BAIBU SUSTAINABILITY REPORT

2021

PREFACE

Bolu Abant Izzet Baysal University (BAIBU), one of the notewhorthy univesities in our country, located in an area surrounded by natural beauties between two metropolis İstanbul and Ankara, was founded on 3 July 1992. The university, which has been developing rapidly since its foundation, has campuses in the city centre and three districts of Bolu (Gerede, Mengen, Mudurnu). The main campus of the university, namely İzzet Baysal Campus, is located in Gölköy, which is 8 km from the city center and surrounded by a unique natural beauty.

The university comprises 16 faculties, 1 institutes, 1 schools, 8 vocational schools and 20 research centers. 1.557 faculty members and 1.181 administrative staff in the university are proud to provide a quality and modern educational setting for about 32.064 students.

This report highlights the main activities performed at the BAIBU in the regards of sustainability during 2021.

1

SETTING AND INFRASTRUCTURE

[1] Setting and Infrastructure (SI)

[1.3] Number of Campus Sites

	**Gölköy Campus** (BAIBU, Turkey)
	**Yeniçağa Campus** (BAIBU, Turkey)

	**Mengen Campus** (BAIBU, Turkey)
	**Gerede Campus** (BAIBU, Turkey)

	**Bolu Vocational School Campus** (BAIBU, Turkey)
	**Seben Campus** (BAIBU, Turkey)

Mudurnu Campus
(BAIBU, Turkey)

- Gölköy Campus is the largest campus with a total surface area of 3926500 m^2. It is one of the six campus of the BAİBU. The main campus of the university, namely İzzet Baysal Campus, is located in Gölköy, which is 8 km from the city center and surrounded by a unique natural beauty.

- Yeniçağa Campus is a modern purpose-built campus, which now extends to 10050 m2. This campus was established in September of 2009.

- Mengen Campus was established in 1997 and the total surface area of this campus is 41695 m^2.

- Gerede Campus, with a total surface area of 64600 km2, was established in 1993.

- Vocational School of BAİBU, is located at the city center of Bolu. Total surface area of this campus is 55753 m^2.

- Seben Campus was established in 2015 and the total surface area of this campus is 21732 m^2.

- Mudurnu Campus was established in 1997 and the total surface area of this campus is 15100 m^2.

[1] Setting and Infrastructure (SI)

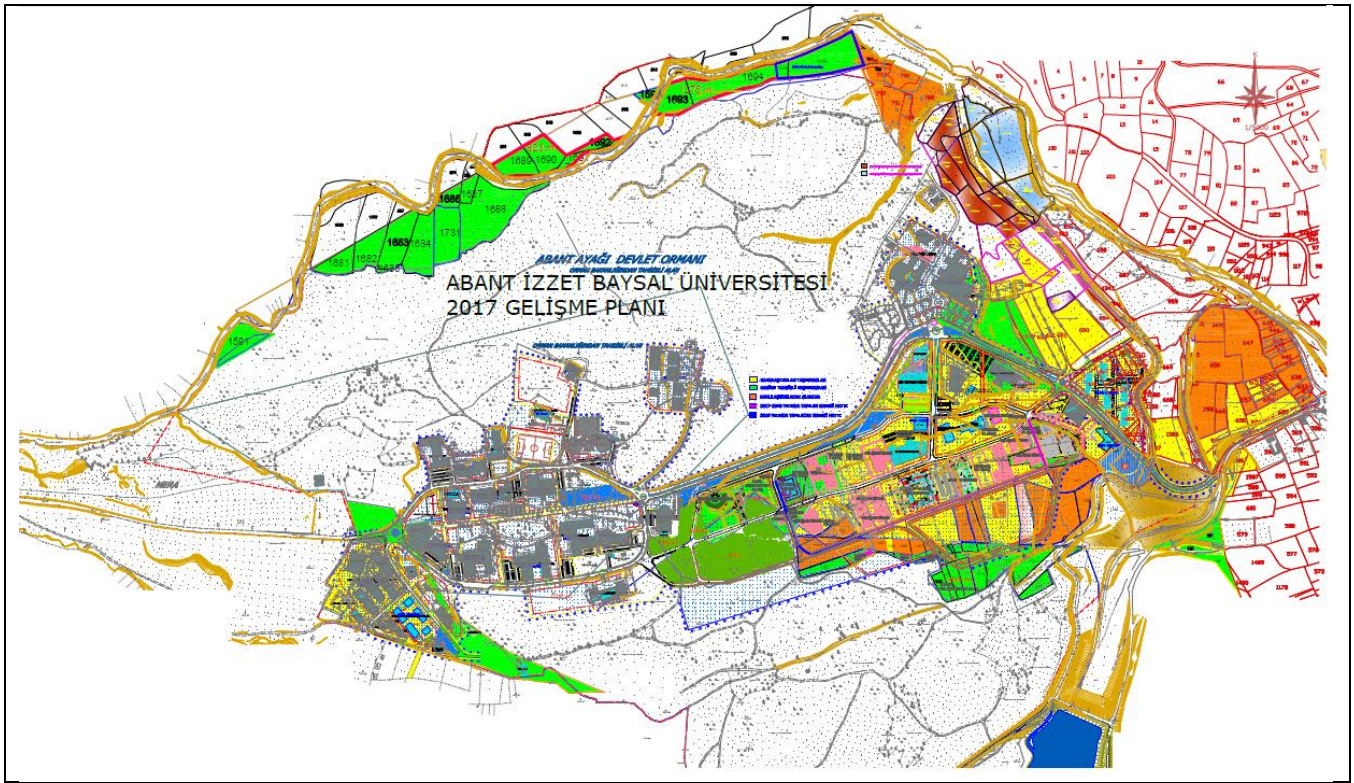
[1.4] Campus Setting

Campus Setting - Suburban (Gölköy Campus, Turkey)

- Gölköy Campus is located in a suburban area with a high rate of forest cover. Gölköy Campus has a total area of 3926500 m^2 and a total population of 9487including academic and administrative staff, students staying in dormitories and employee and their families living in public housing.

[1] Setting and Infrastructure (SI)

[1.5] Total Campus Area (m^2)

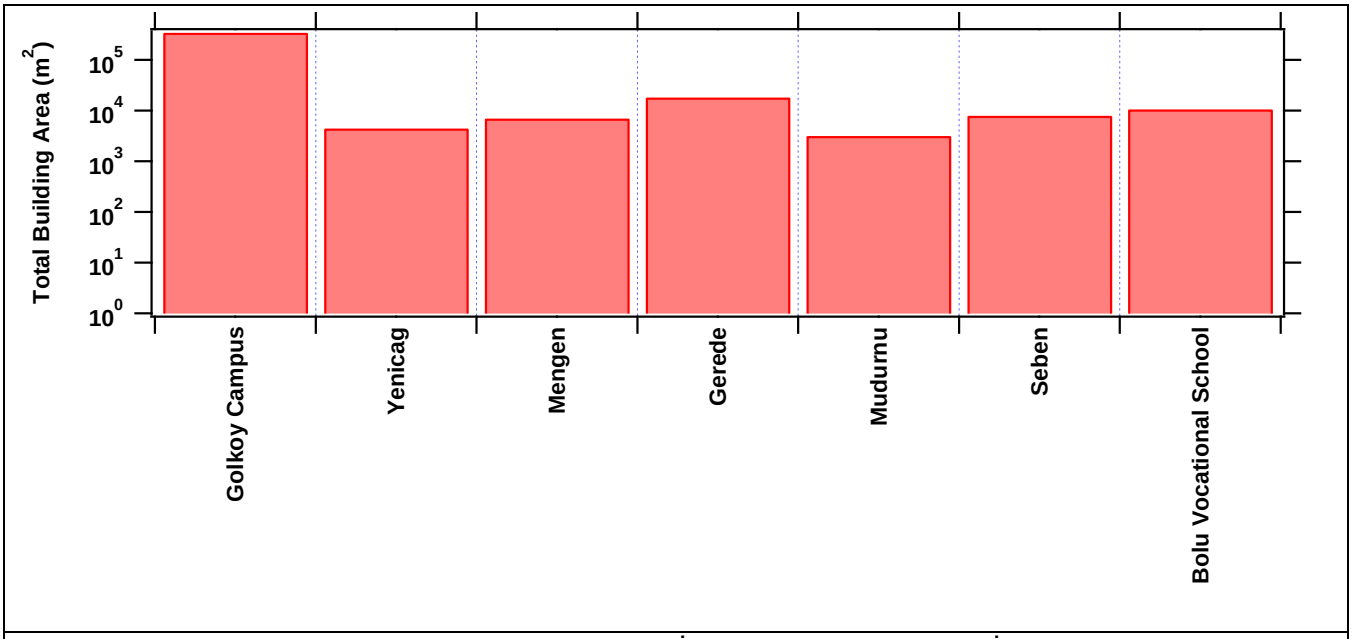


Total Campus Area (Bolu Abant İzzet Baysal University (BAİBU), Gölköy Campus, Turkey)

- Total area: 3926500 m^2
- Total distance/circumference: 8433.57 m

[1] Setting and Infrastructure (SI)

[1.7] Total Campus Building Area (m^2)

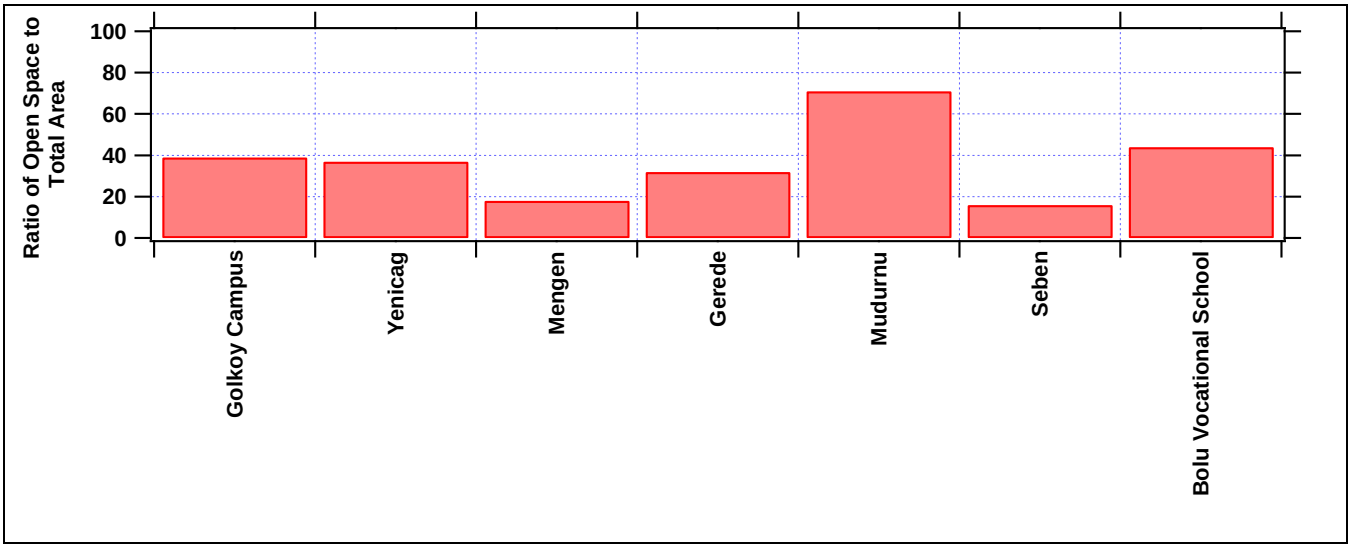


Total Campus Building Area (Bolu Abant İzzet Baysal University (BAİBU), Turkey)

- Total Building Campus Area of University: 399,773 m^2
- Total Building Area of Main Campus: 348,123 m^2
- The Ratio of Building Area to Total Area of Main Campus: 0.11

[1] Setting and Infrastructure (SI)

[1.8] The Ratio of Open Space to Total Area

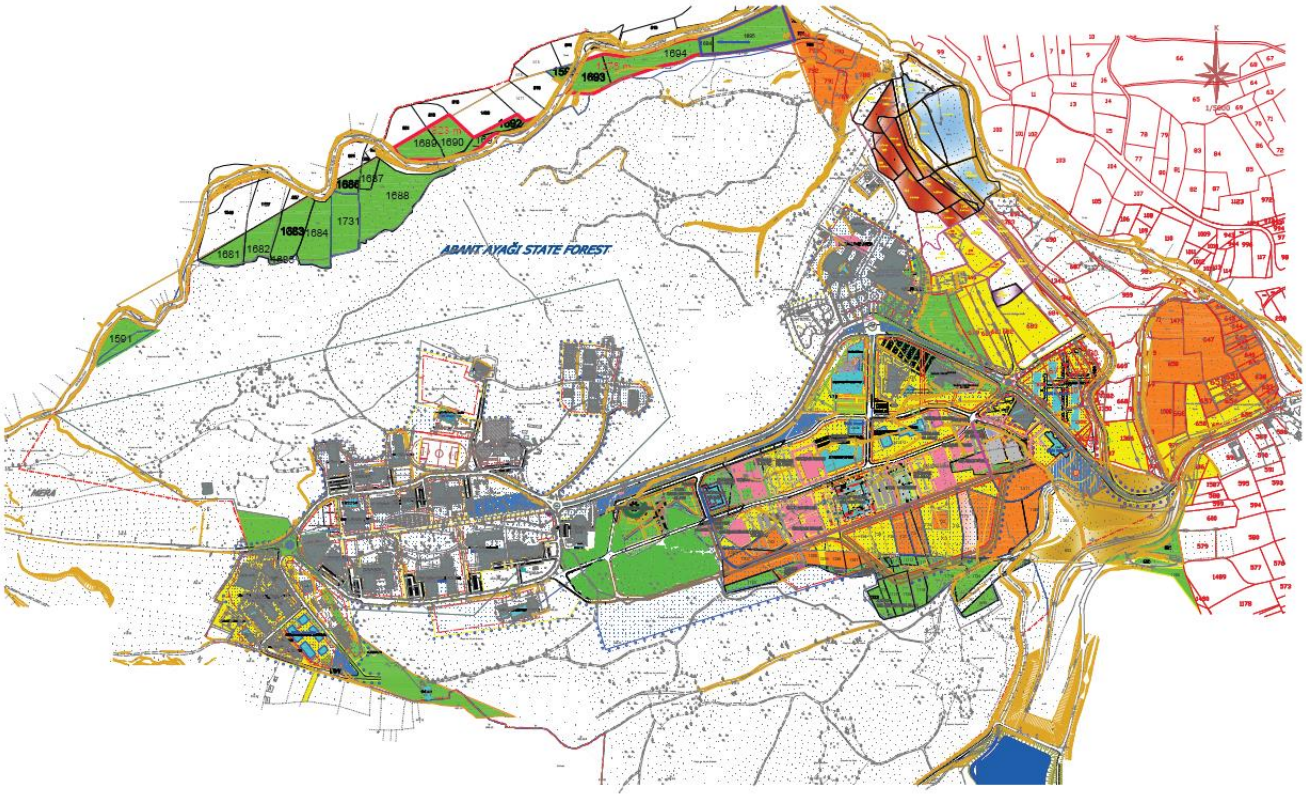


The Ratio of Open Space to Total Area for each campuses (Bolu Abant İzzet Baysal University (BAIBU), Turkey)

- The ratio of open space to total area ranged from 16 % for Seben Campus to 71 % for Mudurnu Campus.
- The corresponding ratio is 39 % for the main campus (Golkoy Campus). The average of this ratio for the whole university is 37 %.

[1] Setting and Infrastructure (SI)

[1.9] Total Area on Campus Covered in Forest Vegetation (m^2)

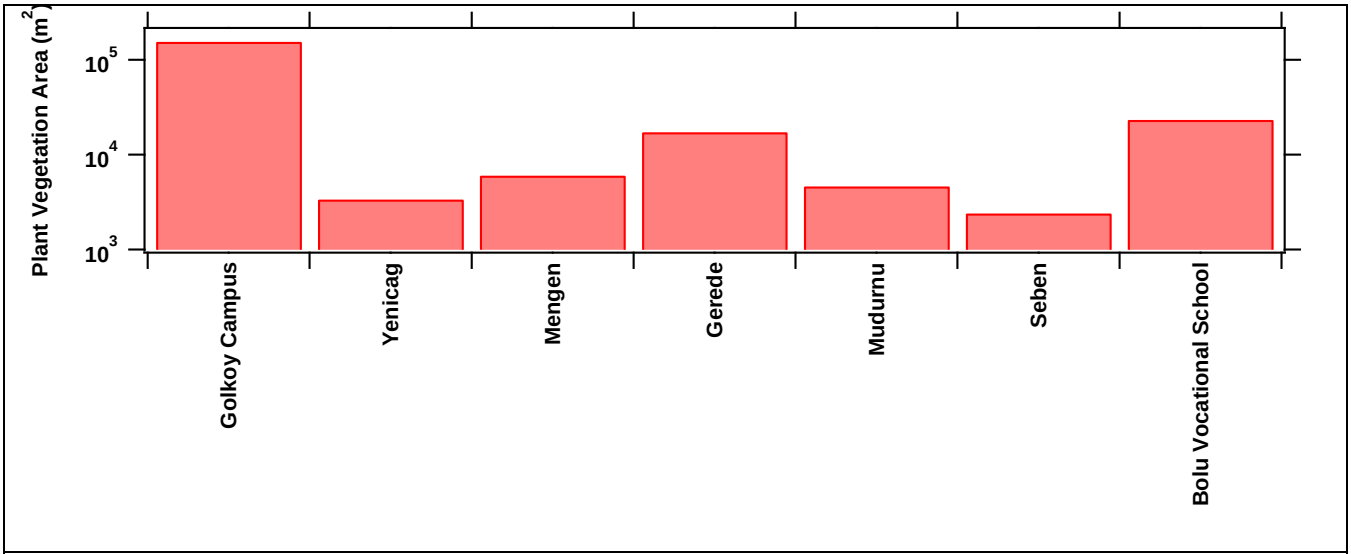


Total Forest Vegetation Area (BAIBU, Turkey) at Gölköy campus (Abant Ayağı State Forest)

- Total area: 1866500 m^2
- Total distance/circumference: 15808.085 m

[1] Setting and Infrastructure (SI)

[1.10] Total area on campus covered in planted vegetation (m^2)



Plant Vegetation Area for each campuses (Bolu Abant İzzet Baysal University (BAIBU), Turkey)

- Total area on campus covered in planted vegetation range from 2,408 m2 for Seben campus to 155,185 m^2 for Golkoy Campus.

- The ratio of vegetated area to total area for the whole university: 0.24

- The virtual tour through the main campus (Golkoy Campus) can be performed by visiting following web page:
    - http://ibu.edu.tr/vtour/index.html

[1] Setting and Infrastructure (SI)

[1.11] Total area on campus for water absorption besides the forest and planted vegetation (m^2)

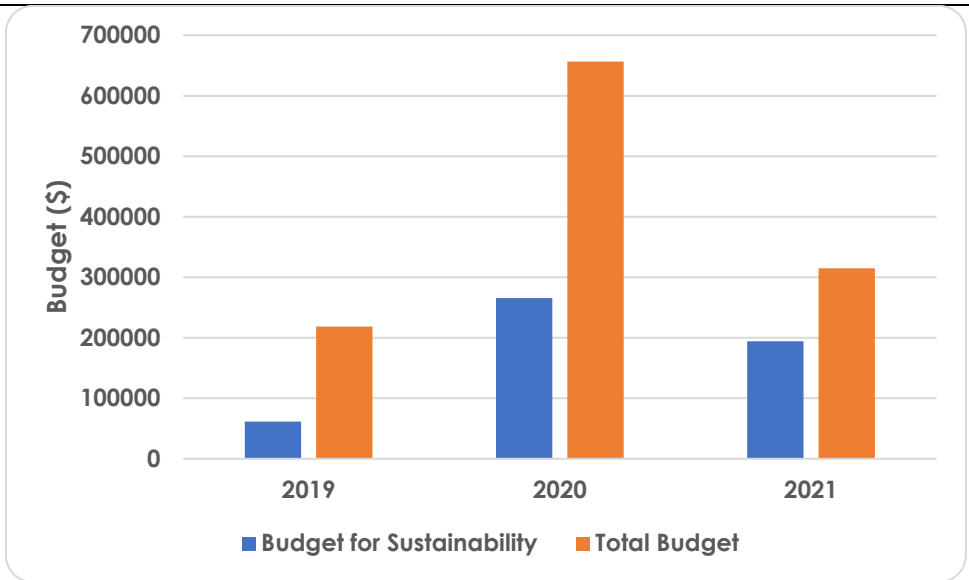
Example of water absorption in Golkoy Campus

(Bolu Abant İzzet Baysal University (BAIBU), Turkey)

- The ratio of total area on campus for water absorption besides the forest and planted vegetation to total area of the main campus is 2 %. In other words, the corresponding water absorption area is 64,319 m^2.

[1] Setting and Infrastructure (SI)

[1.18] University budget for sustainability effort (in US Dollars)



Budget allocated to the sustainability and total R&D budget of the university in the last three years (Bolu Abant İzzet Baysal University (BAİBU), Turkey)

- The average ratio of budget allocated to sustainability to the total budget is 43 %

[1] Setting and Infrastructure (SI)

[1.20] Percentage of operation and maintenance activities during Covid-19 pandemic

Faculty of Law Building on construction

(Bolu Abant İzzet Baysal University (BAIBU), Turkey)

Mengen Vocational School (Mengen Campus)

[1] Setting and Infrastructure (SI)

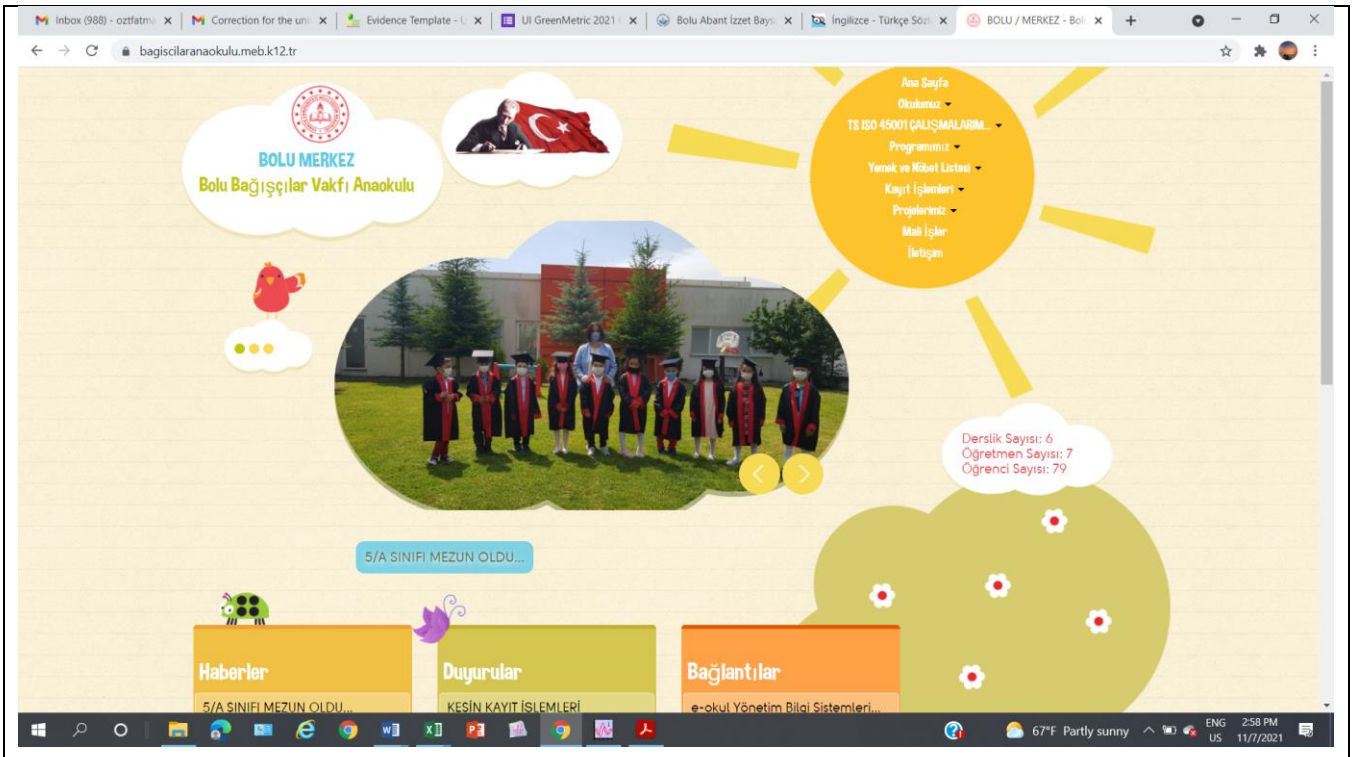
[1.21] Campus facilities for disable, special needs and or maternity care

Example of pedestrian path for disabled person at Golkoy Campus
(Bolu Abant İzzet Baysal University (BAIBU), Turkey)

Example of pedestrian path for disabled person at Golkoy Campus inside the buildings
(Bolu Abant İzzet Baysal University (BAIBU), Turkey)

Example of pedestrian path for disabled person at Golkoy Campus in front of the President Office
(Bolu Abant İzzet Baysal University (BAIBU), Turkey)

The Higher Education Council of Turkey awarded our university with 5 different certificates for its efforts to make the campuses more convenient places for all sort of handicated persons



Kinder garden at Gokoy Campus (Bolu Abant İzzet Baysal University (BAIBU), Turkey)

- Our campus has been designed to provide places that are more convenient for all handicapped persons. Turkish Higher Education Council has awarded our university with five different certificates for its efforts.

- In addition, we have a kinder garden for the kids so that their parents can work more efficiently at the university.

Additional evidence link:

1. The news about the certificates:

http://ajanda.ibu.edu.tr/baibu-engelsiz-universite-bayraklarina-kavustu/

2. The web page of the kinder garden:

https://bagiscilaranaokulu.meb.k12.tr/icerikler/okulum-temiz_10149923.html

[1] Setting and Infrastructure (SI)

[1.23] Health infrastructure facilities for students, academics and administrative staffs' wellbeing

Faculty of Medicine
(Bolu Abant İzzet Baysal University (BAİBU), Turkey)

Faculty of Dentistry

Faculty of Health Sciences

[1] Setting and Infrastructure (SI)

[1.24] Conservation: plant, animal, and wildlife, genetic resources for food and agriculture secured in either medium or long-term conservation facilities

Bird nests on the main campus
(Bolu Abant İzzet Baysal University (BAİBU), Turkey)

Plant Hospital Area
(Bolu Abant İzzet Baysal University (BAİBU), Turkey)

Protection of Golkoy Lake from human activities
(Bolu Abant İzzet Baysal University (BAİBU), Turkey)

Greenhouse operated by the Faculty of Agriculture
(Bolu Abant İzzet Baysal University (BAİBU), Turkey)

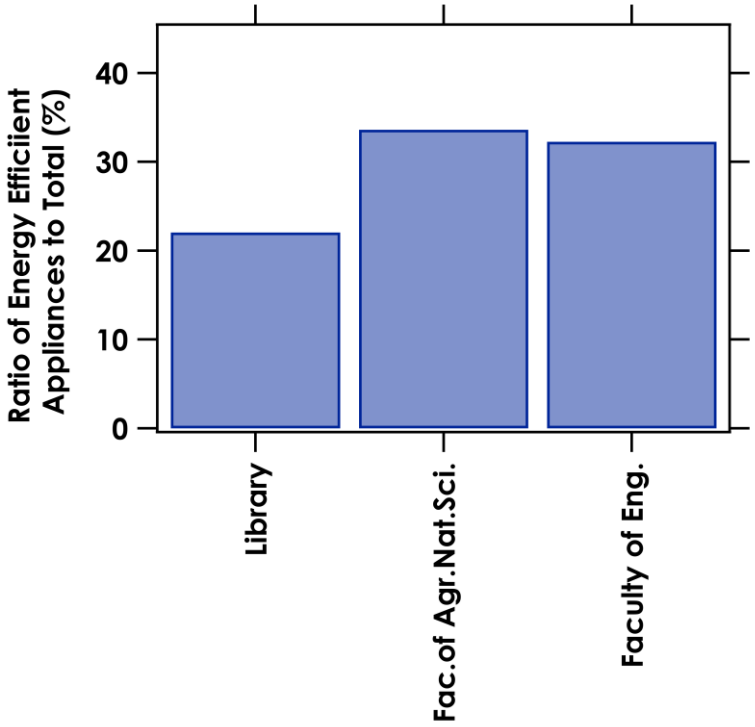
2

ENERGY AND CLIMATE CHANGE

[2] Energy and Climate Change (EC)

[2.1] Energy Efficient Appliances Usage

1. Energy Efficient Appliances Usage: Use of LED lighting and lamps with light detection at Faculty of Engineering in Gölköy Campus (BAİBU, Turkey)



2.Ratio of energy efficient appliances to total at three different buildings at Gölköy Campus (BAİBU, Turkey)

- Energy efficient appliances are also used in the Gölköy Campus of BAIBU. These appliances include mainly LED lamps as depicted in Figure 1. The ratio of used of LED lamps to total varies from one building to another, but on average, 29.3 % of total lamps is LED. In addition, the total number of

appliances in the Gölköy Campus is 4992 and 232 of these appliances (including freezers and other instruments used in the laboratories) are energy efficient in total, which implies that 4.65 % of total appliances are energy efficient.

[2] Energy and Climate Change (EC)

[2.3] Smart Building Implementation

***Min. at least five requirements for each building**

No.	Name	Place	automation		safety				energy		water		Indoor environment				lighting				Building Area (m²)
			B1	B2	S1	S2	S3	S4	E1	E2	A1	A2	I1	I2	I3	I4	L1	L2	L3	L4	
	Bolu Abant Izzet Baysal University	Bolu, Turkey				x	x	x				x				x	x	x		x	485
	Total																				485

Please compile one row for each building (or homogeneous part of it) by ticking with a "X" for each requirement

Smart building implementation

$$\frac{\textbf{\textit{total smart building area}}}{\textbf{\textit{total building area}}} \times \mathbf{100\%}$$

Example:

***Total Building Area: 150,000 m²**

$$\frac{\mathbf{485\ m^2}}{347{,}961\ \mathbf{m^2}} \times \mathbf{100\%} = \mathbf{0.14\ \%}$$

Nuclear Radiation Detectors Application and Research Center (NÜRDAM) at Gölköy Campus of BAIBU

[2] Energy and Climate Change (EC)

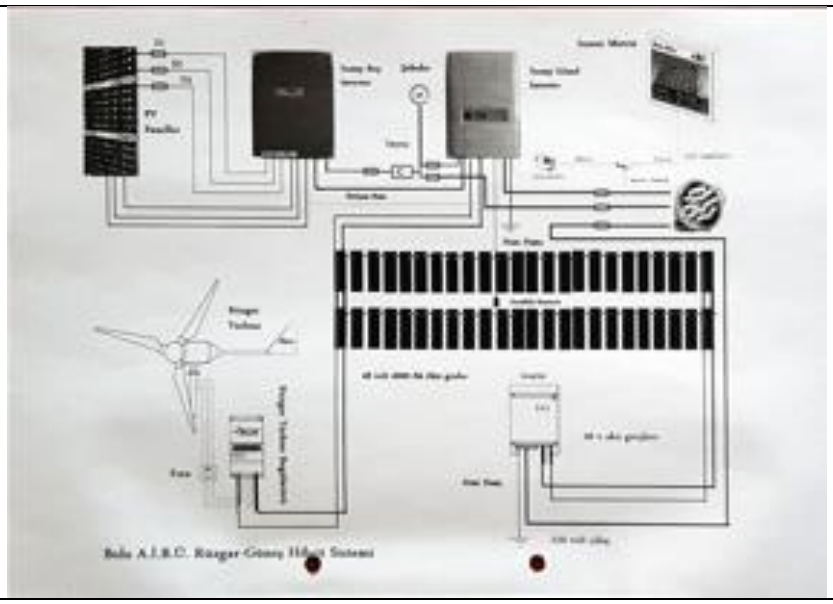
[2.5] Renewable Energy Sources in Campus

1. Façade Mounted Solar Panels at Gölköy Campus (BAIBU, Turkey)

2.Traffic Light with solar panel at Gölköy Campus (BAIBU, Turkey)

3.Roof Mounted Solar Panels at Gölköy Campus (BAIBU, Turkey)

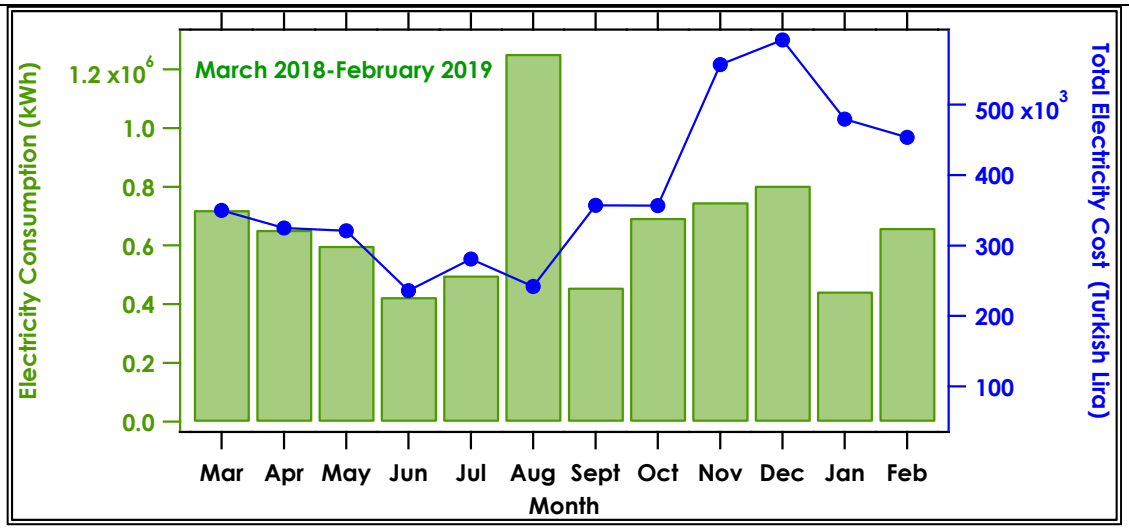
4. Wind Turbine at Gölköy Campus (BAIBU, Turkey)



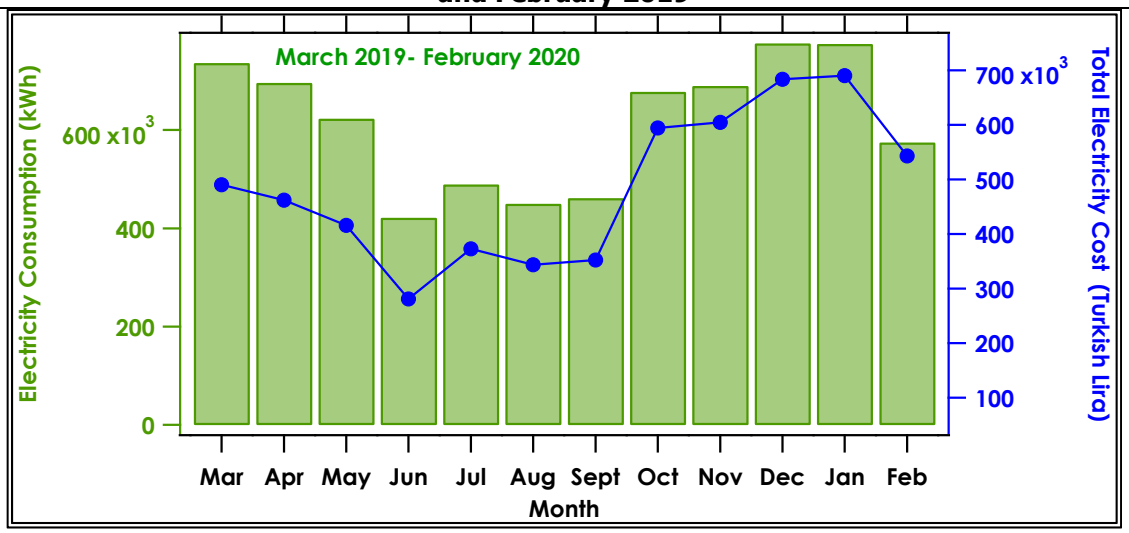
5. Hybrid system of solar panel (Figure 3) and wind turbine (Figure 4)

[2] Energy and Climate Change (EC)

[2.6] Electricity Usage per Year (in Kilowatt hour)



Total Electricity Consumption at Gölköy Campus (BAIBU, Turkey) between March 2018 and February 2019



Total Electricity Consumption at Gölköy Campus (BAIBU, Turkey) between March 2019 and February 2020

[2] Energy and Climate Change (EC)

[2.8] The Ratio of Renewable Energy to Total Energy Used per Year

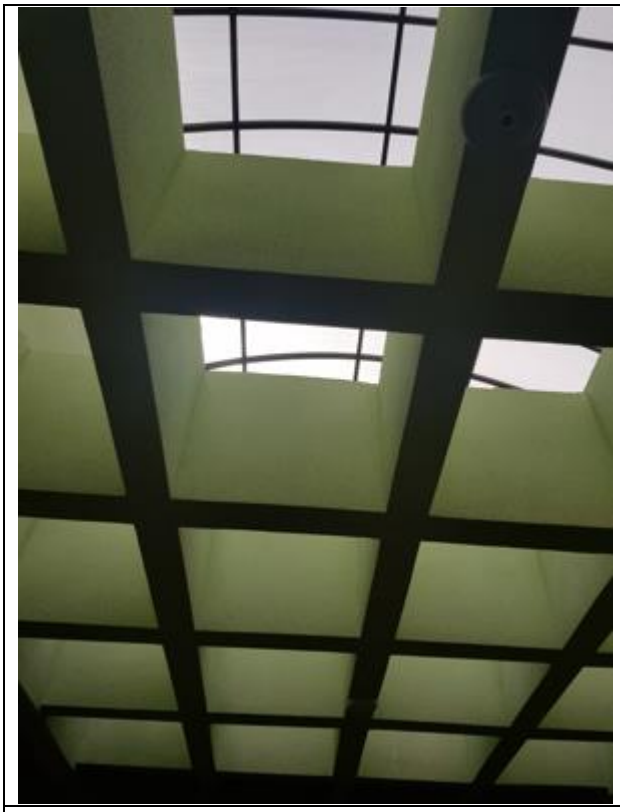
1. Façade Mounted Solar Panels at Gölköy Campus (BAİBU, Turkey)

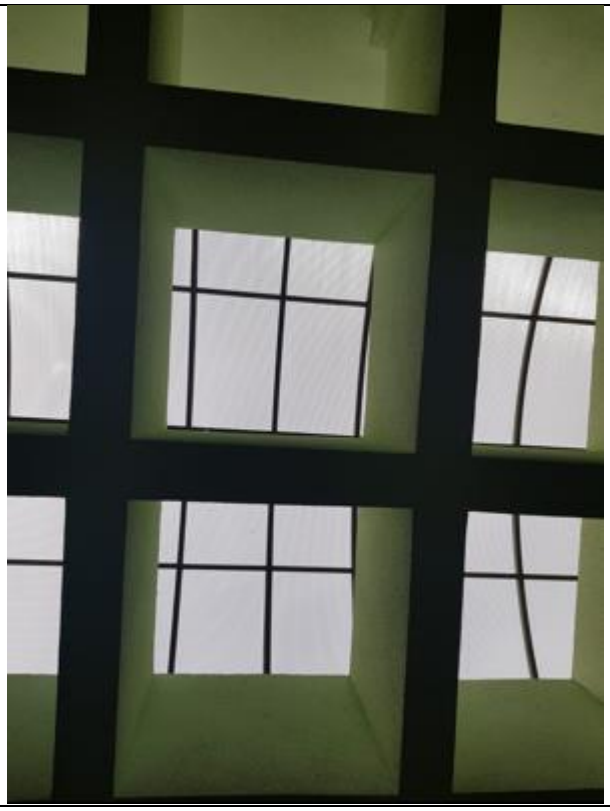
1. Solar PV power station of total 2.32 kWh was installed on the façade of one of the building, so called Nuclear Radiation Detectors Application and Research Center (NÜRDAM), of BAIBU.

$$The\ ratio\ of\ renewable\ energy\ to\ total\ energy\ per\ year = \frac{2.32\ kWh}{7376868\ \text{kWh}} \leq 0.05\ \%$$

[2] Energy and Climate Change (EC)

[2.9] Elements of Green Building Implementation as Reflected in All Construction and Renovation Policies





Green Building Implementation at Gölköy Campus-(BAIBU, Turkey)

[2] Energy and Climate Change (EC)

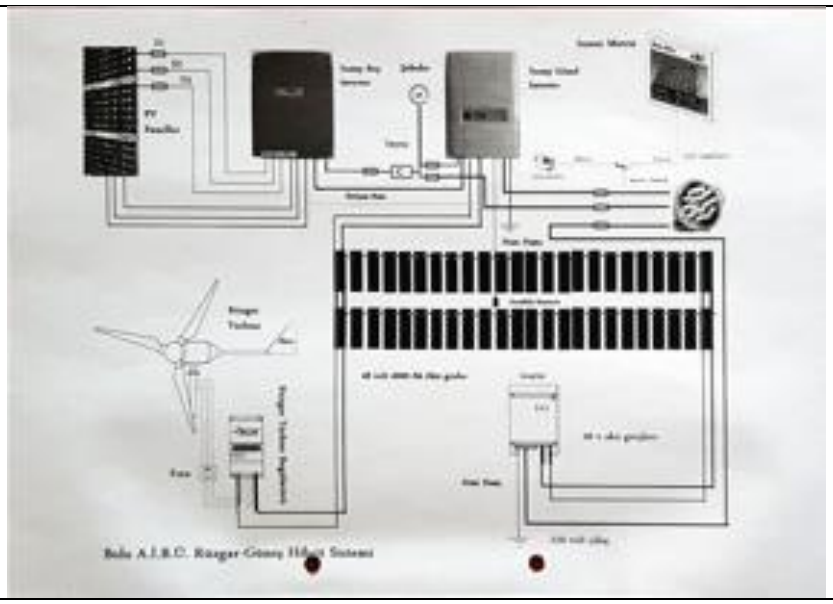
[2.10] Greenhouse gas emission reduction program

1. Façade Mounted Solar Panels at Gölköy Campus (BAİBU, Turkey)

2.Traffic Light with solar panel at Gölköy Campus (BAİBU, Turkey)

3.Roof Mounted Solar Panels at Gölköy Campus (BAİBU, Turkey)

4. Wind Turbine at Gölköy Campus (BAİBU, Turkey)



5. Hybrid system of solar panel (Figure 3) and wind turbine (Figure 4)

1. Solar PV power station of total 2.32 kWh was installed on the façade of one of the building, so called Nuclear Radiation Dedectors Application and Research Center (NÜRDAM), of BAIBU.

2. Traffic lights with solar panel also present in the Gölköy Campus of BAIBU

3. Roof mounted panel in front of the Vocational School of Physical Education Department in the Gölköy Campus of BAIBU

4. A wind turbine is also available on the Gölköy Campus of BAIBU.

5. A plan view of hybrid system including Figure (3) and Figure (4)

[2] Energy and Climate Change (EC)

[2.11] Please Provide The Total Carbon Footprint (CO2 emission in the last 12 months, in metric tons)

Option 2: Recommended by UI GreenMetric

CO_2 (electricity)

$$= \frac{7554547\ (kWh)}{1000} \times 0{,}84$$

$$= 6345.82 \text{ metric tons}$$

CO_2 (bus)

$$= \frac{number\ of\ shuttle\ bus\ in\ your\ university \times total\ trips\ for\ shuttle\ bus\ service\ each\ day \times approximate\ travel\ distance\ of\ vehicle\ each\ day\ inside\ campus\ only\ (KM) \times 240}{100} \times 0{,}01$$

$$= \frac{2 \times 47 \times 5 \times 240}{100} \times 0{,}01$$

$$= 11.28 \text{ metric tons}$$

CO_2 (cars)

$$= \frac{\text{number of cars entering your university} \times 2 \times \text{approximate travel distance of vehicle each day inside campus only (KM)} \times 240}{100} \times 0{,}02$$

$$= \frac{1536 \times 2 \times 3 \times 240}{100} \times 0{,}02$$

$$= 442.368 \text{ metric tons}$$

CO_2 (motorcycle)

$$= \frac{\text{number of motorcycle entering your university} \times 2 \times \text{approximate travel distance of vehicle each day inside campus only (KM)} \times 240}{100} \times 0{,}01$$

$$= \frac{10 \times 2 \times 3 \times 240}{100} \times 0{,}01$$

$$= 1.44 \text{ metric tons}$$

CO_2 (total)

$$= 6345.82 + 11.28 + 442.368 + 1.44$$

$$= 6651.648$$

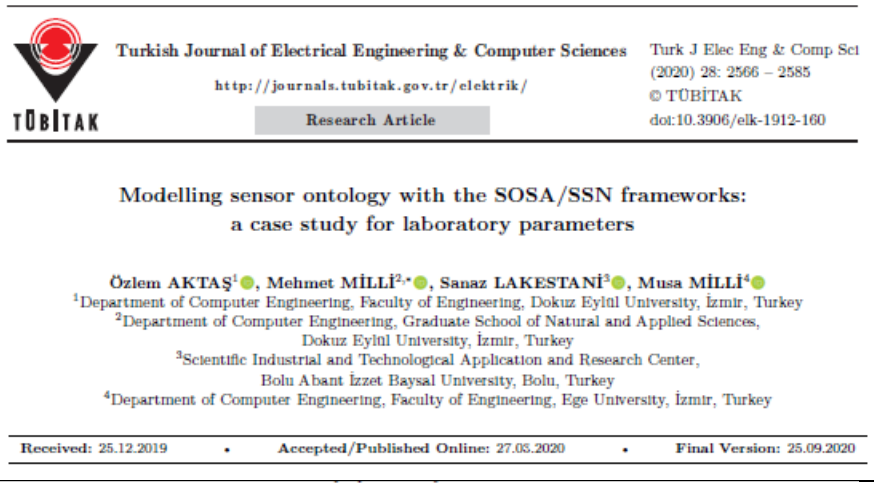
Carbon footprint in 2021= 6800.91 metric tons

Total Carbon Footprint of Gölköy Campus (BAİBÜ, Turkey)

The carbon footprint of the main campus (Gölköy Campus, BAIBU) was calculated based on the Option 2 of UI GreenMetric guideline. The CO_2 release from the use of electricity in the campus is summed up with the CO_2 emissions from cars, buses and motorcycles and considered as the carbon footprint of the campus, which is 6651.648 metric tons for the last 10 months. Electricity and emissions from cars form 93 and 6.50 % of total carbon footprint in 2021, respectively.

[2] Energy and Climate Change (EC)

[2.13] Number of innovative program(s) during Covid-19 pandemic



Turkish Journal of Electrical Engineering & Computer Sciences
http://journals.tubitak.gov.tr/elektrik/
Research Article
Turk J Elec Eng & Comp Sci
(2020) 28: 2566 – 2585
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doi:10.3906/elk-1912-160

Modelling sensor ontology with the SOSA/SSN frameworks: a case study for laboratory parameters

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Sensor	Parameter	Resolution	Range	Voltage
DHT22 temperature and humidity sensor module	Temperature	0.1 °C	-40 °C–125 °C ± 0.5	3.3 V–6 V
	Humidity	0.1% rh	0%–100% ± 2.5–5	
CJMCU-811 CCS811 sensor module	CO_2	1 ppm	400–29206 ppm	1.8 V–3.6 V
	TVOC	1 ppb	0–32768 ppb	
Nova SDS011 digital PM sensor module	PM 2.5	0.1 ppm	0.0–999.9 ppm	5 V
	PM 10	0.1 ppm	0.0–999.9 ppm	
MQ-7 Sensor Module	CO	1 ppm	10–10.000 ppm	5 V ± 0.1 V
Light dependent resistors	Light	1 %	0%–100%	5 V

The cheap sensors were produced for online monitoring of air pollutants inside the buildings

(BAİBU, Turkey)

The cheap sensors were produced to online monitor the air quality indoor and the results were published in Turkish Journal of Electrical Engineering & Computer Sciences by Aktaş et al. (2020). With this monitor, CO, CO_2, TVOC, $PM_{2.5}$ and PM_{10} can be monitored with real time. Monitor was used at our university hospital.

1. https://journals.tubitak.gov.tr/elektrik/issues/elk-20-28-5/elk-28-5-14-1912-160.pdf

[2] Energy and Climate Change (EC)

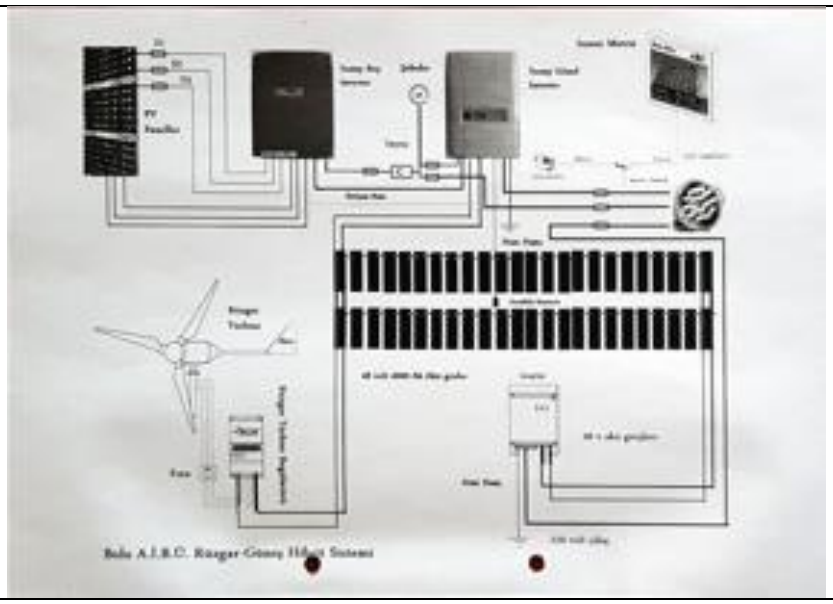
[2.14] Impactful university program(s) on climate change

1. Façade Mounted Solar Panels at Gölköy Campus (BAİBU, Turkey)

2.Traffic Light with solar panel at Gölköy Campus (BAİBU, Turkey)

3.Roof Mounted Solar Panels at Gölköy Campus (BAİBU, Turkey)

4. Wind Turbine at Gölköy Campus (BAİBU, Turkey)



5. Hybrid system of solar panel (Figure 3) and wind turbine (Figure 4)

1. Solar PV power station of total 2.32 kWh was installed on the façade of one of the building, so called Nuclear Radiation Dedectors Application and Research Center (NÜRDAM), of BAİBU.

2. Traffic lights with solar panel also present in the Gölköy Campus of BAİBU

3. Roof mounted panel in front of the Vocational School of Physical Education Department in the Gölköy Campus of BAİBU

4. A wind turbine is also available on the Gölköy Campus of BAİBU.

5. A plan view of hybrid system including Figure (3) and Figure (4)

3

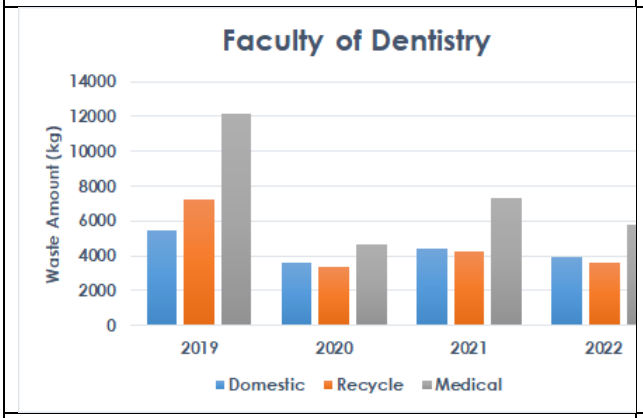
WASTE

[3] Waste (WS)

[3.1] Recycling Program for University Waste

1

2



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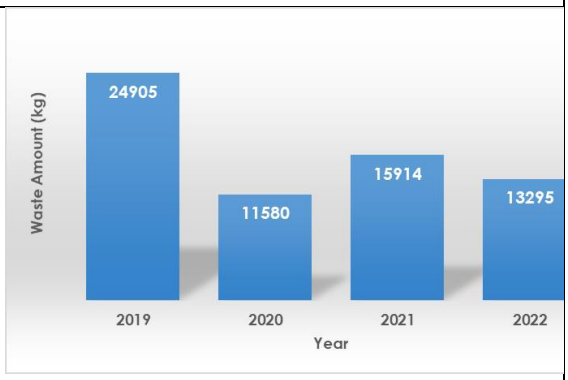


4

Example of Recycling Program for University Waste (BAİBÜ, Turkey)

Table: The waste types produced at Gölköy Campus of BAİBÜ in 2021

	Domestic Waste (kg)	Recyclable Waste (kg)	Infectious Waste (kg)
	6,081	**10,610**	
Total (kg)	**16,691**		

1. Zero Waste (so-called "Sıfır Atık" in Turkish) Project was started in Turkey in January 2019. In the framework of this project, it is aimed that the recovery of packaging wastes will be increased up to 12 % in 2023, which was 5.3 % in 2014. Consequently, the plastics and papers have been collecting separately in campuses of BAİBÜ to reduce the waste amount disposed at the landfills. Recycle boxes

have been put all around the faculties, dormitories, gym centers, and administrative building in the campus to collect glass, paper, metals and plastic separately from the organic wastes.

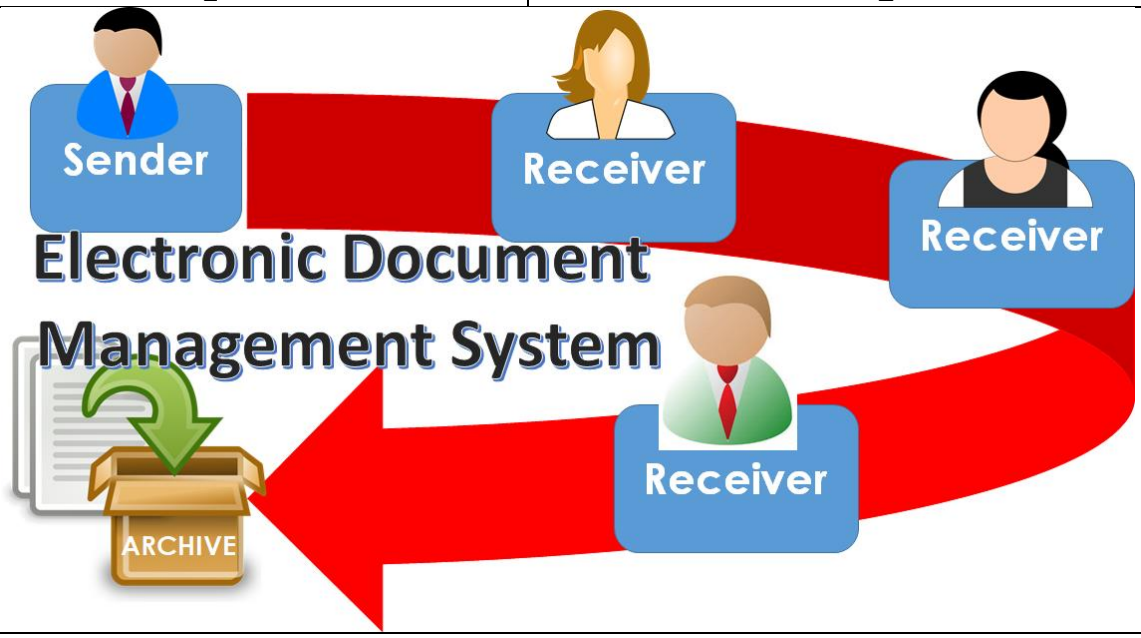
2. Recycle bins have been placed in the garden of each faculties to collect the recyclable plastics, metals, glass, paper and cardboard at all campuses of BAİBÜ. Additionally, this program allows all types recyclables (plastic, paper, glass, aluminum) to be placed in the same container, making it easier for the user. BAİBÜ also promotes the recycling of Electronic Waste and ink-cartridges from printers. E-waste items should not be disposed of in the normal trash due to their high concentrations of toxic chemicals and heavy metals. These wastes have been put in the transparent plastic bags and placed aside the recycle bins, which have then been collected by the municipality of Bolu.
3. Figure 2 shows the total amount of domestic waste and recyclables collected at the between March 2019 and February 2020 at the Gölköy campus. The total amount of waste collected at the campus during this period is 8916 kg, which includes 3617 kg of domestic waste and 5289 kg of recyclables, which corresponds to 59% of total waste generated at the campus
4. Figure 4 depicts the total amount of domestic waste and recyclables collected at the Faculty of Dentistry between March 2019 and February 2020. The percent of recyclables is 54 %.
5. Table shows the amount and types of waste produced at the Gölköy Campus in 2021. The total amount of waste produced in 2021 is 11,660 kg, of which 3,373 kg is recyclables. Therefore, the portion of recyclables during 2021 is 30%.

[3] Waste (WS)

[3.2] Program to Reduce the Use of Paper and Plastic on Campus

1

2



3

Example of Program to Reduce the Use of Paper and Plastic in Gölköy Campus (BAİBÜ, Turkey)

1. Use of plastic bags has decreased by 50 % in Turkey after January 1st, 2019, when retailers began charging for environmentally charging plastic bags. The retailers are charging 0.25 Turkish Lira ($ 0.05) for each plastic bag after 1st of January, 2019 at the shopping mall in the campuses of BAİBU, which encourage people (students, academicians and officials) to use their cotton reusable bags during shopping (Figure 1).
2. Moreover, academic and administrative personnel always try to use 2-side of the paper for printing and check their data before print. Students and academicians try to use e-books and online system instead of hard copy of the books and other relevant material.

3. BAİBÜ IT supports paperless system to reduce paper in daily workplace. Electronic Document Management System (EBYS) has been used for sending and receiving of documents in the university and also within the other state departments in the country.

   The objective of all these efforts is to reduce a lot of paper use at BAİBÜ, which in turn can reduce CO_2 emissions and save the world.

[3] Waste (WS)

[3.3] Organic Waste Treatment

Domestic Waste Collection Bin

Example of Organic Waste Treatment at Gölköy Campus (BAİBÜ, Turkey)

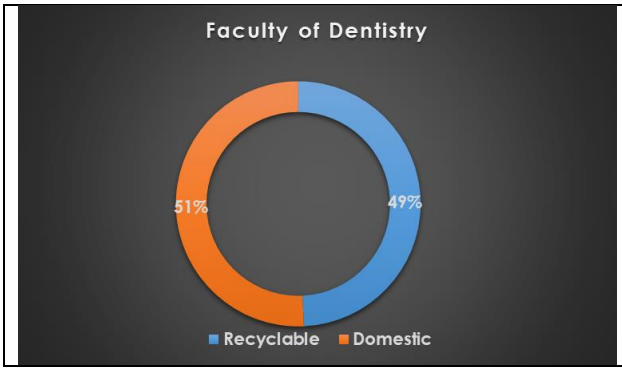


Figure 1

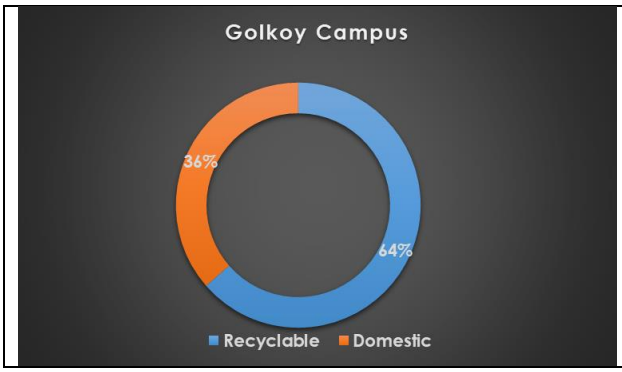


Figure 2

Table: The waste types produced at Gölköy Campus of BAİBÜ in 2021

	Domestic Waste (kg)	Recyclable Waste (kg)	Infectious Waste (kg)
	6,081	**10,610**	
Total (kg)	**16,691**		

In Gölköy Campus of BAİBÜ, the only structures that produce organic waste are canteens and cafés, which have been collected in special bins separately from recyclables, hazardous and toxic wastes. Municipality of Bolu (so-called "Bolu Belediyesi" in Turkish) collects the organic waste and it delivers them at an authorized waste treatment plant that processes the material through anaerobic digestion. The outputs of this system are: biogas, from which biomethane, electricity and liquid carbon dioxide for industrial use are produced, and organic fertilizers.

1. Figure 1 shows the contribution of domestic waste to total waste at the Dentistry Faculty of Gölköy campus. The total amount of waste collected at the faculty during 2021 is 15,914 kg, which includes 6081 kg of domestic waste and 10,610 kg of recyclables, which corresponds to 64% of total waste generated at the campus
2. Figure 2 depicts the contribution of domestic waste to total waste at the Golkoy Campus in 2021. The percent of recyclables is 64%. The portion of recyclables during 2021 is 64%.

[3] Waste (WS)

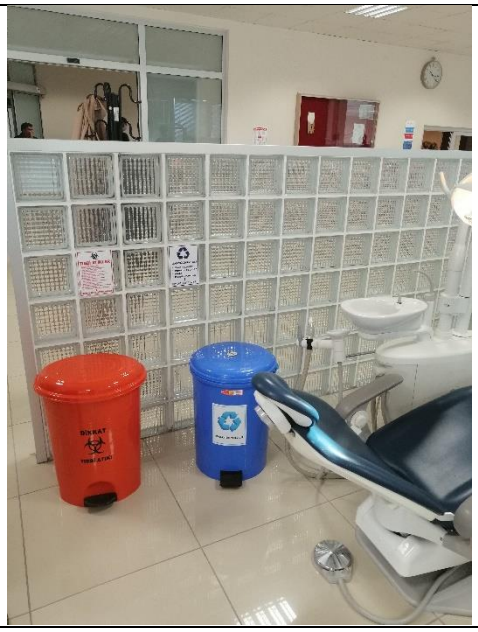
[3.4] Inorganic Waste Treatment

Inorganic Waste Treatment (BAİBÜ, Turkey)	

1. Used batteries in the campus are collected in special red collection bins at Gölköy Campus of BAIBU

[3] Waste (WS)

[3.5] Toxic Waste Treatment



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Example of Toxic Waste Treatment (BAİBÜ, Turkey)

Management of (solid/liquid/gaseous) hazardous waste is directed by Waste Technical Team in the university, which was formed in accordance with the requirements of "Zero Waste Project" after 1st of January, 2019. Currently, the toxic wastes are collected in special bins in the Faculty of Dentistry (Figure 1, orange bin) only. In addition, the batteries are also collected in special bins (Figure 2, red bin) at this and other faculties at the Gölköy Campus. Moreover, Faculty of Dentistry is provided with

a *Temporary Waste Storage* (Figure 3) to safely store the Hazardous Waste received from the labs where they are originated until they are picked up from the authorized Company. One trained Environmental Officer-Technician (Jale Bağcı) is responsible for the waste packaging and labeling and fill documents to comply with national and international regulations. Figure 4 depicts the annual medical waste production at the associated faculty between 2019 and 2022. The Table 1 shows the type and amount of toxic wastes collected and sent to authorized companies for disposal.

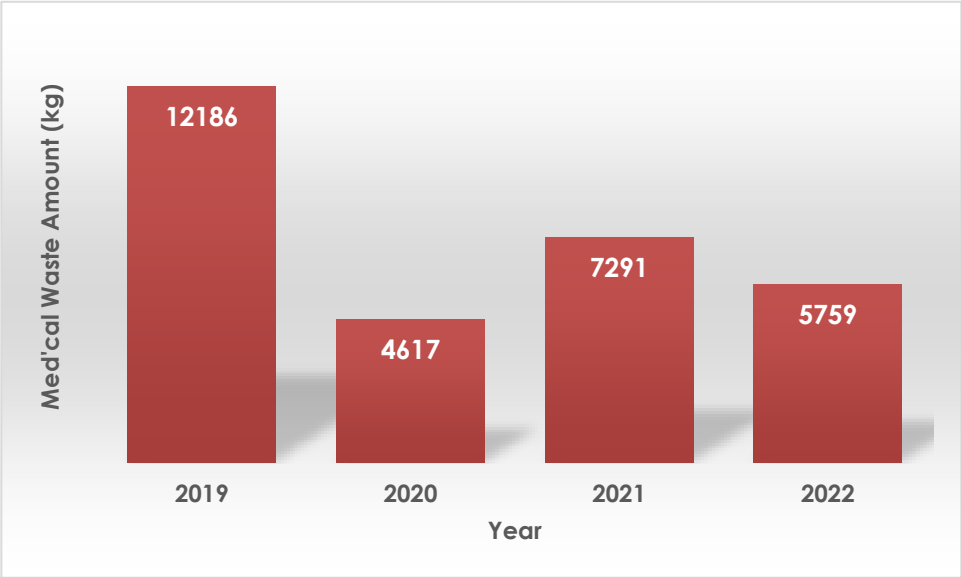


Figure 4: Annual medical (toxic) waste production at the Faculty of Dentistry between 2019 and 2022

[3] Waste (WS)

[3.6] Sewage Disposal

Sewage Disposal (BAİBÜ, Turkey)

- Wastewater generated within the campus is discharged to the sewage system of the Bolu Municipality, where it is treated with the conventional treatment. Every month 30000 tonnes of wastewater is treated by this way.

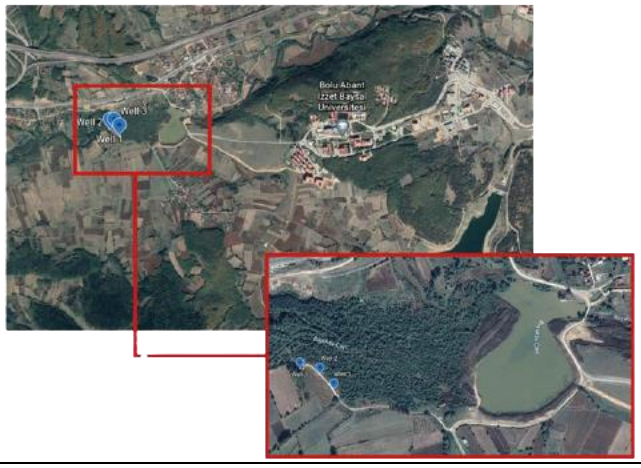
4

WATER CONSERVATION PROGRAM

[4] Water (WR)

[4.1] Water Conservation Program Implementation

Example of Water Conservation – Rain Water Collection



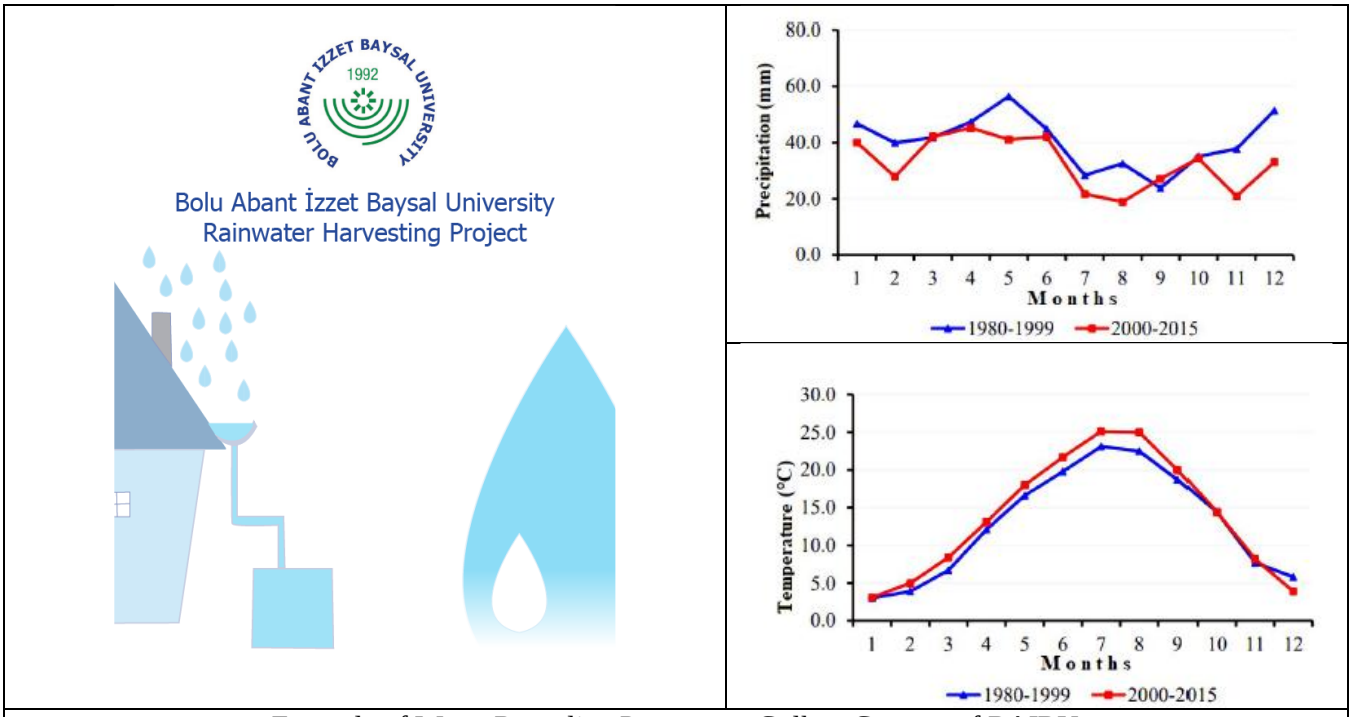
Example of Water Conservation –Wells for Drinking Water Supply at Gölköy Campus

Example of Water Conservation – Lake

1. All buildings of the BAİBU have a separated sewerage system, for waste water and for clean water (rainwater). Rain water is thus collected from the roofs of the buildings and is then discharged into the canals close to Gölköy Campus. At our campus we have a separate sewerage system. We collect rainwater from the roof, parking area etc. and discharge this in the channels close to our campus.
2. There are 3 wells within the campus. The total amount of water withdrawn from these wells is 195 tones per hour. The water obtained from the wells is transported to the water treatment plant with 2200 m-long pipe system. The water is first passed to filters and odor of the water is removed by using carbon filters. NaOCl is used as disinfectant agent during disinfection process.
3. Rainwater collected within the campus is transferred to the canal close to campus and then these canals are discharged water to the Gölköy Lake, which is currently the main drinking water supply of Bolu city.

[4] Water (WR)

[4.2] Water Recycling Program Implementation



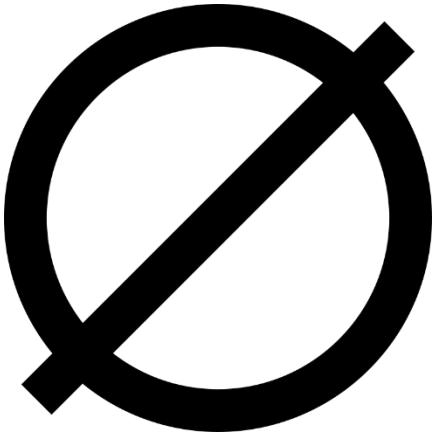
Example of Water Recycling Program at Gölköy Campus of BAIBU

Rainwater harvesting project involves the collection of rainwater from the buildings' roof at the Gölköy campus. The recycled water is used for garden sprinkler system.

The details of the project can be found at https://yesilkampus.ibu.edu.tr/ under the **"Rainwater Harvesting Project"** title

[4] Water (WR)

[4.3] Water efficient appliance usage



1. Water efficient appliances is needed, but nothing has been done since the sensor technology is very sensitive and it should be replaced or fixed more frequently as compared to the traditional (manual) systems

[4] Water (WR)

[4.4] Consumption of treated water

Wells for Drinking Water Supply at Gölköy Campus

There are 3 wells within the campus. The total amount of water withdrawn from these wells is 195 tones per hour. The water obtained from the wells is transported to the water treatment plant with 2200 m-long pipe system. The water is first passed to filters and odor of the water is removed by using carbon filters. NaOCl is used as disinfectant agent during disinfection process.

[4] Water (WR)

[4.5] Water pollution control in campus area

Disinfectants produced at one of the university center

Sterile rooms were built at the dentistry faculty duirng COVID-19

Disinfectant bottles were placed in every building in all of the campuses

Policy

"The Turkish Water Pollution Control Regulation came into effect in 2004". The aim of the regulation is to bring out the technical and legal principles required for the determination of Water Pollution Control Principles with the purpose of actualizing utilization of the country's water resources potential protection, ensuring maximum optimized use and prevention of water pollution in harmony withthe economic and social development objectives. The water quality of the wells from which Golkoy Campus of BAIBU supplies its water has been regularly checked in terms of water pollutants such as metals, ions and pH and microorganisms. Proper treatment is applied before pumping water to the campus for the end use.

Wastewater Treatment

According to "The Environment Law (Public Law 2872)" became active on August 9, 1983, The Turkish Goverment established "The Water Pollution Control Regulation" which declares standards for wastewater discharges, on September 4, 1988. Consequently, the wastewater generated in all campuses of BAIBU was treated properly in wastewater treatment plant before discharging to the receiving environment.

5
TRANSPORTATION

[5] Transportation (TR)

[5.4] The total number of vehicles (cars and motorcycles) divided by total campus' population

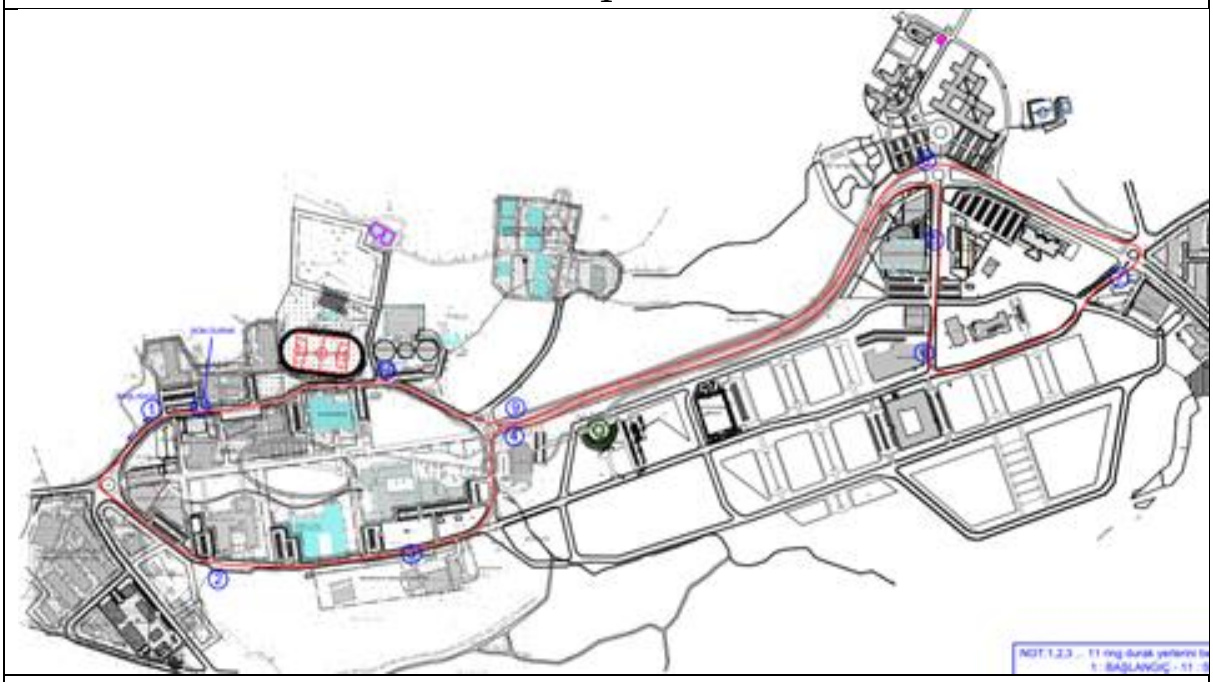
No	Vehicle	Total Number
1	Cars managed by university	20
2	Cars entering the university	1480
	Total	1500

$$The\ total\ number\ of\ vehicles\ divided\ by\ total\ campus'spopulation = \frac{1500}{4121} = 0.364$$

[5] Transportation (TR)

[5.5] Shuttle Services

1



2

Example of Shuttle Services – Shuttle Route (BAİBU, Turkey)

Shuttle services, which have been carried out with the buses in Figure 1, are started at 08:15 am in the morning and the duration between each shuttle service is 15 minutes. The route of the shuttle service at the Gölköy Campus (BAİBU) is depicted in Figure 2. The shuttle services are continued till 10:00 pm in the evening and the total number of shuttle service between 08:15 am and 10:00 pm is 47 per day.

http://ajanda.ibu.edu.tr/kampus-ici-ring-servisi/

[5] Transportation (TR)

[5.9] Zero Emission Vehicles (ZEV) Policy on Campus


Gençlik Projeleri Destek Programı
2019 - I. Çağrı Dönemi
Proje Başvuru Formu
TASLAK

EK-1

Proje Adı	BOLU ABANT İZZET BAYSAL ÜNİVERSİTESİ GÖLKÖY KAMPÜSÜNDE SÜRDÜRÜLEBİLİRLİK ÇALIŞMALARI: KARBON EMİSYONLARININ AZALTILMASI
Proje No	TASLAK (PROJENİZ SİZİN ONAYINIZDAN SONRA BAŞVURU NUMARASI ALACAKTIR.)

Bike project of BAIBU Gölköy Campus was funded by the Turkish Ministry of Youth and Sport

Electro-mobile vehicle manufactured by the Engineering students

1. There is currently one project of BAIBU was funded by Turkish Ministry of Youth and Sport in 2019. 25 bikes will be purchased from the budget of this project and bikes will be used by the students with free. The budget is ready for use; however, since students were attending to lecture off campus, the start up of the project could not be performed. The bike paths have already been opened from the Gölköy campus to the main road of the city
2. There are three electro-mobiles were manufactured by the engineering students. However, currently, they are not for the use of the people living in the campus

[5] Transportation (TR)

[5.13] Ratio of Parking Area to Total Campus Area

1

2

3

There are several parking lots in the Gölköy Campus (BAİBU). Figure 1 depicts the parking lots (highlighted in red). Figure 2 and 3 show the parking lots on the west and east side of the campus, respectively. Parking area information at BAİBU's campuses are provided in Table 1 below:

Table 1: Parking area information of the campuses at BAİBU

Campus	Total Area (m^2)	Parking Area (m^2)	Ratio
Gölköy Campus	3,926,500	47,824	0.012
Yeniçağa	10,050	351	0.035
Mengen	41,694.72	663	0.016
Gerede	64,598.99	3,342	0.052
Mudurnu	15,096.25	6,085	0.403
Seben	21,732.08	1,101	0.051
Vocation School of BAİBU	55,753	None	-

[5] Transportation (TR)

[5.14] Program to limit or decrease the parking area on campus for the last 3 years (from 2018 to 2020)

Bicycle Road and Project (BAİBU, Turkey)

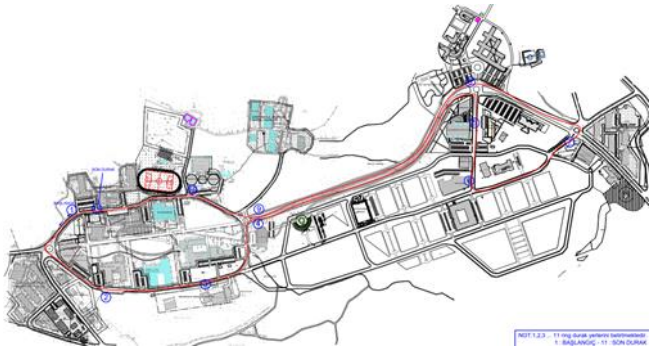
There is a shuttle service within the campus to decrease private vehicles. In addition, we had a bicycle project and we got grant to purchase bicycles for the students with free of charge. In addition, the municipality of Bolu has a public transportation system, which all staff and students can use. Therefore, the number of initiatives to decrease the private vehicles on campus is three.

http://ajanda.ibu.edu.tr/baibunun-sifir-atik-projesine-genclik-ve-spor-bakanligindan-destek/

[5] Transportation (TR)

[5.15] Number of Transportation Initiatives to Decrease Private Vehicles on Campus

Bicycle Road and Project (BAİBU, Turkey)



Shuttle service and its route in the main campus (BAİBU, Turkey)

There is a shuttle service within the campus to decrease private vehicles. In addition, we had a bicycle project and we got grant to purchase bicycles for the students with free of charge. In addition, the municipality of Bolu has a public transportation system, which all staff and students can use. Therefore, the number of initiatives to decrease the private vehicles on campus is three.

[5] Transportation (TR)

[5.16] Pedestrian Path Policy on Campus

	
Example of pedestrian path at Gölköy Campus (BAİBU, Turkey)	Example of pedestrian path at Gölköy Campus (BAİBU, Turkey)

1. Ramps and guiding blocks which have suitable design for pedestrian having physical disabilities. Street lamp for pedestrian in night
2. Separator between road for vehicle and pedestrian path.

6

EDUCATION AND RESEARCH

[6] Education and Research (ED)

[6.1] Number of Courses/Subjects Related to Sustainability Offered

Table 1: Courses offered in Environmental Engineering Department of Faculty of Engineering in BAİBU

Faculty of Engineering
• Introduction to Environmental Engineering • Ecosystems Ecology • Environmental Chemistry I • Environmental Chemistry II • Environmental Microbiology • Environmental Hydrogeology • Unit Operations I • Unit Operations II • Fundamentals of Treatment • Disposal of Solid Wastes • Water Resources Engineering I • Water Resources Engineering II • Environmental Law • Air pollution and control • Environmental Impact Assessment • Land Use and Watershed Management • Environmental and Energy Policy • Treatment Plant Design and Operation • Modelling Ecosystem Dynamics • Global Environmental Changes • Statistics and Environmental System Analysis • Dewatering of Sewage Sludges • Mapping with Geographical Information Systems • Advanced Water and Wastewater Treatment • Contaminated Site Remediation • Environmental Biotechnology • Anaerobic Treatment of Wastes • Fate and Transport of Pollutants in the Environment • Pollution in Atmospheric and Aqueous Environment • Advanced Enviromental Chemistry • Solid Wastes • Wetland Hydrology • Environmental Monitoring • Phosphorus recovery methods from municipal wastewaters • Atmospheric Pollution and Modeling • Water Pollution: Sources and Protection Areas • Lake and Wetland Management

Table 2: Courses offered in other faculties/institutes

Faculty of Agriculture and Natural Sciences/Plant protection

- Agriculture and environmental pollution

Faculty of Architecture

- Urban Plannning and Environment

Vocational School of Bolu Technical Sciences

- Landscape Ecology

Faculty of Economic and Administrative Sciences

- Sustainable Environmental Policies and Practices
- Environemtal Management
- Environmental Policy

Vocational School of BAİBU

- Environmental Protection
- Agriculture and Environment

Faculty of Medical Sciences

- Environment and Social Responsibility

Vocational School of Süreyya Astarcı at Mudurnu Campus of BAİBU

- Urban and Environmental Protection

Vocational School of Yeniçağa Yaşar Çelik at Yeniçağa Campus of BAİBU

- Wastewater
- Environmental Protection
  Packaging Technology

Vocational School at Gerede Campus of BAİBU

- Leather Industry and Environment

Faculty of Agriculture

- Organic and Sustainable Agriculture
- Agriculture and Environmental Pollution

Business Administration and Finance

- Environment and Law
- Environmental Management
- Environmental Problems and Finance

Faculty of Science and Art

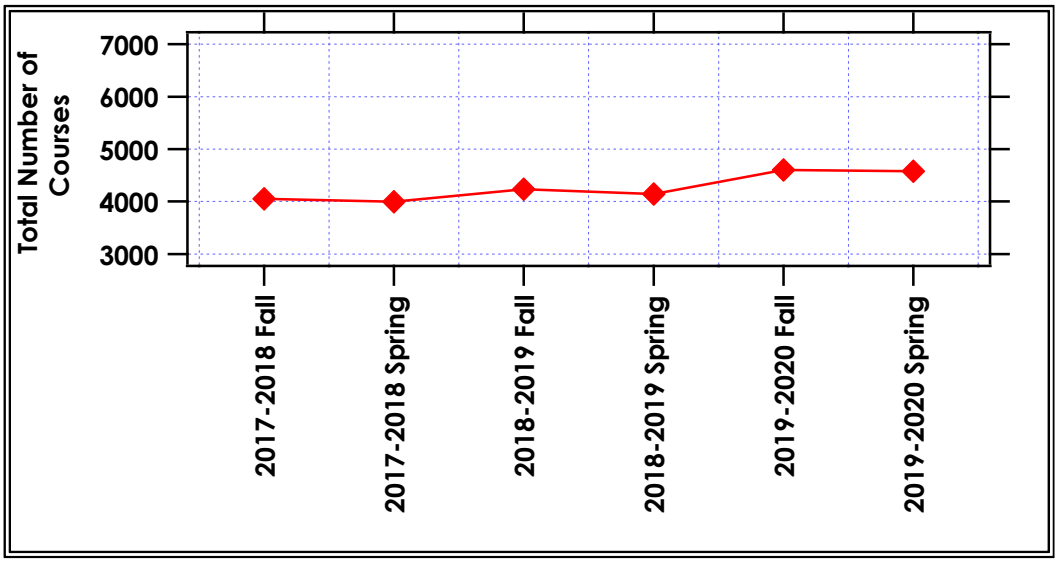
- Environmental Science
- Freshwater Biology and Ecology
- Ostracoda Taxonomy and Ecology
- Ecosystem Ecology

Above is a list of the courses that have had changes approved through BAİBU's Curriculum undergraduate and graduate programmes, which aims to embed sustainability into all course and module content offered by the University.

Total number of courses on sustainability and environment is 60.

[6] Education and Research (ED)

[6.2] Total Number of Courses/Subjects Offered

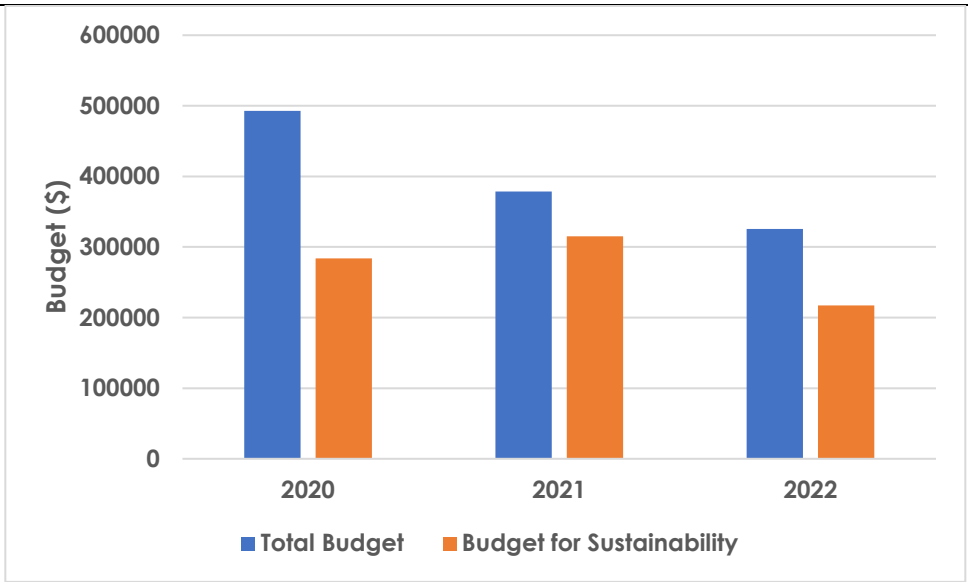


Total number of courses offered in each semester at Gölköy Campus

Total number of courses offered in 2018-2019 Spring and 2019/2020 Fall = 8,748 courses (not modules)

[6] Education and Research (ED)

[6.4] Total Research Funds Dedicated to Sustainability Research (in US Dollars)



Budget allocated to the sustainability and total budget of the university in the last three years (Bolu Abant İzzet Baysal University (BAİBU), Turkey)

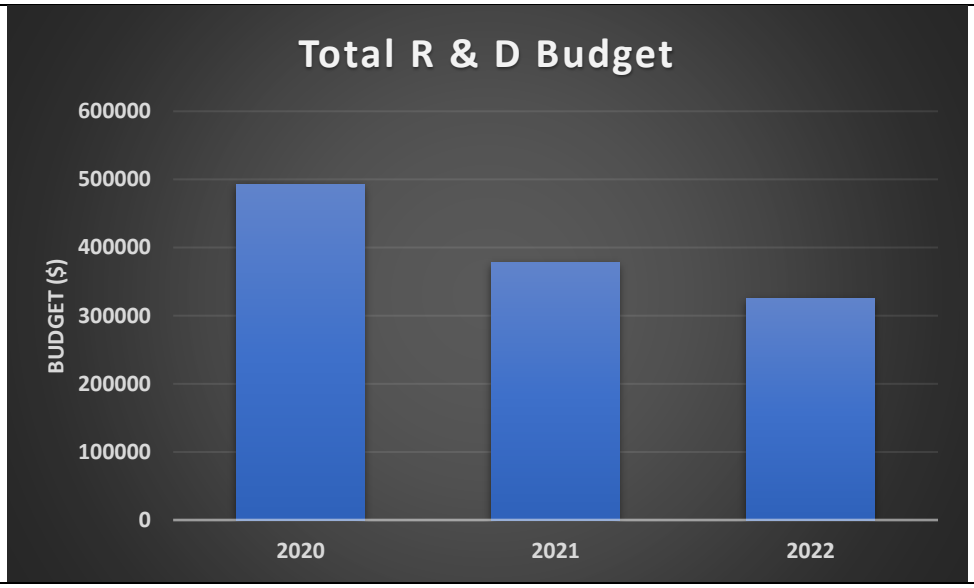
The average ratio of budget allocated to sustainability to the total budget is 43 %

The list of projects can be accessible through:

1. http://bap.ibu.edu.tr/

[6] Education and Research (ED)

[6.5] Total Research Funds (in US Dollars)



Total research and development budget of the university in the last three years
(Bolu Abant İzzet Baysal University (BAİBU), Turkey)

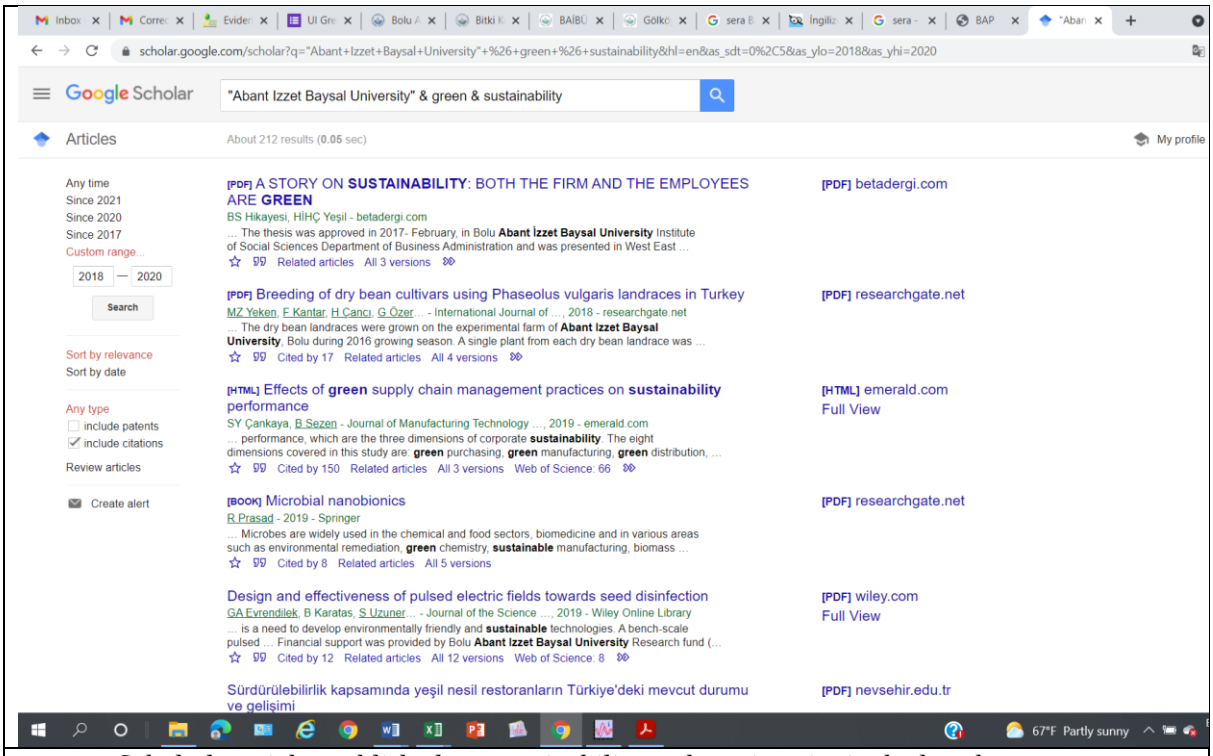
The total R& D budget in 2022 is 325383.5 $

The list of projects can be accessible through:

1. http://bap.ibu.edu.tr/

[6] Education and Research (ED)

[6.7] Number of scholarly publications on sustainability



Scholarly articles published on sustainability at the university in the last three years (Bolu Abant İzzet Baysal University (BAİBU), Turkey)

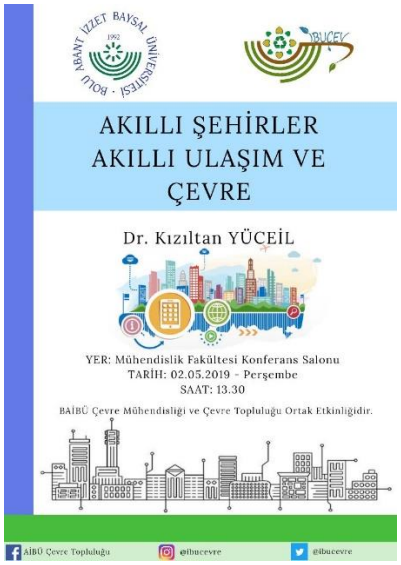
The total number of publications on sustainability is 1,340

The list of projects can be accessible through:

1. https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=%22Abant+Izzet+Baysal+University%22+%26+green+%26+sustainability&oq=%22Abant+Izzet+Baysal+University%22+%26+green+%26+sustai

[6] Education and Research (ED)

[6.8] Number of Events Related to Sustainability



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TABİAT YÜRÜYÜŞÜ
ÜNİVERSİTELİLER İLE EL ELE, SIFIR ATIKLA YEŞİL KAMPÜSE
04.11.2021 Perşembe
13:00
Toplanma yeri
Bolu Abant İzzet Baysal Üniversitesi Genç Ofis
Başvuru için ;
/gsbbolugm
/GSBBoluGM
/BoluGM14
Kontenjan sınırlıdır
"ÜNİVERSİTELİLER EL ELE, SIFIR ATIKLA YEŞİL KAMPÜSE PROJESİ"
(GENÇLİK PROJELERİ DESTEK PROGRAMI (2020-1) KAPSAMINDA GENÇLİK VE SPOR BAKANLIĞI TARAFINDAN DESTEKLENMEKTEDİR)
GÖNÜLLÜ OL
www.gencgonullular.gov.tr
GENÇLİK PROJELERİ DESTEK PROGRAMI
ABANT İZZET BAYSAL ÜNİVERSİTESİ
1992
BOLU

8

	**Zero Waste Poster Competition**
9	
	**Zero Waste Online Workshop**
10	

	
11	
	
12	

The total of 19 events on the sustainability were organized at the campus. The details of events on environment and sustainability are provided in Table 1 below:

Table 1: The details of events performed at the Gölköy Campus (BAİBU)

Date	Time	Speaker	Topic
27/03/2019	11:00-12:00	Dr. Kızıltan Yüceil	Smart Cities, Smart Transport and Environment (Figure 1)
02/05/2019	13:30-14:30	Mustafa Çetin	Management of Electrical and Electronic Appliance Wastes (Figure 2)
18/03/2019		Young TEMA Group	Planting Activity (Figure 3)
21/03/2019		Young TEMA Group	Waste Collection Activity (Figure 4)
2019		Undergraduate Students of Environmental Engineering Department of BAİBU	Training of Primary School Students (Figure 5)
08.11.2019		All students, academicians, and staff	National Forestation Day Event
14.11.2019		Ercan BERBERLER	Zero Waste(Figure 6)
14.11.2019		Tuğçe BERBERLER	Zero Waste(Figure 6)
19.12.2019		Emre DİKMEN	Zero Waste(Figure 7)
19.12.2019		Pelin ERTÜRK ARI	Zero Waste(Figure 7)
08.01.2020		Ercan BERBERLER	Zero Waste
08.01.2020		Tuğçe BERBERLER	Zero Waste
19.02.2020		Emre DİKMEN	Zero Waste
19.02.2020		Pelin ERTÜRK ARI	Zero Waste
11.03.2020		Emre DİKMEN	Zero Waste
11.03.2020		Pelin ERTÜRK ARI	Zero Waste
14.07.2021		All students, academicians, and staff	Forestation Event
06.11.2021		All students, academicians, and staff	Bird Nests Placed on the campus
06.11.2021		All students, academicians, and staff	Clean Up of Golkoy Lake area
10.11.2021		All students, academicians, and staff	Forestation Event
11.11.2021		All students, academicians, and staff	Forestation Event

4.11.2021	**All students, academicians, and staff**	**Waste Collection and Bushwalking**
12.12.2021	**All students, academicians, and staff**	**Zero Waste Poster Competition**
25.02.2022	**All students, academicians, and staff**	**Zero Waste Online Workshop**
03.06.2022	**All students, academicians, and staff**	**Project Closing Panel and Bike Tour**

Additional evidence link:

http://ajanda.ibu.edu.tr/akilli-sehirler-akilli-ulasim-ve-cevre-konferans/

http://ajanda.ibu.edu.tr/elektrikli-ve-elektronik-atik-esyalarin-yonetimi-seminer/

http://ajanda.ibu.edu.tr/entegre-cevre-yonetimi-gida-sektoru-ornegi-seminer/

http://ajanda.ibu.edu.tr/11-kasim-milli-agaclandirma-gunu-fidan-dikim-etkinligine-davet/

http://ajanda.ibu.edu.tr/baibude-15-temmuz-sehitleri-anisina-252-sehit-252-fidan/

http://ajanda.ibu.edu.tr/golkoy-yerleskesinde-agaclara-kusyuvalari-asildi/

http://ajanda.ibu.edu.tr/rektor-alisarli-ogrencilerle-birlikte-tabiat-yuruyusu-yapti/

http://ajanda.ibu.edu.tr/baibu-adalet-ormani-gelecege-nefes-oluyor/

http://ajanda.ibu.edu.tr/agaclandirma-seferberligine-bolu-myo-ogrencilerinden-katki/

http://ajanda.ibu.edu.tr/rektor-alisarli-ogrencilerle-birlikte-tabiat-yuruyusu-yapti/

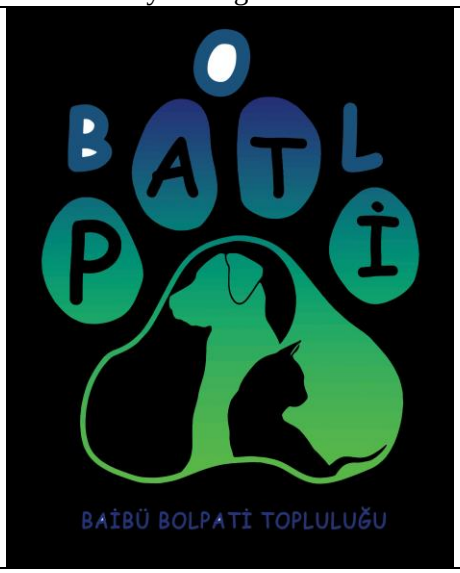
http://ajanda.ibu.edu.tr/sifir-atik-poster-tasarim-yarismasi-kazananlari-belli-oldu/

http://ajanda.ibu.edu.tr/baibu-cevrimici-sifir-atik-calistayi/

http://ajanda.ibu.edu.tr/surdurulebilirlik-calismalari-karbon-emisyonlarinin-azaltilmasi-etkinligi/

[6] Education and Research (ED)

[6.9] Number of student organizations related to sustainability

	
Scientific Research Organization	Bicycle Organization
	
Biology Organization	Animan Friendly Organization
	
Mountain and Hiking Organization	Young Tema Organization

Food Control Organization	Food Organization
Health and Goodness Mobility Organization	Sport and Recreation Organization
Technology, Science and Project Organization	Construction Organization
Tourism and Excursion Organisation	Community Volunteers Organisation

Examples of **student organizations** Related to Sustainability (Bolu Abant İzzet Baysal University, Bolu, Turkey)

- Total number of organization on sustainability is 14

All the information regarding to the student organizations can be found at:

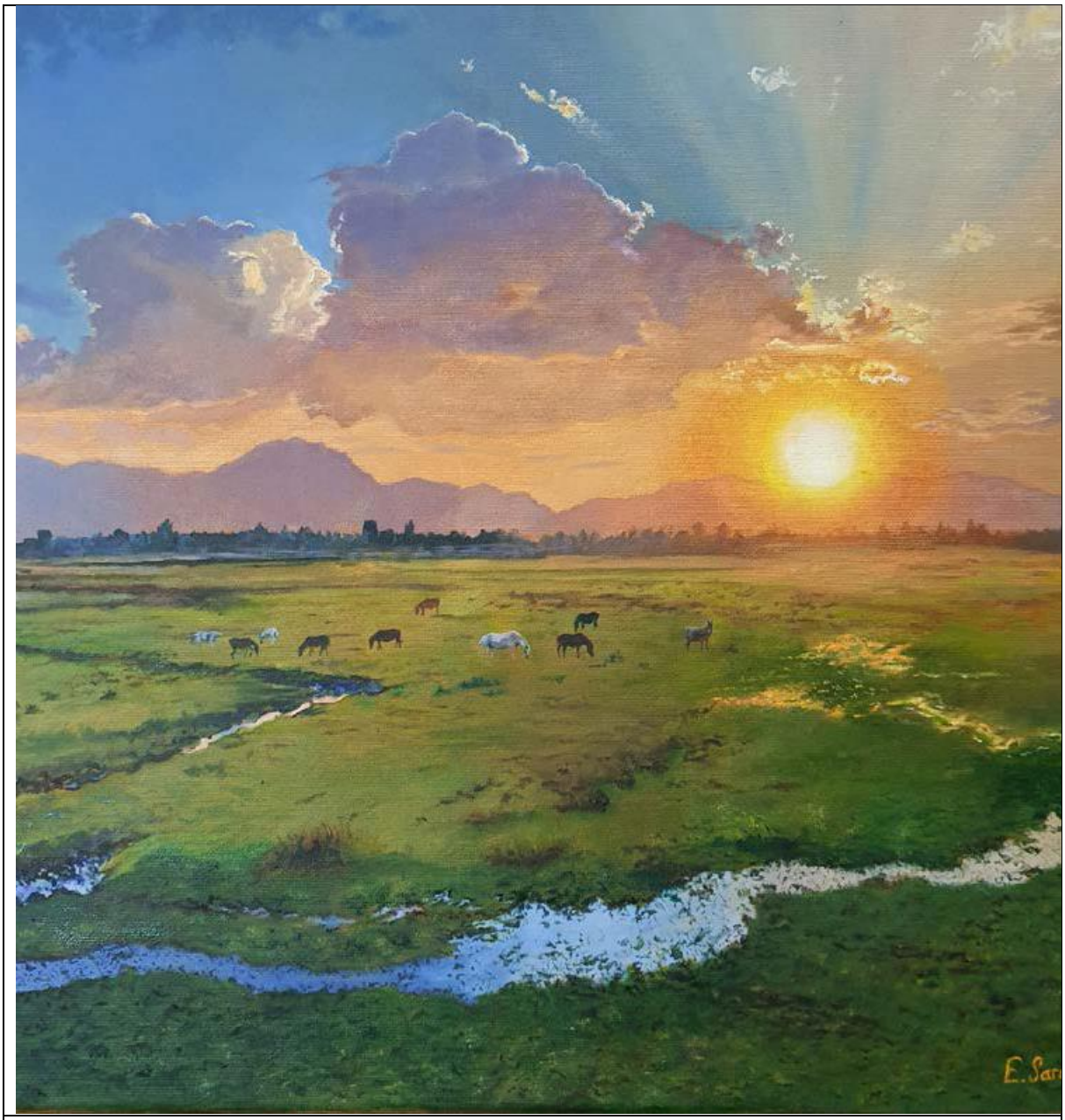
- https://sksdb.ibu.edu.tr/ogrenci/ogrenci-topluluklari/universitemizde-faaliyet-gosteren-ogrenci-topluluklari

[6] Education and Research (ED)

[6.13] Number of cultural activities on campus (e.g.Cultural Festival) including virtual activities (if any)

Kıbrıscık Cultural Research Symposium

Cengiz Aytmatov Remember Day



Student Paint Exhibition

The total number of cultural activities is 24 between 2017 and 2021

The Event Report between 2017 and 2021 can be accessible through the following web page:

1. http://ajanda.ibu.edu.tr/baibu-2017-2021-faaliyet-bulteni/

[6] Education and Research (ED)

[6.14] Number of university program(s) to cope with Covid-19 pandemic

The students guide to distance learning tduring Covid-19 Pandemic

Disinfectants produced at one of the university center

Masks were produced at our university

SAĞLIK KÜLTÜR VE SPOR DAİRE BAŞKANLIĞI

Sağlık, Kültür ve Spor Daire Başkanlığımıza bağlı
Mediko-Sosyal Merkezi bünyesinde bulunan
Psikoloji Birimimiz Covid-19 Pandemi sürecinde,
alanında uzman psikologlarımızla öğrencilerimize ve personelimize yönelik
Online Psikolojik Destek hizmetine başlamıştır.

Psikoloji Birimi / Mediko-Sosyal Merkezi
Psk. Sacide IRGIN
Uzm.Psk. Evgin MİÇOOĞULLARI
İletişim: (0374) 254 1000 – 2530 / Mail : baibumediko@ibu.edu.tr

Online mental support from the medical faculty doctors to the staff and students during COVID-19


Sterile rooms were built at the dentistry faculty duirng COVID-19



Vaccination Stand Opened

The total number of activities to increase the awareness and protect the health of all our partners during the COVID-19 days are 21.

The special section on the webpage of the university regarding to COVID-19:

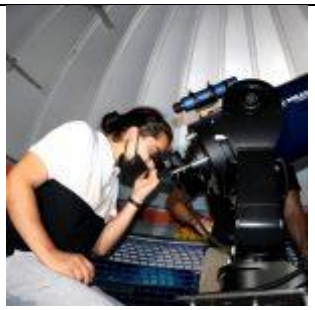
http://www.ibu.edu.tr/tr

The list of activities performed during COVID-19 Pandemic was published in the following report:

1. http://ajanda.ibu.edu.tr/baibu-2017-2021-faaliyet-bulteni/

[6] Education and Research (ED)

[6.15] Number of sustainablity community services project organised and/or involving students

	Zero Waste to Green Campus Project	• Supported by Turkish Ministry of Youth and Sports • The total budget: 9000 $ • Project Duration: 1 year • Number of students participated: all students invited
 Gençlik Projeleri Destek Programı 2019 - I. Özel Çağrı Proje Başvuru Formu İBU ÇEVRE TOPLULUĞU GENÇLİK VE SPOR BAKANLIĞINA (Eğitim, Araştırma ve Koordinasyon Genel Müdürlüğü) 2019 Yılı Gençlik Projeleri Destek Programı I. Çağrı Dönemi kapsamında tarafımızca hazırlanan "BOLU ABANT IZZET BAYSAL ÜNİVERSİTESİ GÖLKÖY KAMPÜSÜNDE SÜRDÜRÜLEBİLİRLİK ÇALIŞMALARI: KARBON EMİSYONLARININ AZALTILMASI" isimli Proje teklifimiz ekte yer almaktadır. Gereğinin yapılmasını arz ederim.	Abant Izzet Baysal University Sustainability Efforts: Decreasing Carbon Footprint Project	• Supported by Turkish Ministry of Youth and Sports • The total budget: 2000 $ • Project Duration: 2 year • Number of students participated: all students invited
	Sky Science Festival	• Supported by Bolu Bağışçılar Foundation • The total budget:1500 $ • Project Duration:1 month • Number of students participated: all students invited

The total number of projects is 3

http://ajanda.ibu.edu.tr/rektor-alisarli-ogrencilerle-birlikte-tabiat-yuruyusu-yapti/

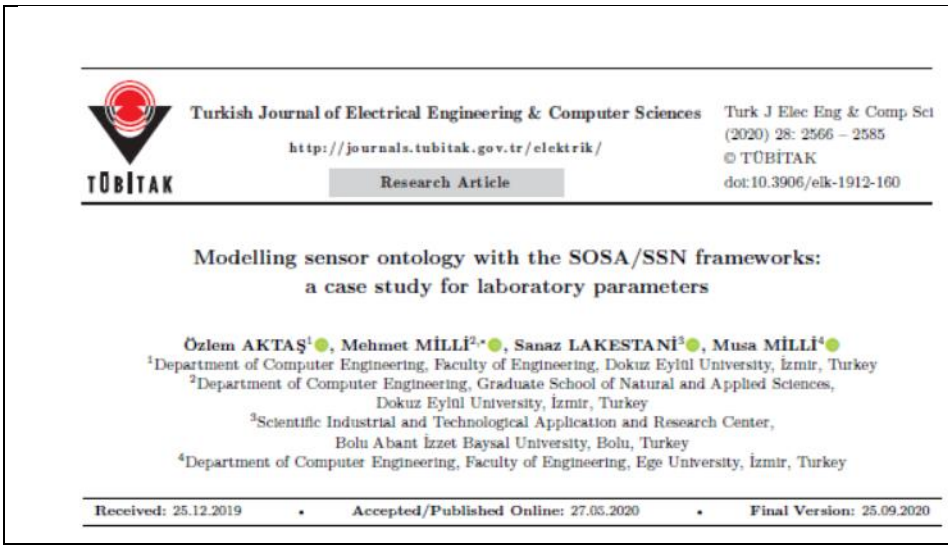
http://ajanda.ibu.edu.tr/baibunun-sifir-atik-projesine-genclik-ve-spor-bakanligindan-destek/

http://ajanda.ibu.edu.tr/baibude-gokyuzu-bilim-senligi-duzenlendi/

[6] Education and Research (ED)

[6.16] Number of sustainability-related startups

	Production of Gel from the Potato Factories
	Production of Gelatin from Leather Wastes
	Four student projects were granted by Turkish Scientific and Technological Research Council on indoor air quality determination



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http://journals.tubitak.gov.tr/elektrik/

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doi:10.3906/elk-1912-160

Modelling sensor ontology with the SOSA/SSN frameworks:
a case study for laboratory parameters

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Cheap sensors to monitor the indoor air quality was manufactured in our university and the performance of the monitor was tested in one of the laboratories of faculty of medicine

The total number of projects is 7

http://ajanda.ibu.edu.tr/baibu-2017-2021-faaliyet-bulteni/

http://ajanda.ibu.edu.tr/baibu-destekli-helal-jelatin-projesinde-son-asamaya-gecildi/

http://ajanda.ibu.edu.tr/baibu-ogrencilerinin-projeleri-tubitak-destegi-aldi/