and export growth in Turkey by developing technologies in device subcomponent design and production.

Link: https://bit.ly/4dlkIV9

MEDICAL IMPLANTS

Research and layered manufacturing center

The center in the joint coordination led by Yıldız Technical University with Bezmi Alem Vakıf University as partner, is funded by the Istanbul Development Agency under the 2021 Innovative Istanbul Financial Support Program. Its mission is to lead in the design and production of surgical implants using 3D printing technologies, aiming to become an international frontrunner in additive manufacturing for medical applications and beyond.

Link: https://kimaum.yildiz.edu.tr/

GreenStars Certification

The certification outlines a multi-step process to achieve sustainability benchmarks by independent panels with documentation.

The impact of the GreenStars Program extends beyond environmental benefits.

By fostering an environment of inclusive growth and continuous learning, the program helps to equip future generations with the skills and knowledge necessary to sustain and expand these initiatives.

The GreenStars Program at Yıldız Technical University, crafted in alignment with the United Nations Sustainable Development Goals, is dedicated to enhancing climate resilience and fostering equitable economic growth through innovative approaches to circular economy and improvements in environmental and public health. This initiative serves as a cornerstone for defining rigorous environmental performance standards through comprehensive certification protocols, enabling the assessment and recognition of sustainable practices across various sectors.

Emphasizing a systematic approach to sustainability, the GreenStars Program supports the integration of environmental, social, and governance (ESG) criteria into corporate strategies, enhancing the accountability and sustainability of organizational operations. The program's framework is built on the principles of the European Green Deal, focusing on reducing carbon emissions and promoting carbon-neutral processes. This aligns with global efforts to mitigate the impacts of climate change and promotes the adoption of sustainable technologies and practices.

Furthermore, the GreenStars Program is instrumental in advancing research and development in sustainable technologies. It facilitates partnerships and collaborations with industry leaders and academic institutions to pioneer innovations that drive sustainable transformation. Through these collaborations, the program leverages expertise and resources to develop solutions that not only address immediate environmental challenges but also ensure long-term sustainability and resilience.



Green
YILDIZ TECHNICA



83%

Participation

The program orchestrates the alignment of institutional processes with national and international sustainability standards, fostering environmental, economic, and social dimensions. It targets the structured execution, monitoring, and evaluation of business operations to enhance compliance and sustainable development efficacy.

96%

Certification

The certification process aims to motivate, evaluate, and reward institutions working towards Sustainable Development Goals, both domestically and globally. It ensures that organizations are recognized for their efforts in advancing sustainability and are encouraged to continue their impactful practices.

90%

National Awareness

This initiative aims to support institutions in aligning their visions and strategies with the 169 targets and 247 indicators under the 17 Sustainable Development Goals. It considers the conditions of the Paris Agreement and the priority areas of the Green Deal, facilitating national adaptation strategies and objectives while ensuring that corporate responsibilities are met effectively.

Stars

L UNIVERSITY

SECTION

3 SUSTAINABILITY RANKINGS

SUSTAINABILITY REPORT 2023

GOING HIGHER ALWAYS

This section features data and performance taken from international ranking organizations' official results. The data and performance are specific to the sustainability rankings section of organizations such as Times Higher Education, GreenMetric, and Quacquarelli Symonds.




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Times Higher Education
Impact Rankings



Yildiz Technical University's Commitment to Sustainable Development Goals and Times Higher Education Impact Rankings

Empowering Sustainable Futures

Yildiz Technical University has demonstrated a profound commitment to fulfilling the Sustainable Development Goals (SDGs), significantly enhancing its position in the Times Higher Education (THE) Impact Rankings.

By integrating sustainable practices across all aspects of our academic and operational activities, we aim to lead by example within the academic community and contribute meaningfully to global efforts in addressing critical environmental and social challenges.

The university's continuous amd dedicated efforts in embracing innovative technologies and fostering collaborative projects demonstrate and emphasize our dedication to reducing our environmental footprint and promoting sustainability on a global scale.

As a result, Yildiz Technical University has seen a remarkable rise in its rankings, reflecting our unwavering resolve to support and advance the Sustainable Development Goals worldwide.



NABLE
PMENT
ALS

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	10 REDUCED INEQUALITIES	11 SUSTAINABLE CITIES AND COMMUNITIES	12 RESPONSIBLE CONSUMPTION AND PRODUCTION	13 CLIMATE ACTION	14 LIFE BELOW WATER	15 LIFE ON LAND	16 PEACE, JUSTICE AND STRONG INSTITUTIONS	17 PARTNERSHIPS FOR THE GOALS
71	301-400	301-400	101-200	201-300	201-300	101-200	401-600	301-400
72	301-400	301-400	201-300	201-300	201-300	201-300	401-600	401-600

In addition to our impressive rankings, Yildiz Technical University has launched numerous initiatives aimed at driving sustainable development both locally and globally. Our research centers and academic programs are continuously aligned with the principles of the SDGs, ensuring that our students and faculty are at the forefront of sustainable innovation.

Collaborative efforts with international partners further amplify our impact, creating a network of knowledge and resources dedicated to sustainable progress. This firm dedication not only elevates our status in the global academic community but also reinforces our role as a catalyst for positive change.

Our commitment extends beyond the classroom and research labs, permeating every aspect of campus life. From implementing green technologies in our infrastructure to encouraging sustainable practices among our students and staff, we strive to create an environment that embodies our sustainability ethos.

These efforts are not only about meeting current environmental standards but also about pioneering new benchmarks for future generations. By fostering a culture of sustainability, Yildiz Technical University is preparing its community to be proactive leaders in the global effort towards a more sustainable and equitable world.

Together, we are not only elevating our university's impact but also shaping a brighter, more sustainable future for all by fostering a community that values and actively engages in sustainable practices, innovative research, and global collaboration.



The university's improved ranking in the GreenMetric rankings is a testament to its leadership in sustainability within the academic community.

The university's efforts are not only enhancing its global standing but also contributing significantly to global efforts in combating climate change and promoting sustainable development.

In 2023, YTU ranked 63rd among universities globally in the UI GreenMetric World University Rankings.

This dramatic increase in the last three years on the rankings list reflects the university's ongoing commitment to environmental conservation, excellence, and sustainability. It also shows that the university has also been successful in raising institutional awareness.

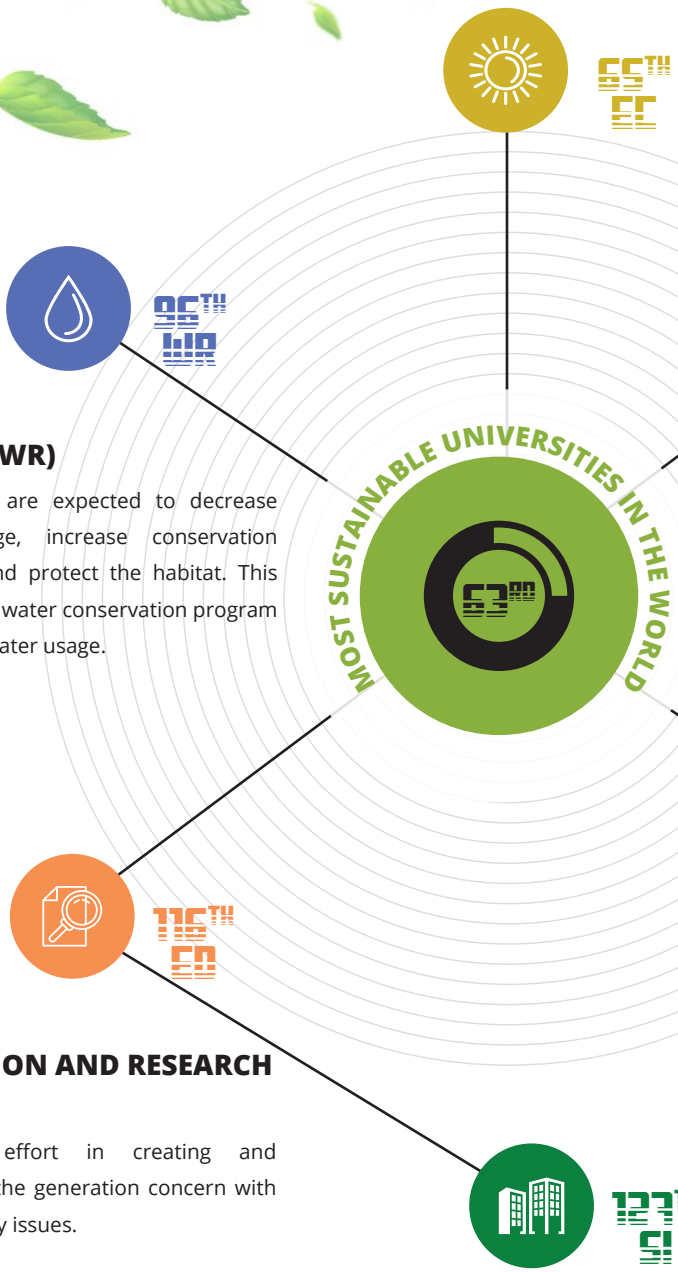
Yildiz Technical University's sustainable campus report highlights the university's comprehensive approach to achieving a greener and more sustainable future for all, showcasing a variety of initiatives and accomplishments. In terms of settings and infrastructure, the university has implemented extensive green policies, incorporating sustainable practices into campus operations. The university has made significant investments in energy-efficient appliances and renewable energy sources, adopting smart building technologies to enhance energy efficiency and reduce greenhouse gas emissions.

In the area of waste management, YTU has established robust recycling programs for organic, inorganic, and toxic waste, along with initiatives aimed at reducing the use of paper and plastic on campus. The university has also implemented effective sewage disposal systems, ensuring sustainable waste management practices. The university has introduced comprehensive water conservation and recycling programs and installed water-efficient appliances to promote sustainable water use. The university's commitment to sustainable transportation is evident through its promotion of zero-emission vehicles and the provision of shuttle services to decrease the number of private vehicles on campus. Additionally, the development of pedestrian paths and efforts to limit parking areas encourage walking and cycling, further supporting eco-friendly transportation options.

In terms of education and research, Yildiz Technical University boasts a high ratio of sustainability courses and research funding dedicated to sustainability projects. The university actively engages in numerous scholarly publications and events focused on sustainability, fostering a culture of environmental consciousness. Organizations carried out by students and community service projects related to sustainability play a significant role in the university's efforts, demonstrating the university's commitment to involving the entire academic community in its sustainability initiatives along with its major stakeholders.

ENERGY AND CLIMATE CHANGE (EC)

The university's attention to the use of energy and climate change issues. Universities are expected to increase the effort in energy efficiency on their buildings.



WATER (WR)

Universities are expected to decrease water usage, increase conservation program, and protect the habitat. This may include water conservation program and piped water usage.

TRANSPORTATION (TR)

Universities' policies in limiting the number of motor vehicles in campus, the use of campus bus and bicycle to encourage a healthier environment and reduce universities' carbon footprint.

WASTE (WS)

Waste treatment and recycling programs are major factors in creating a sustainable environment. Universities must take note on its waste production as well as recycling efforts.

EDUCATION AND RESEARCH (ED)

University effort in creating and supporting the generation concern with sustainability issues.

SETTINGS AND INFRASTRUCTURE (SI)

Basic information of the university policy towards green environment. Include space for greenery and in safeguarding environment, as well as developing sustainable energy.

RANKED

2023

QS WORLD UNIVERSITY RANKINGS

SUSTAINABILITY

451-500

OVERALL RANK



ENVIRONMENTAL IMPACT

346

RANKED

The university has made significant strides in minimizing its environmental footprint. By implementing comprehensive energy efficiency measures and promoting renewable energy sources, the university has reduced its carbon emissions substantially. Our campus initiatives, such as extensive tree planting and waste reduction programs, reflect our commitment to sustainability.

SUSTAINABLE INSTITUTION

99

RANKED

SUSTAINABLE EDUCATION

316

RANKED

SUSTAINABLE RESEARCH

501+

RANKED

QS SUSTAINABILITY RANKINGS

The QS Sustainability Rankings highlight Yildiz Technical University's holistic approach to sustainability, encompassing both environmental and social dimensions. This section reflects our performance on the QS Sustainability Rankings, where we are ranked among the leading institutions committed to sustainable development. Our efforts in sustainable research, education, and community engagement are reflected, demonstrating our comprehensive strategy to integrate sustainability into all aspects of university life. This report provides an in-depth look at our initiatives and achievements, showcasing how we are driving progress towards a more sustainable and equitable future. We are proud of the milestones we have achieved and remain dedicated to continuous improvement in all areas of sustainability.



SOCIAL IMPACT

501+ RANKED

Our university has been proactive in promoting inclusive education, equality, and community engagement. Through various outreach programs, we support local communities and foster a culture of social awareness among our students. Initiatives such as scholarships for underprivileged students and partnerships with NGOs highlight our efforts to make a positive social impact.

EQUALITY
466 RANKED

KNOWLEDGE EXCHANGE
501+ RANKED

IMPACT OF EDUCATION
501+ RANKED

EMPLOYABILITY & OPPORTUNITIES
501+ RANKED

HEALTH & WELL-BEING
501+ RANKED

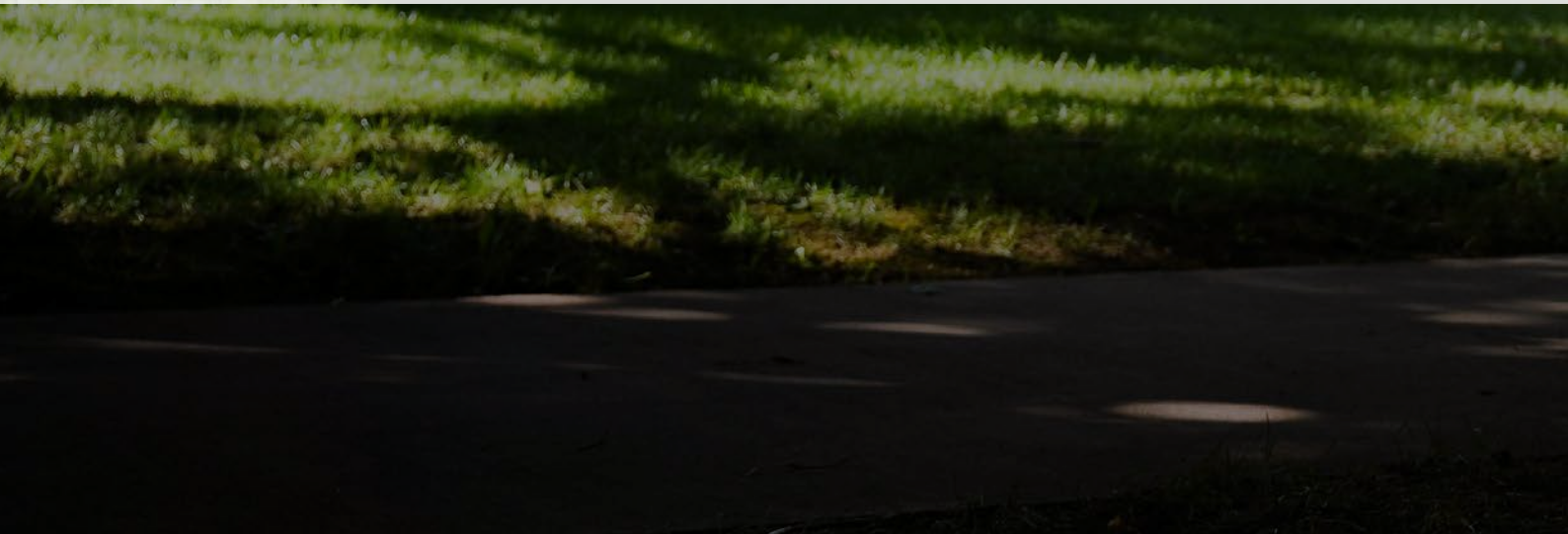
SECTION

4 | DEVELOPMENT GOALS

SUSTAINABILITY REPORT 2023

REALIZING GLOBAL GOALS

This section is dedicated to the initiatives and efforts by the university along with its students during the year 2023, carried out under the three subsections of policy and operations, research and development, and students and activities for each SDG seperately.




YTÜ
YILDIZ TECHNICAL
UNIVERSITY

NO POVERTY

FIGHTING POVERTY ON CAMPUS

General Scholarships

YTU offers a variety of scholarships through both the YTU Foundation and partnerships with various institutions, which are crucial for reducing educational inequalities disparities.

Meal Scholarships

The university provides meal scholarships to ensure that all students have access to nutritious food, supporting their well-being and academic performance.

Accommodation for Doctoral Students

Specialized affordable housing options are available, particularly benefiting female doctoral students, providing them a secure and economical living environment.

Clothing Assistance

In collaboration with the Turkish Red Crescent, the university facilitates Student Boutique, offering free clothing to students, which helps alleviate financial burdens on essentials.

Ramadan Support

Before Ramadan, administrative personnel receive market shopping vouchers, aiding them during this significant period.

Transport and Lunch Services

The university provides transport and dining services to its employees, enhancing their work-life balance and overall job satisfaction.







UNIVERSITY INITIATIVES AND PROGRAMS TO ERADICATE POVERTY ON CAMPUSES

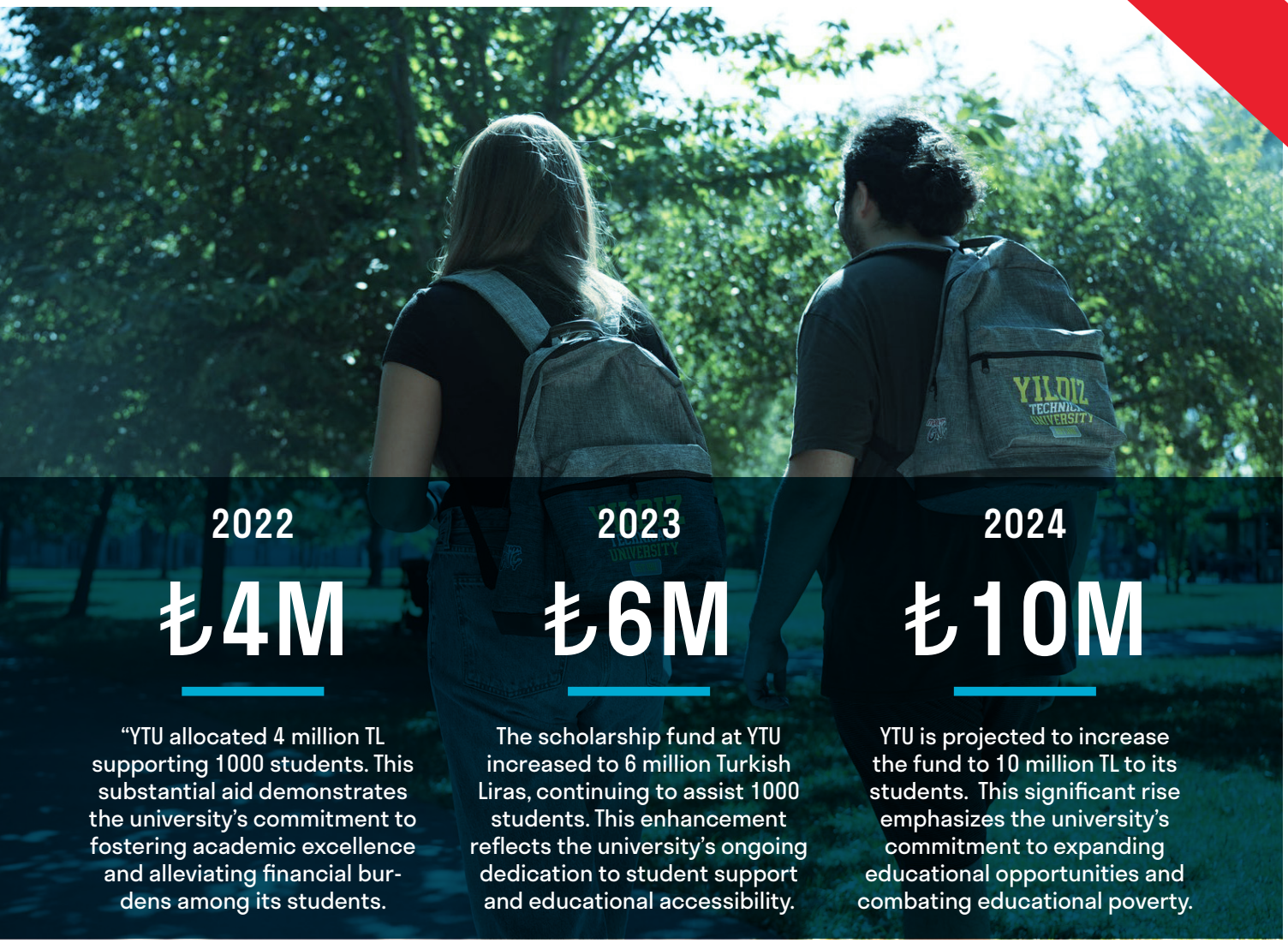
Comprehensive Scholarship Programss & Supporting Essential Needs

Yildiz Technical University ardently supports poverty eradication through extensive scholarship offerings. These include YTU Foundation scholarships and various institutional partnerships that broaden access to higher education. Meal scholarships ensure students' nutritional needs are met, supporting their academic success. The university's collaboration with İş Bankası provides essentials like school bags to new students, reducing financial burdens. Additionally, the Yıldız Student Boutique, in partnership with the Turkish Red Crescent, offers free clothing, further alleviating economic challenges for students. These initiatives are complemented by targeted support programs that address the diverse needs of the student body. Universities play a crucial role in fostering equitable access to education and opportunities, serving as pivotal platforms for societal change and poverty alleviation. Through these thoughtful and inclusive initiatives, YTU demonstrates a robust commitment to eradicating poverty and empowering its community through accessible, comprehensive educational support.

NO POVERTY

1

POLICY & OPERATIONS



2022

₺4M

"YTU allocated 4 million TL supporting 1000 students. This substantial aid demonstrates the university's commitment to fostering academic excellence and alleviating financial burdens among its students.

2023

₺6M

The scholarship fund at YTU increased to 6 million Turkish Liras, continuing to assist 1000 students. This enhancement reflects the university's ongoing dedication to student support and educational accessibility.

2024

₺10M

YTU is projected to increase the fund to 10 million TL to its students. This significant rise emphasizes the university's commitment to expanding educational opportunities and combating educational poverty.

Yildiz Technical University fervently supports Sustainable Development Goal 1, aiming to fully eradicate poverty. Through targeted scholarship schemes, vital support services, and impactful community projects, YTU is dedicated to reducing educational and economic disparities.

Yildiz Technical University takes the eradication of poverty very seriously and attempts to tackle it through a holistic approach, integrating comprehensive scholarships and essential support services. The university's scholarships, funded by both the YTU Foundation and diverse partnerships, ensure broad access to higher education, crucial for reducing educational disparities. Complementing these are meal scholarships that guarantee nutritional support for all students, fostering optimal academic performance and general well-being.

To further support essential needs, YTU offers subsidized housing particularly for female doctoral students, ensuring safe and affordable living conditions. In partnership with the Turkish Red Crescent, the Yıldız Student Boutique provides free clothing, significantly reducing financial stress for students.

The university also focuses on empowering its staff and the wider community. Initiatives like pre-Ramadan shopping vouchers and comprehensive transport and dining services enhance the quality of life for university employees, promoting a balanced work environment.

Educationally, the university is expanding accessible programs under scholarships, aiming to empower a broader demographic and tackle barriers to education. Engagements with local and national entities enhance living standards and foster community resilience, demonstrating YTU's commitment to sustainable educational and social development.

This proactive and integrated approach not only addresses immediate needs but also sets a foundation for long-term, sustainable poverty eradication, aligning with global objectives and the university's mission of fostering inclusive growth and equality.

NO POVERTY



The "xPress Yourself" project, an innovative initiative under the Erasmus+ KA227 program, embodies Yıldız Technical University's commitment to SDG1 by tackling poverty.

This project, in collaboration with international partners from Czechia, Turkey, and Belgium, focuses on empowering young individuals, especially those facing socio-economic challenges, by enhancing their digital and artistic skills.

These efforts underline the project's role in equipping young individuals with the skills to navigate and overcome economic barriers.



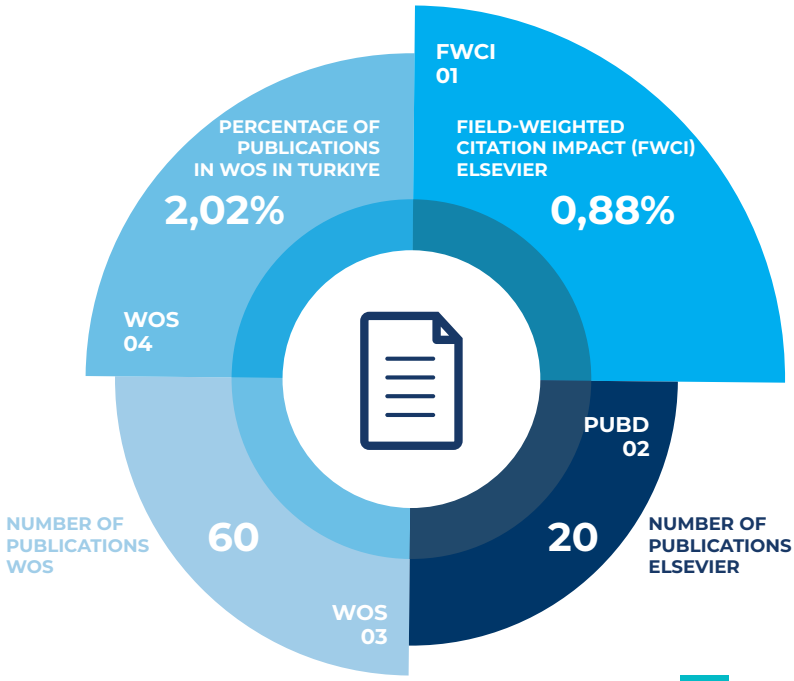
Enhancing Youth Empowerment and Mental Health

The initiative includes the development of a comprehensive non-formal education toolkit, the "xPress Yourself" e-platform, which serves as a learning and expression space. Activities such as virtual transnational meetings and an online festival not only keep participants connected but also showcase their creative outputs, further building their confidence and social networks. By integrating arts and technology, "xPress Yourself" enhances participants' digital literacy and artistic abilities, key competencies that can broaden their educational and career opportunities, thereby contributing to poverty reduction.

YTU Startup House and Microsoft Collaboration

The collaboration between Yıldız Technical University and Microsoft through the Microsoft for Startups Founders Hub exemplifies a robust effort towards achieving Sustainable Development Goal 1. This partnership is dedicated to fostering entrepreneurship among students and local community members by providing technological resources and mentorship.

By equipping budding entrepreneurs with advanced tools and access to a global network of mentors, the initiative aims to reduce poverty by enhancing business capabilities and employment opportunities.



NO POVERTY

1

RESEARCH

Yildiz Technical University has actively engaged in research and development activities aimed at poverty eradication, emphasizing technological innovation and educational support.

Free Trainings for Writing EU Projects

Yildiz Technical University offers, at regular intervals, free training for researchers and academics on how to write EU project proposals.

This endeavor is particularly increasing the university's involvement in poverty-focused European research initiatives.

A Multidimensional Approach to Poverty

The university internally supports a master's thesis addressing child poverty in the Güngören district, embodying its commitment to SDG1. Funded by the Scientific Research Projects division, it explores various facets of child poverty locally but also highlights the university's societal role.

Constant Increase in the Amount of Internally-Funded Projects by Scientific Research Projects Division

Yildiz Technical University has been constantly increasing the amount of internal funds to scientific research projects to eliminate lack of funds and tackle poverty. The amount of internal funds has risen from 2 million Turkish Liras in 2018 to 40 million Turkish Liras in 2023. It is expected to double in 2024 with a project amount of 80 million Turkish Liras.

₺20M	₺40M	₺80M
2022	2023	2024

GENERAL RESEARCH PROJECTS	master students ₺6.000 monthly stipend	doctoral students ₺9.000 monthly stipend
THESIS PROJECTS	master thesis ₺50.000 project budget	doctoral thesis ₺100.000 project budget

NO POVERTY









01 GLOBAL ALUMNI NETWORK CONTRIBUTIONS

Fund gathering events, contirbutions from alumni working in global companies.

Alumni from around the world, including significant contributions from the those in Dubai, gathered funds to provide scholarships to needy students, directly reducing financial barriers to education.

02 FUNDRAISING EVENTS FOR YTU FOUNDATION

Fundraising initiatives among academic staff as well as other outside sources.

All internal and external stakeholders are encouraged to donate to the YTU Foundation to provide scholarships to the students and show a strong sense of community for long-term social impact.

STUDENTS & ACTIVITIES

NO POVERTY

1









03 ORGANIZATION OF THE VR HACKATHON

04 CORRIDOR OF GOODWILL FOR EARTHQUAKE VICTIMS

Students are always supported to keep up with the changing needs of the worklife.

Regular events where students collaborate to develop software solutions, enhancing their job readiness and entrepreneurial skills, which are vital for economic empowerment have been organized.

Ongoing support and mobilization for disaster-affected areas by the students.

More than 500 students formed a corridor of goodwill in order to aid the loading the aid trucks to be sent to the February 2023 eartquakes area, showcasing the power of community service.

Cafeteria Services: Providing Food

Cafeteria Services to Students and Staff. Zero Food-Waste Initiative. Nutritional Support and Food Security.

Yildiz Technical University provides daily meals to over 10,000 students, staff, and stakeholders across its campuses, offering two meals a day with five different options. The university ensures accessibility and variety by including vegan, vegetarian, and gluten-free menu options. Menus are prepared by the Directorate of Health, Sports, and Culture, considering dietary habits, health conditions, and daily calorie needs. Caloric information is announced in advance to prevent food waste, promote efficient resource use, and support healthy food access. The whole menus for the coming month is announced for regular and vegatarian menus, and the staff and students reserve menus with vegan and celiac options. Detailed information regarding the meals can be found at the website of the Directorate of Health, Sports, and Culture: **https://sks.yildiz.edu.tr/**

As one of the few universities in Türkiye with a zero-waste certificate, YTU sends some of the cafeteria waste to the Istanbul Metropolitan Municipality's compost production facility to support sustainable agriculture. Additionally, a portion of the food waste is used as pet food for animals living on campus, contributing to effective resource utilization and waste reduction.

The Directorate of Health, Sports, and Culture at Yildiz Technical University ensures that meals provided in the cafeterias are nutritious and cater to the diverse needs of the university community. By offering balanced meals and accommodating various dietary requirements, the university promotes overall well-being and addresses food security issues.

These efforts are integral to creating a healthy and supportive campus environment where all members have access to nutritious food. Also, the procurement procedures for providing cafeteria services to staff and students are strictly monitored by the relevant divisions to ensure security.

ZERO HUNGER

2

POLICY & OPERATIONS

Advancing the goals of zero hunger and sustainable agriculture by providing diverse and nutritious meal options

Yildiz Technical University is committed to ending hunger, achieving food security, improving nutrition, and promoting sustainable agriculture. Through comprehensive policies and initiatives, the university supports the health and well-being of its community while fostering sustainable practices, by emphasizing the importance of accessible, nutritious food and responsible resource management.



10,000
Daily Number of Meals

The university provides daily meals to an avarage of ten thousand students, staff, and different stakeholders across its campuses.



Twice a Day
Lunch & Dinner

The university ensures that students get access to healthy food and at vary reasonable prices with lunch and dinner options every day.

Healthy meals, zero waste, and thriving campus life!



4
Different Meal Types

The university acknowledges the importance of accessible, nutritious food via providing vegan, vegetarian, and gluten-free menu options.



0,00%
Daily Food Waste

The University sends cafeteria waste to the Metropolitan Municipality's compost facility to support sustainable agriculture.

ZERO HUNGER

Sustainable Food Supply for the city of Istanbul

"Urban Sustainability: Ensuring Sustainable Food Supply for Metropolitan Areas"

Access to adequate food is a fundamental human right essential for a sustainable, equitable, and inclusive world. However, achieving sustainable food access is becoming increasingly challenging with rising urbanization. Ensuring agricultural sustainability in areas suitable for agricultural production near cities is crucial to prevent supply chain disruptions during crises, particularly in metropolitan areas. A TÜBİTAK-supported project conducted by the Department of Urban and Regional Planning at YTÜ examines the agricultural identity of neighborhoods in Istanbul and its vicinity, focusing on Silivri district's different neighborhoods.

The project investigates the agricultural product patterns and losses over the last 30 years, highlighting the importance of these areas during the pandemic for food supply. The study provides concrete recommendations to preserve the agricultural identity of these neighborhoods and aims to ensure and enhance sustainable food supply for Istanbul. This research is critical for developing strategies towards reducing hunger in urban settings by promoting resilient food systems.





RESEARCH & DEVELOPMENT



CLASSIFYING FOOD IMAGES

ZERO HUNGER

2

"Smart Food Choices: Enhancing Consumer Awareness through Food Image Classification"

Have you ever hesitated when choosing a dish you've never tasted in a new city? Under the coordination of Assoc. Prof. Dr. Serkan Ayvaz from the Department of Computer Engineering, a study has developed data augmentation techniques to produce food images and examined big data technologies that process large datasets.

The project aims to classify types of food and provide consumers with information about their contents. Integrating the selected technique into a mobile phone application is expected to help consumers, especially tourists and visually impaired individuals, make easier and more informed food choices, contributing to conscious food consumption and reducing waste.

Key Research Statistics

90
Number of Publications Web of Science

0,85%
Field-weighted Citation Impact (FWCI) - Elsevier

0,81%
Percentage of Publications in Web of Science in Türkiye

17
Number of Publications Elsevier

ZERO HUNGER

GROW YOUR OWN FOOD

Plant, harvest, and eat is a social initiative that aims to create an ecosystem where local and organic foods are produced using urban farming models inspired by nature and consumed consciously to achieve the dream of a healthy, enjoyable, and sustainable urban life.

Organized by the Yildiz Technical University Environmental Engineering Club, the Environment Festival 2023 featured a fun and educational workshop on sustainable agriculture and food accessibility, with 20 participants. This workshop emphasized the importance of growing one's own food and promoting sustainable living practices in urban environments.

The initiative is a testament to the university's commitment to fostering sustainable agriculture practices among students. The project not only provides practical skills in urban farming but also raises awareness about the benefits of consuming locally produced, organic foods. By engaging students in hands-on activities, the initiative promotes a deeper understanding of the food production process and its impact on the environment.

The plant-harvest-eat initiative offers many benefits towards eliminating hunger, some of which is listed as follows:

- **Promotes Self-Sufficiency:** Encourages individuals to grow their own food, reducing dependence on external food sources and enhancing food security.
- **Supports Local Food Production:** Uses urban farming models to produce local and organic foods, decreasing food transportation costs and environmental impact.
- **Raises Awareness:** Educates participants on sustainable agriculture practices, contributing to a broader understanding and implementation of these methods.
- **Reduces Food Waste:** Encourages conscious consumption and efficient use of resources, helping to minimize food waste.
- **Builds Community:** Fosters a sense of community and collaboration among participants, strengthening social ties and collective action towards sustainable living.



STUDENTS & ACTIVITIES

Growing together: Cultivating sustainable food practices and building stronger community ties!



ZERO HUNGER

2

Sustainably farmed and harvested food on campus

Harvest of linden trees on campuses to serve hot linden tea as an alternative to traditional tea leaves

There are annually around a thousand kilogram of linden flower harvest througout the campus. They are dried and distributed to the academic and administrative units of the university to draw attention to the fact and to show that harvesting trees and linden tree flowers contribute to immune system along with the promotion of the benefits of organic agriculture without the use of any pesticides.
This is done in an attempt to create an environmental awareness among staff through utilizing the leaves and blossoms of linden to to make herbal tea for its medicinal benefits.

Also, linden trees cover a vast amount of land on campuses contributing to natural beauty on our campuses with their sunny and brilliant scent and aromatic aura.

Strawberry harvest and strawberry picking

On Davutpasa Campus, we grow strawberry on several spots corresponding to an area of two thousand square meters. Although they are not much, strawberry grown on campus are harvested at differing amounts between 50-100 kilograms and they are distributed to the kindergarden students. Sometimes, kindergarden students go to the land on environmental activities and they pick the strawberries themselves.

Fruit trees and the harvests of fruit such as peaches, quinces, pears, cherries, persimmons, etc.

As well as having vast areas of forest ecosystems on campus, the university has adopted the principle of continuously planting fruit trees and plants on campuses. From the different parts of the country, fruit trees and plants are brought to the campus and planted at different intervals, sometimes as part of tree planting events and sometimes on a regular basis.

The fruit trees also help lower green maintenance costs from the perspective that they contribute to the landscaping of our campuses. Academic and administrative staff take turns planting vegetables, seasonal flowers, and other plants. This initiative aims to cultivate a sense of environmental sustainability among staff across the campus. Staff are provided with educational materials, including leaflets and informative content, on topics such as growing decorative plants, seasonal vegetables, seed planting, fertilization, watering, and garden planning. These efforts contribute to fostering a sustainable environment and enhancing agricultural knowledge within the university community.

GOOD HEALTH AND WELL-BEING

KEY INDICATORS FOR HEALTH AND WELL-BEING

19+

The number of university sports teams

8000+

The number of annual astroturf and gym users

6.6 km

The length of bicycle and scooter lanes on campuses

3000+

The number of annual patients attending the Medico-Social Health Center

15

The number of the student clubs in the categories of sports and dance

770,000 m^2

The amount of total green areas on Davutpaşsa campus

Multidisciplinary Health Research

The Health Biotechnology Center of Excellence and Application and Research Center (SABIOTEK) was established in partnership with Istanbul University-Cerrahpaşa and Marmara University. The center aims to contribute to academic and industrial progress in health biotechnology by preparing national and international projects, developing effective diagnostic and therapeutic products, enhancing Türkiye's international competitiveness in biotechnology, and training qualified human resources in related fields. In 2023, the center launched the "Additive Manufacturing and Titanium Implant Research and Production Center" to design and produce implants based on surgical demands and patient needs. The SABİOTEK Clinical Research Workshop, held the same year, brought together experts from various disciplines to discuss advancements in health biotechnology.



GOOD HEALTH AND WELL-BEING

3

POLICY & OPERATIONS





Health, Sports, Social Services

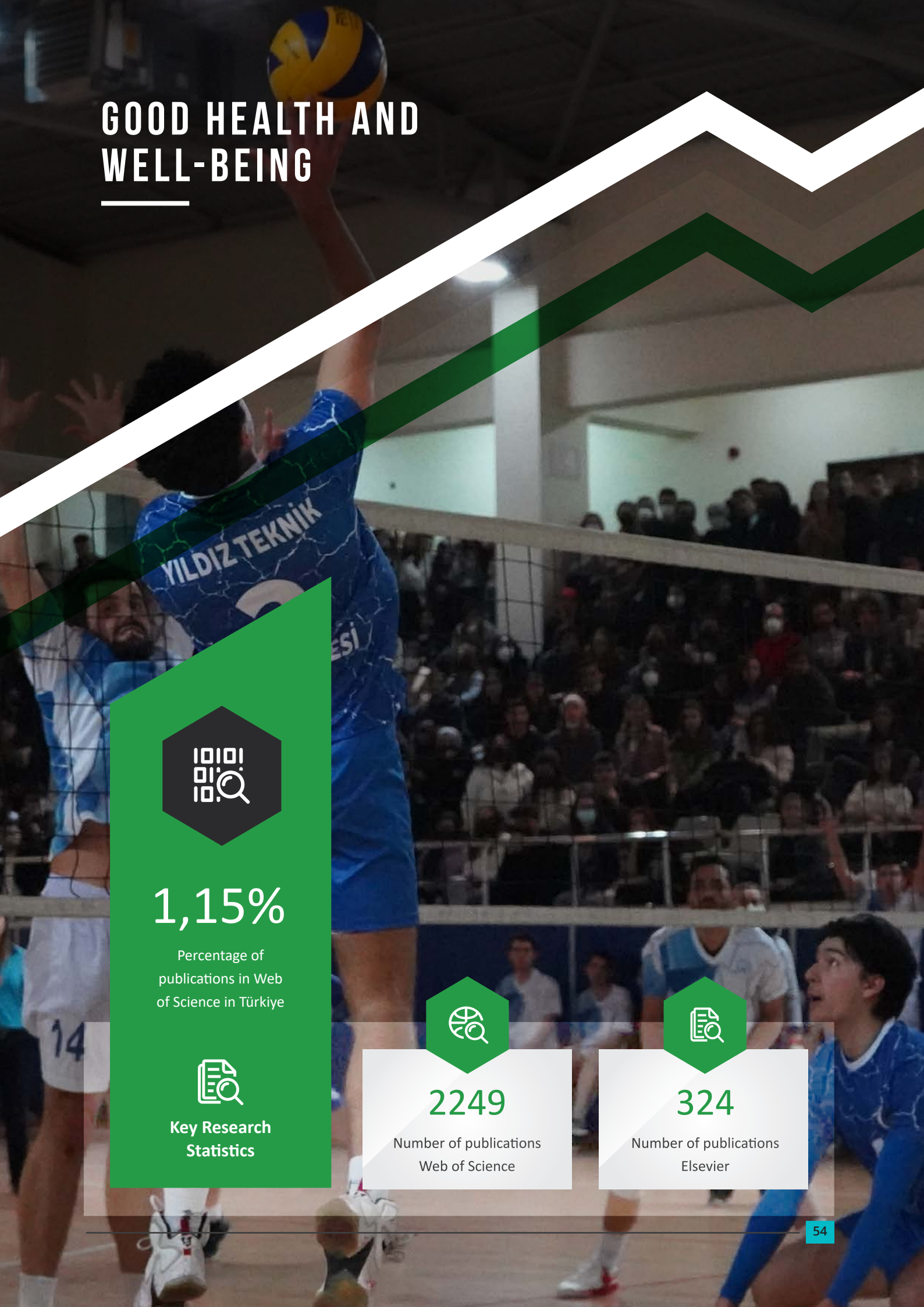
Directorate of Health, Sports, and Culture

The Directorate of Health, Sports, and Culture at Yildiz Technical University provides essential infrastructure for physical and mental well-being. Facilities include fitness centers, swimming pools, and outdoor sports fields, available to students, staff, and stakeholders.

Additionally, the university operates fully equipped Medico Health Units on both the Davutpaşa and Beşiktaş campuses, ensuring access to safe, effective, and quality basic healthcare services. These services cater to an average of 3,000 patients monthly, demonstrating the university's commitment to health and well-being.

These efforts reflect the university's dedication to ensuring healthy lives and promoting well-being for all.

GOOD HEALTH AND WELL-BEING



1,15%

Percentage of publications in Web of Science in Türkiye

Key Research Statistics

2249

Number of publications Web of Science

324

Number of publications Elsevier

GOOD HEALTH AND WELL-BEING

3

RESEARCH & DEVELOPMENT

Key Research Highlights

Role of Polar Algae in Cancer Treatment

Microalgae have been proven to exhibit anti-cancer properties due to their rich content and bioactive characteristics. At the Algal Biotechnology and Bioprocess Laboratory in the Department of Bioengineering, Prof. Dr. Didem Özçimen and her team have been isolating new algae and bacterial cultures from water and ice samples brought back from the 3rd National Antarctic Science Expedition in 2019. The ongoing project aims to investigate the anti-cancer activities of polar microalgae extracts, encapsulated using the electrospray method, on various cancer types. The data obtained is expected to lead the literature and offer an alternative method for cancer treatment with minimized side effects, paving the way for the production of biotechnological drugs based on polar microalgae.

Deep Learning Methods in Medical Analysis and Imaging

Machine learning and deep learning methods have emerged as powerful tools for accurate diagnosis and analysis of medical imaging data. A study conducted by the Department of Mathematical Engineering analyzed tomosynthesis images using two deep learning models to predict pathological prognostic factors for early diagnosis and effective treatment of breast cancer, the most common cancer among women. Another project from the Department of Computer Engineering developed a rapid, accurate, and cost-effective sperm detection module using deep learning for male infertility diagnosis, providing an alternative to high-cost computer-aided systems (CASA) in large laboratories. This project achieved more successful results in sperm cell detection stages compared to existing studies.

Yildiz Technical University is committed to advancing research that supports healthy lives and promotes well-being for all ages. Through various innovative research projects, the university aims to develop novel medical technologies and therapeutic approaches.

Improving Healthcare Services with Artificial Intelligence

AI-supported tools play an increasing role in patient care, including real-time monitoring and analysis of vital signs and conditions. A project supported by the Turkey Health Institutes Presidency (TÜSEB) at the Faculty of Electrical and Electronics Engineering aims to develop an AI-supported monitoring and evaluation system for treating pressure ulcers caused by prolonged sitting and lying. This system will help healthcare workers create better treatment plans and provide patients with more reliable care access.
The university's commitment is demostrated through its innovative research projects that address critical health challenges and advance medical technology. These research initiatives reflect the university's dedication to improving health outcomes and promoting well-being for everyone involved in the society.



GOOD HEALTH AND WELL-BEING



STUDENT CLUBS LEADING THE WAY

INNOVATIVE INSIGHTS

ENGAGING STUDENTS THROUGH HEALTH CONFERENCES

Yildiz Technical University student clubs organize annual events that address various health themes, featuring expert speakers and successful national and international companies. In 2023, the Yildiz Technical University Chemical Technologies Club hosted the ninth “Biyoscience’9 Microbiology Event,” which focused on microbiology studies and engaging topics in the field.

Additionally, the Yildiz Technical University Medical Technologies Club organized the fourth MEDIVATION summit, covering themes such as “Nanotechnology and Nano Medicine in Health” and “Digitalization in Health.” These conferences provide valuable insights into current health issues and advancements, fostering a deeper understanding among students.

GOOD HEALTH AND WELL-BEING

3

STUDENTS & ACTIVITIES



CHAMPIONING HEALTH: PROMOTING TEAM SPIRIT

At Yildiz Technical University, promoting physical activity and team spirit is at the core of our efforts to enhance student well-being.

Through a variety of sports and recreational activities, we encourage students to engage in healthy lifestyles while fostering teamwork and community.

The Department of Physical Education at Yildiz Technical University encourages students to participate in sports they are interested in and promotes team spirit by supporting university teams in over 19 different sports for both men and women. In 2023, the Korfball team won the championship in the Türkiye league, while the men's Handball team and the women's Tennis team secured championships in the Istanbul league. These achievements highlight the department's commitment to developing healthy, productive, and collaborative individuals for society.



Artificial Intelligence in Education Summit

Organized in collaboration with the Istanbul Provincial Directorate of National Education and Yildiz Technical University, the "Artificial Intelligence in Education Summit" brought together many individuals interested in AI and technology. Representatives from the private sector and academics presented various topics related to the current use and future vision of artificial intelligence in education.

The summit emphasized the importance of integrating technology in education and highlighted the role of teachers in shaping the future of Türkiye through technological advancements.

we teach more than content, we teach ideas and the future

QUALITY EDUCATION

4

POLICY & OPERATIONS

Exploring the Poles:

Engaging Youth in Polar Science

Polar Sciences Symposium and Festival was inaugurated by the Minister of Industry and Technology, Mehmet Fatih Kacır. This annual event aimed to engage researchers and young people in polar science education and awareness. The festival featured popular science seminars by scientists who conducted research in polar regions, screenings of Turkish documentaries filmed in the Arctic and Antarctic, and exhibitions of striking nature photographs taken by researchers. Additionally, the festival included fun and educational workshops on polar science, project presentations by high school students, and activities by university polar research clubs. The event was made available to all age groups and free of charge, promoting widespread participation and learning.

Project Writing Training for the Students

Details regarding the TUBITAK 2209 A- 2209B projects, including work packages, success criteria, and research steps, were shared with students. These comprehensive training sessions aim to equip students with the necessary skills to write and manage successful research projects. By providing detailed guidance on each aspect of the research process, from initial planning and proposal writing to execution and final reporting, these sessions foster a culture of academic excellence and innovation.

The ratio of sustainability courses

49.5%

to total courses/ subjects

High School Visits for Career Awareness

Yildiz Technical University continues to engage with some of the country's top high schools to discuss career opportunities and the importance of holistic education.
During a recent visit to Cagaloglu Anatolian High School, university representatives held career talks with enthusiastic students, highlighting the importance of integrating good high schools with top universities to achieve a comprehensive educational approach.

The ratio of sustainability research funding

51%

to total research funding

The Faculty Member Visits to YTU Schools

The YTU Schools benefit from the expertise of Yildiz Technical University academics. The students visited the Faculty of Electrical and Electronics Engineering and met with Prof. Dr. Ozan Erdinc to learn about renewable energy sources. They explored methods of energy production, the workings of wind turbines and solar panels, and discussed concepts of efficient energy use and conservation. These educational visits provide students with hands-on learning experiences that enhance their understanding of science and technology.

Number of events related to

90+

sustainability each year

Yildiz Technical University's commitment to Quality Education is evident through its diverse and impactful initiatives. By integrating technology, fostering academic excellence, and promoting sustainability, the university is shaping a future where quality education is accessible to all. These efforts highlight the university's dedication to lifelong learning and its role in driving educational innovation and inclusivity.

Highlights of the Key Research Projects

Reducing Early School Leaving by Increasing Academic Achievement with Digital Application in Storytelling Techniques

The Digital Stories project aims to reduce students' early school leaving by supporting the teachers professionally with learning difficulties by using digital techniques based on a multi-sensory learning model and storytelling technique.

By making the educational environment more attractive, students who drop out of school due to this anxiety and negative attitude make peace with the educational environment again. In particular, the project intends to reach the following results:

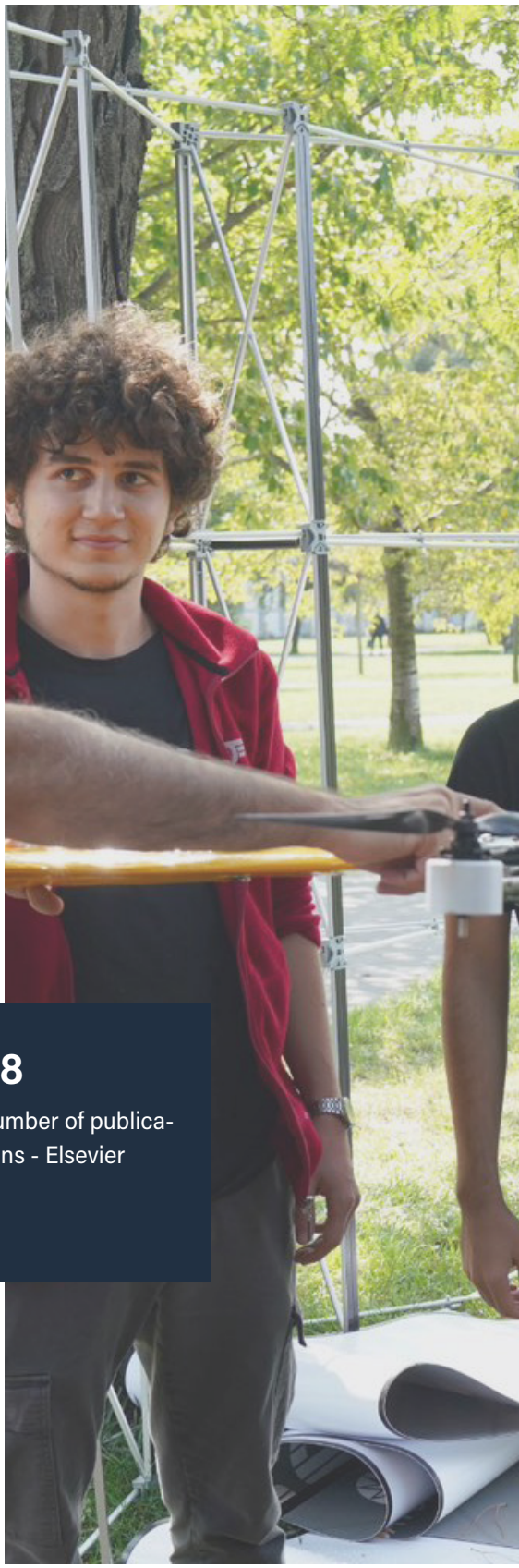
» Decreased dropout rates of students with learning difficulties.

» Increasing the professional development of teachers with new tools and methods.

» Active use of the "Recommendation Program", including the Digital Storytelling curriculum.

» Developing the professional capacity of teachers thanks to the online learning platform.

» Increasing the capacity of educational institutions.



285
Number of publications - WoS

1,92%
Percentage of publications in WoS in Türkiye

68
Number of publications - Elsevier

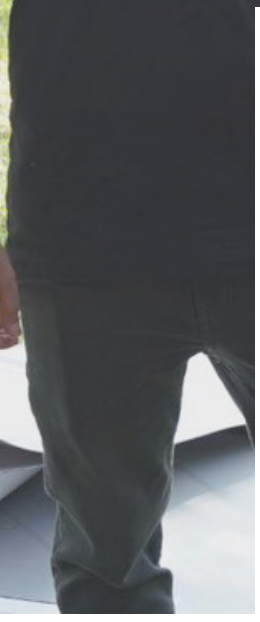
Multicultural Classrooms: Inclusive Learning and Teaching in Higher Education

This project aims to enhance the quality and multicultural dimension of higher education in Europe. It involves developing an innovative curriculum, instructional guide, and teaching materials for multicultural classrooms. The project also includes virtual staff training courses and an innovative Learning Management System to support inclusive teaching practices.

RESEARCH & DEVELOPMENT



Students are an integral part of the research ecosytem at the university.



Professional Development of Teachers to Promote Students' Design Thinking Skills and Academic Achievement

The "Professional Development of Teachers to promote Design Thinking Skills and Academic Success of Students" (DTS) Project aims at increasing the academic success of students, supporting the professional development of educators and teachers, empowering them with resources to teach design thinking skills.

Additionally, teachers will be equipped with a design thinking mindset, which will facilitate the adoption of design thinking educational practices, and strengthen the capacity of educational authorities, policymakers and decision-makers to promote and mainstream design-thinking educational practices. In turn, it is expected that this will contribute to decreasing early school drop-out. Considering the identified needs and the objectives defined for the project, its main target groups are secondary education students, teachers, schools, and institutions.

Empowering Educators: Sharing Knowledge at the Child and Education Summit



Child and Education Summit

The YTU Child and Education Club successfully organized the 8th Education Summit, bringing together hundreds of students, teachers, and professionals from 29 universities across Türkiye. This multifaceted and multidisciplinary event provides a platform for experienced teachers and academics to share their knowledge and guide students, including sessions on Communication with Children After Disasters, Becoming a Digital Teacher, Being a Teacher in a Village School, and Reaching Children. The event not only enhances professional development but also fosters networking and collaboration among future educators, promoting a shared vision for advancing quality education in Türkiye.

Career Development Workshops

The Psychological Counseling Club at YTÜ offers career development education and workshops in the field of psychological counseling and guidance, including sesssions on Finding Meaning in Life, Creative Drama for Stress Management, and Expressive Arts Therapy.

STUDENTS & ACTIVITIES

Student Initiatives

Recycling Education at YTU Schools

In collaboration with Koroplast, the YTÜ Environmental Club conducts recycling education programs at YTU schools. Using the book "The Girl Who Whispered to Birds" as a guide, the program raises awareness about environmental sustainability and the importance of recycling for a better future.

YTU SPARK - My Wishing Star

YTÜ SPARK organizes outreach events for disadvantaged schools, providing educational and recreational activities to broaden students' horizons. The second phase of the "My Wish Star: Spring Festival" was carried out with experiments related to different professions and outdoor activities such as singing and playing instruments. The event aims to provide students with new experiences and foster a love for learning.



Grad Talks

The Graduate School of Science and Engineering at YTU organized 5 sessions of the GradTalks series, providing a platform for graduate students to present their research and engage in academic discussions.

GENDER EQUALITY

Non-Discrimination and Equality Enforcement

Yildiz Technical University is committed to achieving gender equality and empowering all women and girls. The university actively supports the elimination of discrimination against women in all its operations and promotes the effective implementation of legal frameworks that enforce non-discrimination and equality on the basis of gender.

The university is dedicated to ending all forms of discrimination against women within its institutional activities. The university supports the effective application of legal frameworks that promote and enforce non-discrimination and equality. This includes ensuring equal opportunities and fostering an environment where gender equality is a fundamental principle in all academic and administrative operations.



GENDER EQUALITY

5

POLICY & OPERATIONS

The Student Affairs Division monitors and publishes annual statistics on the gender distribution of students within departments, faculties, and graduate schools. Similarly, the Division of Human Resources conducts annual analyses of gender distribution across academic, administrative, and temporary staff categories. These statistics are shared on the university's website to promote transparency and accountability.

In alignment with public policies, YTÜ offers paid parental leave of ten days for fathers and two months for mothers following childbirth. Additionally, both parents can take up to six months of unpaid leave after the initial period, regardless of gender. This policy supports work-life balance and encourages shared parenting responsibilities.

Strict policies have been put into practice to monitor gender representation.

The university adheres to a strict equal pay policy for all academic and administrative positions, ensuring that there is no gender-based pay disparity.

The university offers paid parental leave of ten days for fathers and two months for mothers following childbirth. Additionally, both parents can take up to six months of unpaid leave after the initial period, regardless of gender.

The university is dedicated to ending all forms of discrimination against women within its institutional activities, supporting the effective application of legal frameworks that promote and enforce non-discrimination and equality.

The university oprovides separate facilities such as gyms and swimming pools for women who prefer to use gender-specific spaces. Additionally, there are dormitories exclusively for female students, with a capacity of 2,658 beds.

The university has implemented comprehensive measures to eliminate all forms of violence and harassment against women on campus, promoting a zero-tolerance policy towards gender-based violence and harassment.

Female:Male Ratio

45%
of the Students



48%
of Academic Staff



43%
of the Students in STEM



57%
of Administrative Staff



GENDER EQUALITY

Yildiz Technical University is dedicated to advancing research that promotes gender equality and empowers all women and girls. Through various research projects and initiatives, the university aims to address gender disparities, enhance women's participation in the workforce, and explore the evolving roles of women in society. By focusing on women's participation in employment and their evolving roles in society, Yildiz Technical University is driving social change and promoting equality.



71

Number of publications - WoS

Publications in WoS signify rigorous peer-reviewed research, adding credibility and visibility to the university's efforts in advancing SDG goals.

0,38%

Percentage of publications in WoS in Türkiye

By maintaining a strong presence in WoS, the university supports Türkiye's efforts to achieve SDGs, collaborating with other research institutions.

13

Number of publications - Elsevier

Publications indexed by Elsevier show the university's commitment to producing knowledge and solutions contributing to achieving Sustainable Development Goals.

STUDENTS & ACTIVITIES

GENDER EQUALITY 5

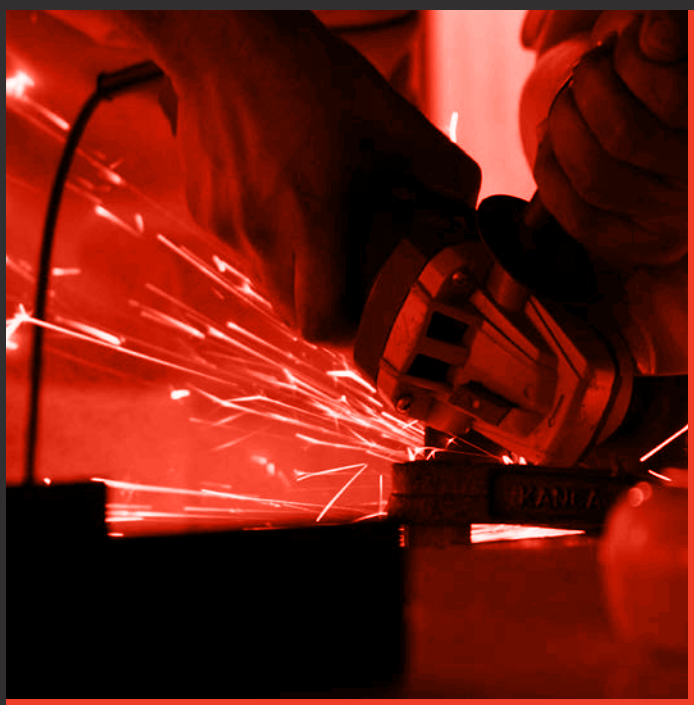
KEY RESEARCH

There are numerous research at Yildiz Technical University in many areas of social life from women's participation in employement to representation of women in society and some of the highlights of the research are given here to demonstrate how serious the univesity is in promotoing a balance between genders .

Transforming Public Spaces: Women's Participation in Paid Employment

The project "From Unpaid Agricultural Labor to Wage Employment: Female Workers in Sakarya Geyve" conducted by the Department of City and Regional Planning investigates how women's participation in paid labor affects their visibility in public spaces. The study focuses on the daily life experiences of female workers in the Geyve and Pamukova regions of Sakarya. It examines the impact of women's participation in the workforce on transforming public spaces and discusses the societal significance of these changes. The research also identifies the barriers women face and the strategies they use to assert themselves in public spaces, offering recommendations for supporting women in developed employment policies.

Additional studies in this area explore the differences between men and women in the labor market, the obstacles women face when entering the workforce, and the underlying causes of gender inequality in blue-collar occupations. These studies aim to provide a comprehensive understanding of gender dynamics in employment and develop strategies to promote equality and inclusion. By engaging with policymakers, community leaders, and other stakeholders, Yildiz Technical University ensures that the findings of these studies are translated into actionable policies and practices.



"Evolving Roles: The Changing Representation of Women in Society"

The researchers at the university are conducting various studies on the changing roles and perspectives of women in society over time. One notable project is the film "Kanto," co-produced and co-scripted by Assoc. Prof. Dr. Yelda Yanat Bagci from the Faculty of Art and Design. The film explores the stories of women from three different generations, addressing universal themes such as social isolation of the elderly, the culture of cohabitation, and family relationships. "Kanto" has been recognized with the impACT award at the Sarajevo Film Festival - Cinelink's Work In Progress section, highlighting its significant impact.

These studies aim to shed light on the evolving position of women in society and how these changes influence their roles in various contexts, including their responses to crises and disasters.

GENDER EQUALITY



From Waste to Value: Compostable Sanitary Women's Pad Production

Innovative Solutions: Transforming Waste into Compostable Pads

Yildiz Technical University's the Biotechnology and Genetics Student Club - Waste Management and Sustainability project team, Women in Science, aims to develop innovative and technological ideas that promote renewable energy use and energy efficiency.

TEKNOFEST 2023 Environment and Energy Technologies Competition

The Biotechnology and Genetics Student Club members presented the "Production of Compostable Pads from Organic Waste" project. This project, which seeks to create eco-friendly menstrual products from organic waste, was selected from over 2,000 entries and made it to the top 150. This initiative not only addresses environmental sustainability but also highlights the intersection of gender equality and environmental innovation.

GENDER EQUALITY

5

STUDENTS & ACTIVITIES

Empowering Women: Addressing Climate Change through Education

Under the motto "Educated Mothers, Educated Children," Prof. Dr. Serap Gunes from the Faculty of Science and Letters, Physics Department, believes that educating and raising awareness among mothers and children is more effective in addressing climate change.

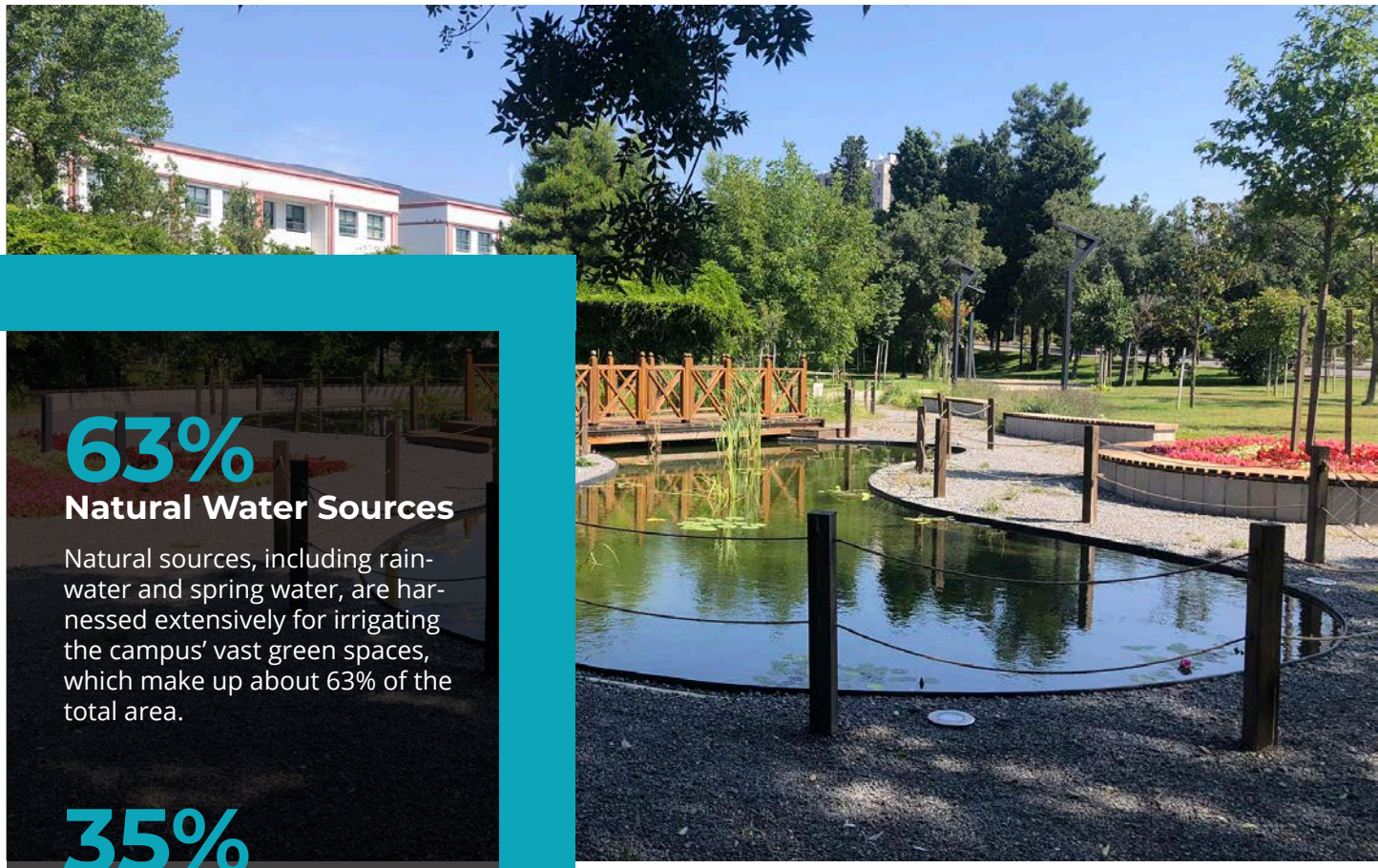


She conducted a four-week free awareness training titled "Step Together for a Green World: Global Climate Change, Sustainability, and Energy Conservation." The training, attended by 14 women, primarily housewives, covered simple measures that can be taken at home to use appliances like refrigerators and washing machines more efficiently and the differences between renewable energy sources and conventional energy types.

The focus was on how to integrate conscious consumption into daily life, empowering women to contribute to environmental sustainability.



CLEAN WATER AND SANITATION



63%
Natural Water Sources

Natural sources, including rain-water and spring water, are har-nessed extensively for irrigating the campus' vast green spaces, which make up about 63% of the total area.

35%
Recycled Water Use

The university used 114,000 tons of recycled water in 2023, fulfilling 35% of its total water needs through recycled sources, highlighting significant strides in water conservation.

202,665
kWh of Energy Saved

Efficient water management practices helped save 202,665 kWh of energy and prevented the emission of 139 tons of CO2 equivalent, contributing to our climate action goals, as well.

CLEAN WATER FOR THE FUTURE

Yildiz Technical University is dedicated to Sustainable Development Goal 6, aiming to ensure clean water and sanitation for all. This commitment is manifested in our strategic water resource management and innovative practices that emphasize sustainability and environmental awareness.

We continue to innovate and expand our water recycling initiatives, with plans to enhance the efficiency of our water use. Future projects focus on upgrading irrigation systems and exploring new technologies for water purification and recycling.

CLEAN WATER AND SANITATION

6

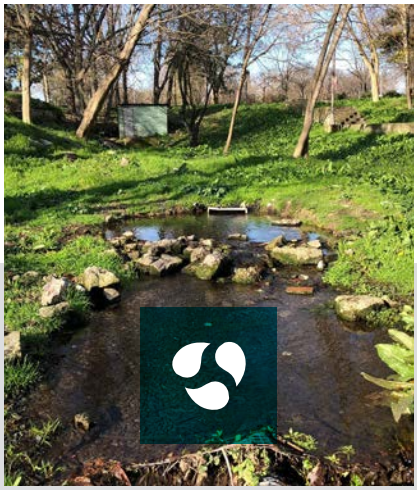
POLICY & OPERATIONS

Sustaining Waters, Nurturing Futures: Embracing Conservation for a Thriving and Greener Tomorrow



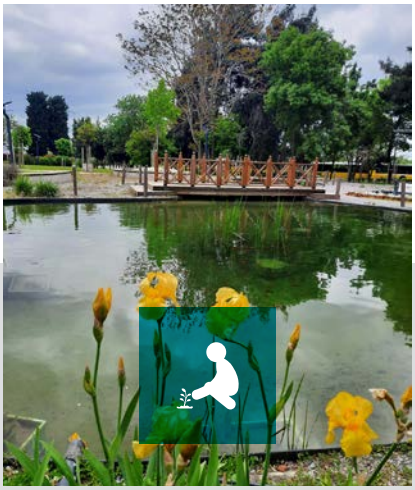
Public water points: Easy access to drinking water

Water fountains are conveniently located throughout the campus, providing easy access to drinking water for all university members within the buildings and across the different spaces on campuses.



Historical practices and modern adaptations

Integrating historical cisterns with modern rainwater harvesting systems, the university showcases a blend of traditional wisdom and contemporary innovation in sustainable water management.



Advanced irrigation and drought-resistant plants

Adoption of drought-resistant landscaping and smart irrigation systems, such as drip irrigation, optimizes water use and preserves vital resources. Also, for concrete spaces, porous materials are used.

OUR DEDICATION

Water conservation and recycling initiatives are complemented by water basins for animals, highlighting a campus-wide policy that cares for both human and wildlife needs.

This approach supports the university's commitment to providing a sustainable and inclusive environment for all campus residents and visitors.

By doing so, maintenance of the vast green areas and the biodiversity involved are sustainably managed.



CLEAN WATER AND SANITATION

KEY RESEARCH INDICATORS

508

NUMBER OF PUBLICATIONS - WoS

Publications in WoS signify rigorous peer-reviewed research, adding credibility and visibility to the university's efforts in advancing SDG goals.

1,07

FIELD-WIEGHTED CITATION IMPACT (FWCI) - ELSEVIER

This indicator emphasize the quality and relevance of our research contributions to addressing global challenges along with tackling local ones.

4,28%

PERCENTAGE OF PUBLICATIONS IN WoS IN TURKIYE

By maintaining a strong presence in WoS, the university supports Türkiye's efforts to achieve SDGs, collaborating with other research institutions.

226

NUMBER OF PUBLICATIONS - ELSEVIER

Publications indexed by Elsevier show the university's commitment to producing knowledge and solutions contributing to achieving SDGs.

THE SMARTPOL PROJECT

Yıldız Technical University, in collaboration with Malta University of Arts and Sciences, Interactive Software University of Cape Town, and Sirena Marine, is leading the SMARTPOL project. This project aims to create a cutting-edge pollution detection, monitoring, and analysis system specifically for marine environments. The system integrates both hardware and software components to provide real-

RESEARCH & DEVELOPMENT

time data on various types of marine pollution, supporting the EU's environmental protection policies and combating climate change.

The SMARTPOL system will feature a Command and Control Centre (CCC) and an Unmanned Underwater Vehicle (UUV) equipped with multi-sensor technology and AI-based solutions. The UUV will perform local environmental monitoring, sample collection, and data analysis. This innovative approach will facilitate the removal of pollutants such as bilge oil spills, ship waste, and plastics from the seas, aligning with the 2019 European Green Deal's emphasis on sustainable digital technologies like AI, 5G, and IoT. The acronym SMARTPOL stands for Development of Autonomous Network System with Special and Integrated Multi-Sensor Technology for Dynamic Monitoring of Marine Pollution.

Ongoing Research Projects Targeted at Sustainable Development Goal 6 and Supported by the Scientific Research Project Division of Yildiz Technical University

SCIENTIFIC RESEARCH PROJECTS TARGETED AT RECYCLING WATER, WASTEWATER, WATER CONTROL

1	Water Level Control in Open Channel Systems Using Frequency-Based System Identification Approach to Improve Efficiency
2	Utilization of Chitosan Derived from Animal-Based Sources for Heavy Metal Removal in Wastewater Treatment
3	Investigation of Heavy Metal Adsorption Properties of Dust Generated in Ferrochrome Production in Aqueous Systems
4	Research on the Presence and Removability of Microplastics in Leachate Treatment Plants in Istanbul
5	Nutrient Recovery from Wastewater in the Livestock Sector
6	Removal of Dyes from Wastewater Using Hybrid Nanocomposite Materials
7	Preparation of High-Performance and Low-Cost Adsorbents for Antibiotic Removal
8	Evaluation of Different Process Alternatives in Treating Textile Wastewater with Hybrid Chemical and Electrochemical Processes
9	Investigation of Sequential Electrochemical Processes for the Treatment of Adhesive Chemical Production Wastewaters
10	Treatment of Leachate with Membrane Bioreactors Using Hybrid Electrocoagulation and Catalytic Oxidation Processes
11	Treatability of Medium-Density Fiberboard Factory Wastewater Using Hybrid Treatment Systems
12	Recovery of Ammonium Sulfate from Anaerobic Digester Effluent
13	Removal of Textile Dyes from Aqueous Solutions Using Chitosan-Grape Leaf Composites
14	Adsorption of Anionic and Cationic Dyes from Aqueous Solutions Using Sodium Alginate Hybrid Composites Doped with Tin Sulfide (SnS2)
15	Removal of Toxic Indigo Carmine Dye from Aqueous Solutions Using Polylactic Acid/Polyaniline Composites
16	Determination of Pyridalin and Methoxilin at Trace Levels with High Accuracy and Sensitivity Using Dispersive Liquid-Liquid and Smart Solvent Microextraction Followed by Gas Chromatography-Mass Spectrometry
17	Production and Photocatalytic Properties of Zinc Oxide Phthalocyanine Nanocomposites for the Removal of Organic Dyes Using Photocatalytic Method

CLEAN WATER AND SANITATION



The university organized a series of events on campus, engaging students and staff in activities that highlight the critical importance of water conservation.

4TH INTERNATIONAL NAVAL ARCHITECTURE AND MARITIME SYMPOSIUM (INT-NAM 2023)

In 2023, the conference theme was "Sustainable Innovations & Nature-Based Solutions focusing on water resources.

Held on October 11-13, 2023, in Istanbul, the 4th International Naval Architecture and Maritime Symposium (INT-NAM 2023) was a significant event organized by the Naval Architecture and Maritime Faculty of Yildiz Technical University. The symposium brought together students, researchers, and professionals to discuss innovations in maritime technology and their implications for water sustainability. Key topics included advancements in ship design for enhanced water efficiency and strategies to reduce marine pollution, aligning with the objectives of SDG 6.

CLEAN WATER AND SANITATION

6

STUDENTS & ACTIVITIES

STUDENTS IN ACTION
World Water Day and Raising Awareness



Activities for Raising Awareness to commemorate World Water Day for the Young Students of YTU Schools

YTU Schools prioritize raising students as conscious individuals who use natural resources correctly in line with sustainable development goals. As part of World Water Day, students visited the Yıldız Technical University campus with posters they prepared to highlight the efficient use and protection of water as a natural resource. During these enjoyable and instructive activities, students conducted a unit study on water and expressed what they learned verbally, through songs, and dances. On this meaningful day, they brought together the water drops they printed using a 3D printer in Information Technologies and Design lessons. These water drops were kept for a month, showcasing the students' caring learner profile.

These events included educational workshops, interactive exhibits, and seminars led by experts in the field of water management.

Water Efficiency Education at YTU Maçka Vocational and Technical Anatolian High School

In collaboration with the Ministry of Agriculture and Forestry, Yıldız Technical University conducted water efficiency education sessions at the Maçka Vocational and Technical Anatolian High School. Initiated in January 2023 as part of the "Water Efficiency Mobilization" campaign, these sessions aim to cultivate a culture of water conservation across various segments of society. On February 27, students at YTÜ Maçka received comprehensive training on methods and practices to enhance water efficiency, aligning with national efforts to promote sustainable water use. This activitiy was carried out within the scope of an awareness campaign, where students are trained to be part of the wider world around them.



AFFORDABLE AND CLEAN ENERGY



TOWARDS RENEWABLE AND

Clean Energy

Yildiz Technical University is dedicated to ensuring affordable, reliable, sustainable, and modern energy for all, by implementing comprehensive policies and initiatives.

The university is actively involved in various renewable energy projects that contribute to reducing the university's carbon footprint and promoting sustainable practices with operations and initiatives such as the installation of solar panels on campus buildings to harness solar energy, development of wind energy projects to complement solar energy efforts, and c ollaboration with industry partners and government agencies to implement large-scale renewable energy projects, thus setting ambitious targets, implementing innovative projects, and engaging with the community

Care with Resources

Engaging with the broader community mainly involves hosting seminars, workshops, and conferences on renewable energy and sustainability topics, as well as partnering with local and international organizations to advance clean energy initiatives.



AFFORDABLE AND CLEAN ENERGY

7

POLICY & OPERATIONS

Energy Research and Graduate Programs

The university has established multidisciplinary graduate programs at both national and international levels to develop the necessary workforce in clean energy sources and technologies. The university offers Energy Technologies Master's Program at the Institute of Science, focusing on the technical and economic analysis of energy production facilities and energy planning.

In addition, Advanced Energy Technologies Master's and PhD Programs at the Institute of Clean Energy Technologies, which cover renewable energy, hydrogen, energy storage technologies, energy efficiency, sustainability policies, and evaluation is offered.

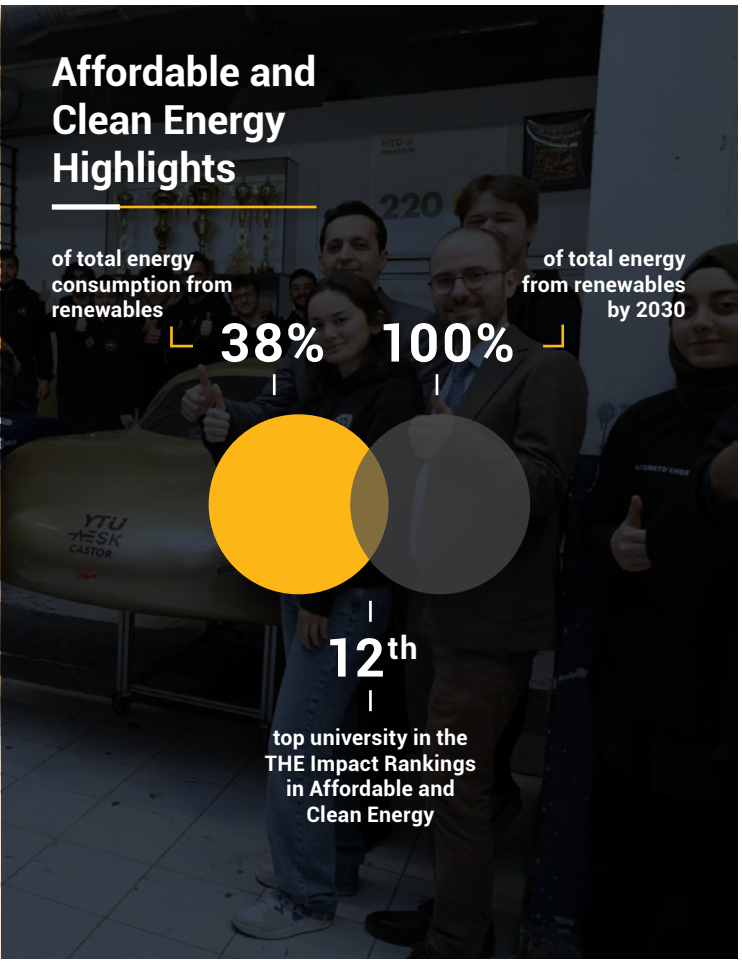
On-campus Clean Energy Applications

In line with the Climate Change Action Plan published in 2023, YTÜ is investing in transforming campus energy production and usage to achieve 100% clean energy by 2030. Key initiatives include:

Comprehensive studies and capacity assessments for wind and solar energy within the Public Buildings Energy Efficiency Project.

Utilization of alternative energy sources for heating and electricity in buildings.

Promoting micro-mobility using electric vehicles, increasing the number of EV charging stations, and converting all campus shuttle buses to 100% electric vehicles.





AFFORDABLE AND CLEAN ENERGY



GOING CLEANER AND GREENER

Hydrogen Research

Pioneering Hydrogen Energy: Developing Sustainable Hydrogen Technologies

— The Hydrogen Research Center focuses on green hydrogen and hydrogen-based alternative fuels. The center conducts research on the production, storage, transportation, and distribution of hydrogen, as well as its use in industrial, transportation, and residential applications.

The project "Development of Clean Hydrogen Energy Technologies" aims to create hydrogen-based production, storage, and application technologies that can be integrated into sustainable energy systems.

Advancing scientific knowledge and practical applications in the field of clean energy.

Key Research

Statistics

824	**588**
Number of publications - WoS	Number of publications - Elsevier
1,48%	**5,48%**
Field-weighted citation impact (FWCI) - Elsevier	Percentage of publications in WoS in Türkiye

Key Research Statistics Dedicated to Sustainable Development Goal 7: Affordable and Clean Energy

AFFORDABLE AND CLEAN ENERGY

7

RESEARCH & DEVELOPMENT



RESEARCH HIGHLIGHT I

Sustainable Storage

Innovative Storage Solutions: Enhancing Energy Storage with Boron Materials

— To ensure a sustainable energy supply chain, it is essential to develop systems that can efficiently store renewable energy. The project "New Generation Applications of Boron Energetic Materials in Hydrogen, Electricity, and Solar Energy Storage Systems," led by Prof. Dr. Aysel Kanturk Figen from the Department of Chemical Engineering, focuses on designing and developing supercapacitors, solar cells, and solid-state hydrogen storage environments using boron materials. This innovative approach aims to enhance the efficiency of energy storage systems that utilize renewable energy sources, contributing significantly to sustainable energy solutions. The outcomes of this project are to provide significant advancements in the field of energy storage, promoting the use of renewable energy.

RESEARCH HIGHLIGHT II

Solar Cell Efficiency

Biotech Meets Solar: Enhancing Perovskite Solar Cells with Microalgae

— Perovskite materials have gained significant attention for their high power conversion efficiency and low material costs in solar cell applications. Supported by TUBITAK, the project "Improving the Efficiency and Stability Performance of Perovskite Solar Cells Using Microalgae" aims to investigate how incorporating microalgae into the perovskite structure affects the efficiency and stability of these solar cells. This project is noteworthy as it is the first to explore the use of microalgae in solar cells, combining biotechnology and photovoltaics in a novel approach. The findings from this project could lead to significant improvements in solar energy systems, contributing to the global efforts to increase the adoption of clean and renewable energy sources.

AFFORDABLE AND CLEAN ENERGY

Student-led initiatives in clean energy are crucial for sustainability. They embody the principles of SDG7 and shows the keen commitment of YTU.

The Yildiz Solar Boat Team

Innovative Maritime Solutions: The Yildiz Technical University Solar Boat Team

— Founded in 2012, the YTU Solar Boat Team aims to increase the use of solar energy in maritime applications and reduce carbon emissions. The team continuously develops their solar-powered boat, participating in international competitions annually. In 2023, the team qualified for the Monaco Energy Boat Challenge in the Solar Category, competing against 46 teams from 25 countries.

The Boat underwent rigorous technical evaluations and competed in endurance, speed, and slalom events. Equipped with a self-designed and manufactured carbon fiber propeller and high-capacity battery, the team plans to continue their innovations in 2024. Notably, they are the only national team participating in these international competitions.

The Alternative Energy Systems Club

Driving Innovation: Yildiz Technical University Electric Vehicle Success

— The YTU Alternative Energy Systems Club (AESK) won first place in the Electromobile Category of the 18th International Efficiency Challenge Electric Vehicle Competition, organized by TUBITAK as part of TEKNOFEST 2023. Competing against 49 university teams, the AESK team not only secured the first place but also received the "Best Local Product" award for their vehicle's entirely locally-developed systems.

The Alternative Energy Systems Club students actively participates in international competitions with five different vehicle models that are under continuous improvement. This achievement highlights their commitment to promoting alternative and clean energy sources. The team also participate the competitions annually.

AFFORDABLE AND CLEAN ENERGY

7

Activities Overview

Among all the SDGs, affordable and clean energy is most targeted by the staff and students alike, aiming to create a greener, and cleaner future.

Yildiz Technical University is dedicated to ensuring affordable, reliable, sustainable, and modern energy for all. In addition to comprehensive policies and initiatives, the university aims to transform its energy production and consumption practices.

On-campus, the university is making strides with clean energy applications, including comprehensive studies and capacity assessments for wind and solar energy. The university is also investing in electric vehicles and promoting micro-mobility, with plans to convert all campus shuttle buses to 100% electric vehicles. Renewable energy projects such as solar panel installations and wind energy developments highlight the university's commitment to reducing its carbon footprint and promoting sustainable practices.

Community and stakeholder engagement through seminars, workshops, and conferences further reinforces the university's role in advancing clean energy awareness and initiatives as well student clubs' initiatives in continously developing alternative energy-powered vehicle and in testing them in numerous national and international competitions decisively.

DECENT WORK AND ECONOMIC GROWTH

The Yildiz Technopark initiative, YTU Startup House, supports student and faculty-led ventures in technology, R&D, and innovation by providing a competitive environment and early-stage funding opportunities. The university employs 2.912 staff members and supports over 14.000 active personnel through its Technopark. With more than 700 companies operating in the Technopark, the university has seen a 70% increase in firm numbers over the past three years.

The TechnoPark's international offices focus on enhancing export capacities, and the university's involvement in the SMARTNET global project aims to increase Türkiye's intellectual property rights, technology product trade, and exports. This initiative, supported by the Ministry of Industry, fosters collaboration between academia and industry, further driving economic growth and innovation. The university ensures equal access to services and protects workers' rights by maintaining livable social conditions. This includes efforts to expand similar measures across all faculties and departments.



700+

The number of companies at Yildiz TechnoPark initiative

14.000+

The number of employees at Yildiz TechnoPark initiative

0,8%

of annual export in Türkiye

Sustainable Development Goals - SDG8

DECENT WORK AND ECONOMIC GROWTH

8

POLICY & OPERATIONS

Yildiz Technical University is committed to promoting sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all. Through comprehensive policies and initiatives, the university aims to create an environment that supports economic development and fosters opportunities for students, staff, and the broader community.



ACCESSIBLE UNIVERSITY

Yildiz Technical University is dedicated to creating an inclusive environment, ensuring accessibility for all students and staff. Faculties of Arts and Sciences and Economics and Administrative Sciences have received the Green Flag for Accessibility in Education and the Orange Flag for Spatial Accessibility, respectively, awarded by the Turkish Council of Higher Education.

PERFORMANCE RECOGNITION

To strengthen institutional loyalty and motivation, YTU organizes various recognition events, including the annual “Academic Award Ceremony.” Researchers are evaluated based on criteria such as citations, publications, projects, patents, collaborations, and the number of doctoral students, acknowledging their invaluable contributions to the university.

ENTREPRENEURSHIP SUPPORT

The university collaborates with sectoral stakeholders to ensure that students, alumni, and researchers actively participate in the economic world and contribute to sustainable economic development. Through the COOP model, students gain sector experience with leading companies, with both short-term and long-term internships via a career portal.

DECENT WORK AND ECONOMIC GROWTH

KEY RESEARCH SDG8

121	1,97%	105
Number of publications WoS	Percentage of publications in WoS in Türkiye	Number of publications Elsevier

EMPOWERING EDUCATORS

Enhancing Design Thinking Skills to Combat Early School Dropout

The European Commission has identified that over 46% of young people face risks of social exclusion and early school dropout due to the education system's inadequacies in imparting practical and unique skills.



Training the Trainer: Developing Design Thinking Skills

To address this issue, the Faculty of Education at Yildiz Technical University, in partnership with the Governorship of Istanbul, Istanbul Provincial Directorate of National Education, and institutions from Portugal, Bulgaria, and Italy, is participating in an EU project.

This project aims to support the professional development of educators and teachers by enhancing their design thinking skills. The goal is to improve students' academic success and reduce early school dropout rates by fostering innovative and engaging educational practices. The project also aims to create a network of trained educators who can share best practices and resources, further amplifying the impact of this initiative.

By equipping teachers with modern pedagogical tools, the project seeks to transform educational environments into dynamic and inclusive spaces that cater to the diverse needs of all students.

DECENT WORK AND ECONOMIC GROWTH

8

RESEARCH & DEVELOPMENT

Performance Analysis of Incubation Firms

"Incubation Impact: Analyzing the Performance of Incubation Firms"

Incubation centers play a crucial role in job creation, revitalizing regions, commercializing new technologies, and strengthening local economies. The Industrial Engineering Department at YTÜ is conducting a project to analyze the performance of incubation firms within the entrepreneurship ecosystem. Utilizing a strategic and hybrid decision-making model that incorporates social and technical variables, the project evaluates the contributions of incubation firms to the entrepreneurial ecosystem. This research aims to identify best practices and strategies for enhancing the impact of incubation centers on regional economic growth.



ICT and Digital Economy Education

Digital technologies are a key growth factor for national economies. Vocational education providers in Information and Communication Technologies (ICT) play a critical role in supporting the development of Small and Medium-sized Enterprises (SMEs) in the digital sector. The "Promoting E-VET: Inclusivity in the Digital Economy" project, supported by the EU and involving YTU's Continuing Education Center and Yildiz Technopark, aims to foster a culture of digital entrepreneurship among ICT students. The project emphasizes the role of digital entrepreneurs in society and adapts vocational education and training (VET) to meet the needs of the labor market, promoting inclusivity and economic growth.

Digital Employee Experience

Employee experience refers to the journey employees undergo within a company, which has evolved into the concept of digital employee experience with the advancement and implementation of digital technologies in the workplace. Although an intriguing and contemporary concept, digital employee experience has not been thoroughly examined in the management and organizational behavior literature. A project conducted by the Economics Department at YTU involves semi-structured interviews with 10 HR managers from sectors defined as digital-intensive, such as banking, finance, and manufacturing. The project has developed a digital employee experience survey based on these interviews, providing empirical data and recommendations to HR managers for improving digital employee experiences.

DECENT WORK AND ECONOMIC GROWTH

CAREER EVENTS

Yildiz Technical University student clubs organize a series of events to help students explore career opportunities and learn from professionals' experiences.

The Business Club students hosted the university's largest career event, the Career Fair, at Davutpaşa Campus.

The fair included participation from corporate firms, sponsor companies, and various NGOs, offering students job and internship opportunities. The event also featured competitions, social activities, and engaging talks with invited celebrities, providing a comprehensive platform for career exploration and networking.

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DECENT WORK AND ECONOMIC GROWTH

8

STUDENTS & ACTIVITIES

The YTÜ Career Center plays a crucial role in connecting students with internship and job opportunities. The center provides comprehensive support, including resume writing workshops, interview preparation sessions, and career counseling. Through partnerships with leading companies and organizations, the Career Center facilitates internships and job placements, helping students gain valuable work experience and transition smoothly into their professional careers.

By organizing comprehensive career events, fostering mentorship programs, and providing skill development opportunities, Yildiz Technical University equips students with the tools and knowledge needed for successful careers.



CONTINUOUS DEVELOPMENT

These activities reflect the university's dedication to creating inclusive and dynamic learning environments that prepares students for the challenges and opportunities of the modern workforce.



INDUSTRY, INNOVATION AND INFRASTRUCTURE



INFRASTRUCTURE

TECHNO PARK

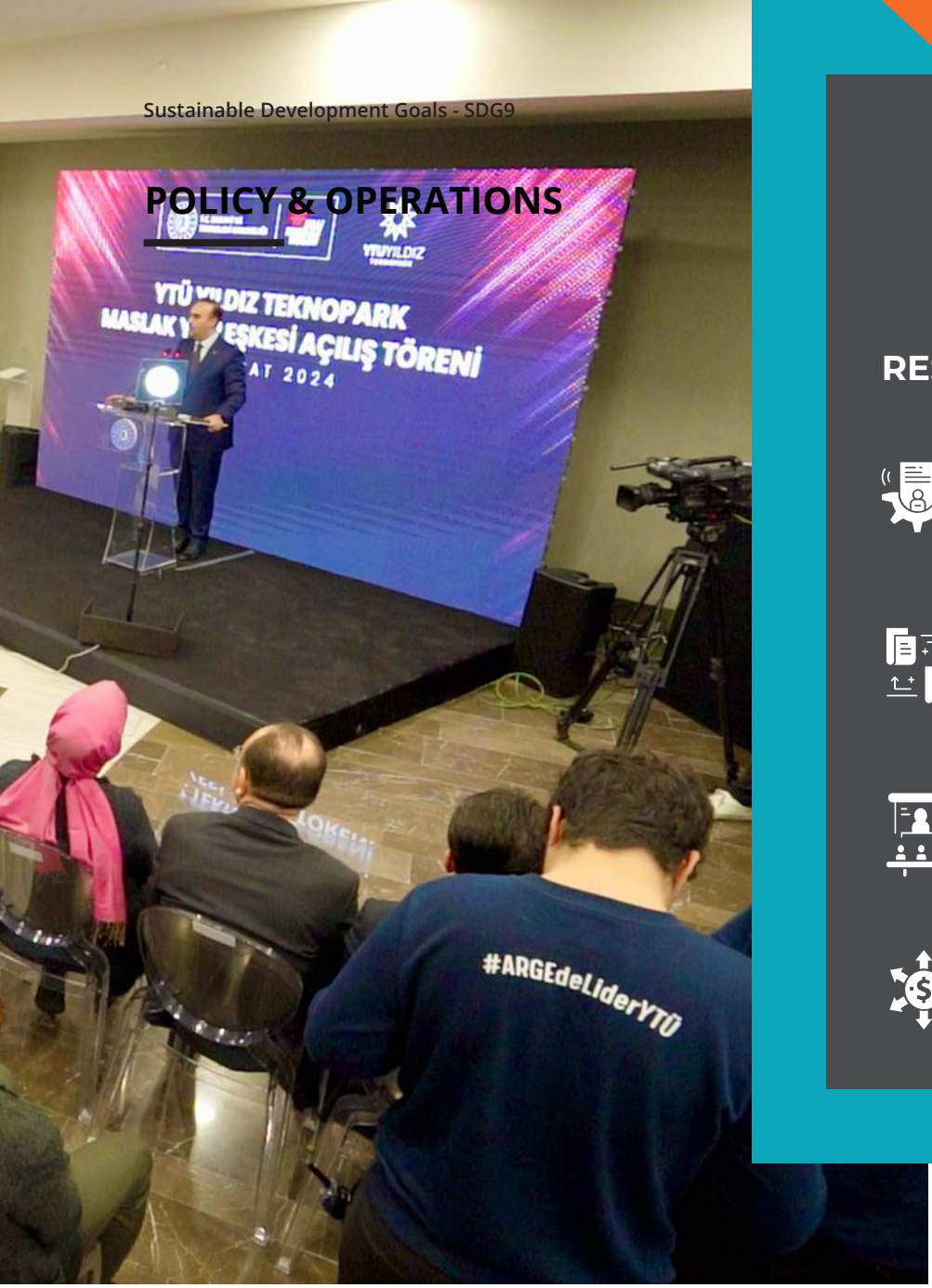


Expanding Infrastructure

The university has implemented several policies and initiatives to support innovative projects and entrepreneurial ventures by expanding its infrastructure further.

The opening of the YTÜ Maslak Technopark marks a significant step towards strengthening the university's role in the innovation ecosystem. This state-of-the-art facility is equipped with advanced laboratories, co-working spaces, and conference rooms, all aimed at supporting startups and established companies in developing cutting-edge technologies. The technopark serves as a hub for innovation, bringing together researchers, entrepreneurs, and industry leaders to collaborate on projects that address real-world challenges.

POLICY & OPERATIONS



INDUSTRY, INNOVATION AND INFRASTRUCTURE

9

RESEARCH OUTPUT

25
Number of National Patents Registered

20
Number of International Patents Registered

39
Number of Ongoing International Projects

₺181M
Budget for Ongoing International Projects

THE UNIVERSITY IS COMMITTED TO FOSTERING A CULTURE OF INNOVATION AND ENTREPRENEURSHIP AMONG ITS STUDENTS AND FACULTY

FUNDING

Yıldız Technical University provides access to various funding opportunities for research and development projects. This includes grants from national and international agencies, as well as funding from private sector partners. By securing financial support, the university is able to advance its research agenda and contribute to the development of innovative solutions.

PARTNERSHIP

The university enjoys strong partnerships with leading companies in various sectors, which facilitates the transfer of knowledge and technology between academia and industry, ensuring that research findings are effectively applied to solve practical problems. Co-working spaces facilitate collaboration among students, researchers, and industry professionals.

DEVELOPMENT

Investing in infrastructure is a key component of the university's strategy to support industry and innovation. The university continually upgrades its facilities to ensure that students and researchers have access to the latest technologies and resources, incorporating green building practices, optimizing energy efficiency, and promoting the use of renewable energy sources.

INDUSTRY, INNOVATION AND INFRASTRUCTURE

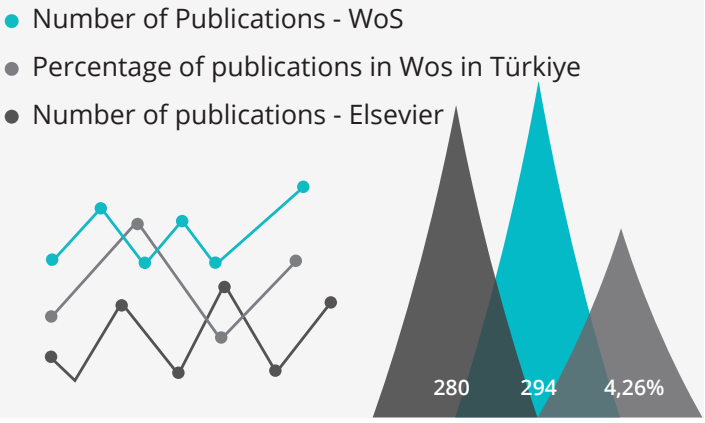
Creating a sophisticated research ecosystem

Collaborative research initiatives and diverse funding sources support impactful research outputs, contributing significantly to industry, innovation, and infrastructure advancements. The university's commitment to high-impact research and strong industry-academia partnerships drives practical solutions and economic growth.

KEY RESEARCH STATISTICS DEDICATED TO SDG9

12 Scientific Research Projects funded by The Scientific and Technological Research Council of Türkiye

41 Scientific Research Projects funded by the University's Sources



Smart Infrastructure

The university is actively involved in the development of smart infrastructure systems that integrate information and communication technologies (ICT) to improve the efficiency and sustainability of urban environments. Projects in this area include smart grids, intelligent transportation systems, and urban planning solutions that enhance the quality of life for citizens.

International Research

Collaborations enable the university to participate in large-scale research projects and access advanced research facilities around the world. Examples of successful international partnerships include joint research programs with leading universities and research institutions across the world.

Research Funding and Grants

Securing funding is essential for advancing research and development activities. Yıldız Technical University actively seeks funding from various sources to support its research projects.



INDUSTRY, INNOVATION AND INFRASTRUCTURE

9

RESEARCH & DEVELOPMENT

OUR MAIN AREAS OF EXPERTISE

Innovative Research

Yildiz Technical University is at the forefront of research in industry, innovation, and infrastructure. The university undertakes a wide range of research projects aimed at developing advanced technologies and sustainable industrial practices.

Advanced Manufacturing

Research at Yıldız Technical University focuses on developing advanced manufacturing techniques that enhance production efficiency and sustainability. These techniques include additive manufacturing (3D printing), precision engineering, and automation.

Collaborative Research

Collaboration is a key component of Yıldız Technical University's research strategy. The university partners with academic institutions, industry leaders, and government agencies to conduct cutting-edge research and develop innovative solutions.



YTU HOSTS EUROPEAN RESEARCH COUNCIL (ERC) MEETING IN 2023

Research Output

The research conducted at YTU has a significant impact on industry, innovation, and infrastructure. The research output contribute to scientific knowledge, technological advancements, and sustainable development.

INDUSTRY, INNOVATION AND INFRASTRUCTURE



Global Entrepreneur Program

The journey from YTU Startup House to the UK began with the Global Entrepreneur Program (GEP) Masterclass 2023. This masterclass served as a crucial learning platform for aspiring entrepreneurs aiming to expand into the UK market. Notable presenters included Aziz Emre Günel, Eamon Tahani, Jude Ower, Michelle Davidson, and Georgina Hamilton. Their insights provided a significant boost to the entrepreneurial journey of the participants, emphasizing YTU Startup House as a hub of entrepreneurial excellence.

INDUSTRY, INNOVATION AND INFRASTRUCTURE

9

STUDENTS & ACTIVITIES

CHIP DESIGN COMPETITION

YTU's student team won the Honorable Mention Award, securing second place in the Analog Design category at the TEKNOFEST Chip Design Competition. This achievement highlights the team's exceptional skills and the university's commitment to fostering technical excellence.



DRIVING INNOVATION, BUILDING THE FUTURE TOGETHER AT YTU!

YTU STARTUP HOUSE'S GLOBAL IMPACT

YTU Startup House achieved significant milestones, including fostering a vibrant community of entrepreneurs and mentors, guiding numerous award-winning projects, expanding globally with new offices and international events, and organizing various innovation-driven activities. Through these efforts, Yıldız Technical University promoted innovation, entrepreneurship, and sustainable growth.

TEKNOFEST ACADEMIC PARTNERSHIP

Yildiz Technical University serves as an academic partner for TEKNOFEST, one of the world's largest technology competitions. This partnership offers students opportunities to engage in cutting-edge technological projects, fostering innovation and technical skills. Additionally, student teams compete in various TEKNOFEST events, gaining invaluable experience and showcasing their talents on a global stage.

DEDICATION TO SDG9 AND GROWTH

Yıldız Technical University significantly advanced SDG 9 by fostering innovation and entrepreneurship, guiding numerous successful projects, and expanding its global reach. Through strategic partnerships and various initiatives, the university promoted sustainable industrial growth and contributed to the development of a vibrant, globally engaged entrepreneurial community.

REDUCED INEQUALITIES

01



22nd Convention for the Disabled Individuals



Together for a Barrier-free Tomorrow

Inclusive Environment and Campus

Yildiz Technical University is dedicated to promoting equality and reducing inequalities within and among communities. Our comprehensive policies and operations are designed to ensure that all individuals, regardless of their backgrounds, have equal access to opportunities and resources.

The university always recognizes the significance of offering social inclusion opportunities for the disabled members of the community and wherever possible organizes events to emphasize its commitment.

In collaboration with Bağcılar Municipality and Eğitim-Bir-Sen, YTÜ hosted the 22nd Convention for the Disabled, a milestone event dedicated to raising awareness and fostering inclusivity. This convention served as a platform to celebrate the success stories of disabled athletes, who shared their journeys and achievements, providing both inspiration and learning opportunities for all attendees. This gathering underscored our unwavering commitment to "Barrier-Free YTU", emphasizing the critical importance of accessibility and equal participation across all facets of university life.

REDUCED INEQUALITIES

10

POLICY & OPERATIONS

02



Green Flag Awards

The university has been awarded the green flag for offering barrier-free education

Accessibility for All, Excellence for All

The flags, awarded for achievements in "Accessibility in Space" (Orange Flag), "Accessibility in Education" (Green Flag), and "Accessibility in Socio-Cultural Activities" (Blue Flag), honor universities that excel in these specific areas of accessibility. The program badges recognize academic programs that are accessible to various disabled groups, reinforcing our commitment to inclusivity.

03



Project Initiatives

Project Initiatives for earthquake-affected regions in Türkiye for infrastructure and relief efforts

Leading with Innovation, Empowering with Inclusion

YTÜ firmly believes that universities must play a pivotal role in addressing societal challenges. In line with this belief, we have spearheaded a project involving 112 academics from 15 different disciplines to develop comprehensive solutions for earthquake prevention and disaster management.

This pioneering project incorporates artificial intelligence for decision-making, showcasing our dedication to innovative and inclusive approaches in enhancing disaster resilience.

04



Coordination Office

The barrier-free university efforts is coordinated by the Coordination Office for the Disabled Students

Breaking Barriers, Building Futures

Ensuring equal access to all rights and services for disabled individuals is a cornerstone of the university's mission. The university's coordination office for the disabled students is dedicated to identifying and addressing the unique needs of disabled students, providing the necessary support to eliminate barriers and offer practical solutions.

We firmly believe that awareness and equality can be fostered by ensuring all students are fully integrated into university life. For this, the university has created a center from which all the activitied empowering disabled students can be coordinated effectively and efficiently.

REDUCED INEQUALITIES

Strengthening Mental Well-Being in Young Researchers: A Multidimensional Study on Psychological Resilience, Intolerance of Uncertainty, and Future Anxiety

One of the key initiatives targeted at reducing inequalities, this project directly addresses SDG 10 by promoting equality within the academic community. By focusing on the mental well-being of young researchers, the project ensures that all researchers, regardless of their background or personal circumstances, have equal opportunities to succeed and thrive in their careers.



The project group aims to produce studies that protect and improve the mental health of researchers. This initiative, under the working groups "Promoting Researcher Well-being on a Practical Level" and "Well-being Practices in Research Institutions," focuses on enhancing the mental well-being of researchers.

Offering training programs for mental healty experts:

The first phase of this project involves testing a model that includes psychological resilience, intolerance of uncertainty, and future anxiety to strengthen the mental well-being of young researchers. This phase aims to identify key factors affecting mental health and develop strategies to enhance resilience and reduce anxiety.

In the second phase, the project aims to examine the effectiveness of an intervention program designed based on the findings from the hypothetical model. This program will be tested through an experimental study to strengthen the mental well-being of young researchers.

Using the outputs from the first two phases, a training program will be offered to equip experts with the knowledge and tools to support the mental well-being of young researchers within their institutions, enabling quicker and more effective responses to mental health issues.

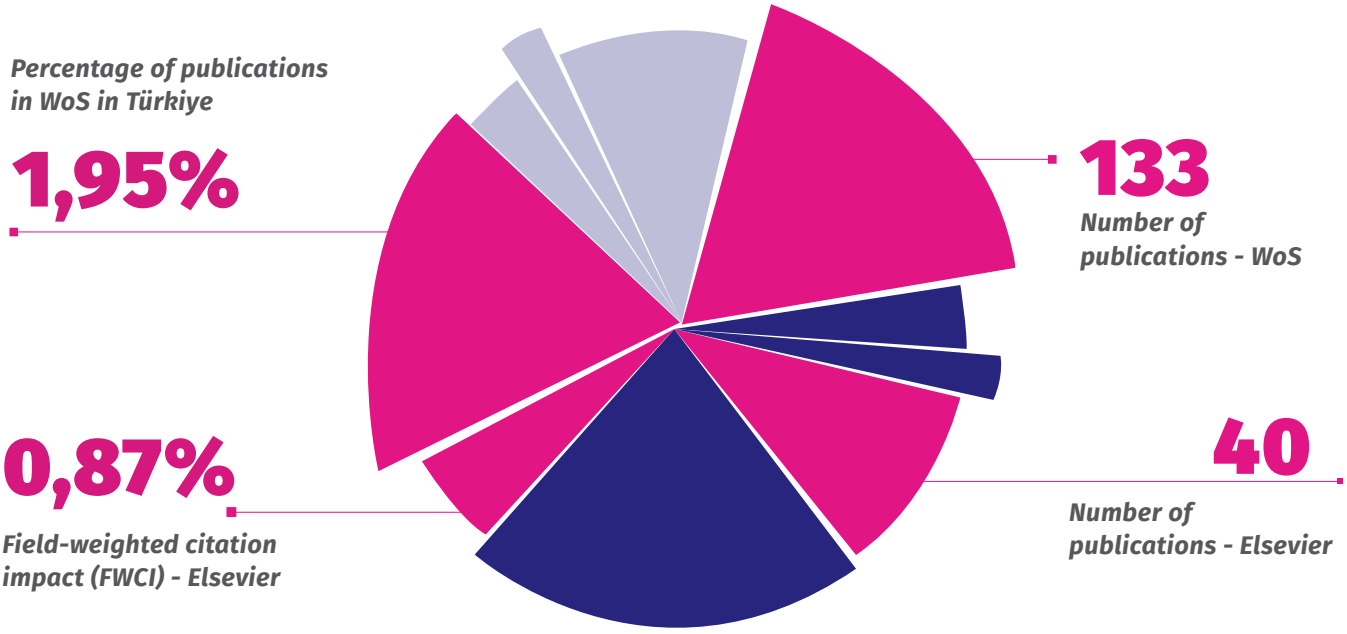
REDUCED INEQUALITIES

10

RESEARCH & DEVELOPMENT

The university is deeply committed to Sustainable Development Goal 10, which focuses on reducing inequalities within and among countries. This commitment is evident in our extensive research endeavors and numerous publications. Our projects are designed to tackle social and economic disparities through innovative and inclusive approaches. YTÜ's publications, indexed in renowned databases such as Web of Science and Elsevier, showcase our dedication to advancing knowledge and practices that promote equality and social inclusion.

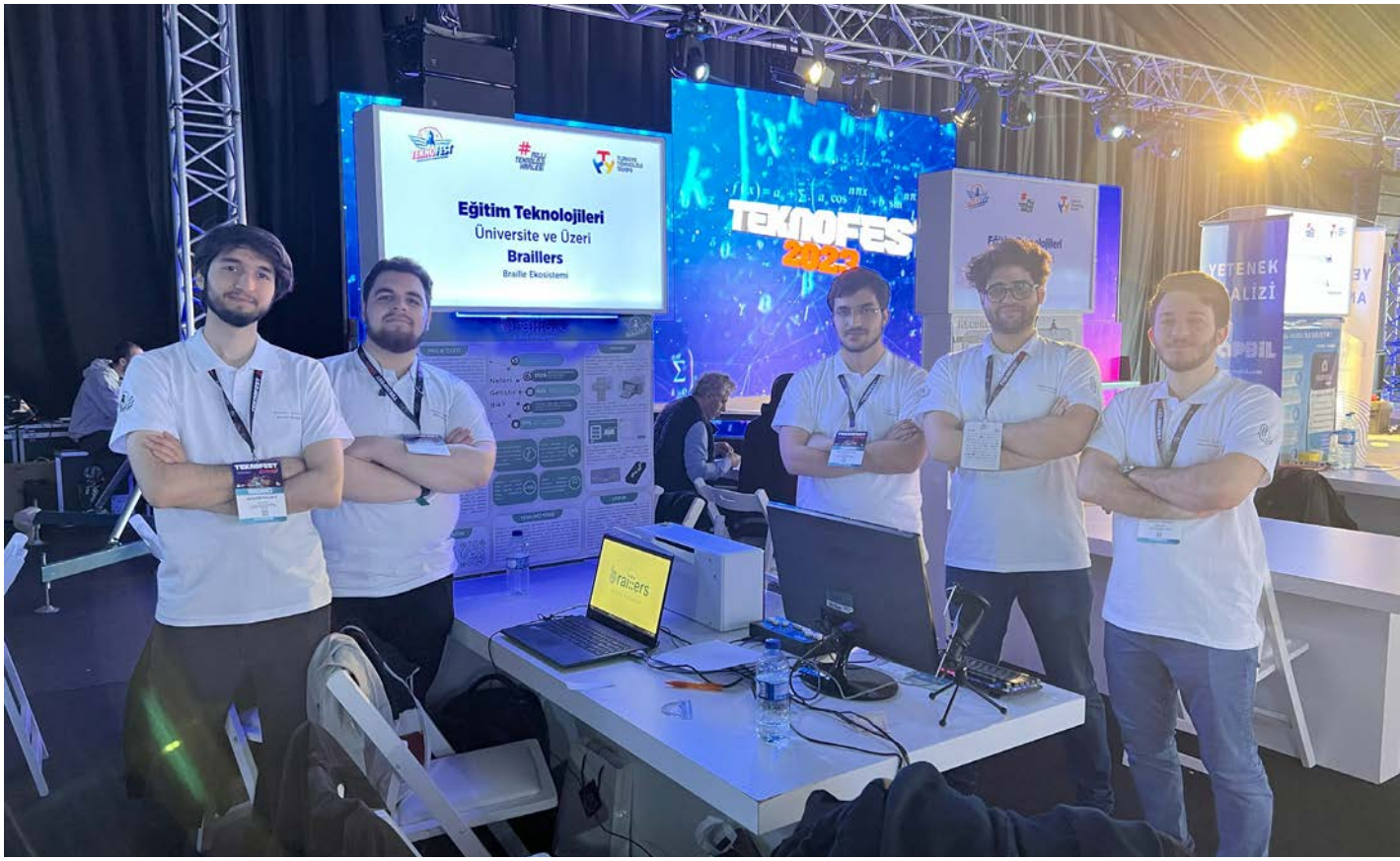
KEY RESEARCH STATISTICS DEDICATED TO SUSTAINABLE DEVELOPMENT GOAL 10: REDUCED INEQUALITIES



SEVERAL HIGHLIGHTS FOR THE SCIENTIFIC RESEARCH PROJECTS IN ACTION DEDICATED TO SUSTAINABEL DEVELOPMENT GOAL 10: REDUCED INEQUALITIES

	Title of the Projects in Action
1.	Social Bond House: The Role of Social Bonds in Adapting Elderly Individuals Displaced by the February 6 Earthquakes to Their New Environments
2.	Improving programming skills of visually impared students
3.	Express Yourself through Digital Storytelling
4.	Strengthening Mental Well-Being in Young Researchers: A Multidimensional Study on Psychological Resilience, Intolerance of Uncertainty, and Future Anxiety
5.	Utilizing Out-of-School Learning Environments for the Integration of International Migrant and Refugee Students

REDUCED INEQUALITIES



Innovating for Inclusion: Empowering the Visually Impaired

At Yildiz Technical University, our cooperative community encourages students to voluntarily take part in inclusive initiatives, exemplified by a dedicated team working on producing innovative products.

Innovating for the Visually Impaired

A dedicated team of Yildiz Technical University students is working on producing innovative products to help blind people learn Braille in a simple and obstacle-free manner. This team has received numerous international accolades, including fourth place in the Technofest competition for Educational Technologies in 2022. Building on their success, the team aims to participate in the Technofest competition for Educational Technologies in 2023, where they plan to present new and innovative educational products that further facilitate the learning process for blind individuals. Their efforts highlight the university's commitment to reducing educational inequalities and promoting accessibility.

Creating Inclusive Communities

Through these student-led initiatives and activities, Yildiz Technical University is making significant strides in reducing inequalities and promoting inclusivity. Our commitment to empowering marginalized groups and creating opportunities for all students to succeed aligns with the principles of SDG 10. By fostering awareness, providing support, and celebrating diversity, we are helping to build a more equitable and inclusive community.

REDUCED INEQUALITIES

10

STUDENTS & ACTIVITIES

Student Club Activities Dedicated towards Reducing Inequalities for the Disadvantaged Groups



World Autism Awareness Day Event by YTU Child and Education Club

The YTÜ Child and Education Club actively promotes awareness about autism, focusing on early diagnosis and understanding its symptoms.

To mark World Autism Awareness Day on April 2, the club organized a series of activities. On March 25, in collaboration with the Tohum Autism Foundation, the club hosted an event to raise awareness about autism, featuring a seminar covering topics such as understanding autism, characteristics of individuals with autism, and effective communication strategies.

The event also included decorating trees with red ribbons to symbolize autism awareness and a seminar held at the Historic Hamam. Participants received certificates of attendance, emphasizing the importance of continuous education and awareness.



Sign Language Training by YTU Child and Education Club

Breaking Barriers with Sign Language: Promoting Communication and Inclusivity

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The YTU Child and Education Club completed its Fall Semester Sign Language Training for the academic year 2023-2024.

This initiative equips students with the skills to communicate with the hearing-impaired community, fostering inclusivity and reducing communication barriers.

Successful participants were congratulated and encouraged to continue using their skills to promote equal opportunities for all.

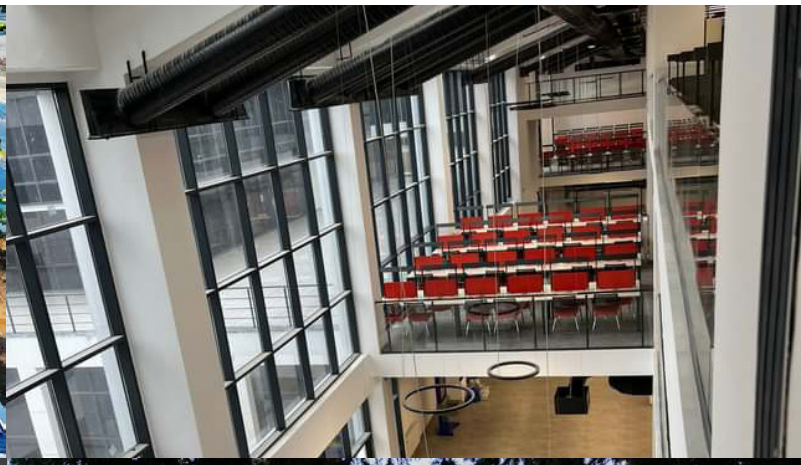
Majority of the students take responsibility towards eliminating inequalities in the community.



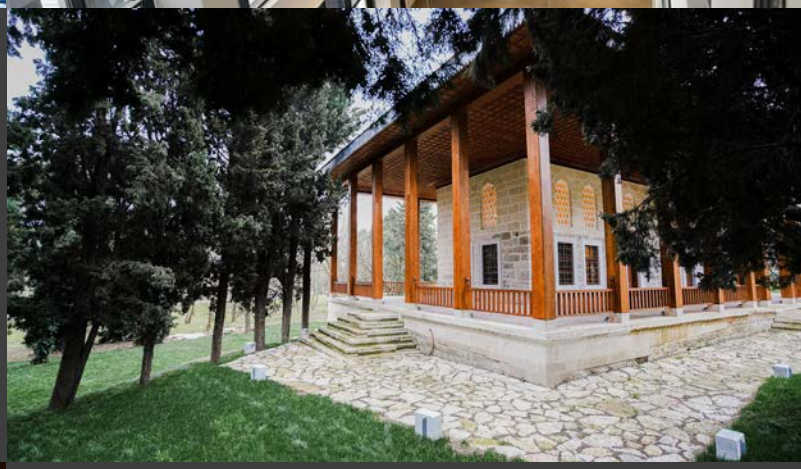
SUSTAINABLE CITIES AND COMMUNITIES

PRIORITIZING SUSTAINABLE MAINTENANCE: BALANCING HISTORICAL AND MODERN ELEMENTS WITH ECOLOGICAL FEATURES





A blend of modern architecture with historical sites





Yildiz Technical University integrates the sustainable restoration of historical sites with the construction of ecologically friendly modern buildings on its campuses. This approach reflects the university's commitment to fostering sustainable cities and communities. By balancing the preservation of cultural heritage with innovative, eco-friendly development, the university ensures that both historical and contemporary elements coexist harmoniously, promoting a sustainable and vibrant campus environment.

SUSTAINABLE CITIES AND COMMUNITIES

11

POLICY & OPERATIONS



CLIMATE CHANGE URBAN SOLUTIONS.

YTU WAS AWARDED HONORABLE MENTION

The university won the Honorable Mention Award in the 'Urban Solutions to Climate Change in the Mediterranean' competition.

The competition featured 80 projects from 12 countries. The ceremony, organized by the Union for the Mediterranean (UFM) and held in Barcelona, honored the innovative urban design solutions developed by YTU students. Dr. Serhat Ulubay, a faculty member from the Architecture Department, delivered the opening speech at the UFM Student Competition on Urban Design 2023. YTU students and alumni, Övgü Resmiye Gülaçar, Ahmet Hakan Uğur, and Gizem Baydı, received their awards from the Turkish Consul General in Barcelona, Selen Evcit. The university showcases its dedication to achieving sustainable development in the international arena as well.

SUSTAINABLE CITIES AND COMMUNITIES

KEY RESEARCH STATISTICS DEDICATED TO SDG11

Yildiz Technical University's commitment to Sustainable Development Goal 11, which focuses on sustainable cities and communities, is reflected in our extensive research and numerous publications. Our projects aim to address urban challenges through innovative and sustainable solutions. The university's publications, indexed in prominent databases such as Web of Science and Elsevier, demonstrate our dedication to advancing knowledge and practices in urban sustainability.

1166
Number of publications - WoS

258
Number of publications Elsevier

18
Number of Scientific Research Projects funded by The Scientific and Technological Research Council of Türkiye

1,05%
Field-weighted citation impact (FWCI) - Elsevier

Number of Scientific Research Projects funded by the University's Sources
53

Percentage of publications in WoS in Türkiye
4,54%

YTU ENVIRONMENT, LANDSCAPING, AND SUSTAINABILITY DIVISION



In response to the future threats of climate change and environmental sustainability, YTU has taken a significant step by establishing the Environment, Landscaping, and Sustainability Division, reinforcing the university's commitment to ensuring sustainable cities and communities.

BLOCKCHAIN AND METAVERSE TECHNOLOGIES RESEARCH CENTER



YTU serves as a dynamic hub for cutting-edge research, development, and application of blockchain and metaverse technologies. Through rigorous inquiry and experimentation, we strive to unlock the full potential of decentralized networks, virtual environments, and digital assets.

RESEARCH CENTER FOR AVIATION SYSTEMS



The newly established Aviation Systems Research Center at YTU is dedicated to advancing research in aviation technologies and improving the safety, efficiency, and sustainability of aviation systems, reflecting our commitment to innovative solutions in transportation and urban infrastructure.

SUSTAINABLE CITIES AND COMMUNITIES

11

RESEARCH & DEVELOPMENT



ADVANCED UAV COMMUNICATION FOR DISASTER RELIEF

The project, titled "Cluster-based Cooperative Massive MIMO-enabled Hybrid MAC Protocol Design for Reliable and Efficient UAV Communication in 5G and Beyond through Artificial Intelligence," aims to enhance the reliability and efficiency of UAV communication in disaster scenarios. The system will facilitate emergency communication to assist rescue operations during relief efforts after earthquakes.

NOTABLE PROJECTS IN ACTION TARGETED AT SDG11

Yildiz Technial University has been advancing urban sustainability through innovative research projects. These include the development of a climate change risk assessment framework for cultural heritage in Turkey, the design of smart buildings responsive to occupants' emotional states, and the improvement of sound source localization technologies for various applications.

LEADERSHIHP IN CULTURAL HERITAGE COMMUNITY

Prof. Dr. Zeynep Gül Ünal, a distinguished member of the Faculty of Architecture, has been elected as the Vice President of ICOMOS International. Her leadership role amplifies YTU's dedication to the preservation and sustainable management of cultural heritage sites. Her involvement with ICOMOS enhances YTU's impact on global efforts to safeguard cultural heritage, making cities and human settlements inclusive, resilient, and sustainable.

SCIENCE HONOR AWARD AND CULTURAL HERITAGE

The university emphasizes its dedication to contributing to sustainable communities by promoting the preservation of cultural heritage. Recently, the "VI. International Özkan Mert Honor Awards" recognized Prof. Dr. Nur Urfalıoğlu from the Faculty of Architecture with the Science Honor Award, awarded based on the UNESCO and Türkiye Ministry of Culture's "Living Human Treasures" criteria.

SUSTAINABLE CITIES AND COMMUNITIES



ROBOTAXI FULL-SCALE AUTONOMOUS VEHICLE COMPETITION

EDUCATIONAL TECHNOLOGIES COMPETITION

Yildiz Technical University students showcased their talents at TEKNOFEST, achieving remarkable success. The YTU AESK team won first place in the Robotaxi Autonomous Vehicle Competition and the International Efficiency Challenge in the Electromobile category.





Additionally, YTU students excelled in the Braillers Education Technology Competition, DroneX International UAV Competition. These achievements highlight YTU's commitment to innovation and sustainable technology development.



INTERNATIONAL UNMANNED AERIAL VEHICLE COMPETITION

SUSTAINABLE CITIES AND COMMUNITIES

11

STUDENTS & ACTIVITIES

Through innovative projects, interdisciplinary collaborations, and active engagement, the university has dedicated itself to fostering a culture of sustainability and resilience.



EARTHQUAKE DOCUMENTARY PRODUCTION

In collaboration with CNNTÜRK, YTU's Civil Engineering Department, led by Prof. Dr. Şükrü Ersoy, produced a documentary on the February 6th earthquakes. This documentary aims to raise awareness and provide insights into earthquake preparedness and resilience, aligning with the goals of SDG 11 to make cities and communities safe and resilient.





ISTANBUL MUSEUM OF MODERN ART COLLABORATION

YTU has established a collaborative partnership with Istanbul Museum of Modern Art, providing students with unique opportunities to engage in artistic and ecological activities that support SDG 11. Throughout the year, students participate in workshops and programs such as the Eco Art Lab, which combines art, nature, and sustainability. The Eco Art Lab encourages participants to create innovative and eco-friendly art and design concepts. This initiative fosters a sense of environmental responsibility and creativity, promoting sustainable practices within urban communities. The collaboration also includes the Studio STEAM program, which explores the intersection of art, biological materials, engineering ideas, and artificial intelligence, fostering a deeper connection between art and nature and enhancing students' understanding of sustainable urban living.

"***Cities have the capability of providing something for everybody, only because, and only when, they are created by everybody.***" - Jane Jacobs

RESPONSIBLE CONSUMPTION AND PRODUCTION

75%
reduction in global warming potential

85%
reduction in mixed household wase

100%
of all waste recycled on campuses

100%
Dedication to SDG12 to the full all over the campus further embeds a sense of sustainability into the campus culture.



315
metric tons of carbon dioxide emissions were prevented. This is the amount that matches the annual CO2 absorbtion power of 14.318 mature trees.

14.318

Through diligent and strategic sustainability initiatives, the university has successfully averted a significant amount of carbon from the atmosphere, testament to the university's unwavering commitment to combating climate change and nurturing a greener future for all.

RESPONSIBLE CONSUMPTION AND PRODUCTION

12

POLICY & OPERATIONS

Yıldız Technical University adheres to the YTU zero waste policies, which are designed to promote sustainable management and effective utilization of natural resources throughout its operations, with a particular focus on procurement processes including purchasing, construction, and service acquisition. The university's zero waste management policies contribute to the UN SDG targets for responsible consumption and production by integrating these practices into the economic cycle. If waste generation is inevitable, the policies prioritize reducing waste output and encouraging reuse.

TARGET GOAL HIGHLIGHTS

1 Implement the 10-year sustainable consumption and production framework

Under Goal 12-1, the university has implemented the 10-year framework for sustainable consumption and production, earning a Zero Waste Certification and an award for the Best Implementation of the Zero Waste System from the Ministry. These accolades recognize their success in minimizing waste emissions.

2 Sustainable management and use of natural resources

YTU has prioritized the sustainable management of natural resources by reusing waste computers and printers, which are repaired and donated to schools, and recycling books and textiles, which are respectively given to primary school libraries and those in need. This initiative not only conserves resources but also serves as a practical example of sustainability in action.

3 Halve global per capita food waste

The university halves food waste per capita by repurposing food waste from dining facilities as dog food on campus and converting other organic wastes into biogas, fertilizer, and compost, the latter of which is used in YTU gardens. Additionally, they demonstrate the transformation of organic waste into compost products using a specialized composting machine.

4 Responsible management of chemicals and waste

Yıldız Technical University upholds rigorous policies for managing chemicals and waste. The university collaborates with local municipalities and waste disposal agencies to enhance the effectiveness of its waste management strategies. These partnerships help manage the safe disposal of hazardous materials and promote community recycling efforts.

5 Substantially reduce waste generation

The university has significantly reduced waste generation through initiatives such as installing water dispensers, promoting digital communication and signatures, and encouraging the use of deposit packaging for various food products. These measures are complemented by efforts to eliminate single-use cups and expand recycling of cardboards, plastics, and cans.

6 Encourage companies to adopt sustainable practices and sustainability reporting

Supporting Goal 12-6, YTU fosters corporate sustainability through its Recycling Test and Research Centre (GETAM), and offers training sessions on zero waste management, corporate sustainability, and integrated reporting to encourage sustainable practices among businesses, which are a part of a broader sustainability strategy.

7 Promote sustainable public procurement practices

Goal 12-7 is advanced by promoting sustainable public procurement practices, including the preference for deposit packaging and compost use, and offering diverse menu options to reduce food waste. These strategies underscore YTU's commitment to fostering sustainable procurement and minimizing environmental impact in its operational decisions.

8 Promote universal understanding of sustainable lifestyles

Finally, under Goal 12-8, YTU enhances awareness of sustainable lifestyles through initiatives like collecting blue caps for charity, distributing eco-friendly promotional products, and organizing activities with the YTU Environment Club to raise awareness about zero waste practices. These efforts effectively promote environmental consciousness among students and staff.

RESPONSIBLE CONSUMPTION AND PRODUCTION

PROJECT HIGHLIGHTS FROM 2023 WITH A FOCUS ON SDG12

1	New Aggregation-Induced Emission-Active Chiral Liquid Crystal Materials: Investigation of Synthesis, Mesomorphic, Photophysical and Electro-Optical Properties
2	Production and Performance Evaluation of Lime Based Injection Materials Containing Cellulose Nano Crystals and Fiber Obtained from Domestic Agricultural Waste
3	Investigation of Mechanical and Durability Behaviors of Metazeolite-Based Recycled Aggregate Geopolymer Composites
4	Investigation of Electrical Curing Potential of Teos-Activated Slag-Fly Ash Based Geopolymer Composites Containing Different Fibers
5	Development of High-Performance Flexible Type Asymmetric Supercapacitors Without Using Binders with Materials Recycled from Industrial and Organic Wastes
6	Production of Chemical Additives from Waste Blood for Lime Based Injection Material and Mortar
7	Production of 3D Tissue Scaffolds Using Additive Manufacturing Methods from Bioactive Glass Doped Polymers

RESEARCH GROUPS FOCUSING ON SDG12 AT YILDIZ TECHNICAL UNIVERSITY

ADVANCED FUNCTIONAL MATERIALS RESEARCH GROUP

WASTE RECYCLING RESEARCH GROUP

ADVANCED MATERIALS RESEARCH GROUP

MICROPLASTIC RESEARCH TEAM

GLASS RESEARCH GROUP

ADVANCED POLYMERIC MATERIALS AND SENSORS RESEARCH GROUP

RESPONSIBLE CONSUMPTION AND PRODUCTION

12

RESEARCH & DEVELOPMENT

1,36

Field-weigted citation impact (FWCI) Elsevier

5,28%

Percentage of publications in WoS in Türkiye

174

Number of publications Elsevier

499

Number of Publications - WoS



ECO-SPHERE

The YTU Environmental Engineering Department is leading the “Circular Economy for Sustainable Earth Spheres (ECOSPHERE)” project, supported by a €3.27 million grant from the Horizon Europe MSCA-COFUND program. This project is one of the top three national initiatives, offering scholarships to 24 postdoctoral researchers over 24 months. They will address crucial environmental challenges by promoting collaboration, creativity, and innovation. Research focuses include sustainable product design, resource efficiency, eco-design, energy solutions, water and waste management, material recovery, economic policy, climate adaptation, and sustainable business models.

Horizon Europe Fund

3.27M

Postdoctoral Researchers

24

Detailed Information

RESPONSIBLE CONSUMPTION AND PRODUCTION

2023 was the year our campus thrived on the vibrant energy of student-led initiatives. We have also enjoyed fostering sustainable future through student engagement. This section features the profound impact of our students in the pursuit of SDG12.

Environment Festival'23 and World Environment Day

Throughout the festival, the club hosted an array of captivating workshops designed to educate and inspire action among students and faculty alike. These activities were aimed at embedding environmental consciousness into the fabric of university life, contributing to a global movement towards a more sustainable future.





GreenStartUps'23 and workshops on sustainabilit

The second annual Green StartUps'23 convened on December 15th, embracing the theme "Reviving Nature with Innovation." This gathering connected sponsors, distinguished speakers, and participants with the pioneers of green entrepreneurship. Participants enjoyed sustainable and environmentally considerate solutions.

Plastic bottle cap collection campaign

The YTU Chemical Technologies Student Club launched an initiative to combat the use of disposable plastics by collecting bottle caps to support the Turkish Spinal Cord Paralytics Association's wheelchair fund. Their Plastic Cap Collection Campaign, a resounding success with over 10,000 caps to aid in procuring wheelchairs.





STUDENTS & ACTIVITIES

RESPONSIBLE CONSUMPTION AND PRODUCTION

12

SUSTAIN, ENGAGE, INSPIRE: OUR STUDENTS IN ACTION



Compost workshop on International Day of Zero Waste

On International Day of Zero Waste, the YTU Environment Club hosted a Compost Workshop, highlighting organic waste minimization. Students engaged in planting rosemary seedlings in compost from YTU's own facilities, while a deposit machine efficiently collected plastic bottles and cans.

Soap making from waste vegetable oils

Within the scope of an educational workshop focused on sustainable practices, participants engaged in the practical application of recycling waste vegetable oils. The participants utilized collected oils to synthesize soap. This exercise served as a hands-on demonstration of converting waste products into usable commodities.







Bracelet making from plastic waste

Environment Festival'23 featured an array of workshops, including a notable Bracelet Making Workshop. Led by Işıl Ergincan, founder of Plastic Lab, and her team, participants transformed plastic waste into creative and wearable art, showcasing innovative approaches to recycling and sustainable living.



CLIMATE CHANGE ACTION PLAN

Yildiz Technical University published a "Climate Change Action Plan" outlining the investments and changes needed to achieve its carbon reduction targets. The plan includes science-based targets to ensure that the university sources all its energy from renewable sources by 2030 and achieves net zero emissions by 2050. This comprehensive plan not only addresses immediate environmental impacts but also sets a long-term vision for sustainable growth and resilience against climate change. The actions are classified under six main headings:

- **Building Efficiency:** Enhancing the energy efficiency of campus buildings.
- **Transport Emissions:** Reducing transport emissions through the use of alternative clean energy sources such as solar and wind power.
- **Energy Emissions:** Implementing renewable energy solutions to reduce overall energy emissions.
- **Awareness and Education:** Educating individuals about climate change and providing access to alternative options.
- **Certification and Incentives:** Encouraging research and application areas through certification and incentives for firms.
- **Green Campus Initiatives:** Increasing green spaces on and off-campus and engaging in tree planting activities.

POLICY & OPERATIONS

Carbon Emissions and Net Zero Target

0

The amount of carbon emissions targeted by the year 2050

26%

The amount of reduction in transport emissions in 2023

100%

The amount of clean energy used on university campuses by 2030

26%

The amount reduction in total emissions per person in 2023

Energy Efficiency and Climate Change

The increasing energy demand proportional to the world's population is still largely met by fossil fuels. However, environmental pollution caused by the use and depletion of fossil resources has led to a search for new and clean energy sources. Our university, with its academic and administrative efforts, supports this philosophy that the whole world is moving towards. Within the scope of the projects carried out, the designs of the buildings in our university have been developed to minimize energy consumption, and energy-efficient appliances are preferred where the use of electricity-consuming appliances is required. Energy consumption is monitored throughout the campus and electronic equipment is replaced with new generation versions consuming lower energy during renovation and maintenance works. The most basic example of this is the natural lighting windows designed to maximize the use of daylight in the buildings. The use of LED lighting is supported in all buildings across the campus during dark hours. At the same time, energy consumption is minimized with smart systems such as automatic doors and automatic lighting systems in many buildings. A similar situation exists for ventilation systems. Thanks to the building designs, air flow can be realized in a healthy way, but at points where temperature control and natural ventilation are insufficient, air-conditioning systems with high energy efficiency "inverter" technology are used. Computers and printers, which are among the most frequently used electronic devices on campus, have the Energy-Star certificate, which is an energy saving standard and shows that the product consumes 20-30% less energy than expected. Also, net zero carbon emissions are targeted for 2050.

CLIMATE ACTION



KEY RESEARCH

The university is contributing to the development of sustainable solutions and advancing scientific knowledge in the field of climate action, by focusing on carbon capture, CO_2 conversion and renewable energy.

Key Research Statistics

666
Number of publications - WoS

1,25%
Field-weighted citation impact (FWCI) - Elsevier

3,12%
Percentage of publication in WoS in Türkiye

163
Number of publications - Elsevier

Using Food Waste for Carbon Dioxide Capture

This project explores the use of food waste, specifically eggshells, to develop materials for carbon dioxide capture. Unlike traditional chemical solvents, the use of a solid adsorbent on a solid surface for CO_2 capture offers easier application, lower energy requirements, and applicability in various processes. This project aims to synthesize a layered material from eggshells, which will be combined with different polymers to create composites. These composites will be evaluated for their performance in capturing CO_2. This research contributes to the Green Deal Action Plan by reducing emissions and promoting the recycling of food waste.

RESEARCH & DEVELOPMENT



Through innovative research projects, Yildiz Technical University aims to develop sustainable solutions to mitigate climate change and enhance resilience, driving practical applications to combat climate change.

Assessing Renewable Energy Potential under Changing Climate Conditions

Renewable energy sources are crucial in mitigating the impacts of climate change. This project, led by Prof. Dr. Berna Ayat Aydogan from the Department of Civil Engineering, aims to investigate the potential changes in wind and wave energy in the Black Sea and Mediterranean regions due to climate change. Using the latest generation of climate models known as CMIP6, the project will analyze the spatial, temporal, and seasonal characteristics of these renewable energy sources under different climate scenarios. This research will provide valuable insights into the sustainability and resilience of renewable energy sources in the face of changing climate conditions.

Conversion of Carbon Dioxide into Valuable Chemicals

The effective use of captured CO_2 is becoming increasingly important. This TUBITAK-supported project investigates the direct catalytic hydrogenation of industrial flue gas mixtures with boron-hydrogen compounds to convert CO_2 into valuable fuels and raw materials used in the production of plastics and other chemicals. The project will explore the efficiency of using boron compounds as a hydrogen source, focusing on the selection of appropriate catalysts and reaction conditions to maximize CO_2 capture and conversion efficiency. This research aligns with the Green Deal's goals of reducing emissions and promoting the use of sustainable raw materials.

CLIMATE ACTION

"Sustainable Living: Hands-on Learning at the Environmental Festival"

The festival provided a unique opportunity for students to engage in hands-on learning experiences focused on sustainable living, featuring interactive workshops where participants learned to make soap and detergent from waste oil, create jewelry from recycled plastic, and grow their own food.

These activities aimed to instill practical skills and promote sustainable habits among students, emphasizing the importance of reducing waste and conserving resources. By collaborating with environmentally conscious individuals, institutions, and organizations, the festival fostered a community dedicated to sustainability and greener future.

The Environmental Festival 2023

The Yildiz Technical University Environmental Club aims to raise awareness and provide comprehensive solutions to issues at the intersection of industry, social life, and the environment. The 2023 Environmental Festival brought together environmentally conscious individuals, institutions, and organizations with students. The event included activities designed to instill sustainable living habits, such as clothing swaps and workshops on making soap and detergent from waste oil, creating jewelry from plastic, and growing your own food. These hands-on workshops provided practical skills and knowledge for sustainable living.



STUDENTS & ACTIVITIES



Climate Change and Sustainability Summit

The Yildiz Technical University Food Club organized the 2nd Climate Change and Sustainability Summit, focusing on the challenges of climate change and sustainability in the context of the food industry. The event featured presentations from industry leaders on topics such as net-zero greenhouse gas emission targets, green growth investments, and sustainable production systems. Discussions highlighted how the food industry can play a significant role in combating climate change and achieving sustainability goals. The summit emphasized the collective effort and responsibility required to address global threats and promote sustainable practices.

"Leading the Way: Food Industry's Role in Combating Climate Change"

The summit highlighted the critical role of the food industry in leading efforts to combat climate change through sustainable practices and innovative solutions.

LIFE BELOW WATER



RESTORATION PROJECTS AIM TO ENHANCE WATER QUALITY, SUPPORT AQUATIC BIODIVERSITY, AND ENSURE THE SUSTAINABILITY OF THESE ECOSYSTEMS

The university has implemented measures to clean and restore the ponds, creating a healthier environment for aquatic life. This includes removing pollutants, managing vegetation, and monitoring water quality.Efforts have been made to support the diversity of aquatic life by introducing native plant species and providing habitats for various aquatic organisms. This helps maintain a balanced ecosystem and promotes the proliferation of native species.

POLICY & OPERATIONS



Community Engagement Yildiz Technical University is actively engaging students, staff, and the local community in conservation activities. Educational programs and awareness campaigns are conducted to highlight the importance of aquatic ecosystems and the need for their protection.

01

Effective water management policies and procedures

The university has a strict policy of implementing efficient water management practices to reduce wastage and ensure the sustainable use of water resources.

This includes using water-saving technologies, such as drip irrigation and automated water systems, and promoting water conservation among the university community. Rainwater harvesting systems have been installed to capture and utilize rainwater, reducing the demand on local water supplies and minimizing runoff. These initiatives reflect the university's commitment to the principles of SDG 14 and the broader goal of ensuring a sustainable campus environment. By fostering a culture of sustainability and environmental stewardship, we aim to inspire future generations to protect and cherish our planet's precious aquatic resources by caring about the environment and the community around them.

02

Pollution control measures and reducing wastewater

Policies aimed at reducing pollution from various sources have been introduced, including runoff and waste discharge, to protect water quality in ponds and other water bodies.

The university has established strict guidelines for waste disposal and uses environmentally friendly cleaning agents to minimize chemical pollution. Regular monitoring and testing of water quality are conducted to detect and address pollution sources promptly.

YTU is committed to developing infrastructure that supports sustainable practices. Green roofs and permeable surfaces are incorporated into campus buildings to reduce runoff and improve water infiltration. Solar panels and energy-efficient systems are used to minimize the environmental footprint of our facilities.

03

Protecting habitat and biodiversity on campus settings

Protecting and enhancing habitats for aquatic life is a key aspect of our sustainability efforts. Buffer zones of native vegetation are maintained around ponds to filter pollutants and provide shelter for wildlife. Efforts are made to control invasive species and restore native plant communities, which are crucial for the health of the aquatic ecosystem.

As part of our efforts to conserve the natural water cycle and aquatic habitats on our campuses, we have undertaken various initiatives to restore and maintain the biodiversity of our ponds and other water bodies. These initiatives are in line with the United Nations Sustainable Development Goal 14 (SDG 14), which aims to "conserve and sustainably use the oceans, seas and marine resources for sustainable development."

LIFE BELOW WATER

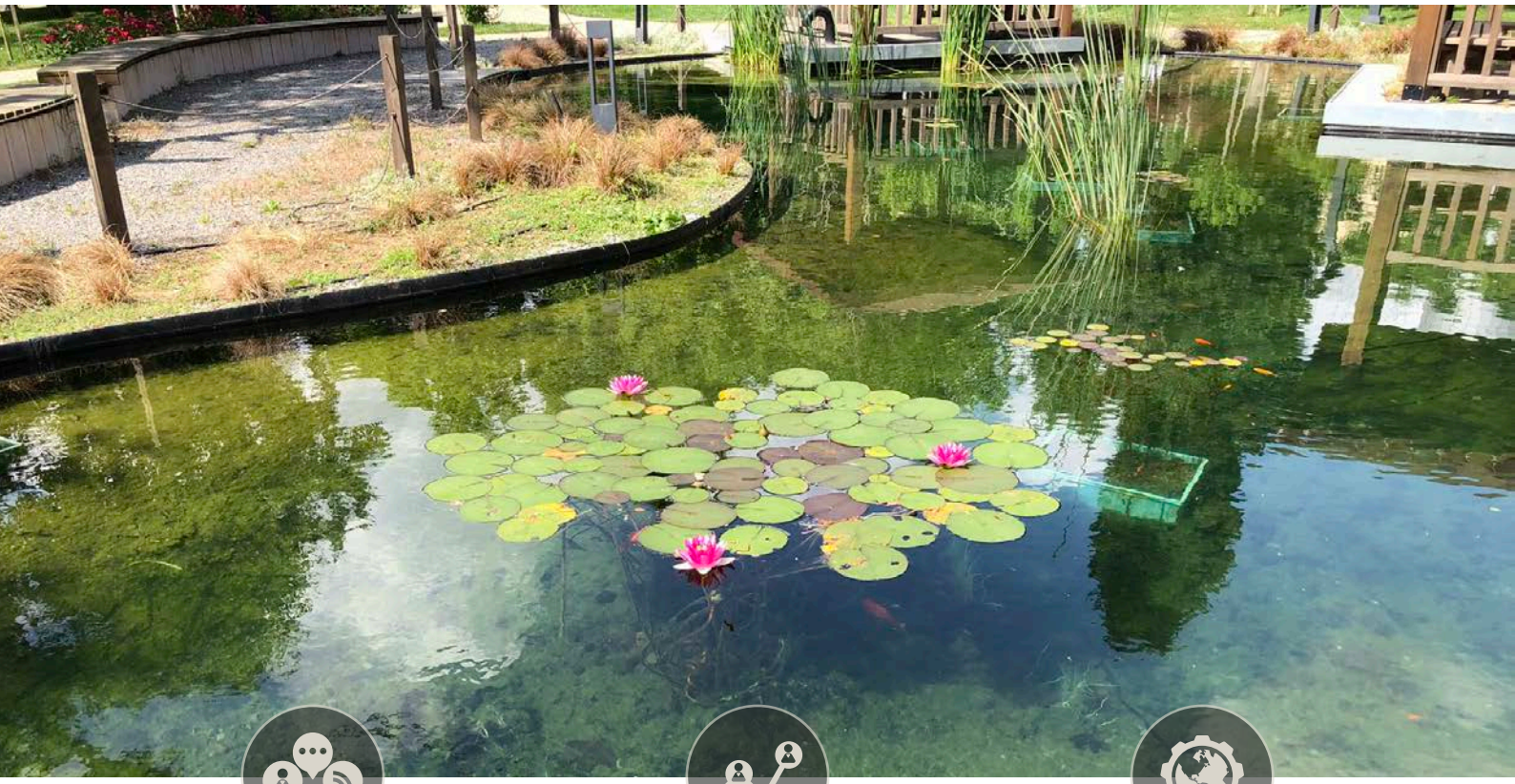
KEY RESEARCH SDG14

227
Number of publications WoS

1,03%
Field-weighted citation impact (FWCI) - Elsevier

3,51%
Percentage of publications in WoS in Türkiye

51
Number of publications Elsevier



Global climate change, sea level rise, extreme events and local ground subsidence effects in coastal and river delta regions through novel and integrated remote sensing approaches (GREENISH Projects)

The GREENISH project addresses critical aspects of SDG 14 by focusing on coastal and river delta regions' resilience to climate change and anthropogenic impacts. Coastal zones are vital for socio-economic well-being and are particularly vulnerable to sea-level rise (SLR) and extreme events. The combined effects of SLR, tidal changes, and extreme weather pose significant risks to public/private infrastructures, cultural/natural heritage, and agriculture. By using advanced remote sensing methods, GREENISH aims to monitor and analyze these impacts, providing essential data to mitigate risks and improve resilience. The project focuses on areas in Europe and China, such as the Yangtze and Pearl river deltas, and the city of Istanbul. The goal is to integrate Earth Observation data and in-situ monitoring to study ground deformation, urban changes, and coastal erosion. The research outcomes will contribute to sustainable water management and the protection of aquatic ecosystems, aligning with SDG 14's objectives to conserve and sustainably use marine resources. By fostering new methodologies and training young scientists, GREENISH aims to develop innovative solutions to safeguard life below water.

LIFE BELOW WATER

14

RESEARCH & DEVELOPMENT

Water Research

Advancing solutions to protect and sustain aquatic ecosystems at Yildiz Technical University

Research and development (R&D) play a crucial role in understanding and addressing the challenges facing aquatic ecosystems. At Yildiz Technical University (YTÜ), we are committed to advancing knowledge and developing innovative solutions to protect life below water. Our research efforts focus on mitigating the impacts of climate change, pollution, and human activities on marine and freshwater environments.

We undertake diverse projects, from investigating global climate change and sea-level rise to studying the effects of microplastic pollution and developing advanced water purification methods. Projects like GREENISH focus on coastal and river delta regions' resilience to climate change and anthropogenic impacts. Other significant endeavors include exploring the effects of microplastics in the Antarctic marine ecosystem and assessing hydrogeological risks in urban coastal areas.

These efforts not only aim to protect and restore aquatic ecosystems but also contribute to sustainable water management practices.

Through the integration of Earth Observation data, remote sensing techniques, and in-situ monitoring, our research aims to provide critical insights and practical solutions. By fostering new methodologies and training the next generation of scientists, we strive to advance the goals of SDG 14: Life Below Water. Our work is supported by various international collaborations and funding sources, reflecting a global commitment to preserving aquatic life.

The collective impact of these initiatives drives our dedication to creating a sustainable and resilient future for all aquatic environments.

Scientific Reserch Projects Dedicated to SDG 14: Life Below Water

1	Investigation of the Effect of Operational Parameters on the Removal of Pharmaceutical Pollutants from Water by Photochemical Oxidation Processes
2	Study on the Removal of Common Endocrine Disrupting Micropollutants by Anodic Oxidation Process: Cases of Estrone and Fluoxetine
3	Investigation of Catalytic Reduction Activities of Alginate-Based Spherical Composites in the Removal of Organic Pollutants and Application in Continuous Flow Reactor Systems
4	Study on the Removal Conditions of Certain Heavy Metals from Aqueous Solutions by Activated Bentonite
5	Investigation of the Removability of Various Micropollutants by Adsorption Process
6	Automatic Detection of Coastlines and Glacier Classes Based on Deep Learning: Example of Marguerite Bay, Antarctica
7	Impact of Microplastic Pollution in the Antarctic Marine Ecosystem: Case Study of Horseshoe Island
8	Design and Fabrication of a New Microfluidic Platform for Isolating Microalgae from Mixed Microorganism Populations Obtained from Polar Regions
9	Evaluation of the Theoretical and Usable Current Energy Potential of the Bosphorus under Climate Change Scenarios

> **JOHN C. SAWHILL**
>
> IN THE END, OUR SOCIETY WILL BE DEFINED NOT ONLY BY WHAT WE CREATE, BUT BY WHAT WE REFUSE TO DESTROY

LIFE BELOW WATER

At Yildiz Technical University, engaging students in activities that promote the conservation and sustainable use of aquatic resources is a priority. By fostering awareness and providing hands-on experiences, we aim to empower the next generation of environmental stewards. Our programs and projects are designed to inspire students to take an active role in protecting aquatic ecosystems,



SHORT COURSE/ CONFERENCE ON APPLIED COASTAL RESEARCH (SCACR 2023)



The 2023 event brought together experts, researchers, and students to discuss the latest advancements in coastal research, with critical issues related to coastal erosion, sea-level rise, and the impact of climate change on coastal zones. The conference provided an invaluable opportunity for students to learn from leading scientists and engage in discussions on coastal management strategies.

APPLIED SHORT COURSE

During the conference, also a short course is provided to the participants from all over the world.



LIFE BELOW WATER

14

STUDENTS & ACTIVITIES

The kick-off meeting marked the official start of the project, bringing together all partners to discuss project goals, strategies, and implementation plans. The meeting set the stage for collaborative efforts aimed at enhancing ocean literacy and promoting sustainable practices across Europe.







SHORE

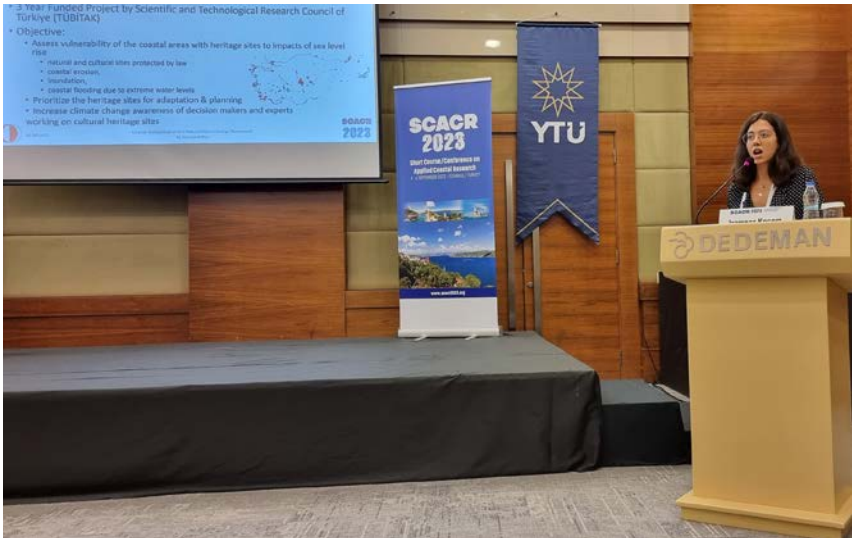
SHORE: EmpOweR Students as the agents of changE

OPENING MEETING

The project is aimed at fostering a culture of conservation and sustainability among future generations.

ABOUT SCACR

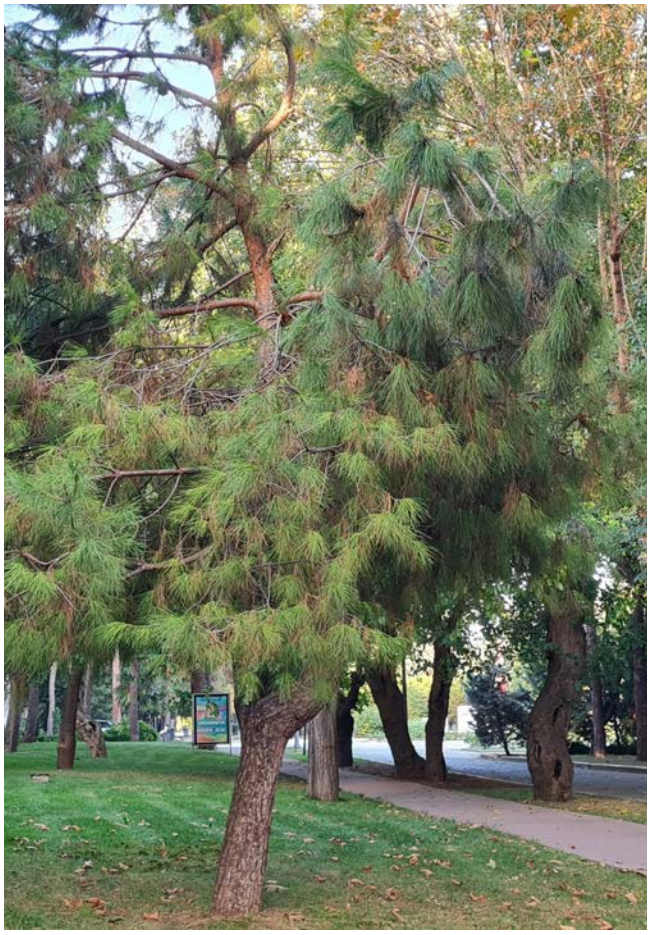
The SCACR brings together MSc and Ph.D. students, field and lab experimentalists, theoreticians and modelers in the field of coastal and port engineering. The aim of the SCACR events is to provide all participants with information on the latest developments from both scientific and engineering perspectives in coastal, port and offshore engineering and to exchange views with users and stake holders of the coastal zone.



The impacts of climate change along with water quality and remedial actions were among the main topics discussed during the conference.

LIFE ON LAND

The 2022-2050 Climate Change Action Plan makes specific references to conserving natural life, soil, water, air, flora, and fauna along with biodiversity areas.



BIODIVERSITY PRELIMINARY ACTIONS REPORT

The university has published an extensive Biodiversity Report, which highlights the diverse range of flora and fauna present on our campuses. This report is intended to provide a current status of the biodiversity elements on the university's campuses and to list preliminary actions toward protecting biodiversity and preventing its loss.

Acknowledging the imminent global threat to biodiversity and emphasizing the need to protect it on campuses, this report forms a cornerstone of our sustainable campus work and smart green campus approach. Detailed analysis of the ecological roles and interactions of various species have been emphasized in the report.

Comprehensive listings and descriptions of plant and animal species found on YTU campuses, emphasizing the rich biodiversity and unique species that contribute to the ecological balance. The report includes an extensive framework to build an understanding of campus biodiversity, which serves as a benchmark of sustainable development.

ENVIRONMENT, LANDSCAPING, AND SUSTAINABILITY DIVISION

In a major step towards sustainable transformation, YTÜ has established the Environment, Landscaping, and Sustainability Division. The university ensures that all campus activities are conducted in a manner that prevents negative impacts on the environment and human health, by developing its activities within the framework of the Sustainability Policy, and adhering to principles of environmental, social, and economic sustainability.

Through this human-centered, scientific, technological, and social approach, Yildiz Technical University is advancing towards becoming a globally leading university in sustainability.



LIFE ON LAND

15

POLICY & OPERATIONS

The university goes out of its way to ensure blooming with sustainability, enhancing campus beauty and biodiversity and to plant the seeds for a greener future. To achieve this, the university annually organizes tree-planting events, where campus residents become a part of the initiatives.



Rose Planting at the New Library Garden

Blooming with Sustainability: Enhancing Campus Beauty and Biodiversity

In collaboration with the YTÜ SDG Student Hub and the University's Environment, Landscaping, and Sustainability Division, rose saplings were planted in the garden of the new library. This initiative aims to beautify the campus while promoting environmental sustainability.

The rose garden is expected to bloom magnificently in the spring, providing a serene and aesthetically pleasing environment for students and staff. This project not only enhances the campus landscape but also serves as a living example of sustainable horticultural practices.



Rose Planting at the New Library Garden

Planting the Seeds for a Greener Future

In Beykoz Poyrazköy, the students and staff participated in a tree planting event to establish the YTU Memorial Forest. This initiative highlights our dedication to creating a greener and more sustainable environment.

Tree planting is a crucial activity that contributes to combating climate change, enhancing air quality, and providing habitat for wildlife. By involving the university community in these efforts, we foster a sense of responsibility and active participation in environmental stewardship. By doing so, the university creates carbon sink areas throughout the city.

KEY RESEARCH STATISTICS

149

Number of publications WoS

30

Number of publications Elsevier

0,96%

Field-weighted citation impact (FWCI) Elsevier

1,29%

Percentage of publications in WoS in Türkiye

RESEARCH & DEVELOPMENT

LIFE ON LAND

15

KEY PROJECT HIGHLIGHTS

AgriPV system with climate, water and light spectrum control for safe, healthier and improved crops production

PV4Plants boosts the energy-agricultural synergy of agriPV technologies to enhance growth conditions and increase land-use efficiency, crop yield and renewable energy generation. This is achieved by optimising the light transmission of PV panels through cutting edge nanoparticles spraying on the PV glass surface. PV4Plants system is specifically designed to meet healthy harvesting and to be adaptable to different climatic conditions and crop varieties that will be demonstrated in 3 highly replicable demo sites in Turkey, Spain and Denmark. PV4Plants optimises the system parameters (panels tilt, irrigation level, amount of fertilisers, etc) based on a multi-indicator real-time monitoring system that allows a continuous improvement of the microclimate underneath the agriPV panels to increase crop health and yield.

Recyclability and reutilization of components and materials both for the manufacturing and End of Life of the PV4Plants system are central aspects of the project. The PV4Plants system will be certificated through the Environmental Product Declaration (EPD), compliance with ISO 14021 and the Sustainability Excellence Label by UNEF. Finally, PV4Plants will boost its market penetration and uptake through innovative farmers' engagement strategies to enhance their acceptance and trust in innovative agriPV systems; new financing schemes and business models to improve investment performance and through a set of policy recommendations that will be developed together with public authorities to create new mechanism designed to accelerate the uptake of agriPV systems in Europe.



83%
Funding

€4.907.018,75
TOTAL COST

€4.079.701,00
EU CONTRIBUTION

LIFE ON LAND

Through these student-led initiatives and activities, Yildiz Technical University demonstrates its commitment to SDG 15: Life on Land. By promoting sustainable agricultural practices, biodiversity conservation, and environmental education, Yildiz Technical University students play a crucial role in fostering a sustainable future. These efforts reflect the university's dedication to environmental sustainability and its mission to lead by example in sustainable development.



Sharing for Sustainability: Reducing Waste through Barter Festivals

As part of the Environmental Festival '23, the Environmental Club invited participants to the Barter Festival under the motto "We Share, We Don't Consume." Attendees brought usable items such as accessories, books, and clothing to exchange for different items of interest, promoting the principles of reuse and sustainable consumption, fostering a culture of sharing and sustainability as well as encouraging waste reduction habits.

Sustaining the Future: From Innovation to Action

Under the theme "Sustain for the Future," the Sustainability Summit '23 focused on the 17 Sustainable Development Goals (SDGs) set by the United Nations, aiming for achievement by 2030. The summit addressed solutions to social, cultural, and ecological issues, featuring examples and discussions on climate change, net-zero targets, sustainable innovation, and restorative systems, with the current practices on campus.

Leading with Green Initiatives: Insights from Industry Experts

YTU Environmental Club organized the Green Sector event, focusing on green growth, environmental sustainability, climate crisis mitigation, and circular economy. Industry leaders shared their approaches and experiences, providing valuable insights for students pursuing careers in environmental engineering as well as for students from all the departments at the university raising awareness for campus residents.

LIFE ON LAND

15

STUDENTS & ACTIVITIES

The students' achievements highlights the university's superiority







1 Best StartUp Award in Agricultural Technologies TARBAS achieved the first place in the Agricultural Technologies Pre-Incubation Category in TEKNOFEST with an innovative device for soil analysis and a mobile application that provides solutions based on the analyzed data. This project aims to enhance sustainability and productivity in agriculture by offering precise soil management solutions, thereby supporting the sustainable use of land resources.

2 Biodiversity Camp in Kaz Dağı National Park

In collaboration with South Aegan Development Agency and YTU Biotechnology and Genetics Student Club, the students organized a biodiversity camp in the Kazdağları, one of the areas with the highest oxygen levels in the world. The camp, at Troltunga Camping Area, featured expert-led observations of endemic species and biodiversity. Participants had the opportunity to learn extensively and engage in discussions with experienced travelers and guests.

3 Best StartUp Award in Agricultural Technologies

Another YTU student initiative won first place in the Agricultural Technologies Pre-Incubation Category with their vertical farming project. This project focuses on maximizing land use efficiency and promoting sustainable urban agriculture practices and addresses the challenges of limited arable land and urbanization by providing a sustainable solution that optimizes space and resource use emphasizing YTU's superiority in fostering innovative solutions that align with global sustainability goals.

PEACE, JUSTICE AND STRONG INSTITUTIONS

Yildiz Technical University is committed to fostering a peaceful, just, and inclusive society. Through various policies and initiatives, the university aims to promote strong institutions, transparency, accountability, and inclusive decision-making processes. These efforts align with SDG 16: Peace, Justice, and Strong Institutions, reflecting our dedication to creating a safe and equitable environment for all members of the university community. Participation in management is a key element of effective governance and democratization at YTU.



Inclusive Governance

Yildiz Technical University (YTÜ) is committed to fostering a peaceful, just, and inclusive society by promoting strong institutions and inclusive decision-making

Yildiz Technical University constantly provides regular in-service training for administrative staff to ensure the continuity of a strong institutional culture. Training topics include quality education, cybersecurity, social media awareness, official correspondence procedures, public procurement law and management, and the student information system.
By prioritizing strategic alignment, the university's human resources policy focuses on efficiency and human-centric principles. It aims to create an infrastructure aligned with the institution's strategic goals, enhancing job satisfaction, intrinsic motivation, and organizational commitment among staff. The constant focus on transperancy and integratiy ensures fairness.

Yildiz Technical University adheres to strict ethical principles in all its academic, administrative, and service activities. he university ensures that these principles are governed by strict regulations.

- These principles include respect for human rights and freedoms, honesty, integrity, transparency, non-discrimination, and sensitivity to the environment and animal rights.

- The Ethics Committee ensures compliance with these principles, fostering a culture of ethical behavior and accountability within the university. The committee has been a symbol of upholding integrity and transparency.

PEACE, JUSTICE AND STRONG INSTITUTIONS

16

POLICY & OPERATIONS

The Psychological Harassment (Mobbing) Prevention Committeeregulate procedures for reporting incidents, handling complaints, and providing support processes to those affected. It organizes in-service training programs to raise awareness and prevent occurrences.

Psychological Harassment Prevention Committee has been put together regulating the procedures for reporting, handling complaints, providing support processes, and organizing in-service training programs related to psychological harassment, ensuring a safe and respectful environment for all members of the university community.

The university's recently established "Community Club" organizes event series that bring together academics, students, alumni, and entrepreneurs.

- The community club acts as a platform where the stakeholders come together to discuss the present and future of science and technology and to find common solutions to global problems.

- Another key aspect of ensuring inclusive governance is to seek opinions from internal stakeholders as well as from external stakeholders such as alumni, industrial partners, field experts, etc.



Human-Centered Approach

Yildiz Technical University's commitment to SDG 16: Peace, Justice, and Strong Institutions is evident through its comprehensive policies and proactive initiatives. By promoting inclusive governance, upholding ethical standards, providing continuous training, and engaging the community, YTÜ is taking significant steps towards fostering a just and peaceful society, creating a safe and equitable environment.

Social Contribution Policy

YTÜ aims to become an innovation-focused university that effectively uses natural resources, promotes societal welfare, and enhances scientific development without compromising the quality of its educational environment. This human-centered approach aligns with the philosophy of living in harmony with nature.

PEACE, JUSTICE AND STRONG INSTITUTIONS

Employee Experience Journey: The Impact on Employee Engagement and Happiness (Subjective Well-Being)



Step I - Onboarding:

Streamline the onboarding process to ensure new employees feel welcomed and prepared.

Step II - Continuous Engagement:

Foster continuous communication and engagement to build strong employee relationships.

Step III - Evaluation and Feedback:

Implement regular performance evaluations through various mechanisms and provide constructive feedback.

Step IV - Recognition and Reward:

Develop automated systems for recognizing and rewarding valuable employee contributions.

Step V - Career Development:

Offer opportunities for career growth and development.

Step VI - Exit Process:

Ensure a smooth exit process for departing employees, capturing feedback to improve future employee experiences.

Sustainable Development Goals - SDG16

RESEARCH & DEVELOPMENT

PEACE, JUSTICE AND STRONG INSTITUTIONS

16



Key Research Statistics

Elsevier

0.76%

Field-weighted citation impact (FWCI)

Elsevier

27

Number of publications

Web of Science

42

Number of publications

Web of Science

2.23%

Percentage of publications in Türkiye

Key Research Projects dedicated to Sustainable Development Goal 16

1.	Cooperation for Integration under Financial Inclusion of Current Refugees and Newcomers
2.	Creating Value through Integrated Reporting in Higher Education Institutions: The YTU Example
3.	Employee Experience Journey: The Impact on Employee Engagement and Happiness (Subjective Well-Being)
4.	The Mediating Role of Green Human Resources Management and Environmental Corporate Social Responsibility in the Relationship Between Green Organizational Culture and Organizational Attractiveness

PEACE, JUSTICE AND STRONG INSTITUTIONS

The university's active promotion of student involvement in governance and policy-making fosters a culture of participation and mutual respect, essential for sustaining strong institutions.

The university's focus on continuous improvement and responsiveness to student feedback ensures that YTÜ remains a leading institution in promoting strong, accountable, and inclusive educational practices.

"Access to Justice from the perspective of the Sustainable Development Goal 16: Peace, Justice and Strong Institutions" Seminar at the Sustainability Summit'23

One of the key discussions during the seminar centered around the barriers that marginalized communities face in accessing justice. These barriers include lack of awareness of legal rights, financial constraints, and systemic biases within the legal system. The seminar highlighted the need for comprehensive legal aid services and community-based legal education programs to bridge these gaps.

This seminar provided a platform for discussing the challenges and opportunities associated with ensuring equitable access to justice for all individuals, regardless of their socio-economic background.

Furthermore, the seminar explored the role of technology and innovation in enhancing access to justice. Participants discussed how digital platforms and tools can streamline legal processes, provide remote legal assistance, and increase transparency within the judicial system.

The integration of technology in legal services not only improves efficiency but also makes justice more accessible to those in remote or underserved areas. This aligns with SDG 16's goal of building effective, accountable, and inclusive institutions that serve the needs of all people.

By bringing together experts, academics, students, and practitioners, the seminar emphasized the importance of strong legal frameworks and effective institutions in promoting justice and equality.



PEACE, JUSTICE AND STRONG INSTITUTIONS

16

STUDENTS & ACTIVITIES



Yildiz Technical University (YTÜ) has been recognized for its commitment to student satisfaction, placing 2nd in Türkiye among all universities according to a research study conducted by the independent agency, University Assessments and Research Center.

This achievement reflects YTÜ's dedication to fostering a supportive and inclusive educational environment where students' voices are heard and valued. Ensuring that students are satisfied with their university experience is a key component of building strong and resilient institutions. The university is entitled to the following achievement grade of the level of the ability to meet students's expectations.

A+

By prioritizing student satisfaction, YTÜ demonstrates its commitment to transparent and accountable governance within the university. The high ranking in student satisfaction is a testament to the university's effective management practices, ethical standards, and inclusive decision-making processes.

These efforts contribute to creating a just and equitable academic environment where students can thrive and succeed, further promoting peace and justice within the university.

Collaborations aimed at Sustainability



Advancing Aviation: Strategic Collaboration

Yildiz Technical University has deepened its collaboration with Turkish Aerospace Industry, a leading aviation company in Türkiye. With the signing of an agreement with Helicopter Deputy General Manager Mehmet Demiroğlu, the Turkish Aerospace Industry YTU TechnoPark Campus will become the Unmanned Helicopter Design Center.

This partnership aims to advance the development and deployment of unmanned aerial technologies.

By focusing on the production of Unmanned Aerial Vehicles, this collaboration contributes to a more sustainable future. UAVs can be used in various applications such as environmental monitoring, disaster management, and precision agriculture, all of which support sustainable practices. The development of UAV technology at YTÜ Technopark aligns with SDG 17 by promoting innovation and technology transfer through strategic partnerships, ultimately fostering economic growth and sustainable development.

Vision

By partnering with national and international institutions, Yildiz Technical University is enhancing its capacity to drive sustainable development and foster global cooperation.

Mission

The collaboration with TUSAŞ on UAV production exemplifies how strategic partnerships can lead to technological advancements that support environmental monitoring, disaster management, and precision agriculture, thereby contributing to a more sustainable future.
These efforts highlight the university's dedication to building a sustainable future through effective and inclusive partnerships. Strategic planning conference was organized with the vision of clarifying our strategic position in the global ecosystem by embracing diversity, multiculturalism, and sustainability in research, innovation, technology transfer, and education through international interaction, mobility, and cooperation.

POLICY & OPERATIONS

Interinstitutional Development

The University's dedication to fostering strong and impactful partnerships:

Through collaborative initiatives with national and international institutions, YTU aims to enhance the global partnership for sustainable development.

Yildiz Technical University's commitment to SDG 17: Partnerships for the Goals is demonstrated through its diverse and strategic collaborations.

Entrepreneurship Webinars

In collaboration with International House Tampere, the university has organized a series of webinars aimed at providing opportunities for entrepreneurs.

Kabataş Erkek High School Cooperation

The collaboration involves visiting the school, participating in their classes, and formalizing a partnership aimed at enhancing the quality of education.

Strategic Planning Conference

Yildiz Technical University has defined its 'Internationalization Strategy' to enhance its global presence and impact. During the Internationalization Strategy Search Conference, valuable insights and strategic action plans were developed with contributions from the academic and administrative staff, as well as students. This strategy aims to promote international collaboration, student and staff mobility, and cross-cultural exchange.
After the conference and workshops involved, Internationalization Strategy Search Conference Report has ben prepared, published online and distributed to the relevant existing and prospective partners in the field.



PARTNERSHIPS FOR THE GOALS

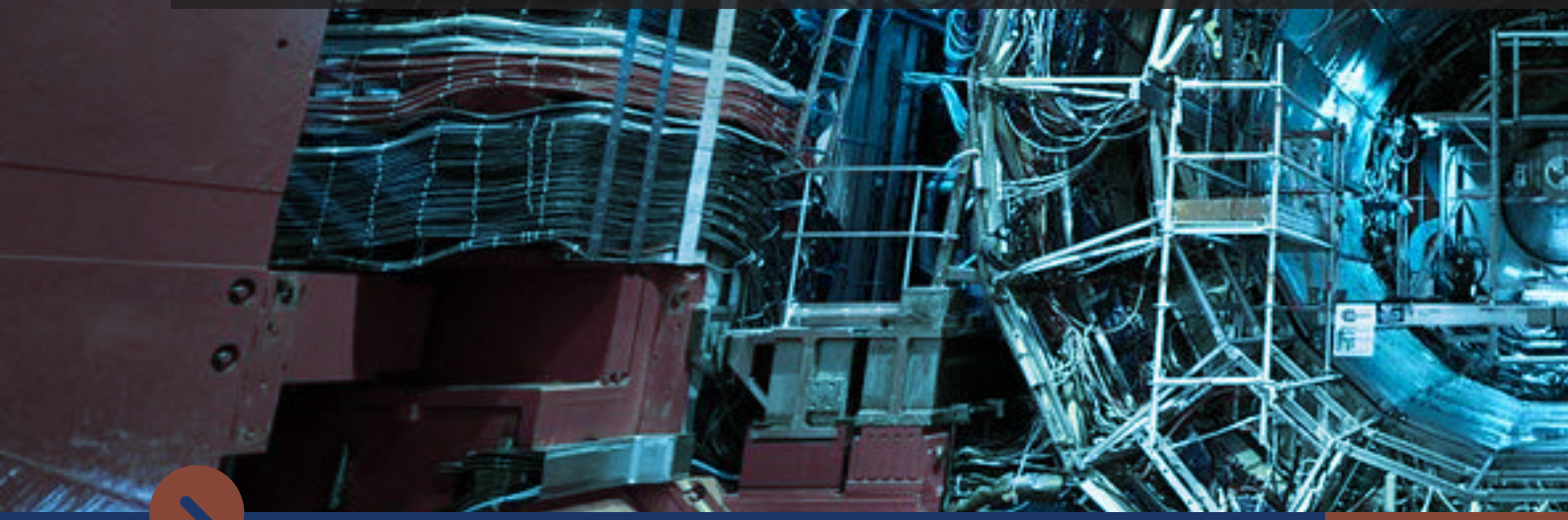
key research statistics & highlights

Sustainability Reporting in Businesses: A Study on Companies Listed in the BIST100 Index

This project, led by YTÜ researchers, examines how companies listed in the BIST100 index report on their sustainability practices. The study aims to identify best practices and gaps in sustainability reporting, providing insights that can help businesses improve their contributions to sustainable development. By analyzing the sustainability reports of leading companies, the project seeks to promote transparency and accountability in corporate sustainability efforts.

1695

Number of publications Elsevier



Yildiz Technical University continues to lead in the field of scientific research as the only university from Türkiye accepted into the ALICE experiment at the European Organization for Nuclear Research (CERN). In this groundbreaking project, YTU students have the unique opportunity to work on the ALICE experiment, striving to uncover the origins of the universe. By traveling to CERN, students can engage directly with the experiment, gaining invaluable experience and contributing to a global scientific endeavor. This collaboration not only enhances the university's research capabilities but also strengthens international scientific partnerships, by always seeking to advance research and development that supports the achievement of sustainable development goals and a greener tomorrow.

RESEARCH & DEVELOPMENT

PARTNERSHIPS FOR THE GOALS

17



YTÜ YILDIZ TECHNICAL UNIVERSITY

CERN ALICE Experiment; the university aims to foster a revitalized global partnership for sustainable development.

PARTNERSHIPS FOR THE GOALS

Activities

Key Initiatives



PARTNERSHIPS FOR THE GOALS

17

STUDENTS & ACTIVITIES

By promoting international academic cooperation, interdisciplinary innovation, industry partnerships, and community support, YTÜ students play a crucial role in fostering global partnerships for sustainable development. These efforts reflect the university's dedication to creating a sustainable and inclusive future through effective and collaborative actions. These activities not only contribute to the students' personal and professional development but also embody the university's vision of fostering a global network of dedicated partnerships that drive and inspire continuous sustainable development, as a result of the combination of academic excellence, innovative research, and community involvement.



Collaborating for a sustainable, greener, and inclusive future together at YTU.

Our commitment to collaboration ensures that we collectively address the world's most pressing challenges with innovative and inclusive solutions. Through strategic alliances with academic institutions, industries, and communities worldwide, we aim to enhance knowledge exchange, and develop sustainable technologies and practices.

Innovative Research Culture at Istanbul Modern Art Museum

The university's innovative research culture is enriched by events held at the inspiring new building of the Istanbul Modern Art Museum, designed by Renzo Piano. The students participate in guided tours, seminars, workshops, and educational programs at the museum, enhancing their interdisciplinary journeys. The collaboration between YTU and Istanbul Modern Art Museum includes programs such as Studio STEAM, which focuses on the relationship between art, biological materials, engineering ideas, and artificial intelligence. Additionally, the Eco Art Lab aims to create new meanings in nature through art, fostering creative and deep connections with the environment. These initiatives reflect YTU's commitment to interdisciplinary collaboration and cultural exchange, promoting sustainable development.

Arçelik and the Department of Mechanical Engineering Collaboration

YTU's Mechanical Engineering Department has established a cutting-edge research laboratory in collaboration with Arçelik, one of Türkiye's leading companies in home appliances and consumer electronics. This partnership is a testament to the university's commitment to fostering innovation through strategic industry-academic collaborations. The laboratory provides students and academics with the opportunity to engage in advanced research projects, focusing on the development of sustainable technologies and innovative engineering solutions. The partnership also emphasizes the importance of innovation in addressing global challenges such as climate change and resource depletion.

The "Teachers Standing by Us" Project by the Faculty of Arts and Sciences

In response to the devastating earthquakes that affected 11 provinces in Türkiye, Yildiz Technical University launched the "Teachers Standing by Us" project to support students in disaster-affected areas. Volunteer teachers offered interactive lessons, including subject explanations, problem-solving sessions, and study workshops. Additionally, the university prepared and sent stationery supplies to students and provided online psychological support to volunteer teachers to help them better serve their students, fostering partnerships and collaborative efforts for sustainable development.

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