



2022
Sustainability Report
SDG6





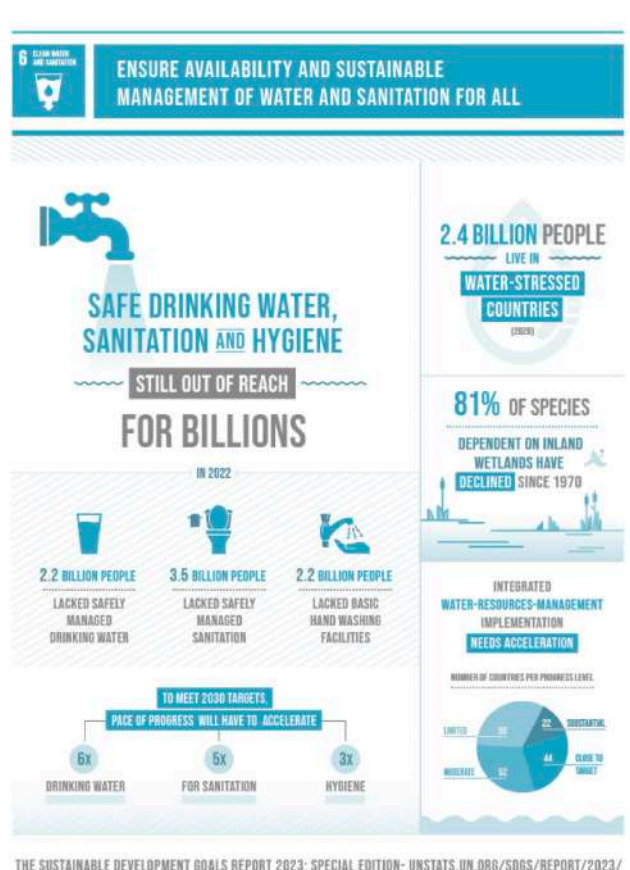
SUSTAINABLE DEVELOPMENT GOALS

6 CLEAN WATER AND SANITATION



SDG6: Clean Water and Sanitation

SDG 6 aims to **ensure availability and sustainable management of water and sanitation for all**. Access to safe water, sanitation and hygiene is the most basic human need for health and well-being. Billions of people will lack access to these basic services in 2030 unless the level of progress quadruples. Demand for water is rising owing to rapid population growth, urbanization and increasing water needs from agriculture, industry and energy sectors. Decades of misuse, poor management, overextraction of groundwater and contamination of freshwater supplies have exacerbated water stress. In addition, countries are facing growing challenges linked to degraded water-related ecosystems, water scarcity caused by climate change, underinvestment in water and sanitation and insufficient cooperation in the area of transboundary waters.



Between 2015 and 2020, the population using safely managed drinking water services increased from 70 per cent to 74 per cent, the population with safely managed sanitation increased from 47 per cent to 54 per cent and the population with access to handwashing facilities with soap and water in the home increased from 67 per cent to 71 per cent. Rates of progress for these basic services would need to quadruple for universal coverage to be reached by 2030.

Assessment of rivers, lakes and aquifers in 97 countries in 2020 shows that 60 per cent of water bodies assessed have good water quality. Of the 76,000 water bodies that were reported on in 2020, only 1 per cent were from the poorest countries. For at least 3 billion people, the quality of the water they rely upon is unknown owing to a lack of monitoring.

Water use efficiency worldwide rose from \$17.4 per cubic metre in 2015 to \$19.4 per cubic metre in 2019, which represents a 12 per cent efficiency increase. About 57 per cent of countries presented a water use efficiency equivalent to \$20 per cubic metre or less in 2019.

Across the world, water stress levels remained safe at 18.6 per cent in 2019, although this hides large regional variations. Southern Asia and Central Asia registered high levels of water stress at over 75 per cent, whereas Northern Africa registered a critical water stress level of over 100 per cent. Since 2015, water stress levels have increased significantly in Western Asia and Northern Africa.

To ensure a sustainable and equitable distribution of water to meet domestic, industrial, agricultural and environmental needs, the average global rate of implementation of improved management of water resources – from 49 in 2017 to 54 in 2020 – needs urgently to double. With political will and adequate financing, 22 countries made significant gains between 2017 and 2020, showing that real and rapid progress is possible and providing tangible examples for the 107 countries that need to significantly accelerate implementation.

Transboundary rivers, lakes and aquifers are shared by 153 countries around the world. Ensuring that these waters are managed equitably, sustainably and peacefully, particularly in the context of climate change, requires countries to put in place operational arrangements for water cooperation. Data from 2017 and 2020 suggest slow progress, with only 32 countries having 90 per cent or more of their transboundary waters covered by such arrangements.

Over the past 300 years, wetland ecosystems have experienced an 85 per cent loss in extent despite the very high value goods and services that they provide. Additionally, the extent of surface water bodies, including lakes, rivers and reservoirs, is rapidly changing across the entire planet, with one in five river basins experiencing high – above natural – fluctuations in surface water during the last five years. E/2022/55 22-06472 13/25 Population growth, changes to land cover and land use and climate change are key drivers of these changes to freshwater ecosystems.

AGU POLICIES AND PRACTICES

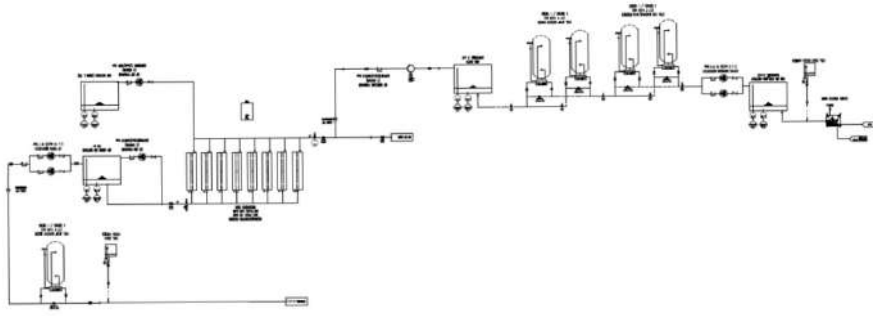
Life fails to exist without water. All living beings depend on it. Water supports our agriculture and aquaculture. Clean water is vital. People die every year from diseases associated with inadequate water supply, sanitation, and hygiene. Therefore, Abdullah Gül University (AGU) gives utmost importance to sanitation, hygiene, and adequate access to clean water. AGU's water-saving measures include a grey water treatment cycle, water-saving photocell faucets (automated via movement detection), and using available underground wells for the irrigation of the AGU campus green areas.

AGU was founded as the new Socio-Technical University Model in order to lead and integrate “Environmental and Social Impact” into the larger higher education agenda. AGU ecosystem is comprised of international, national, and local collaborations with organizations such as United Nations High Commissioner for Refugees (UN-CHR), United Nations Development Programme (UNDP), UN Academic Impact, SDG Universities, Global Solutions Initiatives, and the Sustainable Development Solutions Network. In all of its activities, AGU seeks to increase its impact by forming strong partnerships. The AGU's ecosystem has two clear dimensions: (1) Corporate practices as an exemplary leader: Significant evidence for AGU's Outstanding Contribution includes its Strategic Plan, Climate Action Plan, Zero Waste and LEED Certificate, ISO 14064:2018 Certificate, etc. (2) Teaching & research practices, to increase the awareness of citizens. AGU's departments such as the Career Center, AGU Academy, Creative Hub, Children University, Technology Transfer Office (TTO), and the Youth Office are tasked with providing instruction and research not only for students, but also for the broader community, including industry partners, kindergarten, primary, and high school students. To summarize, 2944 AGU students attended GLB course, 784 industry experts attended SDG awareness training for climate action, 757 kindergartens, primary and high school students attended environmental awareness training and workshops. AGU has been awarded THE Awards Asia: Outstanding Contribution to Environmental Leadership for its activities.



Leed Certificate

AGU uses a precise system called Grey Water Treatment System to treat wastewater and reuse the purified end product in its toilet flushing system in order to reduce its consumption of drinking quality water. In addition, rainwater coming from the roof is filtered and included in the grey water system thanks to the equipment installed on the building's roof. This usage has contributed to cutting freshwater consumption in half and earning AGU the LEED Silver Award in 2015.



AGU Grey Water Treatment System

AGU applies building standards to minimize water use, such as the use of photocell faucets in the washbasins, water-saving recessed toilets, and photocell urinals. AGU campus is a protected historical site under renovation. All new restoration work will continue applying LEED building standards. Moreover, all tap water on campus is drinkable, and water quality checks are conducted periodically, offering free drinking water to all students, staff, and visitors. AGU Health, Culture and Sports Department (SKS) ensures that all tap water throughout the campus is drinkable. Water quality checks are carried out by the Environmental Protection and Control Department's Kayseri Laboratory Branch Office. The report can be viewed [here](#). Moreover, several fresh water fountains were put at everyone's disposal across the campus.

The University has been using available underground wells to utilize sustainable water extraction for the irrigation of AGU campus green areas. There are three underground wells at the campus settlements for the irrigation needs of the green areas, and the night usage of the irrigation system is prioritized in order to save water during the warm season. These systems are used on the off-campus site called Mimar Sinan, in the southeast of the city, as well as the student housing area. Information on the use of water resources is given in [the Environmental Analysis Report](#).

AGU designs landscapes and plants landscapes plants that minimize water usage: As part of its energy efficiency procedures, the AGU Department of Construction and Technical Affairs has established a policy to only plant trees consuming low amounts of water, such as coniferous trees (yellow pine, black pine, etc.), on campus. The maintenance, pruning of the planted trees, and the maintenance of the irrigation systems are carried out periodically. Activities in this field in 2022 are included in the departmental [report](#) on pages 41–42.



AGU sends its wastewater to Kayseri Advanced Biological Wastewater Treatment Plant. Domestic and Industrial wastewater reaching the KASKİ Treatment Plant is treated in a way that does not cause any environmental problems, and the sludge from the facility is safely removed. Kayseri Advanced Biological Wastewater Treatment Plant provides the removal of nutrients such as nitrogen (N) and phosphorus (P) that cause pollution in water resources, as well as carbon (C) in wastewater.

The AGU Waste Management Directive and Implementation Principles document (part 2.1.7.) details processes for Accident Precautions and Procedures. In case of an accident, AGU members are required to refer to the occupational health and safety regulations. The occupational health and safety regulations of the University task each AGU department with devising an emergency plan and processes in case of emissions from hazardous chemicals.

In addition, chemical wastes generated in the laboratory areas are removed from the campus and disposed of. AGU Waste Management Directive and Application Principles documents this process in detailed manner. In addition, laboratory studies are carried out regularly to ensure that AGU's water is potable.

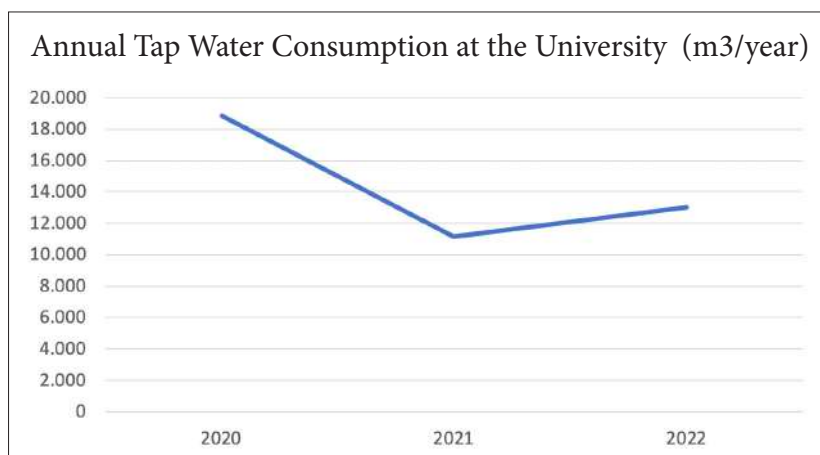
AGU Central Research Laboratory (AGU-MerLab) was established in 2019 and is located on Sümer Campus. It has a total area of 1224 m², of which 788 m² is laboratory area. The Thematic Laboratories in our center are gathered under two main roofs: Engineering and Life and Natural Sciences in 10 Thematic Laboratories. In addition, AGU members Prof. Dr. Niğmet Uzal and Dr. İlker Erdem has Environmental Technology, Pollution Prevention and Waste Reduction, Water Pollution and Control, Water Supply and Purification, Membrane Technology and Membrane Technology laboratories, respectively.

AGU's Central Research Laboratory (AGU-MerLab), which is also used in water extraction technologies, is located in Sümer Campus. It has a total area of 1224 m², 788 m² of which is the laboratories area. Thematic Laboratories in our center are gathered in 10 Thematic Laboratories. Here, both research is conducted and services are provided to the outside world.

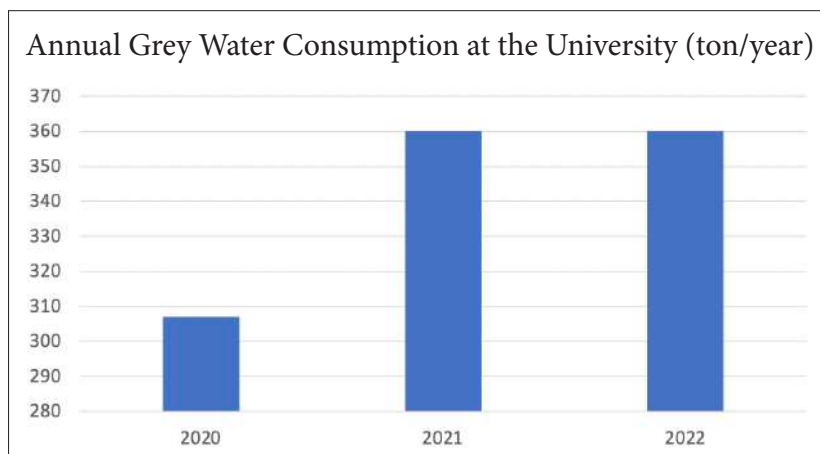
AGU'S PROGRESS

AGU follows publications, projects, courses, theses, dissertations, and congress and symposium participation for all SDGs through AVESIS (Academic Data Management System).

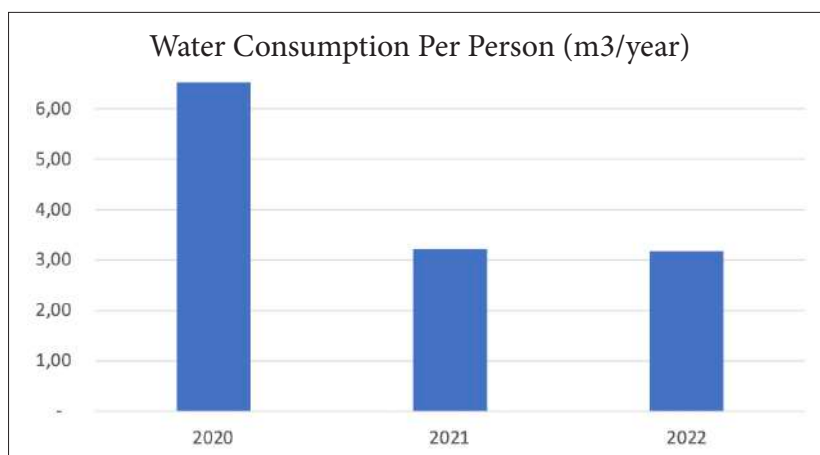




Graph 1: Annual Water Consumption at the University



Graph 2: Annual Grey Water Consumption at the University



Graph 3: Annual Tap Water Consumption per Capita

Beyond these, AGU has a water footprint certificate which was obtained as a result of audits conducted by a 3rd party independent audit firm. During the audit, AGU's water consumption is collected together with all its evidence, and invoice amounts and totals are checked by the auditor company. The calculation and reporting of AGU's water footprint is conducted in accordance with the principles of the International Organization for Standardization (ISO) standard 14046:2014 - Environmental management - water footprint - principles, requirements and guidelines.



This water footprint report has been prepared to understand our organization's impact on water resources, optimize water use and adopt a more sustainable approach to water resources. AGU also analyzes the use of blue, green and grey water and take actions to improve efficiency of water use.

EDUCATIONAL PROGRAMS, RESEARCH, AND PROJECTS

AGU developed an innovative Global Challenge Curriculum (GLB) composed of one mandatory course and several elective courses taught throughout the four undergraduate academic years. These courses focus on global topics such as the ones tackled by the United Nations Sustainable Development Goals.

AGU provides educational opportunities for local communities so that they can learn about good water management. As part of its Civil Engineering courses, AGU offers courses on "Water Resources Engineering" (CE374) and "Water and Wastewater Treatment Engineering" (CE 475), which non-AGU students can also attend. In the MSc program 'Sustainable Urban Infrastructure,' students address topics such as Sustainability in Urban Infrastructure, Sustainable Energy, Clean Water Access, Pollution Prevention, and Environmental Resource Management. As part of this program, AGU also offers a course on "Clean Water Access Infrastructure in Developing Countries" (SIE521) to its students.

AGU Nanotechnology and Civil Engineering Departments also offer courses in sustainable water extraction. You can find some examples of these in the attached extensions, Membrane Separations in Aquatic Systems, Membrane Separations in Aquatic Systems. Moreover, There are faculty members working on membrane technologies.

AGU academics also published research articles in 2022 related to the SDG 6:

- 1- "Pre-concentration of Municipal Wastewater Using Flocculation-Assisted Direct Ceramic Microfiltration Process: Optimization of Operational Conditions" Ozcan O., ŞAHİNKAYA E., UZAL N. WATER AIR AND SOIL POLLUTION, vol.233, no.10, 2022 (SCI-Expanded)

Additionally, AGU academics have been working on research projects related the SDG 6 during 2022. Some of these projects are:

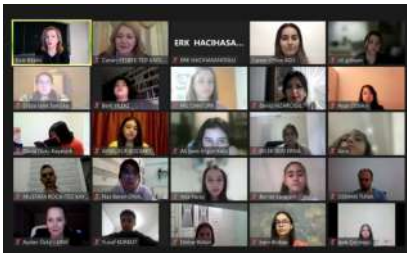
- “Development of an innovative hybrid membrane process for energy, nutrient and water recovery from domestic wastewater”,
- “A New Approach for Sustainable Water Management: Integration of Circular Economy Approach into the Water-Energy-Food-Ecosystem Linkage Framework”,
- “Investigation of the Erkilet Water Flood Case from Geotechnical and Hydraulic ü Perspectives”.
- “Design Optimization and Realization of Direct Start Synchronous Reluctance Motor for Submersible Pump Applications”.

One notable research that can be cited with regard to AGU’s contribution to the SDG 6 is Modeling of Pesticide Transport to Konya Altnapa Dam and Development of Innovative Advanced Treatment Methods for Removal, a TUBITAK project (no. 118Y402) that Prof. Dr. Nuray ATEŞ carried out in collaboration with Erciyes University, Süleyman Demirel University, Abdullah Gül University, and Yıldız Technical University. The project involves monitoring and modeling studies to determine the pressure of agricultural-based pesticides (acetochlor, methochlor, fenthion, andalachlor) in the Altnapa Dam basin, which provides water to Konya. It also examines the effectiveness of the drinking water treatment plant in treating these pesticides, novel applications of adsorption and membrane processes, and the purification performance of pesticides. Being the first comprehensive study of its kind in Türkiye, the project will examine what happens to pesticides during the journey from the source to the facility outlet (tap).



AGU and TED College Offer Sustainable Development Certificate Program

AGU and the Private High School of the TED Kayseri College Foundation jointly organized the Awareness Program on Sustainable Development Goals. The training program was held online with the support of the United Nations High Commissioner for Refugees (UNHCR). The training on “Clean Water and Sanitation” was offered to the 9th and 10th year students by Prof. Niğmet Uzal, a faculty member of the Department of Civil Engineering at Abdullah Gül University.



The United Nations (UN) Sustainable Development Goals consist of 17 main topics including but not limited to the eradication of poverty,

fight against climate change, quality education, popularizing responsible consumption and production and focus on the resolution of social, cultural, and economic challenges. After successfully completing the 7-week training program on the goals of Climate Action, Sustainable Cities, and Life on Earth, the students will receive participation certificates from AGU.

COOPERATION AND EVENTS

AGU is an official knowledge partner of GSI (a global collaborative enterprise to propose policy responses to major global problems, addressed by the G20, the G7, and other global governance fora) and therefore tackles and supports the solution-finding process for the SDG 6. AGU also has partnerships with international NGOs (such as the Sustainable Development Solutions Network-SDSN, SDSN Youth, and [SDG Academy](#).)

As a new-generation university focusing on Societal Impact, AGU partners with (inter) national and local governments to impact communities. AGU has been a leading member of the [Kayseri 2050 project](#) since 2015. In addition, AGU has not only attended but also hosted several meetings and workshops of this project. It aims at determining the city's roadmap and addressing local and regional urban planning, transportation systems, climate change disasters, affordable housing, water security, zero waste, and efficient energy.

Last but not least, AGU's students – Asena Çökelik, Aybüke Kargı, Ebusamet Gözen, Firdevs Sude Çelik, and Ogün Akı – carried out a project called “[A Drop for the Future](#).” Their project came third in “Createhaton,” a competition organized by the AGU Youth Factory. The project team came together with fourth-year students of Besime Özderici Primary School to increase water awareness by focusing on the sixth of the Sustainable Development Goals, ‘Clean Water and Sanitation,’ for four weeks. In the first three weeks, the project team visited the students in their schools and gave education about the importance of water, water scarcity in the world, global warming, and water saving. In the last week, the students of Besime Özderici Primary School were invited to the AGU campus. The students were tasked with using only 1.5 liters of water for their daily needs, such as drinking and cleaning, which aimed at increasing their awareness by experience.



AGU planted hundreds of saplings at Mimar Sinan Campus as part of the “[Breath for Turkey's Century](#)” campaign on November 11, 2022, the National Reforestation Day. Within the scope of the afforestation campaign, which aims to increase the environmental awareness of the society and spread the love of trees, 330 saplings of pine and plane trees were planted in the predetermined area on AGU Mimar Sinan Campus.



Moreover, during the “International Youth Day” celebrations at AGU, participants cleaned the environment and planted plane trees on the campus.



AGU also participated in the Kayseri Climate Change Action Plan Stakeholder Workshop organized by the Department of Climate Change and Zero Waste of Kayseri Metropolitan Municipality and made a presentation titled “Climate Change: Wastewater Reuse” at the workshop. The training also focused on wastewater treatment and wastewater reuse practices.

With the project titled “Think Future, Take Action”, prepared by AGU with the support of TUBITAK, primary school teachers were provided with training of trainers for a sustainable future for all SDGs including all SDG6. See the announcement about this program.



AGU organizes events and seminars on campus and wider community on sustainability and ecology. AGU Faculty of Architecture, for instance, organized a workshop on “Life in Water”. In the workshop, issues such as the importance of water in human life, the impact of humanity on water resources and keeping nature clean were discussed and water-themed designs were made.





AGU Youth Factory organized a workshop in partnership with Kayseri Chamber of Commerce and TED Kayseri College for “World Water Day”. The event included activities on water awareness.



Besides, AGÜ organized a Nature Walk for “World Water Day and Forest Week”.

The workshop on water awareness of the “Water Awareness: One Drop of Water for the Future” Project, which was developed within the frame of volunteering lessons that are given in our university upon the demand of the Kayseri Provincial Directorate of Youth and Sports and the protocol signed between Ministry of Youth and Sports and Higher Education Institution, was carried out on the with the participation of Besime Özderici Elementary School students in AGU.

AGU hosted a workshop for children aged four to six years on “World Water Day”, an annual United Nations (UN) observance day held on 22 March. Kindergarten students of As Koleji joined the “Sustainable Development Goals in Early Childhood” program of the Faculty of Architecture, organized on the occasion of “22 March, World Water Day.”



AGU Faculty of Architecture Faculty Members Dr. Sinan Akyüz and Dr. Sümeyra Ayık attended the Eco Climate: Economy and Climate Change Summit held in Ankara ATO Congressium with their presentation titled “Education for Sustainable Development Goals”.



A cooperation protocol was signed between AGU and Ardahan City Council for the sustainable development goals workshop program within the framework of climate change. With the protocol, joint studies will be carried out between the two institutions within the framework of the “United Nations (UN) Sustainable Development Goals”, including topics such as climate change, water footprint, carbon footprint, food waste, quality education, sustainability of culture, smart cities and societies, clean energy, terrestrial and aquatic ecosystems.



Turkey’s National Water Plan (2019-2023) outlines the national water policy; It has been prepared with a participatory and holistic approach for the sustainable management of our water resources in terms of quantity and quality, taking into account the balance of protection and use. This plan is a top policy and AGÜ, as a public institution, carries out its water-related activities within the scope of this plan. It includes the subject of water efficiency, which is the 6th article of the report.



AGU, in 2022 participated in the Kayseri Climate Change Action Plan Stakeholder Workshop organized by the Department of Climate Change and Zero Waste of Kayseri Metropolitan Municipality and made a presentation titled “Climate Change: Wastewater Reuse” at the workshop. The training also focused on wastewater treatment and wastewater reuse practices.



AGU students successfully implemented their project which ranked 3rd in the “Createhaton” competition organized by AGU Youth Factory. Focusing on “Clean Water and Sanitation” in their project, the project team came together with 4th grade students of Besime Özderici Primary School for 4 weeks in order to raise water awareness. In the first 3 weeks, they visited the students in their classrooms and made educational presentations about the importance of water, water scarcity in the world, global warming and water conservation.



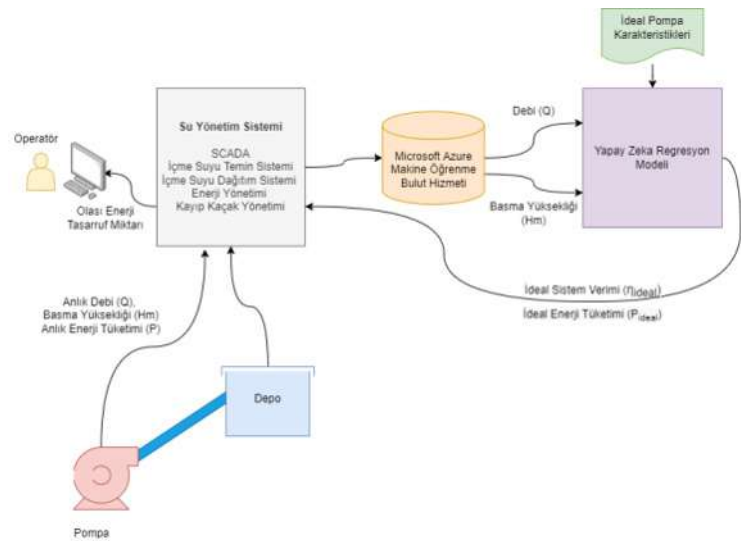
AGU Computer Engineering Department Assistant Professor and Invest Energy and Water Technologies Technical Manager Rifat Kurban was the guest of a program prepared and presented by Bikem Ögünç Demir on a national radio.



Invest Energy and Water Technologies Ltd. company in which Associated Prof. Dr. Rifat Kurban is in the management, won 2nd place in the manufacturer category and 1st place in the Water Management Award with the “Aquacnt, Smart Pcs and Kору1000 Controller and Software Solutions Project” at the Water Losses and Leaks Forum on December 4, World Water Losses Day.



An online national project workshop was organized on 22.December.2022 with the participation of researchers and technical staff from Universities and Water Administrations. Within the scope of this project workshop, Dr. Assist. Prof. Dr. Rifat KURBAN made a presentation on “Automation and Management Systems in Urban Water Management”.



The controller and software products developed by Envest Enerji ve Su Teknolojileri Ltd. Şti., in which Associated Prof. Dr. Rifat Kurban is in the management, to reduce water losses and leakages were awarded in the Manufacturer category of the “Water Loss Forum” in the “Successful Projects and Innovative Products in Water Management Award Program”.



2. SU YÖNETİMİ ÖDÜLLERİ
SONUÇ BİLDİRİMİ

No	Ödül Kategorisi	Proje Adı	Bayyuru Sahibi / Kurumu
1 ^{*)}	Su ve Kanalizasyon İdaresi	Kayıp/Kaçak ve Basınç Yönetimi Projesi	Yasir Vural / İstanbul Su ve Kanalizasyon İdaresi
		Suyu Yöneten Şehir Balıkesir	Merve Türkten / Balıkesir Su ve Kanalizasyon İdaresi
2	İlçe Belediyesi	Acıgöl Belediyesi Su Yönetim (Scada) Projesi	Ercan Ertaş / Acıgöl Belediyesi
3	Üretici	Aquaent, Smart Pcs ve Korus1000 Kontrolcü ve Yazılım Çözümleri	Dr. Rifat Kurban / Envest Enerji ve Su Teknolojileri Ltd. Şti.
4	Yüklenici	Asya Bölgesi Kayıp-Kaçak ve Basınç Yönetimi Projesi	Başar Aygüç / Halıcı Elektronik San. Tic. Ltd. Şti.
5	Müşavir	Gaziantep İçmesuyu Şebekesinin Haritalanması ve Hidrolik Modelin Okuşturulması Danışmanlık İş	Kader İrenli / Alter Uluslararası Mühendislik ve Müşavirlik Hizmetleri Ltd. Şti.
6	Üniversite	Su Kayıp Yönetiminde Ekonomik Kaçak Seviyesinin Optimizasyon Algoritmalarıyla Belirlenmesi	Prof. Dr. Mahmut Frat / İnönü Üniversitesi

^{*)} Su ve Kanalizasyon İdaresi ödül kategorisinde birinciliği iki proje paylaşmıştır.

Prof. Dr. Rifat Kurban participated in the “Workshop on Energy Efficiency in Municipal Services and Heating & Cooling Sector” organized by the Ministry of Energy and Natural Resources and the World Bank and shared his recommendations for energy and water efficiency in drinking water supply and distribution systems.



Prof. Dr. Rifat Kurban shared the products and R&D projects he is developing for water management at the regional consultation meeting hosted by Kayseri Chamber of Industry.



