SUSTAINABILITY REPORT 2022

MIDDLE EAST TECHNICAL UNIVERSITY

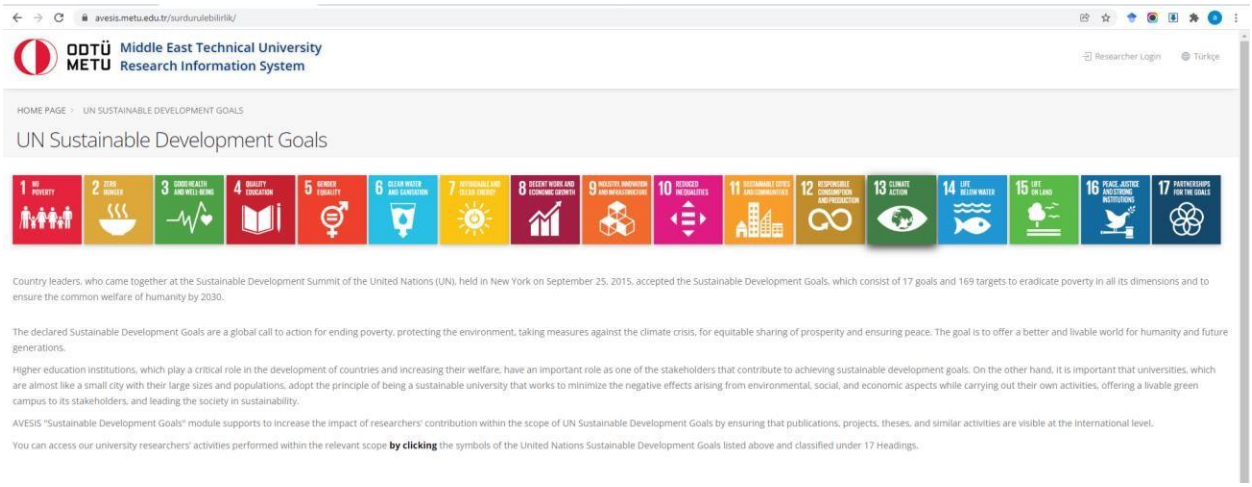
SUSTAINABLE DEVELOPMENT GOALS

The United Nations' 17 Sustainable Development Goals (SDGs) are at the heart of the 2030 Agenda for Sustainable Development adopted by all United Nations Member States in 2015. They are the blueprint for all developed and developing countries to tackle the global challenges, starting from ending poverty and eliminating all deprivations, providing equal access to resources by all, spurring economic growth fighting climate change and preserving the land and the sea.

Universities have a unique role in creating and disseminating knowledge, yet as one of the leading universities in Turkey, METU extends its mission to cover community service as well as education and research. The true societal impact of a university lies where these three mission components intersect and overlap. METU aims to fulfill all SDGs through research, teaching and outreach activities, sustainable campus operations and collaborations with the stakeholders.

Middle East Technical University in Turkey is setting the example by putting sustainability at the core of the institution. In fact, just recently, METU established a Sustainable Campus Executive Board and in December 2020 introduced the METU sustainability website (http://sustainablecampus.metu.edu.tr/en) along with the University's first ever Sustainability Report.

In addition, "Sustainable Development Module" was added to Research Information System (AVESİS) as a platform to improve the impact level and international visibility of activities such as publications, projects, and theses conducted by METU's researchers, in relation to SDGs.



METU Avesis Sustainability Module can be accessed at: https://avesis.metu.edu.tr/surdurulebilirlik/

End Poverty in all its Forms Everywhere

https://sdgs.un.org/goals/goal1

COMMUNITY SUPPORT

METU assists the start-up of sustainable businesses, in local and national scale, through relevant education or resources (e.g. mentorship programs, training workshops) offered by METU Teknokent.

(https://odtuteknokent.com.tr/tr/programlar/girisimcilik.php)

STUDENT SUPPORT

In Turkey, the existence of a centralized selection and admission system (https://www.osym.gov.tr/) does not allow the universities to specifically target to admit low household income groups for undergraduate education. For admission to graduate programs, the selection is based on academic qualities rather than background. The selection and admission processes are carried out transparently.

METU "ACADEMIC FREEDOM, INTEGRITY, INCLUSIVENESS and EQUALITY"
Policy ensures the inclusion of low income students by monitoring "the acceptance, success and completion rates of those students from the lower quartile income groups, people with disability, and other disadvantaged groups and continue financial and other support (such as mentorship and advisership) for their education," and taking "affirmative action in application and acceptance of international students from low and middle low income countries." (http://sustainablecampus.metu.edu.tr/en/policies)

In Turkey, public universities are free of charge for undergraduate study. However, universities can support students from low-income groups after admission through a number of scholarships and financial support, such as for food and housing.

Scholarship opportunities are listed in the following link: https://adayogrenci.metu.edu.tr/ankara/burs-olanaklari

METU MD Marathon Working Group ran in the N Kolay Istanbul Marathon on Sunday, November 6, 2022 for scholarships for METU students.

https://www.odtumd.org.tr/arsivler/12647

Assistance for electronic equipment needs

With the opening of schools and the start of classes, the METU Alumni Association is donating unused electronic devices that are in working condition or can work with minor maintenance and repair to students in need.

https://www.odtumd.org.tr/arsivler/12597

Financial support for students of Turkish Nationality is listed here:
http://oidb.metu.edu.tr/en/node/266

The **Directive for Scholarship and Financial Support** is made public in the following link (in Turkish):
https://oidb.metu.edu.tr/en/node/170

Only students placed in temporary dormitories by Ankara Metropolitan Municipality can view Student-Friendly House Rental Portal" has been put into effect. https://ogrencievi.ankara.bel.tr/

In addition to food and housing support, transportation within the campus is offered free and on a regular basis. For public transport, Ankara Metropolitan Municipality offers student discounts in subway and bus services:
https://www.ego.gov.tr/tr/haber/5444/buyuksehirden-odtuye-ucretsiz-ring-servisi-basladi

For international students, Tuition Fee Exemption and other scholarships and supports are shared at
https://iso.metu.edu.tr/en/scholarship-opportunities/

End hunger, achieve food security and improved nutrition and promote sustainable agriculture.

https://sdgs.un.org/goals/goal2

HUNGER ON CAMPUS

METU offers a variety of food options for students and staff. The meals are offered at low prices, as low as 6 TRY per meal (https://kafeterya.metu.edu.tr/index.php?sayfa=fiyatlar&durum=tabldotfiyat) in university operated cafeteria. For low-income students, food support is also available.

- In 2019, 1,350 students received 783,000 TRY.
- In 2020, 1,343 students received 778.940 TRY.
- In 2021, 1851 students received 881.000 TRY.
- In 2022, 1300 students received 1.558.656 TRY.

The daily menu is announced at https://kafeterya.metu.edu.tr, with price and nutrition information in order to help students maintain a health and well-balanced diet. Vegan and vegetarian food options are also included.

Food purchases are made in accordance with the Public Procurement Law (No. 4734) and Turkish Food Codex Regulation, as well as relevant Turkish Standards Institution (TSE) Standards. All suppliers are required to fulfill ISO 22000 standards. Purchases prioritize local sustainable suppliers, as allowed by legal and technical restrictions.

METU Sustainable Food Policy
METU also commits to ensure to provision of affordable, nutritious, and healthy food choices (including vegan and vegetarian menus) across all the outlets.
By revising its procurement guidelines, METU is also committed to ensure all food consumed within the Campus, to the extent possible within the budgetary constraints, is produced using sustainable methods (whether from sea or land, including the conditions of the workforce who are involved in the production) and from the local producers. This commitment extends to all outlets (including those owned by the third-party sellers) and to suppliers.
(Accessible at: http://sustainablecampus.metu.edu.tr/en/policies)

Ankara metropolitan municipality's hot meals for students continue at 5 locations.

Ankara Metropolitan Municipality continues to provide university students with a daily 4-course hot meal. The number of locations where meals are served has increased to 5 with the addition of METU. The Department of Social Services delivers hot meals to university students at Gazi University and Hacı Bayram Veli University Beşevler campuses and Yıldırım Beyazıt University Esenboğa and Çubuk KYK campuses between 14.30 and 17.30 on weekdays, and at METU A4 Entrance between 13.00 and 16.00 on weekends.

https://www.ankara.bel.tr/haberler/abb-nin-ogrencilere-sicak-yemek-ikrami-5-noktada-devam-ediyor-16063

Ensure healthy lives and promote well-being for all at all ages

https://sdgs.un.org/goals/goal3

HEALTH ON CAMPUS

Sports facilities

Organized regularly every year on October 29th to celebrate the founding of our Republic, the "Republic Run" is a huge event that brings together current students and staff, alumni and many sports enthusiasts from Ankara.

METU sports facilities (gymnasium and pool) are shared on a paid basis with the public (http://spormd.metu.edu.tr/en/)

Pool membership for guests: https://hm.metu.edu.tr/en/guest-member

METU Gymnasium: https://www.metu.edu.tr/sports-facilities

Lake Eymir presents a recreational and sports area for the local community, entrance is free and open for all visitors.

Mental health support

METU Medical Center offers free mental health support for students. https://srm.metu.edu.tr/en
METU Clinical Psychology Unit offers psychological evaluation and psychotherapy services to students on a paid basis (https://ayna.metu.edu.tr/hizmetler)

METU Smoking Policy

Every member of the METU community is expected to make responsible choices regarding tobacco smoking. The smoking can affect individuals and those around with detrimental consequences. At METU, we expect from everyone to engage and contribute a healthy and safe educational environment that plays a key role in supporting each student to reach their full academic potential. We value the health and well-being of every member of our community.

METU commits to the fulfilment of its obligations regarding the implementation of prohibitions and taking institutional measures in accordance with the Law on the Prevention of Harms of Tobacco Products (4207/2008) (http://sustainablecampus.metu.edu.tr/en/policies).

HEALTH OUTREACH

Current collaborations with health institutions

Collaboration regarding development and commercialization of innovative health products and projects, https://www.baskent.edu.tr/tr/haberler/saglik-ve-egitim/turkiyenin-onde-gelen-universitelerinden-odtu-ve-baskent-saglik-sektoru-icin-ortak-hareket-edecek/5 with Başkent University Hospital.

"New Openings in the Medical Device Industry" in collaboration with the Ministry of Health, Turkish Pharmaceuticals and Medical Devices Institution
https://www.titck.gov.tr/haber/tibbi-cihaz-sektorunde-yeni-acilimlar-toplantisi-25112019163433

Health outreach programs

METU Community engages in various sorts of ad hoc and programmed outreach programs and projects in the local community to improve health and wellbeing in the wider community. Ad hoc programs include faculty participation in and organization of seminars on nutrition, sports, exercise, and other health and well-being related topics. Programmed activities include annual student society events, student volunteering programs listed below:

- Information on how to communicate to individuals with leukemia, autism, down syndrome, and cerebral palsy LODOS Student Society
- (http://lodostoplulugu.com/)
- Talking About Disability METU without Disability Student Society (https://eot.metu.edu.tr/)

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

https://sdgs.un.org/goals/goal4

OUTREACH

Lifelong learning access policy

METU Strategy Plan Objective 12 concerns the sharing of METU's accumulation of knowledge and experience for the wider community's benefit. This involves making public activities widespread, and accessible for all regardless of gender, race and income level (Strategic Goal 12.1) and creating free online content accessible by all (Strategic Goal 12.3).

METU Strategic Plan is accessible at http://sp.metu.edu.tr/system/files/odtu_sp_2018_11_01.pdf

OPEN METU

Institutional academic archives are structures that enable universities to compile, store and protect their knowledge resources on a digital platform, allowing open access in line with copyright laws and international standards. These structures enable institutions to manage their own knowledge resources, evaluate their potential, and contribute towards interdisciplinary studies by increasing academic visibility.

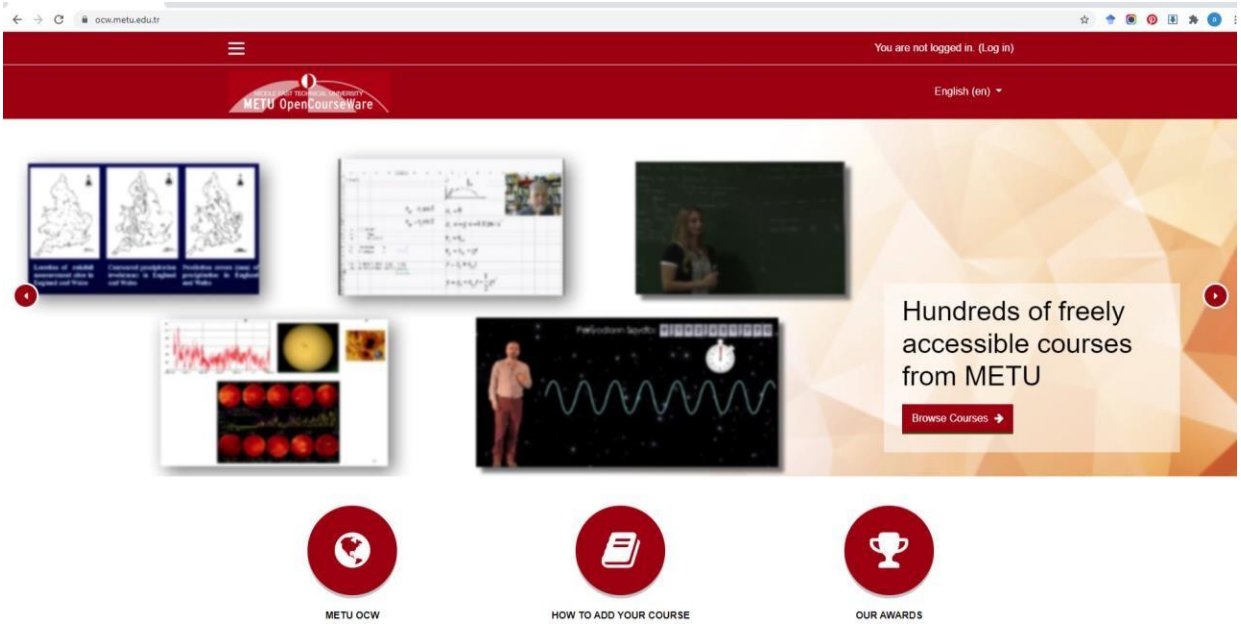
Allowing researchers open access to the scientific knowledge produced by others, within an ethical framework, is of great importance for scientific progression. The open access system is a structure that supports and facilitates one of the primary purposes of universities: the provision on national and international platforms of new products and services resulting from their research. OpenMETU, created within this scope, aims to provide Internet access to the scientific information produced by METU, without any financial, legal or technical obstacles.

The METU postgraduate electronic thesis archive has provided open, digital access to all postgraduate and doctoral theses completed since its launch in 2003 by the Department of Library and Documentation. The METU postgraduate electronic thesis archive system is the first open access system in our country. OpenMETU, enriched with its research data, software products, articles, book chapters, conference papers and presentations, is built on this structure.

https://open.metu.edu.tr/about

Open Courseware

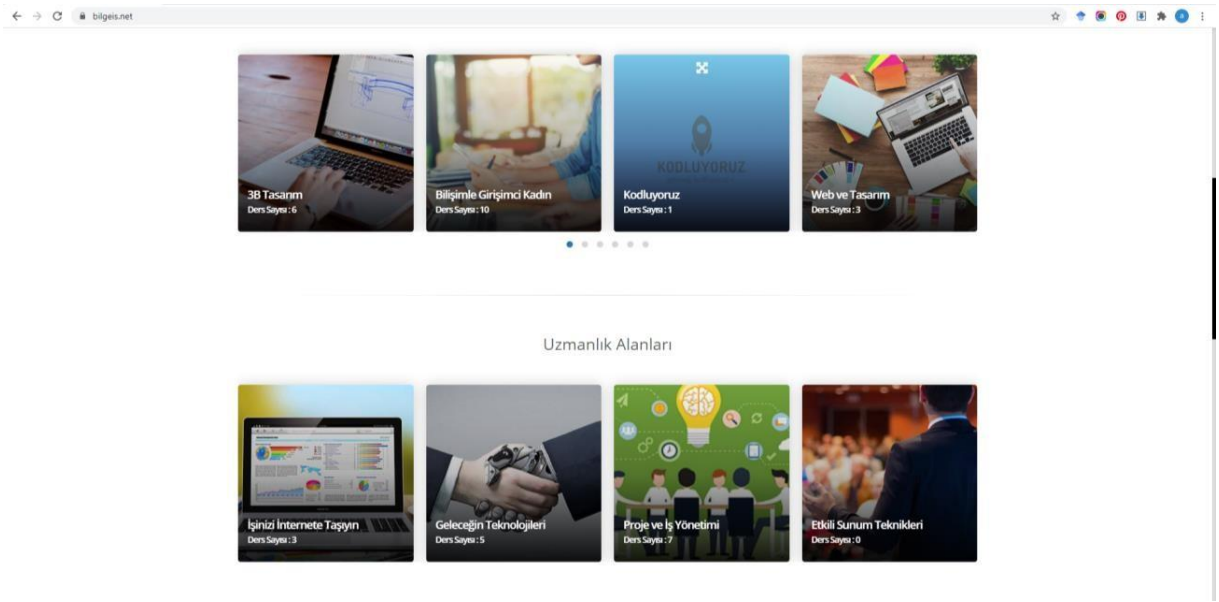
METU offers free online courses under a number of headings. Courses are available at https://www.youtube.com/c/METUOpenCourseWare/playlists free of charge.



Screenshot from https://ocw.metu.edu.tr/

Bilge-İş Project

Bilge-İş is a self-paced learning platform implemented with support from the European Union and the Republic of Turkey. As of October 17, 2017 the project has been successfully completed and currently continues to offer online courses. By the beginning of 2020, there were 162 thousand registered users to the platform, and a total of 101 thousand electronic certificates are awarded to those who successfully complete the modules.



Screenshot from https://bilgeis.net

Public events (lifelong learning)

The Continuing Education Center (CEC) held a total of 55 seminars in 2021, 41 of which were contracted and 14 were open to general participation, reached 2,932 people. The list of open seminars is presented below:

	Title	Department	Duration (hours)	Number of participants
1	Construction project management certificate program	Civil Engineering	36	12
2	Construction project management certificate program	Civil Engineering	36	11
3	Qualitative data analysis and visualization with MAXQDA	Mathematics and Science Education	10	7
4	Introduction to editing	Turkish Literature	20	39
5	Introduction to editing	Turkish Literature	20	37
6	Exposure to virtual reality	CEIT	8	4
7	Construction project management certificate program	Civil Engineering	36	21
8	Evaluation of research outcomes through bibliometric methods	Informatics Institute	20	17
9	Information technologies certificate program (3)	Computer Engineering	84	147
10	Technological innovation management	TEKPOL	24	33
11	Information technologies certificate program (4)	Computer Engineering	84	144
12	Scanning electronic microscope theoretical training	Central Lab	18	21
13	Wind energy and turbine technology basic education	METUWIND	23	24
14	Information technologies certificate program (1)	Computer Engineering	84	184

METU Center for Society and Science also hosts numerous visitors activities throughout the year. Activities in the exhibition area are carried out in 5 different venues. These; "Science and Technology History Exhibition (BTTS)", "Classic Automobile Exhibition (KOS)", "Science Center (BM)", "Science Workshops (BA)" buildings and "Open Air Exhibition (AHS)". https://tbm.metu.edu.tr/

METU Center for Society and Science also hosts numerous visitor's activities throughout the year. In 2021, a total of 11.149 visitors attended the activities that took place in Center's five different facilities (https://tbm.metu.edu.tr/).

Education outreach activities beyond campus

METU Science Communication Group (https://big.metu.edu.tr/) hoists a number of events including:

- METU Science Café (https://bilimkafe.metu.edu.tr/)
- Science meets Art (https://big.metu.edu.tr/bilim-ve-sanat-bulusuyor/)
- Household Science (*BIlimin en hali*) (*https://big.metu.edu.tr/bilimin-ev-hali/*) and (https://www.trtizle.com/belgesel/bilimin-ev-hali)
- Scientists Podcast series (https://big.metu.edu.tr/bilim-insanlari-podcast-serisi/)

Achieve gender equality and empower all women and girls.

https://sdgs.un.org/goals/goal5

Policy for women participation

METU has a policy addressing women's applications, acceptance/entry, participation and progress at the university:
https://citob.metu.edu.tr/system/files/odtu_toplumsalcinsiyetesitligi_ilke_ve_stratejiler_belgesi.pdf

https://ak.metu.edu.tr/tr/system/files/metu-gep_2021.pdf

The application and acceptance rate of female students to graduate programs are measured and recorded by respective programs and institutes. The success and completion rate of all students are also tracked in accordance with the METU ACADEMIC FREEDOM, INTEGRITY, INCLUSIVENESS and EQUALITY Policy (http://sustainablecampus.metu.edu.tr/en/policies).

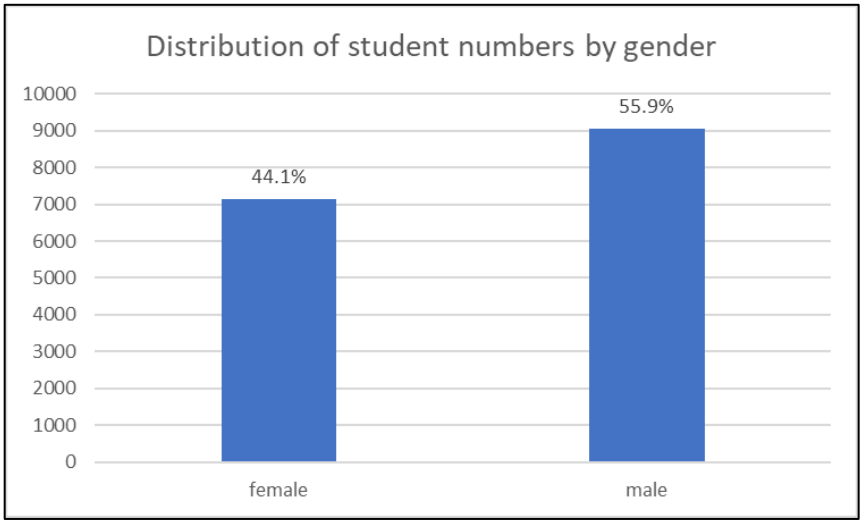
METU Institutional Development and Planning Office tracks women's likelihood of graduating compared to men's, to warn the relevant units and administration for any significant gaps. The data is shared in the institutional reports (in Turkish) at http://kgpo.metu.edu.tr/tr/stratejik-ve-mali-yonetim-belgeleri.

METU provides women's access schemes in the form of mentoring and scholarships. The alumni network (https://odtum.network/) as managed by the Alumni Office (https://mezun.metu.edu.tr/) helps students to connect to more experiences alumni to provide mentorship (https://odtumist.org/burs/mentorluk/)/ and https://ogem.metu.edu.tr/.

Women's application in underrepresented subjects

METU encourages applications by women in subjects where they are underrepresented through ongoing collaborations with different stakeholders including European Union (https://www.youtube.com/watch?v=UT7ZPohxSZU), community groups (https://www.instagram.com/p/CGHqEJRH6DX/) and university outreach in the form of promotion of programs where women are underrepresented with a focus on gender prejudice.

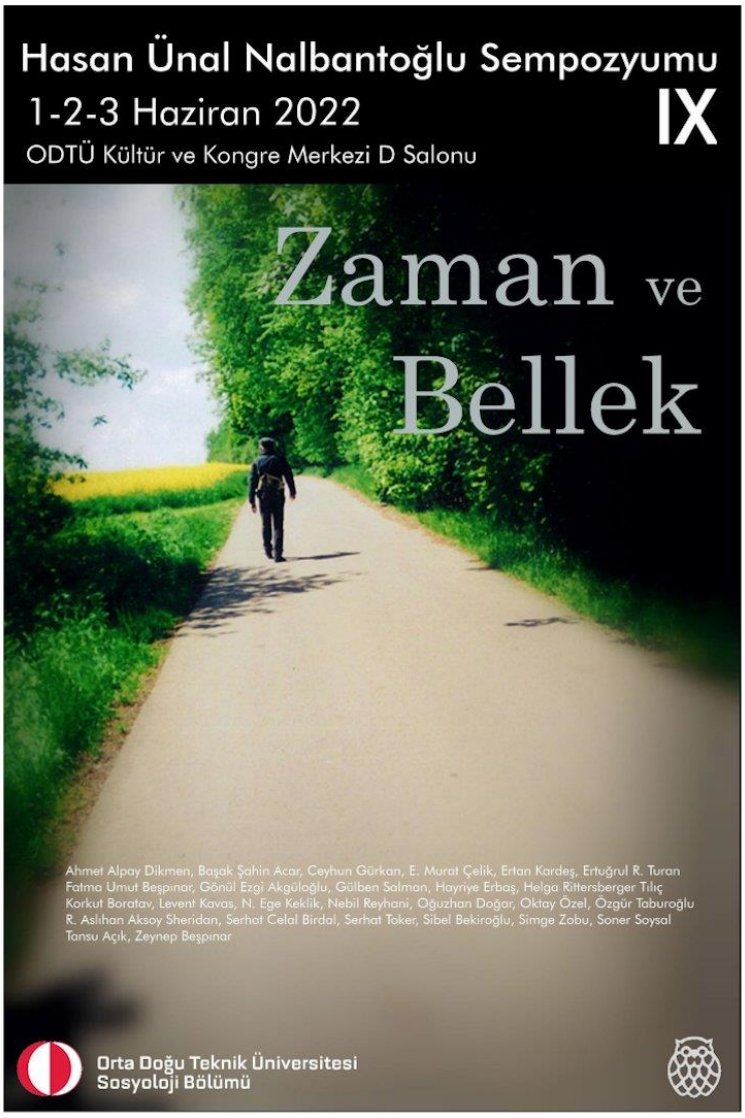
Proportion of women receiving degrees



Some of the events organized

Under the leadership of the Gender Equality Commission, a "Women's Labor Fair" has been organized in our Vişnelik Facility for the benefit of the Association's Scholarship Fund.
In addition to the exhibition and sale of the products of women producers, the fair also featured talks and music concerts.

https://www.odtumd.org.tr/arsivler/12535



Gender and Memory: In the symposium, talks titled "Similarities and Differences between Generations in the Development of Autobiographical Memory: First Memories of Women of the Same Family" and "Gender, Violence and Remembrance".

https://gws.metu.edu.tr/tr/duyuru/hasan-unal-nalbantoglu-sempozyumu-ix-zaman-ve-bellek

Also listed are events organized by the Gender Studies Society: A talk on "Women's Poverty",
Seminar on "What We Can Do Legally When We Face Violence", A movie called "Aaahh Belinda" directed by Atıf Yılmaz

Maternity and paternity policies

Maternity and paternity policies are regulated by relevant laws, which does not allow public universities (as state institutions) to exercise any practice outside the law. Civil Servants Act 657 allows for a 16-

week maternity leave and the Labor Law 4857 Article 35 allows for a 10-day paternity leave.

The application procedure for maternity and paternity leave can be accessed at https://pdb.metu.edu.tr/tr/dogum-izni-islemleri/.

Childcare facilities

METU provides paid childcare facilities for students, staff and faculty. The website of METU Pre-school is accessible at https://yuva.metu.edu.tr/

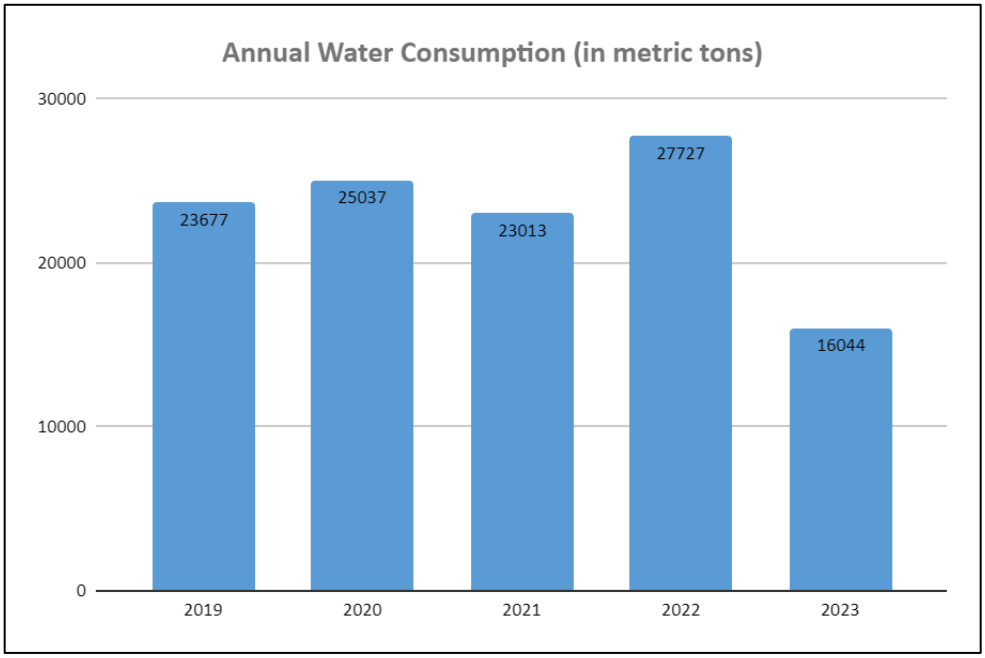
Women's mentoring schemes

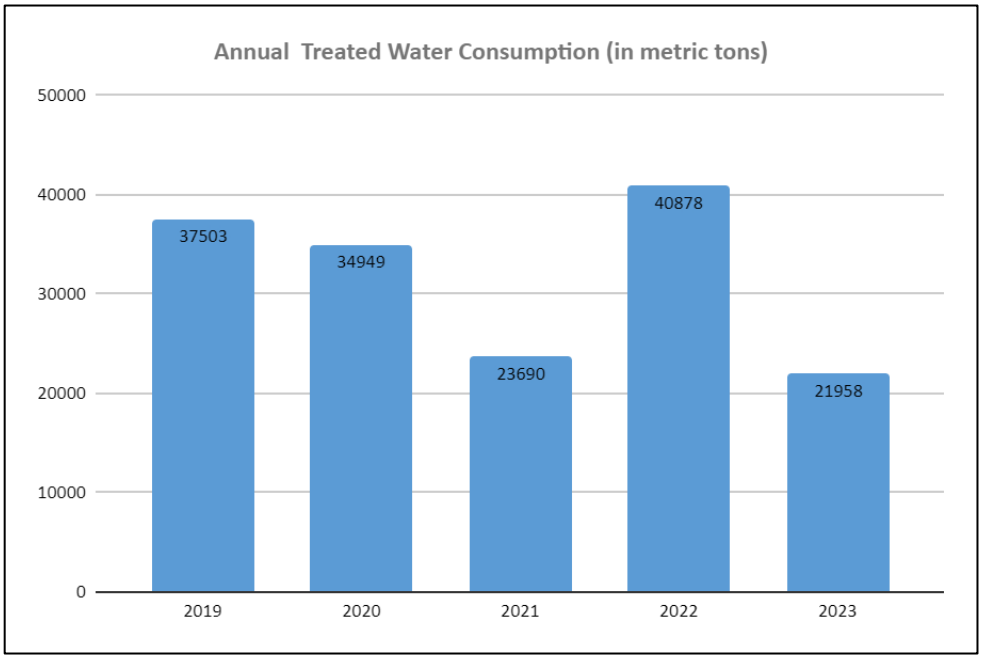
METU provides women's access schemes in the form of mentoring and scholarships. The alumni network (https://odtum.network/) as managed by the Alumni Office (https://mezun.metu.edu.tr/) helps students to connect to more experiences alumni to provide mentorship (https://odtumist.org/mentorluk/) and https://ogem.metu.edu.tr/.

Ensureavailabilityandsustainablemanagementofwaterandsanitationforall

https://sdgs.un.org/goals/goal6

On-Campus water usage and care

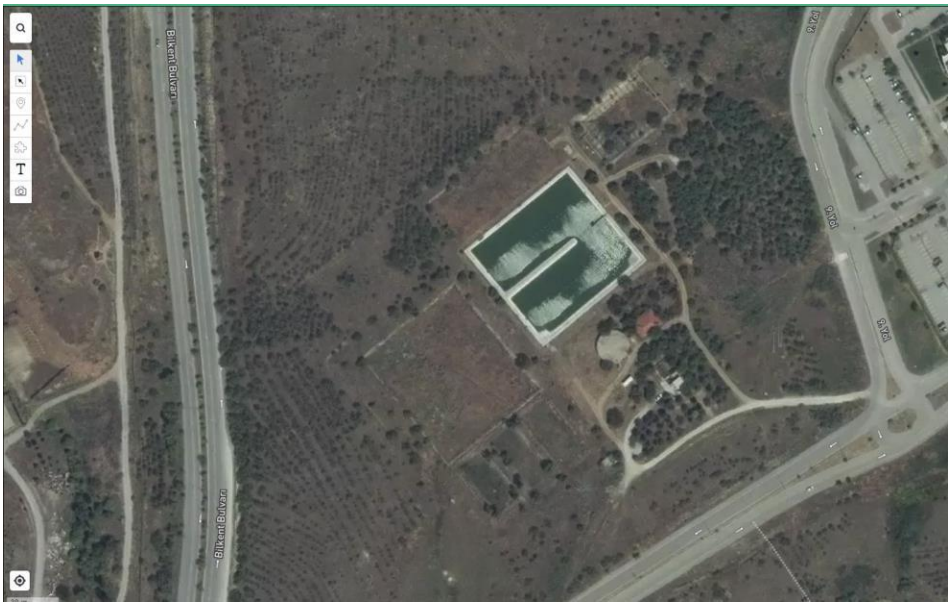




Wastewater treatment

Municipalities Law No. 5216 dictates municipalities to undertake sewerage services for all those within their boundaries. The sewerage in METU is treated technically for reuse in the university's own facilities than transferred to Ankara Water and Sewerage Authority's (ASKI) infrastructure to whereby a conventional activated sludge process is employed.

ASKİ, Conventional activated sludge process, Ankara (http://www.aski.gov.tr/TR/ICERIK/Atiksu-Aritma/30).



Water Recycling Plant (taken from Google Earth)

Water reuse policy

As part of the METU Platform for Advanced Research on Renewable Energy, Ecosystem and Sustainability (YESAP) study (BAP-08-11KB2014K120600-2)

- ***Rainwater Management:*** With the employment of Stormwater Management Model (SWMM) the potential use of green roofs, rain barrels (for rainwater harvesting), rain gardens and permeable concrete (on roads and parking lots), a plan to prevent rainwater runoff was formulated.
- ***Water management:*** The water for Ankara Campus is exclusively sourced from three wells near Lake Eymir. As a pilot application, the wastewater of METU Teknokent and the lodgments are refined in membrane facilities within the campus to use for irrigation.

Recycled water used in irrigation

Water in the community

METU Science Communication Group organized "Reflecting on Water" Photography Contest for World Water Day.
https://big.metu.edu.tr/reflecting-on-water-fotograf-yarismasi/

Water management educational opportunities

Geological Engineering Department faculty member K. Koray Yılmaz, spoke in TRT Radio's "Voice of Life" program, for the World Water Day. He gave information about water resources, water problems and the work done in our country to solve these problems (https://soundcloud.com/user-3519291/dunya-su-gunu-22032019-doc-dr-koray-k-yilmaz)

Promoting conscious water usage

Between 2014-17, within the framework of METU Platform for Advanced Research on Renewable Energy, Ecosystem and Sustainability (YESAP), a study was carried out (BAP-08-11KB2014K120600-2) to evaluate METU's environmental performance an investigate the application possibilities for rainwater, sewerage and solid waste management.

Rainwater Management: With the employment of Stormwater Management Model (SWMM) the potential use of green roofs, rain barrels (for rainwater harvesting), rain gardens and permeable concrete (on roads and parking lots), a plan to prevent rainwater runoff was formulated.

Water management: The water for Ankara Campus is exclusively sourced from three wells near Lake Eymir. As a pilot application, the wastewater of METU Teknokent and the lodgments are refined in membrane facilities within the campus to use for irrigation.

The installation of smart water meters: In order to uncover water consumption and losses, smart water meters were installed to a number of locations, including dormitories, and water consumption was actively monitored throughout the life of the project. The findings revealed that behavioral and infrastructural modifications are necessary to achieve water management within the campus.

Through the use of well water extracted from Bursal wells and Lake Eymir, which became usable as a result of METU Limnology Lab's bio-manipulation program explained below, METU helps off-campus water conservation.

METU Ankara Campus hosts Lake Eymir, which is a part of Eymir - Mogan Watershed consisting of two consecutive lakes along the line of Ankara – Hatip Stream. Up until 1997, Lake Eymir was largely polluted by the wastewater from the town of Gölbaşı, located just outside Ankara. With the collaboration of Ankara Water and Sewer Authority and METU Limnology Laboratory, the ecological monitoring of the watershed has begun and a facility to treat wastewater was installed. For the healing of the aqua system of Eymir, a plan involving biomanipulation (eliminating the unwanted alien species from the lake) has been initiated.

https://www.metu.edu.tr/system/files/eymir_golu.pdf

"Mogan-Eymir Lake Sub-Basin Protection Action Plan" is still effective in collaboration with the Ministry of Agriculture and Forestry General Directorate of Water Management. (https://www.tarimorman.gov.tr/SYGM/Sayfalar/Detay.aspx?SayfaId=7)

Cooperation on water security

The following are the examples of ongoing projects, on water security.

Flow Estimation and Basin Optimization Model

The Evaluation of Water Energy Food Nexus in Sakarya Watershed

Paralleling and Optimizing Hash Function Algorithms

Ensure access to affordable, reliable, sustainable and modern energy for all

https://sdgs.un.org/goals/goal7

University measures towards affordable and clean energy

METU 2018-22 lays the groundwork for renovations in the existing building stock and the construction of new buildings.

Smart building applications are embraced in the renovations and new constructions. The construction of METU Campus began in late 1950s, becoming a landmark of modernist architecture in the years to come. The buildings in the original plan are conserved, while getting equipped with energy efficient applications, such as LED lighting fixtures, automatic climate control systems, motion sensor operated lights, energy efficient electronics (computers, monitors and accessories) and appliances (A/C units, dishwashers etc.).

New buildings are designed and constructed in accordance with smart building principles to save energy. Shielding adjustments and the use of natural light in indoors are most commonly used elements, in addition to the use of energy efficient applications. The list of newest additions to METU Campus building stock are listed below.

Ayaslı Research Center:

http://www.ayasligroup.com/en/responsibility/odtu-ayasli-research-center

MATPUM

https://www.venesco.com.tr/odtu-matpum
http://www.emo.org.tr/ekler/60381704cad1744_ek.pdf?dergi=520%22%20target=

METU Yüksel Proje Auditorium:
http://www.arkiv.com.tr/proje/odtu-yuksel-proje-amfisi/10324

METU Faculty of Education Annex Building:
http://www.arkiv.com.tr/proje/orta-dogu-teknik- universitesi-egitim-fakultesi-ek-binasi/11319

METU MODSIMMER Building:
http://www.arkiv.com.tr/proje/odtu-modsimmer-modelleme-ve- simulasyon-arastirma-ve-uygulama-merkezi/1587

METU 2018-22 Strategic Plan, Goal 17.1 outlines the principles for renovation of existing buildings and construction of new ones.

The list of buildings with smart elements in METU Campus

No.	Name	Building Area (m²)	No.	Name	Building Area (m²)
1	YTM Matpum	2,000	11	Tasarım Fabrikası	1,216
2	Ayaslı Research Center	3,200	12	TAI AR-GE binası	4057
3	Matpum Annexe Building	1,100	13	Milsoft Building	7,300
4	Telekom Ar-Ge Binası	15,727	14	Yüksel Proje Auditorium	5,200
5	SATGEB	25,882	15	Faculty of Education Annex Building:	6,600
6	MET Tesisleri(A-B-D-E Blk-BİLİM)	40,336	16	Graduate Students Guest House	11,870
7	Titanyum Blok	6,587	17	İsa Demiray Dorm.	7,000
8	İkizler Binası	8,275	18	19th Dorm	14,000
9	Galyum Blok	13,968	19	Osman Yazıcı Guest House	2,500
10	Silikon Blok	10,300	20	METU MODSIMMER Building	10,500

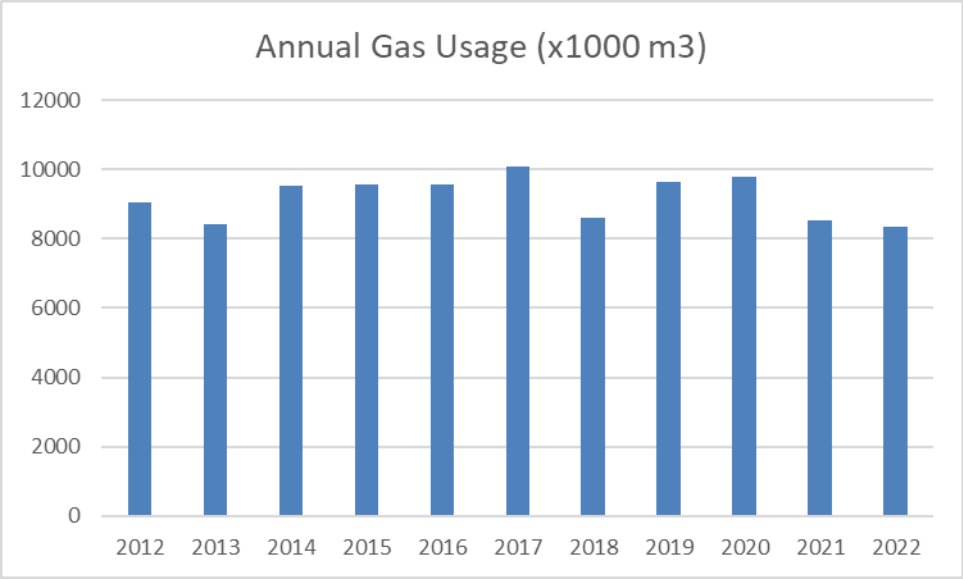
METU 2018-22 Strategic Plan, Goal 17.3 outlines the principles for renovation of existing buildings. *METU SP 2018-22 is accessible at http://sp.metu.edu.tr/system/files/odtu_sp_2018_11_01.pdf*

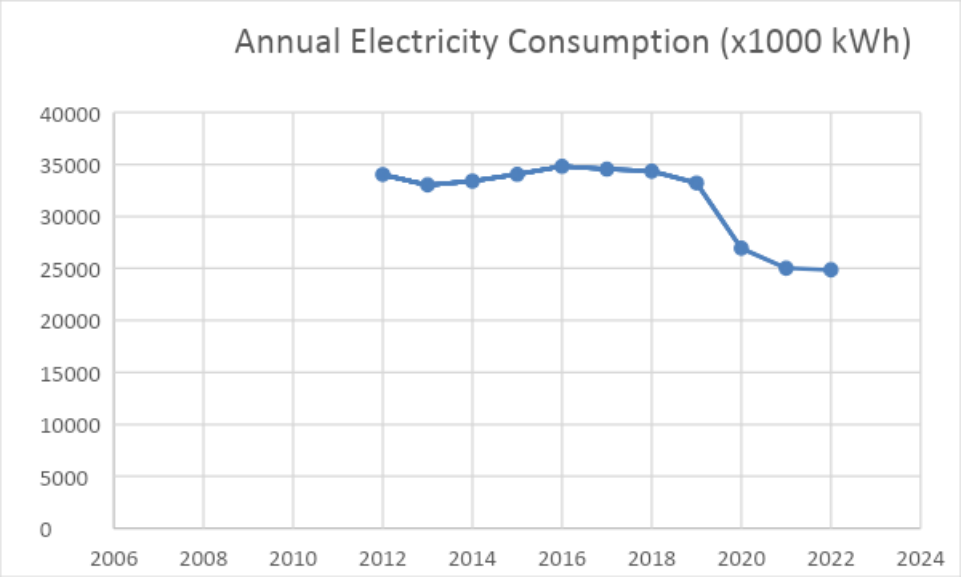
Carbon reduction and emission reduction process

METU 2018-22 Strategic Plan, Goal 17.2, aims to lower energy consumption, hence reduce the carbon footprint by altering the on-campus transportation system.

In METU, annual energy consumption is monitored and reduced by using energy efficient practices.

Electricity usage per year (in kilo watt hour)





Energy wastage identification

The university performs regular checks energy consumption levels at the campus level, and for individual buildings in order to identify where energy waste is possible. In addition to the overall plan to replace appliances, electronics and lighting fixtures for electricity consumption and the improvements made on building elements to reduce heat escape is performed on a regular basis.

Divestment policy

In order to reliance on coal and oil, METU has a divestment policy to use more environment friendly sources, notably gas, and renewable sources such as solar energy.

Middle East Technical University has solar energy applications (photovoltaics) on two buildings. One of them is located on the Ayasli Smart Building and has a total power of 75 kW. The other is a total of 5.5 KW panels on the roof of the Physics department.

For the 50kW part of the total of 75 KW panels in the Ayaslı building, real-time data can be tracked instantly via a website that is accessible within the campus.

In the "Photovoltaic Systems Test Platform" within the body of "ODTÜ-GÜNAM", 3 kW of 5.5 kW is given directly to the Physics building network while 2.5 kW part is for testing, and the energy produced by them is given to the load unit of electronic analysis systems. Analysis results and evaluations are announced to the world of science through international articles.

Solar Panel (METU Department of Electrical and Electronics Engineering Building)

OUTREACH: Energy and the community

Local community outreach

METU hosts two significant research centers excelled in renewable energy sources, collaborating with local, national and global stakeholders in conducting research and developing policies to disseminate the use of renewable energy sources.

1. **The Center for Solar Energy Research and Applications (GÜNAM)** is a multi-disciplinary center of excellence in the area of solar energy science and technology. It has been supported by the Turkish Ministry of Development since 2009. With rich infrastructure and human capital, GÜNAM is the leading and most comprehensive national center in the development of solar energy technologies including photovoltaic, concentrating solar thermal, and cross cutting technologies such as high performance buildings, smart grids, and smart cities with a mission to

be a global player in this field (https://odtugunam.org/).

2. **METU Center for Wind Energy (RÜZGEM / METUWind)** is established on 28 February 2011, funded by The Ministry of Development.
   METUWind is established with the vocation of becoming the center of attraction at the national and international level with its innovative and competent designs/accreditation activities as well as its scientific and technological research on the wind energy.
   METUWind is part of a number of national and international organizations. At the national level, METUWind has a membership of Renewable Energy, Eco-systems and Sustainability Research Platform of METU (YESAP), Turkish Wind Energy Association (TWEA/TÜREB) and Wind Energy Technologies Platform (RETEP). At the international level, METUWind takes part at the pioneering wind energy platforms in Europe such as the European Energy Research Alliance – Wind Energy Joint Program (EERA JP Wind) (associate member) and the European Academy of Wind Energy (EAWE) (full member) (https://ruzgem.metu.edu.tr/en)

METU Continuous Education Center (CEC) also offers a training program on wind energy titled "Wind Energy and Turbine Technologies" (https://sem.metu.edu.tr/egitim/ruzgar-enerjisi-ve-ruzgar-turbini-teknolojileri-temel-egitimi.html)

METU Sustainable Energy Group (METU-SEG) The Sustainable Energy Group at Middle East Technical University is focused on advancing the State-of-the-Art in Sustainable Thermal Energy Conversion Technologies. (http://seg.me.metu.edu.tr/index.html)

Promote sustained, inclusive, and sustainable economic growth, full and productive employment and decent work for all.

https://sdgs.un.org/goals/goal8

ACADEMIC FREEDOM, INTEGRITY, INCLUSIVENESS and EQUALITY Policy ensures inclusiveness and equality in employment practices (http://sustainablecampus.metu.edu.tr/en/policies).

Employment practice living wage

METU pays all staff and faculty the wage defined by the state. All the employees are paid at least the living wage, as dictated by the Civil Servants' Act (657) of 1965. (https://www.mevzuat.gov.tr/MevzuatMetin/1.5.657.pdf)

Employment practice unions

METU recognizes unions and labor rights (freedom of association and collective bargaining) for all, including women and international staff. The list of members and their respective unions are also made public: http://pdb2.metu.edu.tr/sendika-uye-listesi/

Employment policy on discrimination

METU has a policy on ending discrimination in the workplace based on gender. In 2017, Gender Equality Support and Sexual Harassment Prevention Unit (CİTÖB) was formed to raise awareness on gender equality, support equality in representation, and raise awareness of cases of gender-based violence, especially sexual harassment and assault, raise awareness and evaluate applications regarding these cases and support applicants.

The institutional policy in policy of non-discrimination against women (in Turkish) is accessible at:

https://citob.metu.edu.tr/system/files/odtu_toplumsalcinsiyetesitligi_ilke_ve_stratejiler_belgesi.pdf

Other bases of discrimination (age, religion etc.) are eliminated by Labour Law (4857) and Civil Servants' Act (657).

Employment practice equivalent rights outsourcing

METU has a policy on guaranteeing equivalent rights of workers when outsourcing activities to third parties: https://pdb.metu.edu.tr/4857-sayili-kanuna-tabi-calisan-personel-icin-maas-islemleri

Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.

https://sdgs.un.org/goals/goal9

METU fosters innovation through collaborative projects with the industry and public sector.

METU Teknokent

METU Teknokent was established in 2001 to bring together research institutions and industrial enterprises to cooperate towards research-and-development and innovative activities, engaging in knowledge and technology transfer. METU Teknokent hosts 411 companies (https://odtuteknokent.com.tr/tr/firmalar/tum-firmalar.php).

METU Technology Transfer Office (TTO)

Funded by TÜBİTAK 1513 Technology Transfer Offices Support Programme, METU Technology Transfer Office (METU-TTO) was founded to focus on university-industry collaboration. METU-TTO assumes a central position in delivering the output of R&D activity by METU researchers to the community's service. The execution of University-Industry Cooperation activities, management of intellectual property rights of created by the R&D activity of METU faculty, and their commercialization for both community's use and generation of income for further research are the main objectives of the unit. METU TTO focuses on three main strategies:

- To carry out activities to improve Technology Readiness Level (TRL) of innovations; for the lowest TRL Level innovations (TRL1), collaborations with small- and medium scale enterprises were given primary importance.
- To disseminate academic entrepreneurship among METU researchers by supporting them set up businesses towards further development and commercialization of innovations found in the METU TTO portfolio.
- The relationships with the institutions already collaborated through companies and TTO groups, new projects will be made more sustainable though new projects within the scope of internationalization.

Other Collaborations

Within the framework of the knowledge and competencies of the university, strengthening existing structures and creating new ones, the growth strategy focusing on technology-based entrepreneurship has been continued. In 2018, the activities and program such as YFYİ (Yeni Fikirler Yeni İşler), Animation Technologies and Game Development Center (ATOM), TÜBİTAK 1512 Individual Young Initiative Program (BİGG) TEKNOSTART, TeknoMENTORs program, Incubation Program and Investor-Entrepreneur meetings, Entrepreneurship and Innovation Platform are organized with increasing interest from participants. Growth Circuit—an accelerator program and investment company founded by METU Technopolis, aiding initial-phase technological investments within the Turkish entrepreneurship ecosystem, towards accessing to international markets. Growth Circuit Ventures is aiding technology start-ups with $ 25,000-250,000 investments, also establishing Turkey's first co-working space sponsored by Technopolis, Cozone,

within Technopolis Informatics Innovation Center (BİLİM) to host 350 members in a 2,300 square meter space. LABSOUT is a research based (intellectual property focused) startup accelerator, with the objective to help identify, develop, and speed up the commercialization of university-based intellectual property through commercialization by licensing the technology to the new startups established by the inventors.)

ASELSAN ACADEMY

In order to take advantage of university-industry cooperation with profound R&D implications; METU, ASELSAN and three Research Universities (Gazi University, Gebze Technical University and Istanbul Technical University) signed a Graduate Education Protocol in 2018.

The program entails cooperation not only with ASELSAN, but also among participating research universities towards contributing to our defense industry in the fields of technology and engineering. The number of graduate students participating in the ASELSAN Academy program are increasing with the heightened involvement of METU.

News

A team of engineers from METU has partnered with the defense industry and started studies on the suitability of four-legged robots for difficult terrain conditions

Bacaklı robot, savunma sanayinde önemli yere sahip olacak

Kaplan, leopar, çita gibi canlıların doğayla mükemmel uyumundan esinlenilerek üretilen dört bacaklı robot platformları, ODTÜ Robotik ve Yapay Zeka Teknolojileri Araştırma ve Uygulama Merkezi (ROMER) akademisyen ve öğrencilerinin AR-GE çalışmaları için Türkiye'ye getirildi.

ODTÜ mühendislerinden oluşan ekip, dört bacaklı robot platformlarına zor arazi şartlarında yüksek hareket kabiliyeti kazandırmak ve yeni nesil platformlar geliştirmek için savunma sanayisi ile ortak çalışmalara başladı.

Elektrik-Elektronik Mühendisliği Bölümü Öğretim Üyesi Prof. Dr. Afşar Saranlı, bacaklı robotların hareket kabiliyetinin tekerlekli veya paletli robotlara göre çok daha üstün olduğunu vurguladı.

Savunma sanayi ve sivil uygulamalarda bacaklı robotlar

Bacaklı robotların ticari ve verimli ürünlere dönüşme potansiyelinin yüksek olduğuna işaret eden Saranlı, savunma sanayiinde askeri personelin güvenliğini sağlamak amacıyla arazi hakkında gözlem yapmak, bilgi almak, istihbarat toplamak amacıyla bu tür robotların kullanılmaya başlandığını anlattı.

Saranlı, daha büyük boyutlu bacaklı robotların ise yük taşınması, askerin hareket kabiliyetinin artırılması, daha uzun mesafelere gidilebilmesi için destek unsuru amacıyla kullanılabildiğini dile getirdi.

Savunma sanayii ile ortaklık başladı

Afşar Saranlı, geçmiş yıllarda yaptıkları 6 bacaklı SensoRhex robotunun ticari kopyasının ODTÜ Teknokent'teki bir firma tarafından yerli tasarım motorlar ile üretildiğini, böylece bu alandaki çalışmalarının ticari ürüne dönüşmesinde belli oranda ilerleme sağladıklarını kaydetti.

Bunun yanında ROMER kapsamında büyük bir savunma sanayii firması ile başlayan iş birliği ile uzun süreli stratejik ortaklık hedefleri bulunduğunu kaydeden Saranlı, bu alanda artan talepler ve üniversite-sanayi iş birliği için büyük fırsatlar olduğunu belirtti.

https://basinda.metu.edu.tr/images/basin/1775522661_0.jpg

METU Teknokent has developed a smart chip that captures cancer cells with blood tests.

KANSER TEDAVİSİNE TÜRK 'ÇİPİ'

ODTÜ Teknokent araştırmacıları tarafından üzerinde 7 yıl çalışılan, dolaşımdaki kanser hücrelerini basit bir kan tahliliyle yakalayan akıllı çip teknolojisi geliştirildi. Klinik araştırma safhası ise şimdilik Ankara'da bulunan dört hastanede uygulanacak. Hali hazırda kullanılan iğne biyopsisi yönteminin yerini daha acısız ve daha az maliyetle alması beklenen bu yeni yöntemle beraber hem hastalara hem de doktorlara kolaylık sağlanacak. Geliştirdikleri yeni teknolojinin bu alanda birçok ilki barındırdığına değinen ODTÜ Elektrik Elektronik Mühendisliği Bölümü Öğretim Üyesi ve Mikro Biyosistemler Genel Müdürü Prof. Dr. Haluk Külah, Mikro-Elektromekanik Sistemler (MEMS) ve mikro akışkan teknolojilerinin kullanıldığı likit biyopsi tekniğiyle kan örneğinde kanser hücrelerini yakaladıklarını ifade etti. Kan tahlili ile kanser süreci hakkında birçok bilgiye ulaşabildiklerini belirten Külah, doğruluk oranlarının yüksek olduğunu ve rakiplerine karşı daha üstün bir performans sergilediğini belirtti. Yakın zamanda 300 hasta üzerinde klinik çalışmaların başladığını söyleyen Külah, "Böylece araştırma amaçlı olarak gerçek hastalar üzerinde kan testi ile kanser tanısı ve tedavisinin takibini yapabileceğiz" dedi. Gerekli onayların alınmasının ardından hastalar, mevcut sağlık sigortaları ile bu testi yaptırabilecek.

https://basinda.metu.edu.tr/images/basin/1770858405_0.jpg

Defense Industry Summit was held at METU

ODTÜ'de Savunma Sanayii zirvesi

Milli savunma sanayii alanında öncü firmalar ODTÜ Savunma Sanayii Topluluğu çatısı altında dev bir Savunma Sanayii Zirvesi'nde buluşuyor.

ANKARA (Anayurt)- ODTÜ Savunma Sanayii Topluluğu, 24 Mayıs 2022 Salı günü Kongre ve Kültür Merkezi A Salonunda I. ODTÜ Savunma Sanayii Zirvesi'nde öncü firmaları buluşturuyor. Etkinliğe ASELSAN, ROKETSAN, MKE, METEKSAN, NERO Endüstri temsilcileri konuşmacı olarak katılacak ve ülkemizin savunma sanayii alanındaki tecrübe, görev ve sorumlulukları üzerine sunumlar gerçekleştirecek.

SAVUNMA SANAYİİ İÇİN TARİHİ ZİRVE

Zirvede; Türk savunma sanayiinde yapılan yatırımların, geleceğin stratejilerinin incelenmesi, ODTÜ'nün sahip olduğu akademik gücü, laboratuvar kabiliyetleri ve sahip olduğu nitelikli öğrenci kaynağının değerlendirilmesi, ODTÜ ve Türk Savunma Sanayii arasındaki iş birliğinin geliştirilmesi, Milli Savunma Sanayii Atılımı için öncü kurumlar ve geleceğin mimarları öğrenciler arasındaki iletişimi artırmak hedefleniyor. Zirvenin başlıca konuşma konularını milli teknoloji hamlesi, istikbal için havacılık ve uzay sektörü, teknoloji ve savunma mavi batan stratejisi: denizde savunma ve stratejik güvenlik gücü: insan kaynağı oluşturuyor.

SAVUNMA SANAYİİNE EN ÇOK MEZUN ODTÜ'DEN

Zirveye hem katılımcı firmalardan hem de ODTÜ öğrencilerinden çok ciddi ilgi olduğunu söyleyen ODTÜ Savunma Sanayii Topluluğu Başkanı Furkan Olga: "ODTÜ'nün, Türkiye'de savunma sanayii alanına en çok mezun veren kurum olmasının gururunu taşıyoruz. Bu sebeple ülkemizin milli bağımsızlığı ve güvenliği için hayati öneme sahip olan Savunma Sanayii Zirvesi'ni ilk kez topluluğumuz bünyesinde düzenlemenin büyük heyecanını yaşıyoruz" dedi.

"ZİRVE TARİHİ BİR DÖNEMDE TOPLANIYOR"

Zirvenin ülkemiz tarihi günlerden geçerken toplandığını belirten Olga: "Ülkemizin ABD merkezli tehditlere karşı mücadele ettiği bu tarihi günlerde, savunma sanayiimiz kritik önem taşıyor. Sınır boylarımızda ABD destekli terör örgütleriyle savaşırken,

Mavi Vatanımızda kararlılığımızı ortaya koyarken, kendi silahımızın üretiminde kendimiz söz sahibi olmalıyız. Bu sebeple milli savunma sanayii, yerli ve milli üretim önümüzdeki en kritik görevlerden biridir. Bu kritik dönemde, I. ODTÜ Savunma Sanayii Zirvesi, devletimizin ve milletimizin ortak aklını en doğru hedefe yönlendirmeyi hedefliyor" dedi.

https://basinda.metu.edu.tr/images/basin/1726225240_0.jpg

Reduce inequality within and among countries

https://sdgs.un.org/goals/goal10

Non-discriminatory admissions policy

In Turkey, the existence of a centralized selection and admission system (https://www.osym.gov.tr/) does not allow the universities to specifically target to admit any disadvantaged groups for undergraduate education. However, the practices of positive discrimination is ensured by relevant laws and regulations:

Law on Disabilities (No. 5378) Articles 14 and 15 guarantees employment and education for all individuals with disabilities:
https://engelsiz.yok.gov.tr/Documents/Hakkimizda/5378_sayili_engelliler_kanunu.pdf

The universities are required to spare a capacity for the admission of disabled students:
https://engelsiz.yok.gov.tr/Sayfalar/Haberler/kontenjan-mujdesi.aspx

Access to university track underrepresented groups' applications

METU as a body measures and track applications and admissions of underrepresented (and potentially underrepresented) groups including

- low-income students,
- non-traditional students,
- women, and
- disabled students.

Their application, admission, success and completion rates are monitored by Directorate of Student Affairs and METU Disability Support Office (https://engelsiz.metu.edu.tr/en/about-dso).

Gender Equality Support and Sexual Harassment Prevention Unit

CİTÖB aims to raise awareness on gender equality, support equality in representation, and raise awareness of cases of gender-based violence, especially sexual harassment and assault, raise awareness and evaluate applications regarding these cases and support applicants.

https://citob.metu.edu.tr/tr

Access to university underrepresented groups recruit

METU delivers programmes to recruit students, staff, and faculty from underrepresented groups, within the liberties identified by the relevant laws and regulations.

Student Recruitment

In Turkey, the existence of a centralized selection and admission system (https://www.osym.gov.tr/) does not allow the universities to specifically target to admit any disadvantaged groups for undergraduate education. However, the practices of positive discrimination is ensured by relevant laws and regulations:

Law on Disabilities (No. 5378) Article 15 guarantees education for all individuals with disabilities.

The universities are required to spare a capacity for the admission of disabled students: https://engelsiz.yok.gov.tr/Sayfalar/Haberler/kontenjan-mujdesi.aspx

Staff and Faculty Recruitment

Law on Disabilities (No. 5378) Article 14 employment for all individuals with disabilities.

METU ACADEMIC FREEDOM, INTEGRITY, INCLUSIVENESS and EQUALITY Policy ensures "equality in employment with regard to gender, cultural and religious background" (http://sustainablecampus.metu.edu.tr/en/policies).

METU Disability Support Office

Middle East Technical University is the first university of Turkey in which accessibility studies towards students with disabilities have been initiated. The first attempt in accessibility studies started in 1998 when the work group of "Accessible METU Project" was established. The main objective of the project was to improve the accessibility of buildings in the campus and circulation inside the buildings. The aim of the project was to make pedestrian ways between faculty buildings, dormitories, sport arenas and cafes suitable for transportation of students with disabilities. In 2004, long before the legal obligation for universities to establish a disability coordination service in Turkey, METU Disability Support Coordination Unit was established to investigate problems that students with disabilities faced and to develop suitable systems for the solution of these problems. The Unit involved in the studies of "Regulations on the Solidarity and Coordination of the Individuals with Disabilities in the Institutions of Higher Education" which was approved in 2006 and revised in 2010.

Disability Support Coordination Unit was reconstituted, and METU Disability Support Office was established instead on June 28th, 2011in accordance with the Middle East Technical University Senate's decision dated and numbered 2011/5-2. METU Disability Support Office was charged with providing equal access to resources and services of the university for students who have special needs because of specific disabilities, and establishing an environment that supports their development. METU Disability Support Office's working procedures and principles determined as reorganizing physical circumstances of the campus depending on the special needs of students with disabilities and enhancing academic accessibility in accordance with the articles 11 and 12 of "Regulations on the Solidarity and Coordination of the

Individuals with Disabilities in the Institutions of Higher Education".

https://engelsiz.metu.edu.tr/en/about-dso

Accessible facilities

METU Campus is equipped with lift chairs and ramps for those with disability. To eliminate any possibility of oversight, the Disability Support Office employs “Hunting the Barriers” survey to identify any obstructions on Campus.

Disability access scheme

METU offers access schemes for people with disabilities such as mentoring or other targeted support

Mentoring: https://engelsiz.metu.edu.tr/en/

Other targeted support:
https://basinda.metu.edu.tr/icerik/odtuden/84/odtuye-yokten-engelsiz- universite-odulu-university-accessibility-award-to-metu-by-yok

Disability accommodation policy

Have **reasonable accommodation** policy or strategy for people with disabilities invloving physical, emotional, mental, academic or employment related issues.

For emotional and mental accommodations members can seek help in https://srm.metu.edu.tr/

For academic accommodations METU Disability Support Office offers notetaker support and course partnerships (https://engelsiz.metu.edu.tr/en/)

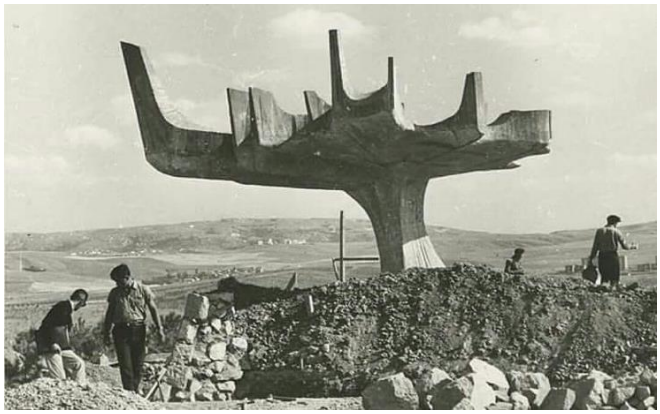
Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

https://sdgs.un.org/goals/goal11

Support of arts and heritage

The construction of METU Campus began in the early 1960s as Turkey's first university Campus. Located outside Ankara, the Campus hosts a group of finest examples of modern architecture, designed by Behruz and Altuğ Çinici. (METU Campus as featured in the Architecture journal Arkitekt, 1965 (3) 320: http://dergi.mo.org.tr/dergiler/2/146/1746.pdf). METU provides public access to buildings, monuments, and natural heritage.

METU also hosts a large number of sculptures and monuments.



METU "Tree of Science" Tamer Başoğlu and Ersen Gürsel (1966)

"Space and Youth" Burhan Alkar (1986)

The Campus is open to public for educational and research activities. METU Library is open to public, for on-site use of books and other collections. (http://lib.metu.edu.tr/)

METU Campus hosts three museums METU Archeology Museum, Science and Technology Museum, and Geology Museum.

METU Archeology Museum

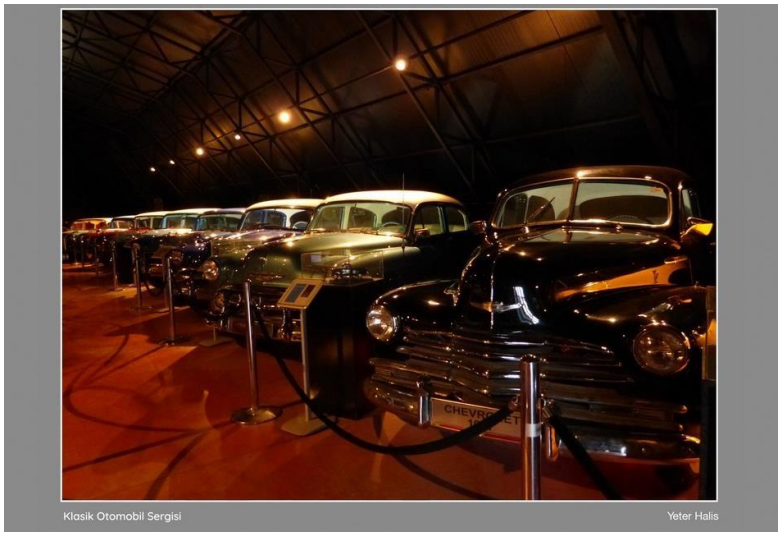
METU is located outside Ankara, and the Campus was built in the early 1960s at Yalıncak and Koçumbeli villages, both of which are significant archeological settlements.

Founded in 1969, the METU Archeology Museum exhibits archaeological artifacts unearthed in the Koçumbeli settlement (https://muze.metu.edu.tr/galeri/kocumbeli), which dates back 5,000 years, within the METU campus site, as well as the artifacts found in Yalıncak site (https://muze.metu.edu.tr/galeri/yalincak) and the Phrygian necropolis tumuli (https://muze.metu.edu.tr/frig-tumulusleri) in Ankara city center.

Science and Technology Museum

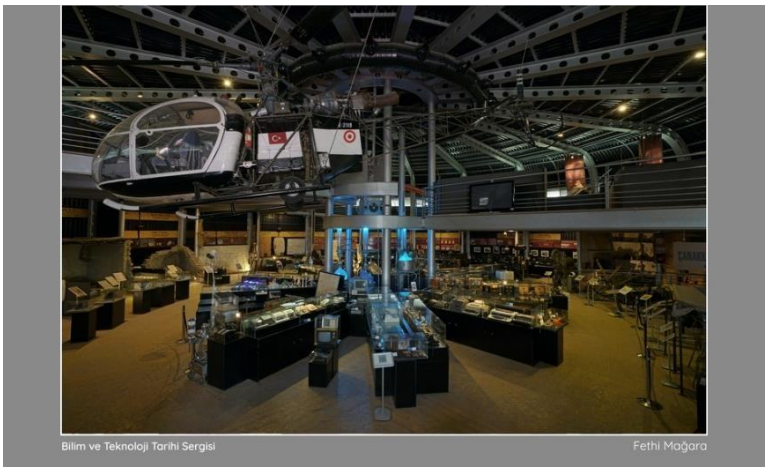
As Part of METU Center for Society and Science (https://tbm.metu.edu.tr/) METU Science and Technology Museum consists of Open Air Museum (https://tbm.metu.edu.tr/ahs/), Classical Automobile Museum (https://tbm.metu.edu.tr/kos/), The History of Science and Technology Museum (https://tbm.metu.edu.tr/btts/), Science Center (https://tbm.metu.edu.tr/bm/), Planetarium (https://tbm.metu.edu.tr/gokevi/) all of which are open to public.

METU Center for Society and Science also hosts numerous visitors' activities throughout the year. The activities take place in Center's five different facilities.



Classical Automobile Museum (https://tbm.metu.edu.tr/kos/)

Open Air Museum (https://tbm.metu.edu.tr/ahs/)



The History of Science and Technology Museum (https://tbm.metu.edu.tr/btts/)

Science Center (https://tbm.metu.edu.tr/bm/)

Planetarium (https://tbm.metu.edu.tr/gokevi/)

METU Geology Museum

Middle East Technical University Geology Museum was established in 1995 and exhibits rocks, minerals, fossils, precious stones and historical mining artifacts in the 150 m2 corridor located on the ground floor of the Geological Engineering Department. It has been home to thousands of mineral, rock and fossil specimens collected by the members and graduates of the department or donated by collectors since the foundation year of the department in 1963 (http://geoe.metu.edu.tr/en/geology-museum).

Public access to green spaces

METU's Lake Eymir is open to all visitors throughout the year
(https://ihm.metu.edu.tr/tr/galeri/eymir-golu-resimleri)

Arts and heritage contribution

Contribute to local arts, in terms of number of annual public performances of university choirs, theatre groups, orchestras etc… either ad-hoc or as part of an ongoing programme.

METU hosts a large number of events open to general public both on a programmed and ad hoc basis.

METU Culture and Convention Center is the primary area where such activities take place. The schedule for the year 2021 can be accessed at https://kkm.metu.edu.tr/calendar-node-field-etkinlik-tarihi/year.

In addition, METU hosts a large number of public events including:

- METU Music Society's annual Rock Festival (https://www.instagram.com/odtumt/?hl=en)
- METU Theatre Festival (http://odtuoyunculari.metu.edu.tr/)
- METU Art Festival (https://odtusanat.metu.edu.tr/)

Record and preserve cultural heritage

METU delivers projects to record and preserve intangible cultural heritage (such as local folklore, traditions, language, and knowledge).

Center for Research and Assessment of Historical Environment (TACDAM)

In 1966, scholars from various universities and scientific institutions of Turkey joined together under the leadership of the former president of Middle East Technical University, Kemal Kurdaş, to establish a research institute which would undertake the Keban Project. It was the co-operative effort towards salvaging the historical monuments and sites of a region that had to be flooded through the construction of the Keban Dam in the 1970s. After 1975, the project extended its study area to include the Lower Euphrates Region. While the archaeological sites within METU campus were being excavated, METU Archaeological Musem was established with the aim of disseminating to the public the information revealed by these excavations.

This institute, re-structured in 1995 as a Centre of Research and Assessment of Historical Environment (TAÇDAM) continued with its original mission: to motivate undertakings of salvage archaeology and documentation of historical environment by means of the most advanced methods and techniques for those areas under risk. Now, being among advanced institutions of archaeology in Turkey, TAÇDAM stands as one of the leading research units concerning historical environmental matters with an interdisciplinary vision. Directed on research matters by a managing committee formed of representatives from several academic units at Middle East Technical University -archaeometry, geology, restoration of historic monuments, city and regional planning- TAÇDAM serves as an interdisciplinary research center to survey and excavate archaeological sites in threatened areas of Turkey, and to publish their results.

SUSTAINABLE CAMPUS

METU Strategic Plan 2018-22 Goals 17.1 and 17.2 lays the groundwork for the preparation of a more sustainable transportation scheme.

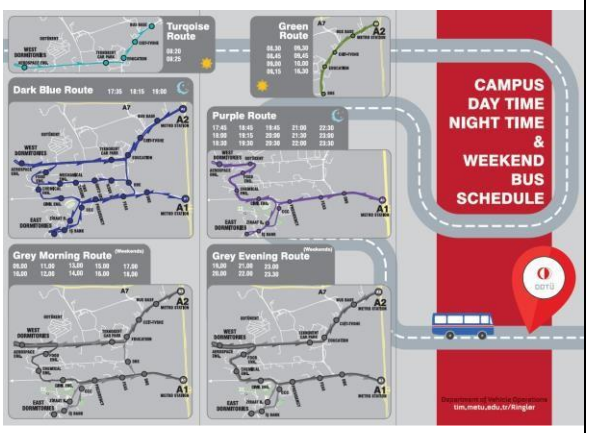
- The bicycle path and pedestrian walkway construction has been underway and scheduled to be completed by the end of 2020. Bicycle racks are also installed in key locations.
- The renewal of ring services is planned, existing bus fleet are being replaced with older models.
- Charger station for EV cars has been installed.

In order to limit in-campus traffic and use of private vehicles, the university opened new satellite parking lots at the edge of the campus perimeters, where members can leave their cars and commute with shuttle to other parts of the campus. Once members got used to using these parking lots, other parking lots at the core of the campus will be gradually decreased.

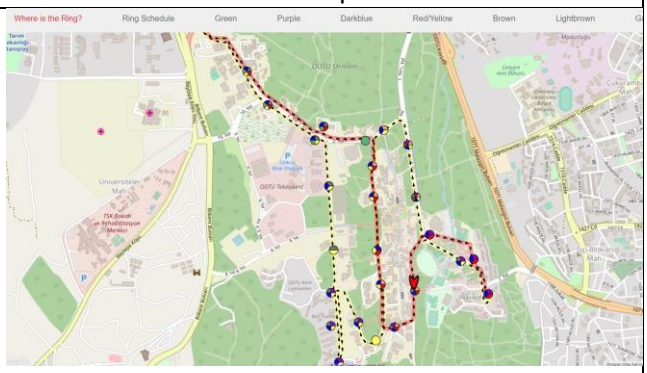
A2 Gate, Satellite Parking Lot, Middle East Technical University, Ankara (39.906846, 32.767037)

Bus Stop with Schedule

Bus Depot



Bus Routes and Schedule



Middle East Technical University, Turkey/
https://ring.metu.edu.tr

Real Time Location of Busses

The Directorate of Vehicle Management offers free shuttle services for the METU Community (http://tim.metu.edu.tr), 31 buses complete a total of 8620 trips throughout the year.

ODTÜ mobile phone applications for both iOS and android, and web pages offer information about bus routes, real time location and trips.

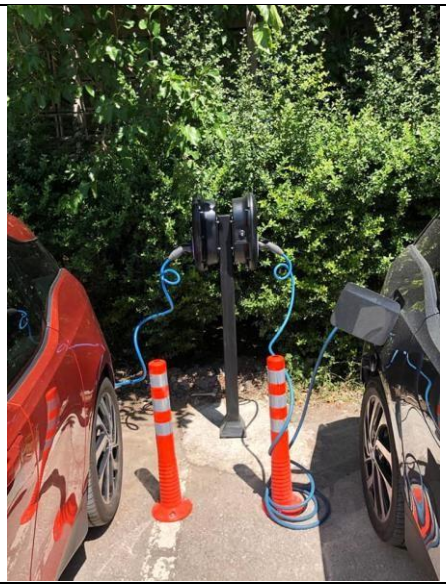
Web page for bus routes and trips:
Main campus: https://ring.metu.edu.tr
APP: https://itunes.apple.com/tr/app/orta-doğu-teknik-üniversitesi/id1206857420?l=tr&mt=8
https://play.google.com/store/apps/details?id=tr.edu.metu.mobile

The use of Zero Emission Vehicles (ZEV) is also encouraged on campus.

bike parking racks near cafeteria

(above and below) METU Electric Charge Station

Electric Scooters



With the 2018-22 Strategic Plan, METU prioritized the increased use of bicycles and Zero Emisson Shuttles in its campuses.

METU Campuses are cyclist and pedestrian friendly. Along with central Alle, there are many roads closed to vehicle traffic in order to provide a safe environment for cyclists and pedestrians. Ankara Campus is accessible through public transport, and many students and staff members reach to campus using the subway. Many administrative and academic buildings are at a walking distance (10-15 minutes) from the subway station and paid electric scooters or bicycles are available. Also, there is a cycling path parallel to the main road.

Affordable on-campus housing

METU offers affordable housing for employees on METU Campus. The information of METU Lodgings can be accessed at https://stm.metu.edu.tr/tr/lojman-tipleri-ve-krokileri

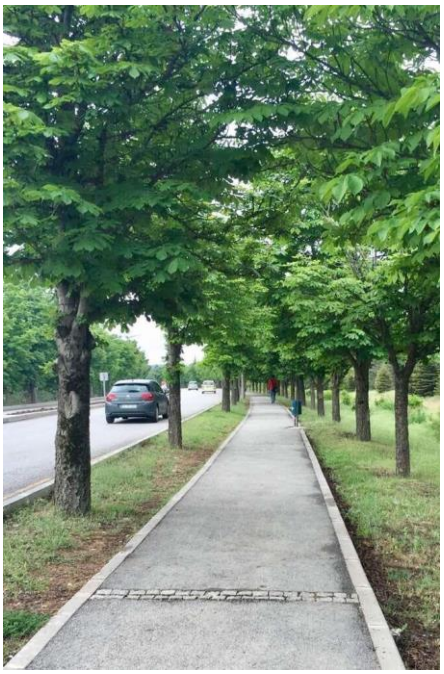
METU Professor Houses (Behruz Altuğ Çinici)

METU offers a wide range of housing alternatives (including dorms and guesthouses) for students (http://yurtlar.metu.edu.tr/en). With 19 dormitories, METU has a capacity to host a total of 7,286 students.

METU 19th Dorm

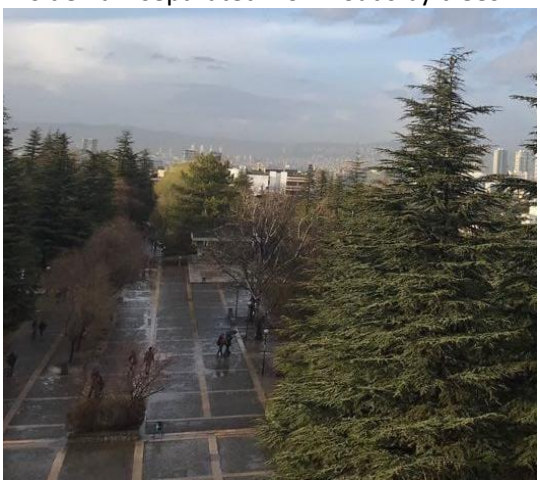
Pedestrian priority on campus

METU prioritizes pedestrian commuting on its campus by putting speed limit to vehicles, offering pedestrian crossings and walkways throughout the campus. METU Strategic Plan 2018-22 lays the groundwork for the application of pedestrian priority on campus, by improving pedestrian walkways.



sidewalk separated from roads by trees

lifts for wheelchair users

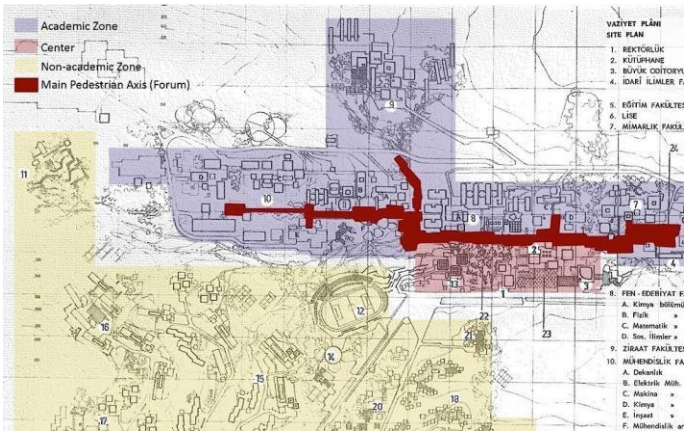


main pedestrian road called “ALLE”

pedestrian road and square near stadium

“

platform lifts for disabled



Altuğ-Behruz Çinici Plan (1961) and settlement sub-regions according to main function groups

elevated pedestrian crosswalks

warning sign for pedestrian area at the campus entrance

Local authority collaboration regarding planning and development

There are a number of research projects carried out in collaboration with local, regional, national and international authorities:

One such example is the Nature4Cities Project “Nature Based Solutions for Re-Naturing Cities: Knowledge Diffusion and Decision Support Platform through New Collaborative Models” (https://www.nature4cities.eu/). Ankara as one of the pilot cities, the project brings together METU and local Çankaya Municipality (https://www.nature4cities.eu/post/ankara-çankaya-the-capital-of-turkey-is-seeking-for-nature-based-solutions).

7th Urban Studies Congress in METU

The 7th Urban Research Congress "Sustainable, Livable, Accessible Housing and Living Environments" was held on May 16-17-18, 2022 at the Architecture Amphitheater of our university in partnership with Middle East Technical University and Urban Research Institute. Within the scope of the congress, papers other than invited speeches and panels were held online.

https://crp.metu.edu.tr/tr/duyuru/7-kent-arastirmalari-kongresi
https://basinda.metu.edu.tr/images/basin/1723371794_0.jpg

Ensure sustainable consumption and production patterns

https://sdgs.un.org/goals/goal12

Policy waste disposal

Toxic waste treatment

The toxic waste in METU is handled in accordance with the Waste Directive of the Environment Ministry of Environment and Urban Planning (https://www.resmigazete.gov.tr/eskiler/2015/04/20150402-2.htm)

In METU, the presence of a large number of research labs help produce a large sum of toxic waste. The toxic waste regulation was introduced in 2018. Pictures show Temporary Waste Storage areas where the waste received from the labs are stored, they are picked up from the authorized companies such as (https://www.ekovar.com.tr/hizmetlerimiz/index.html). The Rectorate does not dictate which companies to work with as the units can find more suitable waste management companies, specific to their type of waste. However, when the unit faces a high cost to get rid of toxic waste, it can seek support from the "Laboratuvary waste commission".

Landfill policy

The waste disposal in METU is handled in accordance with the Waste Directive of the Environment Ministry of Environment and Urban Planning (https://www.resmigazete.gov.tr/eskiler/2015/04/20150402-2.htm).

Minimization of plastic use

In 2019, METU Zero Waste Unit was formed in order to prevent waste, to use resources more efficiently, to prevent or minimize waste generation by reviewing the causes of waste generation, and to collect and recycle waste separately at its source in case of occurrence.

To carry out zero waste practices that will raise awareness with the aim of managing resources in a sustainable and efficient manner, after determining the current situation in the Middle East Technical University and providing the necessary equipment within the scope of the zero waste project.

Ensuring the transportation of the wastes that are collected separately at the source and collected separately without mixing with each other in coordination with the Internal Services Directorate and the relevant unit of the Municipality.

Starting from the prevention of waste generation, to ensure the establishment and continuity of the zero waste management system, which includes the processes of reducing waste, collecting separately at its source, temporary storage, separate collection, transportation and processing.

To register to the Zero Waste Information System and to ensure the traceability of the waste managed in this context.

Relevant legislation can be accessed at https://sifiratik.gov.tr/ and Zero Waste Directive which is binding for all public institutions
https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=32659&MevzuatTur=7&MevzuatTertip=5

Minimization of other disposable items

Zero Waste Directive dictates the minimization of disposable items, made from plastic and paper.

METU INORGANIC WASTE AND RECYCLING POLICY

Middle East Technical University (METU) considers solid waste and recyclable products as a resource that will contribute to the quality of life, inclusive and sustainable economy, and integrity of nature in a way that supports sustainable development. While preparing action plans on solid waste and recycling, these three basic elements (quality of life, inclusive and sustainable economy, integrity of nature) reflecting the interdependent and interacting parts of sustainable development are taken into account, and none is more prominent than the other. METU solid waste and recycling policies are designed to guide all official institutions, organizations, businesses and individuals with which it cooperates. The relevant stakeholders are expected to use solid waste management system based on recycling waste, reusing, or not generating waste.

METU is committed to reuse solid waste as a resource and takes steps to encourage sustainable use of natural resources in its decision-making processes. It establishes systems that can make useful products from materials considered as waste but have natural value by reviewing them economically, environmentally, and socially. In this way, it offers some facilities to create new job opportunities, use sustainable energy, protect human health, and enhance environmental quality. METU has full responsibility to decrease the consumption of disposable materials from paper, plastic, and aluminium.

Our staff will carry out all internal and external correspondences using the "Electronic Document Management System". Educational materials in each course will be shared utilizing ODTUCLASS, the learning management system of METU. Necessary arrangements will be made for students to get minimum number of printouts. Disposable and non-environmentally friendly service materials made of plastic, aluminum or foam cannot be used in canteens, cafeterias, restaurants, and buffets located in the campus. These products cannot be sold in the markets in the campus. In all kinds of academic/social meetings and events to be held on the university campus, reusable service products will be preferred instead of disposable products. All suppliers will be expected to sell products in reusable or recyclable packages on the university campus.

Applications

In order to eliminate paper use, EBYS (E-Document Management Platform), Scientific Research Projects, Academic Performance and Publicaton Promotion and Scienitific Promotion processes are carried out using digital platforms.

https://ebys.metu.edu.tr, https://bapsis.metu.edu.tr, https://apsis.metu.edu.tr/

In order to avoid the use of single-use plastic bottles, METU offers free drinking water in all the fountains across campuses. Also the cafeterias does not offer plastic kitchenware to eliminate waste.

https://kafeterya.metu.edu.tr/odtu-kafeterya

ODTUDEN store offers products to replace single use items, the income form the slaes are transferred to university scholarship funds https://odtuden.com.tr

As initiated by the METU Green Campus student association, the BPA-free and reusable bottles are sold as part of the Zero Waste initative.

Take urgent action to combat climate change and its impacts

https://sdgs.un.org/goals/goal13

Local education programmes on climate

METU Continuous Education Center (METU CEC) offers certificate program titled "Climate Change, Adaptation Policies and Turkey" for non-students. The purpose of the program is to train the staff of public institutions and organizations, the private sector, universities, research institutions, non- governmental organizations on issues of climate change, adaptation to the effects of climate change through strategy alignment, planning policies integrated with social and economic dimensions. This training program is a modular program prepared by METU Earth System Sciences Department.

https://sem.metu.edu.tr/egitim/iklim-degisikligi-sertifika-programi.html

Co-operative planning for climate change disasters

METU cooperates with the government in planning for climate change disasters through Disaster Management Implementation and Research Center. The activities of the research center is listed at http://dmc.metu.edu.tr/en/.

In addition, there are several ongoing research collaborations funded by the government on planning for climate change and sustainable cities.

- Third Country Training Programme on Disaster Risk Management and Building Disaster Resilient Communities (TICA-JICA Cooperation Program Supported Project, 2019 –2019)
- Scenarios of Marine Biodiversity and Evolution under Exploitation and Climate Change (TÜBİTAK International Multi-Cooperation Project, 2019 – 2022)
- Assessment of Climate Change Impacts on Streamflow and Hydropower in Antalya, Turkey (TÜBİTAK International Bilateral Joint Cooperation Program Project, 2019 – 2021)
- Updating Guidelines for Provincial Risk Reduction Plan Preparation by Pilot Implementation Project
- Arsinoe: Climate Resilient-Regions Through Systemic Solutions and Innovations (Horizon 2020 Project, 2021-2025)
- Climate change effects on trophic structure and dynamics in saline and brackish water based on a space-for-time field sampling, controlled mesocosm experiments, paleoecology, remote sensing and modelling CLIM-SALTLAKES (TÜBİTAK Project, 2020-2023)

- PONDERFUL-POND Ecosystems for Resilient Future Landscapes in a changing climate (Horizon 2020 Project, 2020-2024)

- İklim Değişikliğinin Türkiye'de Aşırı Yağışlara Etkisinin En Güncel İklim Modelleri (CMIP6) İle Yüksek Çözünürlükte Değerlendirilmesi (TÜBİTAK Projesi, 2022-2025)

- Genomic Biodiversity Knowledge for Resilient Ecosystems (TÜBİTAK - AB COST Projesi , 2019 - 2023)

- SÜRDÜRÜLEBİLİR KENTLER İÇİN İLERİ TEKNOLOJİLER PLATFORMU (SÜİT) (TÜBİTAK Projesi, 2022 - 2025)

- Sürdürülebilir ve Düşük Maliyetli Malzemeler İçeren İklime Dayanıklı 3D Yazdırılabilir Bina Bileşenleri (3D-PC): Hassas Nüfuslar İçin Düşük Maliyetli ve Yüksek Hızlı Konut Sağlanması (TÜBİTAK Uluslararası İkili İşbirliği Projesi, 2021 - 2023)

Collaborations with the government

METU informs and supports local or regional government in local climate change disaster or risk early warning and monitoring through the work of its related research centers

- Disaster Management Implementation and Research Center (http://dmc.metu.edu.tr/en/.)
- DEKOSIM (http://dekosim.ims.metu.edu.tr/)

Environmental education collaborations with NGOs

METU collaborates with non-governmental organizations (NGOs) on climate adaptation. An example is the collaboration for the "Nature of Youth and the City" Erasmus+ Project by Nature Conservation Center, METU Ecosystem Implementation and Research Center (EKOSAM), Butterfly Conservation (UK), Anima Mundi (IT), Technological Education Institute of Thessaly (GR). The project aims to train and equip youngsters on sustainability and preservation of nature. https://odtudedoga.org

FIRST IN ANKARA: GREEN-THEMED "GREENY GAME JAM" EVENT TOOK PLACE

Ankara Innovative Incorporated Company, a subsidiary of Ankara Metropolitan Municipality, and the Department of Information Technologies hosted the capital's first green game competition together with METU GATES, Gazi DOTT and METU Design Community. "Greeny Game Jam" event was held free of charge at North Star TechBridge on October 21-23.

Başkent'in çevreci oyun yarışması

Bilişim sektörüne ve genç bilişimcilere desteklerini sürdüren Ankara Büyükşehir Belediyesi, Başkentin ilk çevreci oyun yarışmasına imza attı. ABB iştiraklerinden Ankara İnovatif Teknoloji AŞ ile Bilgi İşlem Daire Başkanlığının METU GATES, Gazi DOTT ve ODTÜ Tasarım Topluluğu iş birliği ile düzenlediği "Greeny Game Jam", Kuzey Yıldızı TechBridge'de gerçekleştirildi.

Ankara'yı teknolojinin başkenti yapma yolunda birçok projeye imza atan Ankara Büyükşehir Belediyesi, açtığı teknoloji merkezleri ile tüm Türkiye'ye örnek olmayı sürdürürken bilişim sektörüne ve genç bilişimcilere destek olmaya da devam ediyor. ABB iştiraklerinden Ankara İnovatif AŞ ve Bilgi İşlem Daire Başkanlığı; METU GATES, Gazi DOTT ve ODTÜ Tasarım Topluluğu ile birlikte Başkentin ilk çevreci oyun yarışmasına ev sahipliği yaptı. 21-23 Ekim tarihlerinde Kuzey Yıldızı TechBridge'de ücretsiz olarak gerçekleştirilen "Greeny Game Jam" etkinliğine; bilişim sektöründe çalışanlar ve üniversite öğrencileri yoğun ilgi gösterdi.

"GENÇLERİMİZİ HER ZAMAN DESTEKLEYECEĞİZ"

Aralıksız bir şekilde 3 gün süren etkinlikte; Büyükşehir Belediyesi yarışmacılara kahvaltı ve akşam yemeği imkânı sağladı. Etkinlikle ilgili bilgi veren Ankara İnovatif Teknoloji AŞ Yönetim Kurulu Başkanı Tayfun Tanju Kara, şunları söyledi: "Bir oyun yazma yarışması. Yeşil temalı. Burada yazılımcı arkadaşlar yeşil temalı oyunlarını yazarak yarıştılar. Biz Ankara Büyükşehir Belediyesi olarak ev sahipliği yaptık. Mansur Yavaş Başkan'ımızın bilişimle ilgili düşüncelerini hayata geçirebilmek için genç girişimcilere elimizden gelen her türlü desteği sağlamaya çalışıyoruz."

Yarışmanın sonunda dereceye giren 3 takıma ödüllerini veren Bilgi İşlem Daire Başkanı Gökhan Özcan da "Gençleri ve bilişimi çok seven Ankara Büyükşehir Belediye Başkanı'mız Mansur Yavaş'ın selamını getirdim sizlere. Gençlerimizi her zaman destekleyeceğimizi bilmenizi istiyoruz. Bütün takımlarımızı tebrik ediyoruz" diye konuştu.

"BU MERKEZ İYİ Kİ YAPILMIŞ"

Greeny Game Jam etkinliğine katılan gençler, bilişim etkinliklerine destek verilmesinin çok önemli olduğunu belirterek, düşüncelerini şu sözlerle dile getirdi:

-Serhat Taratorak: "Gazi Üniversitesinden katılıyorum yarışmaya. Çok güzel bir yarışma oldu. Buradaki herkes çok samimi ve sıcaktı. Ortamda çok güzel. Her şey için teşekkürler."

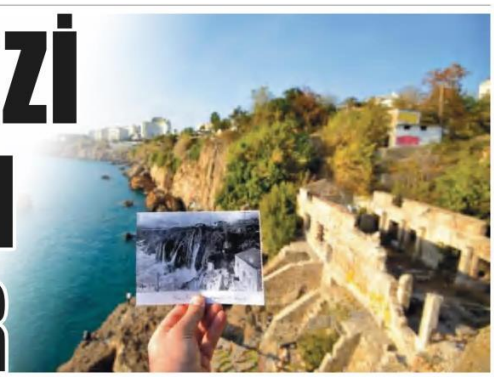
-Melih Tuna: "ODTÜ'de okuyorum. İlk kez bir gamejam'e katılıyorum. Ankara'da yapılan en iyi etkinlik oldu. İlk etkinliğime böyle bir yerde katılmış olmam çok güzel. Bu tarz etkinliklere destek verilmesi çok önemli. Oyun oynamayı saçma görenler var ancak bu tarz etkinliklerle desteklenmemiz çok güzel. Teşekkürler." **(Başkent)**

https://www.ankara.bel.tr/haberler/ankara-da-ilk-yesil-temali-greeny-game-jam-etkinligi-gerceklesti-15974

https://basinda.metu.edu.tr/images/basin/1769086166_0.jpg

METU faculty member made a presentation titled "Local Climate Action Together: Design and Practical Suggestions" at the climate crisis workshop

İKLİM KRİZİ ÇALIŞTAYI BAŞLIYOR



Muratpaşa Belediyesi'nin iklim krizine dikkat çekmek için geçen yıl başlattığı +0,5 Akdeniz'in Geleceği çalıştaylarına bu yıl da devam ediyor

Muratpaşa Belediyesi, artan hava sıcaklığı, azalan doğal kaynaklar, yükselen deniz seviyesi, düzensiz ve aşırı yağışlar, kuraklık, sel ve kasırga gibi artan doğal felaketlerle kendini gösteren iklim krizine dikkat çekmek için geçen yıl başlattığı +0,5 Akdeniz'in Geleceği çalıştaylarına bu yıl da devam ediyor. Geçen yıl deniz kirliği ve su politikaları üzerine odaklanan çalıştayın 2'ncisi, İklim Krizinde Yaşamaya Dair temasıyla, 2 Aralık 2022 Cuma Türkan Şoray Kültür Merkezi'nde gerçekleştirilecek. İklim krizinin, 'sosyo-ekonomik durum', 'gıda güvenliği' ve 'halk sağlığına' etkilerinin konuşulacağı çalıştayda, uzman ve akademisyenlerin sunumlarının yanı sıra, çeşitli atölyeler de gerçekleştirilecek.

Muratpaşa Belediye Başkanı Ümit Uysal, çevre çalışmalarının sosyal faaliyet alanı olmaktan çıktığını söyledi. Uysal, "Çevre faaliyetleri, kendi yaşamımızı savunma, bir meşru müdafaa mecrası haline gelmiştir" dedi. İnsanoğlunun, artık çevre krizinin bizzat içinde yaşadığını dile getiren Başkan Uysal, "İklim krizi sadece ekosistemin zarar görmesinden ibaret değildir. Adaletten uzak sosyo-ekonomik şartlar, gıda ve su kıtlığı, halk sağlığında bozulmalar, mevcut krizleri tetiklemekte ve üzerine yenilerini eklemektedir. Bu nedenle ikinci çalıştayımızda iklim krizinde yaşamaya dair temasını belirledik" diye konuştu.

İKLİM KRİZİNDE GIDA, SAĞLIK VE KIRILGANLIK

İki oturum olarak gerçekleşecek çalıştayın birinci oturumunda "İklim Krizinde Gıda ve Sağlık" başlığında sunumlar gerçekleşecek. Adnan Menderes Üniversitesi Tıp Fakültesi Halk Sağlığı Anabilim Dalı'ndan Prof. Dr. Emine Didem Evci Kiraz "Sağlıklı İklim Reçetesi", gıda mühendisi ve akademisyen Bülent Şık "İklim Krizi, Çocuklar ve Gıda Güvenliği" ve Dr. İlter Yenidede "İklim Dostu Sürdürülebilir Beslenme" üzerine konuşacak.

"İklim Krizinde Kırılganlık" başlığındaki ikinci oturumda ise; Orta Doğu Teknik Üniversitesi Mimarlık Fakültesi Şehir ve Bölge Planlama Bölümü'nden Prof. Dr. Anlı Ataöv "Yerel İklim Eylemi: Birlikte Tasarım Ve Pratik Öneriler"; Akdeniz Üniversitesi İktisadi ve İdari Bilimler Fakültesi Uluslararası İlişkiler Bölümü'nden Doç. Dr. Ceren Uysal Oğuz ve Doç. Dr. Senem Atvur "İklimin Kırılgan Grupları, İklim Adaleti, İklim Demokrasisi Ve Göçler", Akdeniz Üniversitesi Sağlık Bilimleri Fakültesi, Gerontoloji Bölümü'nden Doç. Dr. Özgür Arun ise "İklim Krizinin Yaşlı Hakları Üzerine Etkisi"ni anlatacak. Çalıştayda elektronik atıkları sanata çeviren ressam Ayşecan Hizmet'in koordinatörlüğünde bir araya gelecek gençler de 'yaratıcı yeniden kullanıma' örnek olacak resim performansıyla iklim krizine dikkat çekecek. Projeye, ATSO Güzel Sanatlar Lisesi resim bölümü öğrencileri resim öğretmenleri Ahmet Kaya eşliğinde katılırken, Arty Sanat Akademi'sinin öğrencileri de performansta yer alacak. Akdeniz Üniversitesi Serik Gülsün Süleyman Süral Meslek Yüksekokulu Tasarım Bölümü Moda Tasarım Programı öğrencileri de öğretim görevlisi Mine Aydoğan'ın yürütücülüğünde çevreci atölyeler ve sunumlarla çalıştaya katılacak. Avrupa'nın en büyük sivil toplum merkezi olma özelliği taşıyan Abdullah Sevimçok Sivil Toplum ve İnovasyon Merkezi, çevre alanındaki proje sunumları ve Yaşamdan Yana Derneği de Vegan Atölyesi ile çalıştayda yer alacak.

HABER MERKEZİ

https://basinda.metu.edu.tr/images/basin/1778846437_1.jpg

The Climate Council Science and Technology Commission was held with the participation of Barış Salihoğlu, a faculty member of METU Marine Sciences Institute

İKLİM ŞÛRASI BİLİM ve TEKNOLOJİ KOMİSYONU İLK TOPLANTISI GERÇEKLEŞTİRİLDİ

İklim Şûrası Bilim ve Teknoloji Komisyonu'nun ilk toplantısı 24 Ocak 2022 tarihinde çevrim içi olarak gerçekleştirildi.

Türkiye Bilimsel ve Teknolojik Araştırma Kurumu (TÜBİTAK) Başkanı **Prof. Dr. Hasan Mandal**, Başkanı olduğu İklim Şûrası Bilim ve Teknoloji Komisyonu'nun ilk toplantısının açılış konuşmasını gerçekleştirdi. Sürece ilişkin bilgilendirme yapan **Mandal**, Komisyon'un 11 Ocak'ta gerçekleşen İklim Değişikliği ve Uyum Koordinasyon Kurulu toplantısında alınan kararla kurulduğunu belirtti. Ar-Ge ile bilim ve teknoloji bileşenlerinin daha fazla ele alınması gerektiğine vurgu yapan **Mandal**, özellikle bu bileşenlerde süreçlere uyum ve adaptasyon konularında önlemlere ihtiyaç duyulduğuna dikkat çekti. **Mandal**, "Ülkemizin iklim değişikliği odaklı süreçlerinde elini taşın altına koyma noktasında 'Biz de varız' diyoruz. Kesişme noktalarımız bizi kuvvetli kılıyor, diğer gruplarla ve alanlarla kesiştiğimiz noktaları bulmak elimizi güçlendirecektir" değerlendirmesinde bulundu.

Komisyonun Başkan Yardımcısı Orta Doğu Teknik Üniversitesi (ODTÜ) Deniz Bilimleri Enstitüsü Deniz Bilim (Oşinografi) Anabilim Dalı Öğretim Üyesi **Prof. Dr. Barış Salihoğlu** da, komisyon çalışmalarının önemine dikkat çekerek, bilim ve teknoloji alanında iklim meselesine yön verileceğini belirtti.

Açılış konuşmalarının ardından *"İklim Değişikliği, Çevre ve Biyoçeşitlilik, Temiz ve Döngüsel Ekonomi, Temiz, Erişilebilir ve Güvenli Enerji Arzı, Yeşil ve Sürdürülebilir Tarım ile Sürdürülebilir Akıllı Ulaşım"* başlıklarında beş çalışma grubu toplandı.

https://basinda.metu.edu.tr/images/basin/1698227540_0.jpg

Conserve and sustainably use the oceans, seas and marine resources for sustainable

https://sdgs.un.org/goals/goal14

Sustainable Development Goal 14 is an important goal set to sustainably manage and protect marine and ocean resources. In order to contribute to this critical goal, our university has successfully carried out various research projects and carried out important studies on marine and ocean ecosystems. These projects cover a range of areas such as marine biology, water quality, fisheries sustainability and ocean pollution. The table below summarizes the major research projects carried out at our university. These projects support our commitment to the conservation of marine and ocean resources within the framework of SDG 14.

Project Name	Project Type
SODA ATIKSU	Project Supported by Other Private Institutions
Kuzeydoğu Akdeniz balık populasyonlarında son 40 yıldaki değişimler, bu değişimlerde ötrofikasyon, balıkçılık baskısı, iklim ve Lessepsian göçünün rolü ve değişimlere yön verme olasılıklarının araştırılması	TUBITAK Project
Marmara Denizi Bütünlesik Modelleme Sistemi (MARMOD) Faz II	Project Supported by Other Official Institutions
ACTNOW: Advancing Understanding of Cumulative Impacts on European Marine Biodiversity, Ecosystem Functions and Services for Human Wellbeing	UFUK EUROPE Project
Studying Populations and Microscale Habitat Selection of the Endangered White-headed Duck (Oxyura leucocephala) at Lake Mogan, Ankara	Other International Funding Programs
20. Yüzyıldan Günümüze Ankara'da Kentleşme ve Bir Kentsel Doğa Parçası: Papazın Bağı	Higher Education Institutions Supported Project
Kıyılardaki Kültürel Miras Alanlarının Deniz Seviyesi Yükselmesi ve Etkilerine Olan Kırılganlığı	TUBITAK Project
Developing Optimal and Open Research Support for the Black Sea (DOORS)	Horizon 2020 Project
BRIDGE-BS: Advancing Black Sea Research and Innovation to Co-Develop Blue Growth within Resilient Ecosystems	Horizon 2020 Project
Sürdürülebilir Su Yönetimi Için Yeni Bir Yaklaşım: Su-Enerji-Gıda-Ekosistem Bağı Çerçevesine Döngüsel Ekonomi Yaklaşımının Entegrasyonu	TUBITAK Project
Conserving the Endangered White-headed Duck (Oxyura leucocephala) Populations in Central Anatolia and Helping Raise the Next Generation of Ornithologists and Ecologists	Other International Funding Programs

Marmara Denizi Birincil Üretim Değişimlerinin Uydu Verileri ve Sediment Biyo-Jeokimyası Kullanılarak Mekânsal ve Zamansal Olarak Değerlendirilmesi	TUBITAK Project
AQUACOSM-plus: Network of Leading Ecosystem Scale Experimental AQUAtic MesoCOSM Facilities Connecting Rivers, Lakes, Estuaries and Oceans in Europe and beyond	Horizon 2020 Project
Türkiye için yüzer hibrit yenilenebilir enerji sistemleri	TUBITAK International Bilateral Cooperation Project
Cultoure4Youth: Supporting Youth Entrepreneurship in Cultural Tourism for coastal communities in the Black Sea region	Other EU Funded Projects
Earth Commission: Translation of Earth System Boundaries for Cities	Other International Funding Programs

BRIDGE-BS project to investigate the effects of climate change in the Black Sea.

"BRIDGE-BS" projesiyle "ODTÜ Bilim-2" gemisi yola çıktı

Karadeniz'de iklim değişikliğinin etkileri araştırılacak

İklim değişikliğinin Karadeniz'deki etkilerini gözlemlemek amacıyla hayata geçirilen "Karadeniz'de Dirençli Ekosistemlerde Mavi Büyüme Gelişimi için Araştırma ve İnovasyon" projesinin ilk deniz seferi için "ODTÜ Bilim-2" gemisi yola çıktı

Orta Doğu Teknik Üniversitesi (ODTÜ) Deniz Bilimleri Enstitüsü Müdürü Prof. Dr. Barış Salihoğlu ve Müdür Yardımcısı Doç. Dr. Mustafa Yücel liderliğinde "Karadeniz'de Dirençli Ekosistemlerde Mavi Büyüme Gelişimi için Araştırma ve İnovasyon" (BRIDGE-BS: Advancing Black Sea Research and Innovation to Co-Develop Blue Growth within Resilient Ecosystems) başlıklı çok uluslu proje geçen yılın haziran ayında başladı. Konsorsiyumunu 7'si Karadeniz kıyı ülkesinden, 8'i Avrupa Birliği üye ülkesinden ve uluslararası kuruluşlardan olmak üzere toplam 33 ortağın oluşturduğu BRIDGE-BS, Avrupa Birliği'nin (AB) bilimsel kaynaklarını birleştiren "AB Ufuk 2020" programı içerisinde, bugüne kadar en fazla Türk ortağın yer aldığı proje olma özelliği taşıyor.

İLK KIŞ SEFERLERİNİ GERÇEKLEŞTİRİLECEK

Bütçesi 9 milyon avro olan proje, Karadeniz'in ekosistem direncine, mavi ekonominin gelişmesine, bunu tamamlayıcı nitelikte ortak gözlem sistemleri geliştirmeye ve kara-deniz etkileşimlerine odaklanıyor. Proje kapsamında ilk deniz seferi ise 13 bilim insanının katılımıyla ODTÜ Bilim-2 gemisi ile başladı. 30 gün sürecek sefer boyunca Karadeniz'de 150 ayrı noktadan numuneler alınacak ve ölçümler yapılacak. Karadeniz seferine başlayan gemide değerlendirmelerde bulunan Doç. Dr. Mustafa Yücel, kendileriyle projede yer alan diğer ülkelere ait araştırma gemilerinin de aynı dönemde Karadeniz'de bulunacağını ve ülkelerin ortak olarak ilk kış seferlerini gerçekleştireceğini söyledi.

KARADENİZ BİRÇOK BASKI ALTINDA

Eş zamanlı araştırmalar yapılmasının en önemli konu olduğunu, verileri birleştirdikleri zaman "Karadeniz'de aralık ayının resmini çektik" diyebileceklerini dile getiren Yücel, "Biri kış, diğeri yaz olmak üzere 30'ar günlük 2 büyük sefer planladık. Haziran ayında da aynı seferin yaz başındaki versiyonunu çalışacağız. Bunların yanında ortaklarımız imkan bulup Karadeniz'e çıktıkça küçük çaplı örneklemeler yapmaya devam edecekler" dedi. Yücel, "Karadeniz, özellikle iklim değişikliği, insan kaynaklı kirlilik gibi birçok baskı altında olan bir deniz. Bu baskılar karşısında Karadeniz nasıl etkilendi, nereye doğru değişecek ve hangi önlemler alınmalı? En basit anlamda BRIDGE-BS Projesi bu soruların yanıtını bulmaya hizmet ediyor" ifadesini kullandı.

"İLK ETKİ OKSİJEN ÜZERİNDE OLUYOR"

Karadeniz'de iklim değişikliğinin etkilerine ilişkin mevcut bulguları paylaşan Yücel şu bilgileri verdi:

"Karadeniz'deki iklim değişikliği bulguları maalesef iç açıcı değil. Karadeniz kendi doğası itibarıyla ilk 80-100 metresinde birçok balık türünün yaşayabileceği kadar oksijen içeriyor. Derinlerinde oksijen yok, hatta 120-150 metreden sonra hidrojen sülfür dediğimiz, birçok canlı için zehirli, toksik gaz birikimi ile metan birikimi var. İklim değişikliğiyle denizler ısındıkça içinde daha az oksijen tutabiliyor. Isınma, net olarak denizlerin oksijeni kaybetmesine neden oluyor. Marmara'da olduğu gibi karasal atıklar ve aşırı biyolojik üretim de bunun üzerine ek yük getiriyor. Karadeniz'de maalesef iklim değişikliğinin ilk etkisi oksijen üzerinde oluyor."

Yücel, şu andaki veriler yeterli düzeyde olmadığı için ellerinde net bir rakam olmamakla birlikte, normalde 120-130 metre derinlikte başlayan hidrojen sülfürün, Karadeniz'de şu anda 100-110 metrede başladığına dair işaretler olduğunu belirtti.

"ISINMA KARADENİZ'DE ÇOK KUVVETLİ"

Biyoçeşitlilik kaybına ve balık popülasyonlarının azalmasına yol açan ısınmanın Karadeniz'de çok kuvvetli olduğunu, okyanuslar ortalama 1,5 derece ısınırken Karadeniz'in 2 ila 2,5 derecelik ısınmaya maruz kaldığını bildiren Yücel, bu durumun, Karadeniz'in akıntı sistemlerinde de bazı hayati değişikliklere yol açtığına dikkati çekti. Yücel, "Karadeniz'e özgü bazı iç akıntı sistemleri var, bunun çok yavaşladığını gördük. Bu, tarihsel olarak bilinen, gösterilen bir akıntıdır. Kış döneminde oluşur, dibe oksijen pompalar. Bunun maalesef çok çok yavaşladığını bulduk. Karadeniz'in bu tip nefes alış mekanizmaları sırf ısınma nedeniyle azalmış durumda" dedi. Tuna, Dinyeper ve Dinyester gibi Karadeniz'e dökülen büyük nehirlerin kapladığı alanın, Karadeniz'in 5 katı olduğu bilgisini veren Yücel, proje kapsamında bu havzalarda da çalışmalar yürütüldüğünü aktardı.

MAVİ EKONOMİ STRATEJİSİ

Doç. Dr. Mustafa Yücel, denizlerden ekonomik anlamda faydalanabilmenin proje kapsamındaki konulardan biri olduğunu vurgulayarak, şöyle devam etti: "Burada beklenen sadece iklim değişikliği, kirlilikle ilgili trendleri ortaya koyup 'Sistem kötüye gidiyor' deyip çekilmek değil. Bir yandan da çözüm üretmek. Karadeniz'de belki akuakültür gelişebilir. Yenilenebilir enerjinin hangi alanlarda uygun olacağı yönünde çalışmalar var. Projenin kalanı, 'Karbondioksit salmayan ya da minimal salan, çevreci, sürdürülebilir sektörleri denizde geliştirebilir miyiz?' sorusuyla ilgileniyor. Bu anlamda yenilenebilir enerji, sürdürülebilir akuakültür, biyoteknoloji geliştirme gibi ileride iş imkanları sağlayacak, denizi kullanarak ama denizin sağlığını da koruyarak sürdürülebilir mavi ekonomi gelişimi yönünde bir strateji oluşturuyoruz."

"KARADENİZ VE MARMARA BİRBİRİNİ ETKİLİYOR"

Karadeniz'deki ısınmanın Marmara Denizi'ni doğrudan etkilediği uyarısında bulunan Yücel, sözlerini şöyle tamamladı: "Birkaç haftada, maksimum 60 günde, İstanbul Boğazı'ndan giren Karadeniz suyu, Çanakkale Boğazı'ndan çıkmış oluyor. Marmara'nın üst suları Karadeniz'in yüzey sularına çok benzer. Oradaki bir değişiklik çok hızlı biçimde Marmara'yı etkiliyor. Yapısı gereği daha küçük, çevresinde şehirleşme gibi unsurların olmasıyla Marmara, muhtemelen daha büyük bir ısınmaya maruz kalıyor. Karadeniz'in ısınması, her anlamda kötüye gidişi Marmara'yı çok hızlı etkileyecek. Karadeniz'deki türlerin azalması, Marmara'nın biyoçeşitliliğini etkiliyor. Marmara'daki durumun kötüleşmesi de Karadeniz'i etkiliyor. Bu iki deniz derin akıntıyla birbirine bağlı. Marmara için ne uygulanıyorsa, Karadeniz kıyılarımızda da bence bir an önce uygulamamız gerek. Atık su arıtma, çevre dostu uygulamalar gibi çalışmalar bütün kıyılarımızda yapılması zaten gerekli."

https://www.aa.com.tr/tr/yesilhat/bilim/iklim-degisikliginin-karadenizdeki-etkileri-bridge-bs-projesiyle-

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arastirilacak/1819116

İşbank and METU collaborate for the seas

Within the scope of the cooperation, İşbank offered the unmanned underwater glider device called 'Deniz Kâşifi', produced in France, to the use of the Institute of Marine Sciences at METU. They aim to provide a better understanding of the seas and a better determination of the state of ecosystem health.

(https://www.aa.com.tr/tr/sirkethaberleri/egitim/is-bankasi-ve-odtuden-denizler-icin-is-birligi/677218)

https://basinda.metu.edu.tr/2022-12-02/3269953

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

https://sdgs.un.org/goals/goal15

OUTREACH: Supporting land ecosystems through education

Projects for SDG 15

- Anadolu'da Yaşayan Lekeli Semender, Salamandra infraimmaculata (Mertens, 1948)'nın (Caudata: Salamandridae) Ekolojisi, Popülasyon Biyolojisi ve Filogenetik Yapısı (TÜBİTAK Projesi, 2021 – 2023)
- Eymir Kuş Halkalama İstasyonu (Diğer Resmi Kurumlarca Desteklenen Proje, 2018 - 2022)
- Genomic BIodiversity Knowledge for Resilient Ecosystems (TÜBİTAK - AB COST Projesi , 2019 - 2023)
- Identifying seed sources for highly adaptable oak forests in a changing climate (TÜBİTAK Uluslararası Çoklu İşbirliği Projesi, 2021-2023)
- Kıyılardaki Kültürel Miras Alanlarının Deniz Seviyesi Yükselmesi ve Etkilerine Olan Kırılganlığı (TÜBİTAK Projesi, 2022- 2025)
- Göllerde İklim Değişimi Kaynaklı Aşırı Karasal Çözünmüş Organik Madde (tDOC) Yüküne Karşı Mikrobik ve Planktonik Komünitelerin Dayanıklılığı (Resistance), Esnekliği (Resilience) Ve İyileşmesi (Recovery): Mezokozm Temelli Deneysel Araştırma(Kısaltma: R3-DOC) (TÜBİTAK Projesi, 2020 - 2023)

Educational programmes on ecosystems

As an extension of EKOSAM, EKOSAM Student Community aims to protect the natural wealth and biological diversity of ecosystems, especially the METU campus, and to raise awareness by making environmental and nature-themed activities primarily for the students of METU and for people who visit and work in the campus (http://ekosam.metu.edu.tr/en/ekosam-student-club-0).

In recent years, different events took place on METU Campus related to the sustainable use of land.

Species Count (Tür Say!)

In 2018 and 2019, Turkey's first bio blitz (Tür Say!) event took place at METU Campus as part of the "Nature of Youth and the City" Erasmus+ Project carriedoutbyNatureConservationCenter,METU Ecosystem Implementationand Research Center (EKOSAM), Butterfly Conservation (UK), Anima Mundi (IT), Technological Education Institute of Thessaly (GR).

Counting species activity, also known as bioblitz (combination of the words "bio" meaning life and "blitz" meaning raid indicates that people discover the diversity of species in a certain place in a short time by intensively cooperating), has been around in many countries, including the United States and the United Kingdom, as a community science activity in order to increase public interest in nature. In this activity open to all the participants from all backgrounds, the living creatures observed in nature are identified by the help of experts, after a giving brief training to participants on Campus species.

May 26, 2019 Species Count (Tür Say!) event (Source: odtudedoga.org)

Plogging at Lake Eymir

Since May 2017, annual *Plogging (*"plocka upp" and "jogging") event takes place around Lake Eymir. (Source: https://kampus.metu.edu.tr/en/campus3/plogging-event-metu-eymir)

Annual Aforestation Festival

The main METU Campus is located on the West of Ankara, once a remote location which became the first ever university campus in Turkey. Inhabiting the steppes on Central Anatolia, the joint efforts of students and personnel turned the dry land in to a large forested land which became the lungs of Ankara, transforming into one the largest artificial forests in the World[1].

The 39,280,000 square meter campus are also hosts a natural lake, Eymir, with an area of 1,090,000 square meters, surrounded by the METU Forest [1]https://www.metu.edu.tr/system/files/odtu-kampus-haritasi.pdf

[1] *[1]https://the.akdn/en/how-we-work/our-agencies/aga-khan-trust-culture/akaa/re-forestation-programme-metu*
"

The construction of Ankara Campus began in late 1950s, in the outskirts of the Turkish Capital, Ankara. Its suburban setting turned to urban with the expansion of the city, beginning in the late 1990s and continues until this day.

METU Rector Kemal Kurdaş (1961-69) Planting the first trees of the METU Forest

METU Forestation Festival took place on October 30, 2019
(https://www.youtube.com/watch?v=NElWcISCqoM)

Activities to maintain and extend current ecosystems' biodiversity

To maintain and extend existing ecosystems and their biodiversity, of both plants and animals, METU undertakes research on ecosystems.

Ecosystem Implementation and Research Center (EKOSAM)

As one of many research centers at METU, the aim of EKOSAM is:

1. to investigate the structure, function, biodiversity and ecosystem services and products of aquatic, steppe and forest ecosystems, which are widespread in our country including METU campus,
2. to develop adaptation and mitigation proposals in our region, which is warming up today and will become even more hot and dry in the future, in order to preserve the structure and functions of these ecosystems,
3. setting sustainable management objectives that will help to make optimal decisions that balance ecosystem conservation / restoration needs and socio-economic developments, and
4. to share the information with the society obtained from the researches in order to increase scientific awareness and to improve the activities of citizen science. (http://ekosam.metu.edu.tr/en/about)

Planning for local biodiversity

In order to preserve natural and architectural properties of the METU Campus, "METU Conservation Development Plan" was developed in 2014, with the collaboration of Ministry of Urban and Environmental Planning. The plan was revised in 2017.

https://www.metu.edu.tr/tr/duyuru/odtu-koruma-amacli-imar-plani-hakkinda-aciklama

In the construction of new buildings, decisions for location are based on METU Conservation Development Plan. Local biodiversity is also taken into consideration, especially the protection of the land classified as forest area is a priority.

METU NATURE and ECOSYSTEMS POLICY

METU campuses contain a very rich mosaic of land, lake and marine ecosystems that very few universities in the world have. The University adopts as a principle to use these ecosystems as natural laboratories to protect, develop and develop exemplary strategies for their sustainable use. In addition, it supports the studies at the institutional level for the formation of concrete principles for the following subjects and their implementation through practices.

Sustainable practices (such as plastic waste management, air pollutants emission limits) to prevent sea/water/air pollution caused by activities carried out on land.

Establishing observation and prediction systems to monitor the health of aquatic and marine ecosystems and sharing data openly over the web (example of Lake Eymir and DBE coast)

Developing an integrated management strategy specific to METU for the protection of land and sea creatures and ecosystems and ensuring its visibility on the relevant web pages.

Establishing a database on campuses' unique biodiversity, protecting endangered species determined by the International Union for Conservation of Nature (IUCN), and developing practices for protecting the ecosystem against invasive species (http://sustainablecampus.metu.edu.tr/en/policies).

Collaborations with the local government

Within the scope of the project "Building a Resilient City to Climate Change by Empowering Women", coordinated by Ankara, Çankaya Municipality, **Nature at METU** carried out a study in which it provided training together with climate change experts and raised awareness about climate change by playing games. After training kindergarten teachers were instructed to implement in their schools.

METU Institute of Marine Sciences (IMS) collaborates with local stakeholders, including Mersin Chamber of Commerce and Industry and Mersin Economy Platform in formulating the Blue Strategy to protect the ecosystem of East Mediterranean coast of Turkey.

https://www.mersinhaberci.com/haber/19857/byle-br-ar-geye-destek-salanmadi.html

METU IMS also signed “Clean Mediterranean” protocol with four municipalities of Antalya, Mersin, Adana and Hatay, to preserve the East Mediterranean Sea.

https://www.milliyet.com.tr/yerel-haberler/mersin/merkez/temiz-bir-akdeniz-icin-4-belediye-bir-arada-6092421

METU also collaborates with the Ankara Metropolitan Municipality to protect and develop the surroundings of Lake Eymir. (https://www.birgun.net/haber/abb-ve-odtu-den-eymir-isbirligi-286056) Another collaboration is with the Çankaya Munipality in Nature4Cities project mentioned in 11.4.7. (https://www.nature4cities.eu/post/ankara-%C3%A7ankaya-the-capital-of-turkey-is-seeking-for-nature-based-solutions).

METU cooperates with NGOs such Doğa Koruma Derneği (https://www.dkm.org.tr/) in carrying out *Species Count (Tür Say!) event (Source: odtudedoga.org).*

Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

COLLABORATIONS

METU Faculty provides specific expert advice to local, regional or national government through policy guidance, participation in committees, provision of evidence. On-going consultancies in 2019 to government institutions include:

- The Council of State
- Ministry of National Education EU Commission
- International Organization of Migration
- Turkish State Railways
- Eskisehir Metropolitan Municipality
- Ankara Water and Sewer Authority
- Istanbul Metropolitan Municipality
- Mersin Metropolitan Municipality
- Turkish Army, General Staff

Policy- and lawmakers outreach and education

METU provides outreach, general education, upskilling and capacity-building to policy and lawmakers on relevant topics including economics, law, technology, climate change. An example is the METU Continuous Education Center (METU CEC) certificate program titled "Climate Change, Adaptation Policies and Turkey" for non-students.

The purpose of "Climate Change, Adaptation Policies and Turkey" Program is to train the staff of public institutions and organizations, the private sector, universities, research institutions, non-governmental organizations on issues of climate change, adaptation to the effects of climate change through strategy alignment, planning policies integrated with social and economic dimensions. This training program is a modular program prepared by METU Earth System Sciences Department.

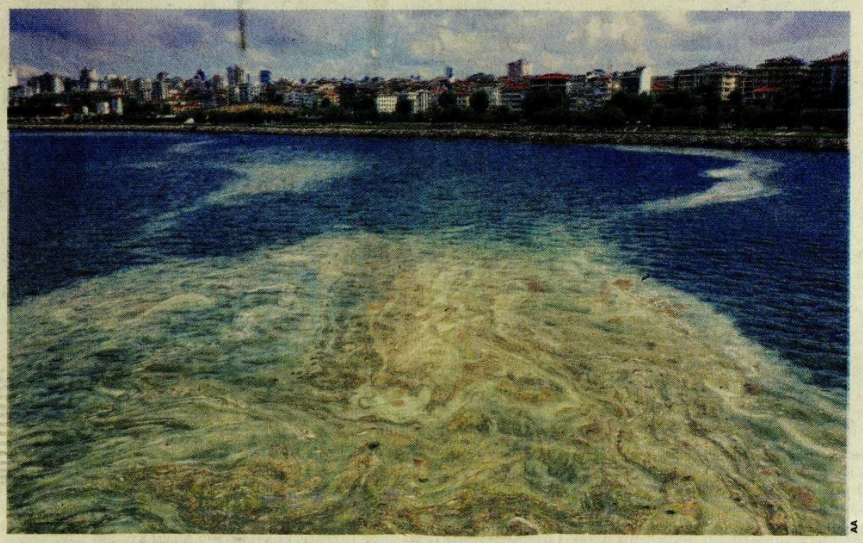
https://sem.metu.edu.tr/egitim/iklim-degisikligi-sertifika-programi.html

Participation in government research
METU undertake policy-focused research in collaboration with government departments. The projects continuing as of 2021 are as follows:

Sea Snot (Musilage) Research in Marmara Sea carried out by METU IMS, in collaboration with the Ministry of Environment, Urbanization and Climate Change in order to reduce and eliminate water pollution in the Marmara Sea.

Scientists sound alarm over 'sea snot' in Marmara Sea

Turkey seeks a solution to the marine mucilage known as 'sea snot' which has taken over parts of the Marmara Sea, while scientists researching the phenomenon say it is 'unprecedented' and point to pollution's contribution to the situation



A view of the "sea snot" off the coast of the Asian side of Istanbul, Turkey, June 4, 2021.

CONTINUED FROM PAGE ONE-

PROFESSOR Barış Salihoğlu, head of METU's Institute of Maritime Sciences, says mucilage was widespread, from the surface to the bottom. "We have seen a gel-like structure spreading across the sea and never encountered such a large mass before," he told Demirören News Agency (DHA) on Friday. The university's Science-2 vessel was deployed to the sea for mucilage research earlier this week and will continue research for four more days, before presenting its findings to the Ministry of Environment and Urban Planning which leads the cleaning efforts against the mucilage.

Salihoğlu says the mucilage is not something new, but this time it has significantly reduced oxygen levels at sea. He said the lack of waste treatment aggravated the situation. "Agricultural waste, industrial waste pouring into the sea from deltas, tributaries particularly worsened it. We need to halve the pollution at least. Cleaning the pollution at least by half would return oxygen levels to normal within five to six years. We need patience and also swift measures," he warned.

The mucilage, more visible in areas close to the coast, dealt a blow to fishing as it reduces visibility and harms the nets. Below the sea, the ecosystem is suffering, with flora and fauna dying. It also scares away swimmers, at a time when coastal towns rely on tourism revenues with the onset of summer.

Sea snot, basically a huge collection of microorganisms, increases with the discharge of nutrient-rich sewage into the sea. Salihoğlu says wastewater was discharged to the bottom of the sea with the presumption that it would "head" to the Black Sea but a large part of the discharge sticks on the surface and stays in Marmara. He noted that although wastewater treatment plants are operating, some need improvement. "The pollution should also be decreased in rivers too, especially in the Susurluk delta (south of Marmara)," Salihoğlu stated.

The government is currently running a workshop on the issue and is expected to unveil an emergency action plan Sunday. Minister of Environment and Urban Planning Murat Kurum told reporters earlier this week that they developed "short-term and long-term" solutions to the issue with scientists, nonprofit groups, municipalities and local authorities. Kurum said the activities of industrial facilities played a role in the pollution and they would take steps to increase the number and capacity of wastewater treatment plants.

Eyyüp Karahan, head of the ministry's Directorate of Environmental Protection, says they had no means to intervene in the "dramatic rise in seawater temperatures" that worsened the mucilage but they can work to reduce the pollution. Speaking at the workshop held in the northwestern province Kocaeli, which is among the cities affected by the sea snot, Karahan said Friday that they have notified municipalities and governorates about the wastewater's contribution to mucilage in January and sought immediate action. He noted that Turkey had 1,170 wastewater treatment facilities run by municipalities serving 89% of the population and 249 among them were in the Marmara region. He noted that the recycling rate of wastewater has reached 3.2% and they hope to increase it to 5% in the next two years.

Tahir Büyükakın, the Kocaeli mayor who heads the Marmara Municipalities' Union, told the workshop that the Marmara has almost been treated like a "cesspool" for years, with sewage discharged without comprehensive treatment. "The Sea of Marmara should be viewed as part of a larger ecosystem, rather than a sea independent of its immediate region. We have to take steps to address the problem by tackling the sources of pollution, including those from the Black Sea and from the countries littoral to Black Sea," he said.

For Veysel Eroğlu, a former minister of Forestry and Waterworks, the solution is "easy" if the correct steps are taken. Eroğlu, now a lawmaker for the ruling Justice and Development Party (AK Party) said at a press conference Thursday that all relevant parties, from municipalities to the countries releasing wastewater into the Black Sea, should cooperate for a solution. "All municipalities discharging wastewater into the Marmara should have biological treatment plants. Nitrogen and phosphorus should be eliminated from industrial wastewater. We need an industry that creates less pollution and consumes less water. We need to rehabilitate all streams pouring into the Marmara. We need to check the pollution caused by pesticides. Finally, we need a tight inspection for pollution and to set up a monitoring network against pollution in all streams and all sources of wastewater pouring into the sea," he says. "This is not impossible. If all this is done, the pollution would be gone and so would the mucilage," he concluded.

ISTANBUL / DAILY SABAH WITH AGENCIES

Mucilage covering Marmara may spread to Black Sea: Expert

An expert warns about the spread of mucilage, also known as sea snot, to the Black Sea, saying, 'If the Marmara Sea dies, the Black Sea will die with it'

ISTANBUL

An aerial photo shows a marina full of musilage, a glue-like substance that develops on the surface of the water due to phytoplankton, on the Marmara Sea.

The massive marine mucilage bloom that has been killing the undersea life of the Marmara Sea might also hasten the end of the Black Sea, an expert warned while briefing the Turkish Parliament Global Climate Change Research Commission on June 3.

"The Black Sea is the world's largest oxygen-free water body. If the Marmara Sea dies, then the Black Sea will die with it," Gülşah Deniz Atalar, a board member of the Climate Change Policy and Research Association, told commission members.

Mucilage is a viscous, gluey substance that develops on the surface of the water due to the excessive proliferation of microscopic plants called phytoplankton. It is caused by the accumulation of nitrogen, phosphorus and carbon in industrial and agricultural wastewater.

Talking about the Danube River in her briefing, Atalar said: "The river carries all of the pollution of the western Balkan countries to the Black Sea."

Highlighting the importance of the Marmara Sea for the Black Sea, she said, "The Marmara Sea feeds and gives oxygen to the Black Sea by the undercurrent. But due to the mucilage, the Marmara Sea cannot do this."

The Black Sea is home to 60 percent of the Turkish fishing industry.

Turkey's environment minister said on June 3 that they were preparing a comprehensive action plan for the protection of the Marmara Sea.

"We are currently working on measures to be taken both in the short and the long term regarding the mucilage occurring in the Marmara," Murat Kurum told reporters in the Central Anatolian province of Konya.

He said scientists, nongovernmental organizations (NGOs), the Environment Ministry and the Marmara Municipalities Union were all working together to solve the sea snot problem.

"We are preparing an emergency action plan. Of course, when you look at this point, the reason for mucilage seems to be the increase in seawater temperature, the pollution in the sea and the decrease in the water level with the effects of climate change and the decrease in water mobility," Kurum added.

He stressed that they would also take steps to increase the number, quantity and quality of wastewater treatment plants in the region.

"This is an important issue that concerns our environment, our seas and our coasts, and we are trying to carry out this process as part of an urgent action plan," he noted.

The causes of the pollution and the uncontrolled production of sea snot in the Marmara Sea are being investigated by scientists in a research ship by the Middle East Technical University (ODTÜ).

The Bilim-2 (Science-2) vessel collects data from 100 stations, including the Istanbul and Çanakkale straits, in the Marmara Sea as part of the "Marmara Sea Integrated Modeling System (MARMOD) Project," which has been conducted since 2017 by the environment ministry.

Samples are analyzed in the laboratory of the Bilim-2 ship.

Marine Sciences Institute Director Barış Salihoğlu told the state-run Anadolu Agency that ODTÜ recently focused on the Marmara because scientists observed an ongoing decrease in oxygen level in the sea.

Upon the occurrence of recently aggravated mucilage production in the Marmara Sea, Salihoğlu said that climate change and overfishing were among the factors that triggered the problem.

"It is necessary to study the Marmara Sea with all its parameters. Otherwise, you will not be able to analyze problems such as mucilage correctly," he said.

Noting that the research is mainly focused on current factors such as the decline of oxygen and salt that affect sea snot production in the Marmara Sea, Salihoğlu said it would take at least six to seven years to see an improvement if precautions were taken as soon as possible.

"A very quick recovery is not easy, it takes time and patience," he said.

He also said that it was hard to tell the amount of pollution in the Marmara at the moment, adding, "There is mucilage in the entire water column."

"There are serious signals about the health of the ecosystem. It will not immediately improve after the measures are taken, but we think that we can solve it in the long term with determined steps," he said.

- BLACKSEA CONNECT –Coordination of Marine and Maritime Research and Innovation in the Black Sea (https://ims.metu.edu.tr/slider/black-sea-connect)
- SeaDataCloud-Further Developing the Pan-European Infrastructure for Marine and Ocean Data Management (https://www.seadatanet.org/About-us/SeaDataCloud/Partners)
- AQUACOSM **-** Network of Leading European AQUAtic MesoCOSM Facilities Connecting Mountains to Oceans from the Arctic to the Mediterranean (Project Partners: https://www.aquacosm.eu/project-information/aquacosm/)
- Expressive and receptive skills in bilingual children: A study on refugee childrens narrative production and lexical processing abilities (Higher Education Institutions Supported Project, 2020 - Continuing)
- Enhancement of research excellence in Mathematics Teacher Knowledge (MaTeK) (HORIZON 2020 Project, 2021-2023)
- Teachers Close to Borders: Uncovering Teachers? Practices as they Work to Enact Equitable Teaching with Refugee Children (TÜBİTAK Project, 2021 - 2023)

Other government research:

Title	Researchers	Project Type
Çevre, Şehircilik ve İklim Değişikliği Bakanlığı, MEKANSAL PLANLARDA ESAS ALINACAK SAKINIM ÖNLEMLERİ VE RİSK AZALTIM KRİTERLERİNİN GELİŞTİRİLMESİ İŞİ	Huvaj Sarıhan N., Kentel Erdoğan E., Askan Gündoğan A., Şenol Balaban M., Balaban O.	Presidency of Turkey, The Office of Strategy and Budget Project
NÖROM Nörobilim ve Nöroteknoloji Mükemmeliyet Merkezi	Ulusoy İ., Halıcı U., Bayram B., Ankaralı M. M. , Temizel A., Gençer N. G. , Akar G., Ertekin Bolelli Ş., Turgut A. E. , Son Ç. D. , et al.	Presidency of Turkey, The Office of Strategy and Budget Project
Rassal Sayı Üretimi ve Tek Foton Kaynağı ile Kuantum Anahtar Üretimi ve Dağıtımı	Demirköz M. B.	Presidency of Turkey, The Office of Strategy and Budget Project
Yerli Radyasyon Monitörü	Demirköz M. B.	Presidency of Turkey, The Office of Strategy and Budget Project
Robotik Teknolojileri Araştırma, Geliştirme ve Eğitim Merkezi (ROMER)	ŞAHİN E., ANKARALI M. M. , KALKAN S., SARANLI U., YAZICIOĞLU Y., CİNBİŞ R. G.	Presidency of Turkey, The Office of Strategy and Budget Project
Teknoloji Tasarım ve Yenilik Uygulama ve Araştırma Merkezi	SORGUÇ A.	Presidency of Turkey, The Office of Strategy and Budget Project
ODTÜ MEMS Biyomedikal Uygulamalara Yönelik Altyapı	KÜLAH H.	Presidency of Turkey, The Office of Strategy and Budget Project
Kanser Sistem Biyolojisi Laboratuvarı (KANSİL)	ACAR A. C.	Presidency of Turkey, The Office of Strategy and Budget Project
Dişli ve Güç Aktarma Sistemleri Araştırma Merkezi	CİĞEROĞLU E.	Presidency of Turkey, The Office of Strategy and Budget Project
Enerji Depolama Malzemeleri Ve Cihazları Araştırma Merkezi	AYDINOL M. K.	Presidency of Turkey, The Office of Strategy and Budget Project

KANSER SİSTEM BİYOLOJİSİ LABORATUVARI KanSiL	ATALAY R.	Presidency of Turkey, The Office of Strategy and Budget Project
Orta Doğu Teknik Üniversitesi, İİBF İşletme Bölümü Bünyesinde Çalıştırılan TradeMaster Investment Lounge İsimli Yatırım Laboratuvarı'nın Altyapısını Geliştirme Projesi	AYAYDIN HACIÖMEROĞLU H., DANIŞOĞLU S.	Presidency of Turkey, The Office of Strategy and Budget Project
Dişli ve Güç Aktarma Sistemleri Araştırma Merkezi	Ciğeroğlu E., Özgen G. O. , Yazıcıoğlu Y., Özer M. B.	Presidency of Turkey, The Office of Strategy and Budget Project
İİBF İşletme Bölümü Bünyesinde Çalıştırılan TradeMaster Investment Lounge İsimli Yatırım Laboratuvarının Altyapısını Geliştirme Projesi	GÜNER Z. N.	Presidency of Turkey, The Office of Strategy and Budget Project
Saçılmalı Demet Hattı Projesi	Demirköz M. B.	Presidency of Turkey, The Office of Strategy and Budget Project
Doğu Anadolu Gözlemevi Odak Düzlemi Aygıtlar ve Adaptif Optik Sistemi	Yerli S. K.	Presidency of Turkey, The Office of Strategy and Budget Project
BİOMATEN Altyapısının Geliştirilmesi	DURUCAN C.	Presidency of Turkey, The Office of Strategy and Budget Project
Parçacık Radyasyonu Testleri Oluşturma Laboratuvarı	DEMİRKÖZ M. B.	Presidency of Turkey, The Office of Strategy and Budget Project
GÜNAM 2. Aşama Global Mükemmeliyet ve Sanayi Ara Yüzü Oluşturulması	TURAN R.	Presidency of Turkey, The Office of Strategy and Budget Project
GÜNAM Expansion project	BAKER D. K.	Presidency of Turkey, The Office of Strategy and Budget Project
Araştırma Parkı	HASANÇEBİ O.	Presidency of Turkey, The Office of Strategy and Budget Project
ODTÜ Araştırma Parkı	Hasançebi O.	Presidency of Turkey, The Office of Strategy and Budget Project

DENİZ EKOSİSTEM ve İKLİM ARAŞTIRMALARI MERKEZİ	Salihoğlu B., Tezcan D., Fach Salihoğlu B. A.	Presidency of Turkey, The Office of Strategy and Budget Project
DEKOSIM Deniz Ekosistem Ve Iklim Arastirmalari Merkezi Sistem Ongoru Ve Hizmet Gelistirme Projesi	Kıdeyş A. E. , Salihoğlu B.	Presidency of Turkey, The Office of Strategy and Budget Project
Deniz Ekosistem ve İklim Araştırma Merkezi (DEKOSİM)	SALİHOĞLU B.	Presidency of Turkey, The Office of Strategy and Budget Project
Araştırmacı Yetiştirme Programı	DAL H.	Presidency of Turkey, The Office of Strategy and Budget Project
Rüzgar Enerjisi Teknolojileri Ar- Ge Merkezi (RÜZGEM)	UZOL O.	Presidency of Turkey, The Office of Strategy and Budget Project
Rüzgar Enerjisi Teknolojileri Araştırma ve Uygulama Merkezi	Uzol O.	Presidency of Turkey, The Office of Strategy and Budget Project
Doğu Anadolu Gözlemevi Projesi	Yeşilyaprak C., Yerli S. K.	Presidency of Turkey, The Office of Strategy and Budget Project
İZMİR ÇEŞME KÜLTÜR VE TURİZM KORUMA VE GELİŞİM BÖLGESİ (KTKGB) PROJE ALANI- KONSANTRE TUZLU SUYUN DERİN DEŞARJ İLE DENİZE GERİ VERİLMESİNİN ETKİLERİNE İLİŞKİN ÖN İNCELEME RAPORU HAZIRLANMASI	Örek H., Salihoğlu B., Tezcan D.	Ministry of Culture and Tourism
Komana Kazısı	Erciyas D. B. , Acara Eser M., Pişkin E., Sevimli E., Erdal Y. S. , Karasu Y. E.	Ministry of Culture and Tourism
İzmir Akıllı Uzmanlaşma Stratejisi- İkincil Veri Analizi Raporu	Erdil E., Çetinkaya U. Y.	Development Agency
Kommagene Nemrut Yönetim Planı 021-02-01-2-00-012	Aykaç Leıdholm P., Şahin Güçhan N.	Development Agency
Beden Eğitimi ve Spor Öğretmenlerinin Mesleki Alan Bilgisinin Desteklenmesi	Hürmeriç Altunsöz I.	Ministry of Youth and Sports
Kentsel Tarım Stratejisi Belgesi: Çankaya İlçesi Uygulama Örneği	Büyükcivelek A. B. , KARADOĞAN S.	Development Agency

Strengthen the means of implementation and revitalize the global partnership for sustainable development.

https://sdgs.un.org/goals/goal17

Relationships with NGOs and government for SDG policy

METU has direct involvement with the SDG policy development processes of the Turkish government through research projects and other collaborative work:

"Climate Change and Our Seas" Workshop in collaboration with Turkish Marine Research Foundation

Scientific opinions that emerged after the workshop were collected in a book titled "Climate Change and Its Effects on Turkish Seas" and presented to the use of academic institutions, decision makers, voluntary organizations and students working on this subject.

The proceedings were gathered in a book, which can be downloaded (at https://tudav.org/wp-content/uploads/2021/04/iklim_kitap_tudav_odtu.pdf) and benefited free of charge from the Turkish Marine Research Foundation's website, provides ideas for the municipalities and relevant state institutions on adaptation to change, as well as the measures that can be taken with the effects of climate change on the marine ecosystem, our coasts, cultural heritage and human health. Recent studies show that the surface seawater temperature in the Mediterranean has increased by about 1.5°C over the past 50 years. Estimates show that sea level may rise by 1-2 meters in 2100, which will greatly affect the Mediterranean coastal population. In addition, at least half of the cities on the Mediterranean coast will be severely affected by climate change by 2050. Long-term measurement and monitoring studies are needed more than ever before in Turkish seas. All settlements on the coast, especially Istanbul, need to make detailed adaptation plans.

http://ims.metu.edu.tr/slider/iklim-degisikligi-ve-turkiye-denizleri-uzerine-etkileri-kitabimiz-yayinlandi

Blue Growth Initiative for Research and Innovation in the Black Sea

A Blue Growth Initiative for Research and Innovation in the Black Sea aims to advance a shared vision for a productive, healthy, resilient, sustainable and better valued Black Sea by 2030. The initiative will help to deeper connect Black Sea societies through a bridge of new knowledge, technologies and services.
The initiative aims to foster human and infrastructures capacity building in coastal, marine and maritime sectors in view of unlocking unique opportunities for a sustainable and environmentally friendly blue growth in the Black Sea.

In 2017, an Initiative was launched and supported by the European Commission (EC) to develop a joint research and innovation agenda and guide national and EU-level policymakers named as, 'The Blue Growth Initiative for Research and Innovation in the Black Sea'. As highlighted in the Burgas Vision Paper, this expert working group consisted of experts from Black Sea coastal countries, (Republic of Bulgaria, Georgia, Romania, the Russian Federation, the Republic of Turkey and Ukraine, as well as the Republic of Moldova), in cooperation with marine experts from leading European marine institutes and organisations, with the support of the European Commission. They produced the Burgas Vision Paper

the key framework document for a shared vision of a productive, healthy, resilient, sustainable and better-valued Black Sea by 2030. The paper was launched during the European Maritime Day 2018 in Burgas, Bulgaria (May 2018). It addresses the key pillars on which a new Strategic Research and Innovation Agenda (SRIA) can be built on. This process was further supported by the Ministerial Declaration towards a Common Maritime Agenda (2018) for the Black Sea, endorsed by the same Black Sea countries.

http://connect2blacksea.org/research-and-innovation-in-the-black-sea-empowering-the-next-generation-for-a-healthy-resilient-and-productive-black-sea/

Implementation of Stock Assessment in Fisheries Activities (IFISH)

The objective of the project is to contribute to the gradual harmonization with EU legislation in the Republic of Turkey's fisheries policy. The project, which will be implemented in line with the general objectives of the EU's common fisheries policy, will provide the basis for a sustainable fisheries governance strategy. Thus, Turkey's fishing industry and the desired sustainability goals is to help develop the ecosystem approach.

The aim of the project is to improve the institutional capacity of the Ministry of Agriculture and Forestry and to increase stakeholder awareness in stock assessment and ecosystem monitoring in fisheries activities. The project has three components. These are; strengthening the administrative capacity of the Ministry of Agriculture and Forestry for stock assessment in fisheries activities, ecosystem monitoring and management and the establishment of a comprehensive advisory board; data collection, verification, evaluation methodology development and stock assessment in fisheries activities, and stakeholder awareness and participation.

The project will focus on several key elements. The first of these is to provide training for fisheries managers and scientists with an ecosystem-based approach in fisheries management. In this way, the importance of strong stock assessments to increase the usability of data in line with the principles of ecosystem-based fisheries management will be emphasized. Also, stakeholders were included in the fisheries management process to ensure the sustainability of marine resources in Turkey.

https://www.ifishproject.com/index.php?sid=111&asid=1&lang=0

International collaboration data gathering for SDG

METU is a member of Sustainable Development Solutions Network (SDSN) since 2016 (https://www.unsdsn.org/sdsn-members).

Also, activities conducted by Institute of Marine Sciences produce data shared with other researchers, in relation to SDG 14.

1. ARGO Program

Argo is an international program that collects information from inside the ocean using a fleet of robotic instruments that drift with the ocean currents and move up and down between the surface and a mid-water level. Each instrument (float) spends almost all its life below the surface (https://argo.ucsd.edu/about/). METU Institute of Marine Sciences is one of the partners of the ARGO Program.

The first Argo swimmer in Turkish seas was released to the Black Sea in 2002 in partnership with METU-DBE, Marine Hydrophysical Institute (Sevastopol/Ukraine) and Washington University (USA). In the following period, a total of seven Argo swimmers were left in the Black Sea. Details of this study can be found at http://flux.ocean.washington.edu/metu/.

Within the scope of the DEKOSİM project, four of the six Argo devices purchased with the support of the Ministry of Development were left in the Black Sea and two in the Mediterranean, in order to measure the long-term and continuous current and physical parameters in the seas of Turkey, and measurement results began to be obtained via satellite. All Argo swimmers have sensors on them that measure temperature, conductivity (salinity), pressure, and dissolved oxygen.

Data is shared with other researchers at http://dekosim.ims.metu.edu.tr/dekosim/icerik/odtu-argo-programi.

2. Erdemli Time Series

Again, within the scope of DEKOSİM project, long-term observation infrastructure has a very important place. For this reason, the studies conducted in the past years were examined and the data collected in the same regions were compiled as a basis for long-term observation studies. Especially in Mersin Bay, where METU Marine Sciences Institute is located, physical, chemical and biological parameters have been collected since 1997 in the region from the shore to a water depth of 200 meters, despite various interruptions.

Named after the coastal town where METU IMS is located, the "Erdemli Time Series" (ETS) program has been launched to ensure that this existing data set is maintained more regularly and precisely. Within the scope of this program, physical parameters in the water column are measured weekly at eight stations along a profile from the shore to a water depth of 200 meters, corresponding to water depths of 20, 50, 75, 100, 125, 150, 175 and 200 meters, respectively. The most exposed station is located about 15 km from the coast. Regular flow measurements will begin to be taken along this long profile, which perpendicularly cuts the general water cycle of the Eastern Mediterranean. In addition to physical parameters, water sampling will be made from 10, 20, 30, 50, 75, 100, 150 and 200 meters water depths for chemical and biological parameters in monthly periods.

http://dekosim.ims.metu.edu.tr/dekosim/Erdemli-Zaman-Serisi

3. Float/Buoy Monitoring System

Within the scope of the DEKOSİM project, two buoy systems will be installed in the Black Sea and the Mediterranean for long-term and continuous measurement. One of the buoy systems will be installed in the Black Sea in front of Sinop, the other in the Mediterranean, in front of the METU Marine Sciences Institute campus in Mersin. The system, which will be installed at a depth of approximately 100 meters, 5 miles off the shore, has sensors to measure at surface, 10, 20, 30, 50, 75 and 100 meters. All sensors measure temperature and conductivity (salinity). Receivers at the surface, 50 and 100 meters can measure dissolved oxygen. In addition, chlorophyll and turbidity measurements will be made on the surface.

The cable carrying the float system is also used in data transmission from sensors carrying an inductive modem to the float on the surface. Meteorological measurement devices will be installed on the floater in accordance with the protocol signed with the General Directorate of Meteorology. Meteorological data will be published on the D-OMGI web page in real time. The products to be obtained from the oceanographic data will be published on the dekosim.ims.metu.edu.tr page.

http://dekosim.ims.metu.edu.tr/dekosim/Samandira

METU, as a body, initiate and participate in cross-sectoral dialogue about the SDGs. Below are two examples in relation to SDG 14.

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https://www.ifishproject.com/index.php?sid=111&asid=1&lang=0

Collaboration between Microsoft and METU TEKNOKENT

Microsoft Turkey continues its collaborations with METU to strengthen the start-up ecosystem. The strategic cooperation between Microsoft and ODTU TEKNOKENT, which started with “New Ideas New Businesses”, will continue with special Demo Days for Microsoft for Startups Founders Hub member initiatives.

Microsoft ve ODTÜ TEKNOKENT'ten işbirliği

Microsoft Türkiye, start-up ekosistemini güçlendirmeye yönelik iş birliklerine ODTÜ ile devam ediyor. Microsoft ve ODTU TEKNOKENT'in Yeni Fikirler Yeni İşler ile başlayan stratejik iş birliği, Microsoft for Startups Founders Hub üye girişimlerine özel Demo Day'ler ile devam edecek.

ODTÜ ve ODTÜ TEKNOKENT tarafından organize edilen, Türkiye'nin öncü erken aşama hızlandırma programı Yeni Fikirler Yeni İşler 2022 Demo Day, 14 Aralık Çarşamba günü ODTÜ'de gerçekleşti. Microsoft Türkiye'nin de desteklediği program ile ODTÜ TEKNOKENT, teknoloji tabanlı iş fikirlerinin hayata geçmesine ve ürünlerin hızlı bir şekilde ticarileşmesine destek sağlıyor. Microsoft ve ODTU TEKNOKENT'in Yeni Fikirler Yeni İşler ile başlayan stratejik iş birliği Microsoft for Startups Founders Hub üye girişimlerine özel Demo Day'ler ile devam edecek. Microsoft For Startups Founders Hub programının girişimlere sunduğu avantajlardan faydalanmak isteyen start-up'lar https://foundershub.startups.microsoft.com/signup linkindeki başvuru sayfasını ziyaret ederek bilgi alabilirler.

https://basinda.metu.edu.tr/2022-12-30/3313635
https://www.dunya.com/sirketler/mcdonalds-dijital-alisveris-deneyimi-sunmaya-basladi-haberi-679779

Other projects for SDG 17

- Earth Commission: Translation of Earth System Boundaries for Cities (Other International Funding Programs, 2021 - 2023)
- Floating Hybrid Renewable Energy Systems for Turkey (TÜBİTAK International Bilateral Joint Cooperation Program Project, 2021 - 2023)
- Innosolpower, Yenilikçi Yüksek Güç Yoğunluğuna Sahip Mikro-Termal Güneş Enerjisi Depolama (TÜBİTAK International Multi-Cooperation Project, 2021 - 2024)
- Taş Dolgu Dalgakıranlarda Kullanılan Farklı Ünitelerin Ve Dizilimlerin Dalga Aşmasına Ve Kronman Duvarlara Etkiyen Kuvvetlere Etkisinin Modellenmesi (TUBITAK Project, 2022 - 2025)
- Turkey Pandemic Preparedness Project Assessment (World Bank Supported Project, 2021 - 2022)
- SHALLOW LANDSLIDE SUSCEPTIBILITY MAPPING IN RIZE, TURKEY (Funded by UK Newton Fund, IAPP Industry-Academia Partnership) (Newton Programme Project, 2020 - 2023)
- Kent Formu, Hava Kirliliği ve Çocukluk Dönemi Astımı İlişkisi (TUBITAK Project, 2020 - 2024)
- Craft: Developıng A Novel Clımate Change Rısk Assessment Framework For Cultural Herıtage In Turkey (UK Arts and Humanities Research Council AHRC, Global Challenges Research Fund GCRF, 2020-2022)
- Turnover response system development (Newton Programme Project, 2020 - 2023)
- NET: NEW TECHNOLOGIES AND PARTICIPATORY APPROACHES FOR DISASTER RESILIENCE (Funded by UK Royal Academy of Engineering, Project Coordinator: Univ. of Plymouth, 2020-2022)
- Development of a module add-on that can make attacker position estimation for micro and mini unmanned aerial vehicles (TUBITAK Project, 2021 - 2023)
- REcube: REthink, REvive, REuse - Transmitting the knowledge for the green regeneration of the European Concrete Heritage (Erasmus Project, 2021 - 2024)