

6 CLEAN WATER AND SANITATION



NUMBER OF
PUBLICATIONS & THESES

4



NUMBER OF
PROJECTS

0



NUMBER OF
EVENTS

0



NUMBER OF
COURSES OFFERED

3



NUMBER OF
COLLABORATIONS

1



NUMBER OF
AWARDS

0

SDG 6 CLEAN WATER AND SANITATION

Ensure availability and sustainable management of water and sanitation for all

Targets and Indicators

6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all

6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations

6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally

6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity

6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate

6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

6.a By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies

6. b Support and strengthen the participation of local communities in improving water and sanitation management

Courses, Theses, Publications

On October 14, 2021, TEDU's University Senate made a commitment to pursue the Sustainable Development Goals (SDGs) to enhance awareness of these issues both at the university and in the local community.



Civil Engineering Design Course: As part of TED University's commitment to SDG 6: Clean Water and Sanitation, the Civil Engineering Design course integrates real-world applications into its curriculum through comprehensive capstone design projects. In the Fall Semester of 2024, senior students from the Department of Civil Engineering undertook the design of a wastewater collection and treatment system for a coastal city in Türkiye. The project included the full design of a wastewater collection network and the preliminary design of a treatment facility, addressing both infrastructure efficiency and environmental protection. Through this applied learning experience, students not only gained technical expertise in hydraulic and environmental engineering but also advanced the university's mission to prepare engineers capable of designing sustainable, water-resilient, and environmentally responsible systems.

Theses

Graduate Thesis on Microplastic Pollution: In 2024, the thesis entitled as "Computational investigation of drag and settling behavior of micro-meso plastic particles" was completed in TED University. The thesis focused on the numerical analysis of the drag coefficient and settling velocity of plastic particles. Settling velocity is an important key parameter in the performance of the numerical modeling of pollutant transport. It has been shown that plastic litter constitutes almost 70% of the litter pollution in the world's waters (rivers, lakes, groundwater and oceans). Plastics have entered the food chain made their way up to higher trophic levels, and hence to human body. It is shown that nano-plastics exist in the pericardial gland. Modelling studies shows us the accumulation areas of plastics, therefore enhancing the quality classification water areas, contributing valuable data to support the sustainable protection of the water environments. This thesis directly supports Target 6.3 of SDG 6, which aims to "improve water quality by reducing pollution, eliminating dumping, and minimizing the

release of hazardous chemicals and materials." Through advanced modeling and data-driven analysis, the research enhances understanding of plastic pollution dynamics and strengthens scientific capacity for clean water management and restoration efforts.

Events - Activities

No events and activities took place regarding this SDG.

Collaborations, Projects, Awards

Sustainable Water Consumption Initiative: TED University has collaborated with Arçelik A.Ş., a global leader in home appliances and sustainable innovation, operating in 58 countries, with 46 production facilities across 14 nations and 22 international brands (including *Beko*, *Grundig*, *Blomberg*, *Leisure*, and *Singer*). Arçelik integrates sustainability as a core business strategy, emphasizing environmental stewardship and resource efficiency throughout its global operations. Within the scope of this collaboration, TED University and Arçelik jointly launched an initiative to eliminate single-use plastic bottles on campus. As part of the project, Arçelik water dispensers were installed across common study areas and food courts, enabling the university community to access clean, filtered water without the need for disposable bottles. This initiative directly supports Target 6.3 of SDG 6: Clean Water and Sanitation, which aims to "improve water quality by reducing pollution, eliminating dumping, and minimizing the release of hazardous materials." By promoting reusable alternatives and reducing plastic waste generation, this partnership demonstrates how academic-industry collaboration can advance sustainable water management and environmental protection.

BORIS2 Project-Cross Border Risk Assessment: TED University's Department of Civil Engineering serves as an active stakeholder in the international project "BORIS2 – Cross BOrder RISk Assessment for Increased Prevention and Preparedness



in Europe: Way Forward.” The project is funded by the European Commission under the Union Civil Protection Mechanism (UCPM) program, which supports enhanced disaster risk management and resilience across Europe. The central goal of BORIS2 is to develop a shared, transnational methodology for assessing cross-border risks related to earthquakes and floods. By integrating scientific modeling, data sharing, and coordinated response strategies, the project seeks to strengthen collective risk prevention and preparedness mechanisms among participating countries. This initiative directly supports Target 6.5 of SDG 6: Clean Water and Sanitation, which calls for the “*implementation of integrated water resources management at all levels, including through transboundary cooperation as appropriate.*” Through its contribution to flood risk assessment and integrated water management, TED University plays a vital role in advancing international cooperation, resilient infrastructure planning, and sustainable disaster preparedness across borders.

TÜBİTAK Project on Microplastic Settling Behavior: The project titled “*Investigation of Settling Velocity for Regular and Irregular Shaped Microplastics by Experimental, Numerical, and Deep Learning Methods,*” funded by TÜBİTAK (The Scientific and Technological Research Council of Türkiye), focuses on understanding the settling velocity and behavior of microplastic particles across various polymer types. The study employs a hybrid methodological approach that integrates experimental analysis, numerical modeling, and deep learning techniques to improve the accuracy of predictions related to particle movement in aquatic environments.

By advancing knowledge on how different forms of microplastics behave in water systems, the project provides critical data for pollution modeling, risk assessment, and water quality improvement. Through its innovative use of data-driven modeling and scientific experimentation, the project contributes to global efforts to monitor,

mitigate, and prevent microplastic contamination, reinforcing TED University’s commitment to sustainable water resource management and environmental protection.

Campus

Water obtained from groundwater is used to irrigate the landscape areas on our campus (See Image 1).



Image 1. Water Irrigation Shed

Mains water is used in wet areas in all physical areas except the landscape areas on our campus (See Image 2).



Image 2. Water Irrigation System

The plumbing infrastructure in our campus has been constructed in full compliance with health and environmental safety standards (See Image 3). The clean water and wastewater systems are completely independent of each other. In addition to the independent wastewater system, the



university maintains a regular inspection and maintenance plan to ensure wastewater is treated in compliance with environmental regulations before discharge. While the clean water line carries potable and domestic water suitable for use, the wastewater line ensures that used water is safely discharged without causing harm to the environment.



Image 3. Plumbing Infrastructure for Wastewater

A total of 44 purified water dispensers have been installed across our campus at locations that are easily accessible to users (See Image 4). Thanks to these dispensers, all members of our community can freely access clean drinking water.



Image 4. Purified Water Dispensers

In this way, we provide free drinking water to our staff, students, and visitors while also minimizing plastic waste generation. Moreover, this initiative has achieved a 45% reduction in water costs.



Image 5. Purified Water Dispensers (2)

Every six months, water samples are collected from four different dispensers on campus and sent to the Ankara Public Health Laboratory for analysis. The samples are examined based on 12 different parameters, and the results are reported. The analysis reports are shared with all members of our community. In addition, all dispenser filters are regularly replaced every six months to ensure continuous water quality and hygiene.

Under the contractual agreement with **Arçelik Pazarlama A.Ş.**, the maintenance of water dispensers on the campus is performed on a monthly basis. The contract is effective for a duration of two years. Across our university, 70% of the faucets in wet areas are equipped with sensor-operated systems (150 out of a total of 214 faucets) (See Image 6). These sensor faucets automatically detect hand movement and release water only when needed, thereby preventing unnecessary water waste and promoting the efficient use of water resources.



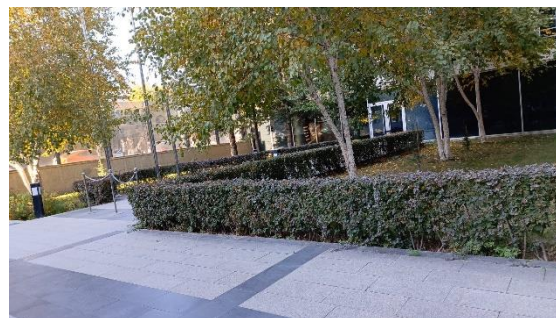
Image 6. Faucet Systems to Save Water

In addition, all of our sensor faucets are fitted with aerators (perlators) that regulate water flow and reduce overall consumption without compromising user comfort (See Image 7). By mixing water with air, these devices help achieve up to 30% water savings while maintaining consistent pressure and performance.

**Image 7.** Faucet Systems with Aerators

Through these implementations, our university actively contributes to the protection of natural resources and supports its sustainability and environmental conservation goals.

In our campus, drought-resistant plant species are preferred in landscaping areas, particularly during the summer months, in order to minimize water usage and contribute to the conservation of natural resources (See Image 8). This approach allows our green spaces to maintain their visual appeal throughout the year while significantly reducing overall water consumption.

**Image 8.** Drought-resistant Plant

Additionally, the garden irrigation system is equipped with timed sprinklers and rain sensors, which ensure that watering takes place only when necessary and in optimal amounts (See Image 9). The rain sensors automatically deactivate the system during periods of sufficient rainfall, thereby preventing unnecessary water use, while the timers enable irrigation to occur during the most efficient hours of the day (early morning or evening), minimizing water loss due to evaporation.

Across the campus, long-lasting, climate-adapted, and low-water-demand plants are preferred over short-lived seasonal species. This sustainable landscaping practice not only reduces maintenance costs but also reflects our university's commitment to environmental responsibility and the efficient use of natural resources.

**Image 9.** Garden Design with Drought-resistant Plants

The irrigation needs of the landscaped areas on our campus are met using water sourced from natural groundwater reserves (Image



10). This practice helps reduce dependence on the municipal water supply and contributes to the conservation of potable water resources.



Image 10. Garden Design with Drought-resistant Plants 2

Through this approach, our university aims to establish a campus model that respects ecological balance and promotes responsible resource use. The efficient and balanced utilization of groundwater constitutes an important part of our sustainability vision.

Our university organized a “[Sustainable World Exhibition](#)” to raise environmental awareness and promote sustainable living practices. The exhibition was held between July 16 and August 4, featuring various training sessions and educational activities focused particularly on water management and efficient water use (See Image 11 and Image 12). During the events organized for local communities, participants received information on effective water management practices, water conservation methods, and the importance of protecting natural resources. Through this initiative, both university members and the surrounding community strengthened their awareness of sustainable water use, contributing to the development of a broader sense of environmental responsibility across society.



Image 11. Event from Sustainable World Exhibition



Image 12. Sustainable World Exhibition Members from TEDU

Within our campus, natural groundwater resources are extracted through drilling (well) systems and utilized for various operational purposes (See Image 13). The extracted water is primarily used for landscape irrigation, technical system support, and certain cleaning activities. This practice helps reduce dependence on the municipal water supply while promoting the sustainable use of natural water resources. The groundwater obtained through drilling is regularly monitored and tested to ensure compliance with environmental and quality standards. In this way, the university ensures the efficient management of water resources and the responsible use of groundwater without compromising the ecological balance.



Image 13. Drilling (well) Systems

In order to contribute to water and energy saving for our future, to adapt to changing climate conditions, to use resources effectively, with high quality and efficiently, and to adopt sustainability activities, many activities and technical studies are carried out in the academic and administrative processes of our University. In order to use water, which is the basic source of life, economically, and to protect the environment and nature, the measures stated below are closely followed in accordance with the articles of the guide located at <https://www.suverimliligi.gov.tr/yayinlar/>, which includes higher education campuses (See Image 14).



Image 14. Directions for Free and Drinkable Water

The monthly consumption amount of water used on the campus is calculated in m³ and cost analysis calculations are made in the form of graphical tables.

At TEDU, efforts to ensure the efficient and effective use of water resources and to raise awareness on this matter are ongoing. One of the key sustainability practices implemented at our university is the Zero Waste Program,

which has been in place for several years and is based on the principle of on-site waste segregation and collection. In this context, personnel responsible for waste collection receive regular training, and the necessary equipment for waste separation and collection continues to be available throughout the campus. In addition, online information sessions are periodically organized to inform campus users about the scope and objectives of the program (See Image 15).



Image 15. Seminar Poster for Community Training on Sustainability

To enhance awareness among campus users regarding sustainability and the zero waste initiative, informative posters and visual materials have been prepared and are regularly displayed on digital information screens and bulletin boards across the campus.

In addition to waste segregation and recycling, awareness campaigns and short training sessions are organized to encourage students and staff to adopt water-saving habits, such as responsible faucet use and reporting leaks promptly. These activities



reinforce the university's commitment to promoting conscious water use on campus.

Student Communities and Ongoing Activities at TEDU

At our university, various student communities actively carry out initiatives aimed at promoting sustainability and raising environmental awareness.

a. Sustainable Environment Community:

The TEDU Sustainable Environment Community is a student organization dedicated to fostering awareness and responsibility regarding the environment, nature, and all living beings. The community seeks to adopt and internalize the concept of environmental sustainability as a lifestyle and to contribute to the resolution of contemporary environmental issues—both at the individual and collective levels.

Guided by the belief that humanity is not superior to nature but rather an inseparable part of it, the community aims to transform humanity's destructive impact on the environment into a constructive and restorative one. This perspective offers individuals an opportunity to add a meaningful and purposeful dimension to their lives.

In line with this mission, the TEDU Sustainable Environment Community continues to organize various activities, seminars, and awareness campaigns to share and spread this consciousness among individuals within and beyond the university.

b. Sustainable Development Solutions Network (SDSN):

The Sustainable Development Solutions Network (SDSN) is a global network that brings together universities, research centers, think tanks, civil society organizations, and the business sector from around the world. Established as a United Nations initiative, the network aims to foster collaboration among stakeholders to develop and implement solutions that advance the Sustainable Development Goals (SDGs).

TED University contributes to this global effort by taking part in the SDSN network, encouraging active participation from its students, academics, and research groups. Through knowledge sharing, innovative ideas, and collaborative projects, the university supports the development and dissemination of sustainable solutions at both local and international levels.

