İZMİR INSTITUTE OF TECHNOLOGY

SUSTAINABILITY REPORT

2021

CONTENTS

ABSTRACT

İzmir Institute of Technology (IZTECH) aims at creating a sustainable and resilient campus environment that outreaches the boundaries of the campus in order to serve the in-campus and out-campus communities alike. In line with this main aim, IZTECH has initiated application to the Greenmetric World University Ranking that was developed by Universitas Indonesia. Therefore, IZTECH has undertaken a gap analysis in terms of its sustainability performance by determining the current situation and the future targets. There were 6 main topics to investigate and eventually improve: Setting and Infrastructure, Energy and Climate, Waste, Water, Transportation, Education and Research. October 2021 marks IZTECH's second year of application to the Greenmetric Ranking. In its first year IZTECH was ranked 217th out of 912 institutions. In order to determine the scopes to develop and improve from each rankingIZTECH endeavors to create a sustainable campus environment.

1. INTRODUCTION

Izmir Institute of Technology (IZTECH), a leading unique research institute in Turkey, has strategically embraced the notion of sustainability in its campus located in the urban periphery of Izmir, a multi-linguistic, multi religious harbor city.

Currently, there are six state universities and three foundation universities in Izmir. Established in 1992, IZTECH is the third state university in Izmir. IZTECH locates in Izmir province that locates on the western coast of Turkey. Izmir is the third largest metropolitan area of the country as the city inhabits 4.394.694 people by 2021. The city experiences a rapid increase in population and rate of urbanization. Within the context of Izmir, IZTECH locates in approximately at the geographical center of Izmir Peninsula that lies at the western part of the city. Located in the rural periphery of the city, the campus of IZTECH has a special context compared to other campus universities in the central city.

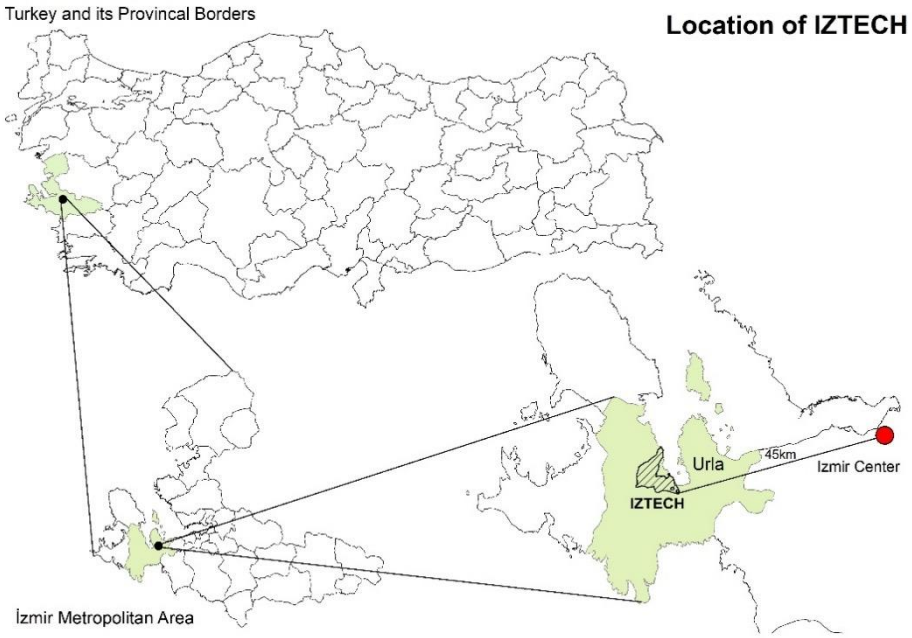


Figure 1. IZTECH location map. (Akpinar et. al., 2021)

IZTECH university campus located in a rural area, establishes a different social and spatial relationship with the city and its immediate surroundings.

In 2014, IZTECH Sustainable Green Campus Coordinatorship was established; and only starting from December 2019, a Framework on Sustainable Campus was defined. And, IZTECH has decided to apply the *GreenMetric* for critical self-evaluation and development in the field of sustainability in 2020.

Contributing to the development and transformation of the urban and rural character and public services in its immediate surrounding, IZTECH campus, which stands out with its rural features, is taking steps towards becoming a sustainable and green campus.

However, due to its peripheral location, the educational processes and the campus space have been deeply affected by the pandemic. In that sense, a need for an assessment that takes into account the effects of the pandemic has emerged for the IZTECH campus.

The medium of education in IZTECH is English and it covers three Faculties (Science, Architecture and Engineering). The Graduate School gives the opportunity of studies at graduate level in several fields to prospective students. As a leading national research institute, IZTECH has a research ecosystem that is unique for Izmir as the campus area also includes a planned technology development zone, Technopark IZMİR, Innovation Center, Technology Transfer Office, and Research Centers.

Following our first application to UI GreenMetric World University Rankings (*GreenMetric)* in 2020*,* IZTECH has set up first of all, a strategical plan for the institutionalization of the system as well as the road map. Currently, the Strategic Plan of IZTECH weakly addresses the concept of sustainability. The research team on the sustainability of the institution has argued that the conceptual framework of sustainability is far from being completed. In this framework, an ethical policy document has been initiated by the university administration. The document collectively prepared by internal actors of the university covers its institutional positioning vis-à-vis the sustainability of IZTECH. The policy text covering our meeting with nature has been discussed and written, and officially approved by the University Senate in October 12th 2021. As part of this institutionalization process, the mission as well vision of the coordinatorship have been established based on this policy text.

Secondly, IZTECH has applied to the Higher Education Council (YÖK) for the establishment of a research center in the Academic year 2021-2022. Alongside the structural steps towards the institutionalization of sustainability at IZTECH, student initiatives focusing on sustainability and environmental issues also exist within the campus.

*Table 1. Our Positions in terms of sustainability. (*Akpinar, I., et, all, 2021)

Theme	Our Positions
Three Pillars of Sustainability	IZTECH adopts economic, social and ecological sustainability as the basic principle in terms of education, research and benefit to society, and strives to ensure that all assets in the IZTECH campus exist in a sustainable environment.
Sustainable Development	Starting from its own campus and its immediate surroundings, IZTECH considers it a duty to contribute to the development of individuals who care about sustainable future of the planet and are aware of the threat to society and environment, and to raise awareness on this issue.
Use of Resources	IZTECH monitors and archives resource usage values, shares them regularly with campus stakeholders and the

	public, and takes the necessary measures for the continuous improvement.
Education-Research Ecosystem	IZTECH redefines its campus as a sustainable, living and nature-friendly “education-research ecosystem” that considers the sustainability of natural and cultural assets. It adopts the principle that all components in this ecosystem are equal.
Governance	IZTECH is determined to develop its corporate governance, corporate culture and organizational capacity with a participatory structure and to ensure quality of life in the campus.
Vision	IZTECH continues its activities with the vision of a global sustainable future by improving its institutional and cooperative infrastructure on a national and international scale, through its campus, its immediate surroundings and the city of Izmir.

IZTECH has discussed how the pandemic affected the daily routines of the campus users, together with the ways they commute, use campus outdoor public spaces and indoor working spaces. A critical review of sustainability issues through questionnaire technique applied to the IZTECH campus users, including administrative and academic staff, and students at IZTECH. The multidimensional survey has been designed to strengthen the understanding of the socio-spatial and educational characteristics of IZTECH, to grasp the perspectives of the campus users on the sustainability performance of the campus, and to gather some intangible data on the Covid-19 period and its impacts on the use of campus spaces (Akpınar, et, all, 2021).

In the light of the answers of participants and a critical evaluation of the previous application, our sustainability team (academics, young researchers, graduate students) have led the below-mentioned axes of GM and executed small-medium scale transformations and implementation at IZTECH campus.

2. SETTING AND INFRASTRUCTURE

The IZTECH campus is located in a large area blended with forests, plants, vegetable gardens, greenhouses and a large number of animals. Our campus has rather low portion of buildings which allows a sustainable campus life and good quality of air. The campus contains an open space 98% of open space and 47% of forest. The forest area grew 10% in the last 12 months and biodiversity in our forests are studied and recorded systematically.

The campus contains a planted vegetation area over 10% to the total area. We planted 20.000 trees in the last 2 years. Recycled/filtered water for plants allow us to grow the vegetation area. The water absorption is taken in consideration while building open areas, pedestrian ways and even roofs. Natural stones are used instead of concrete or asphalt in all pedestrian areas.

We have greenhouses in our campus which are used for academic activities in a large perspective. This is a long-term vision of our university and being actively used. In addition, bio-diversity in the forests of our campus has been investigated for academic purposes (Deniz Gerçek's BAB fund). In this framework, Doganlar/Frary lab at IZTECH, a new type of cotton was developed. The new cotton species has higher efficiency and quality when compared to the conventional cotton plant. Moreover, Doganlar/Frary lab aimed at determining if the expression of a Bt cry gene in tomato could provide control of the leaf miner *Tuta absoluta*. This insect was initially only a threat to crops in South America but within the past decade it has spread to Europe and Africa where it has earned the nickname 'tomato Ebola.' Control of this pest is especially difficult in developing countries which may not have access to insecticides or may not be able to afford the repeated sprays that are needed to eliminate leaf miner. In our research, the cry1Ac gene was introduced into tomato plants. The transgenic plants were then examined for their response to leaf miner infection. Up to 100% of leaf miner larvae died after feeding on leaves producing crystal proteins.

Almost 100 homeless dogs are living in our campus and fed by the university. We established a system which produces dog feed out of the rest food from the cafeteria and restaurants within the campus. The dogs are fed daily and vaccinated, when necessary, as well.

IZTECH has a total budget of 23.959.664 USD for the last 12 months and over 15% of this budget was spent for the sustainability purposes. The sustainability budget mainly focused on sustainable research/education, water recycling, accessible campus as well as CO_2 emission reduction in transportation and lighting.

The buildings in our campus are accessible with either ramps or lifts in the outside of the buildings. Each building has an elevator and accessible toilets. We have 3 campus entrances which are controlled by the security staff as well as the cameras. In addition, entrance of each building in the campus as well as some parts of the campus are recorded by the security cameras. Every building has a fire alarm system, several fire extinguishers in every floor, an integrated fire hydrant through the walls as well as a large fire hydrant outside of the buildings.

A Health infrastructure in our campus is available. We have a clinic in the campus with first said, emergency room, and certified health personnel including nurses and medical doctors. The clinic has capability to perform dental examination and treatment, vaccination, emergency service and laboratory.

The Covid-19 pandemic did not slow down the maintenance and technical works in the campus. Contrary, the works have been finished more efficiently due to the limited usage of the buildings.

3. ENERGY AND CLIMATE

IZTECH works for the improvement in energy efficiency, production of renewable energy and energy consumption reduction thus decreasing greenhouse gas emissions. At the IZTECH campus, energy efficient appliances are installed in the buildings such as LED light bulbs, light bulbs with motion sensor, energy efficient air conditioner systems, etc. Most of the buildings has natural lighting and ventilation. Solar panels and a wind turbine have been built in the campus to contribute on the renewable energy generation and decrease the CO2 emission.

Most of the buildings have the natural daylight design as well as natural ventilation. The Gulbahce region has a very high sunshine duration during the year. Greenhouse gas emission reduction is considered from different scopes such as e-vehicles managed by the university, free bicycles in the campus, waste sorting bins (metal, plastic, paper, glass, batteries and rest), wastewater treatment and usage, renewable energy sources (wind and solar) and drinkable water fountains.

During Covid-19 pandemic, IZTECH conducted several research activities to contribute the academy by different innovative programs.

IZTECH has undertaken the tasks of developing an identification and quantification kit for viral loads in the environment and humans. Several trials have been conducted in IZTECH labs and successful results were obtained.

- IZTECH conducts research on the production of COVID-19 vaccine candidate via Nicotiana benthamiana transient expression system. Within the project, producing recombinant COVID-19 antigens in N. bethamiana using a transient expression system was aimed, which could be used for development of vaccine and diagnostic test kits. We target production of different variants of recombinant S glycoprotein and N protein in our production system.
- Another project works on the “in silico analysis of phytochemicals for use in COVID-19 treatment and in vitro testing of potential drug candidates”. Phytochemicals obtained from the plant databases are subjected to molecular docking studies to assess their anti-viral and anti-inflammatory activity.
- Furthermore, in the light of the necessity of mobility for human health, especially for the elderly, the ‘Next generation implants for everyone’ project at IZTECH established the gait analysis lab of the Aegean region at IZTECH. Through this lab, Turkey's first walking database and movement data of daily activities are collected. The database will also be put into service for use in biomechanical modelling over the web. Through

this laboratory, people with gait disorders and musculoskeletal disorders will be able to be diagnosed. Lastly, a face shield to help healthcare professionals was produced via 3D printers. First products are used by the IZTECH emergency response team.

A Conceptual model of the Gülbahce geothermal system, Western Anatolia, Turkey was developed based on structural and hydrogeochemical data. This data established the base for the study which examines the heating of İzmir Institute of Technology with geothermal energy. In this context, the potential of the geothermal license area was evaluated, and the heating need of the university area was calculated. The heating system was designed in the university area and the material lists were prepared and a feasibility report was prepared by the experts that work in GMK Energy.

4. WASTE

Performance of IZTECH at waste management was evaluated according to the data collected on several aspects: (1) rate of recycling program applied to university waste, (2) number of programs to reduce the use of paper and plastic on campus, (3) rate of organic waste treatment, (4) rate of inorganic waste treatment, (5) rate of toxic waste treatment, and (6) the means of sewage disposal.

4.1. Recycling Program:

In Turkey, the Zero Waste Project (http://zerowaste.gov.tr) is in effect. Izmir Institute of Technology is bound by law to give all of the recyclable wastes generated on premises to a designated recycling company, Ada Recycling Company. IZTECH implemented a system that informs everyone on campus about what is recyclable and what is not. The Waste Commission of IZTECH is responsible for structuring the rules and execute the collection of specific waste (Electronic Waste, batteries, and ink-cartridges from printers. E-waste items are collected separately and not disposed of in regular trash bins) (Figure 2).

Figure 2. Recycling Program for IZTECH, Turkey

4.2. Reduction of Paper and Plastic On Campus:

IZTECH has implemented and participated in the following efforts in order to reduce the paper and plastic use on campus:

a. IZTECH, being a state university, is currently using the Electronic Document Management System, that has been established by all state offices by the government decree, thereby reducing paper use.
b. IZTECH is bound by law to establish the “Zero Waste Project” on campus.
c. IZTECH has built several drinking water fountains on campus to provide free drinking water for all, hence reducing the consumption of plastic bottles.
d. IZTECH has distributed glass water bottles to reduce single-use plastics.
e. Reuse of plastic bags is also encouraged on campus as a part of the nation-wide initiative. Within the initiative the previously free single-use plastic bags are sold at 0.25 TRY/bag. Also IZTECH produces shopping bags from waste textile and sells them to raise money to give as scholarship.

4.3. Organic Waste Treatment:

In IZTECH, organic waste is produced at canteens and cafeterias of varying capacity. All of the organic waste produced on campus is collected by Izmir Metropolitan Municipality’s garbage trucks and is transported to Harmandalı Landfill Area, where it is disposed of according to health and safety regulations. The Harmandalı Landfill Area, where a biogas production facility is also managed by Izmir Metropolitan Municipality (Harmandalı Landfill, 2021). IZTECH is bound by national legislations to give its organic waste to the municipality so that it can be disposed of safely and according to the national law (Figure 3).

Figure 3. Organic Waste Treatment at IZTECH, Turkey

4.4. Inorganic Waste Treatment:

Inorganic waste treatment is managed at IZTECH in cooperation with the Izmir Metropolitan Municipality. IZTECH is bound by the Solid Waste Directive in effect in Turkey. Therefore, IZTECH is bound to give all its inorganic waste to the garbage trucks of Izmir Metropolitan Municipality. As mentioned above, the Waste Commission of IZTECH is responsible for collecting Electronic Waste, batteries, and ink-cartridges from printers. E-waste items are collected separately and not disposed of in regular trash bins (Figure 4).

Figure 4. Inorganic Waste Treatment at IZTECH, Turkey.

4.5. Toxic Waste Treatment:

Hazardous/toxic waste management is managed by the Waste Commission at IZTECH. Every lab at IZTECH has one person assigned to inform the lab staff and students on how to manage toxic/hazardous waste within the lab. Wastes are collected in temporary storage rooms in the buildings. Every year, the Waste Commission collects the data on the type and amount of the waste before getting quotes from licensed waste transport and disposal companies. Once the data are collected, the company that gives the best service and economic quote is contacted to visit the campus to collect all hazardous/toxic waste (Figure 5).

Toxic/hazardous waste temporary storage

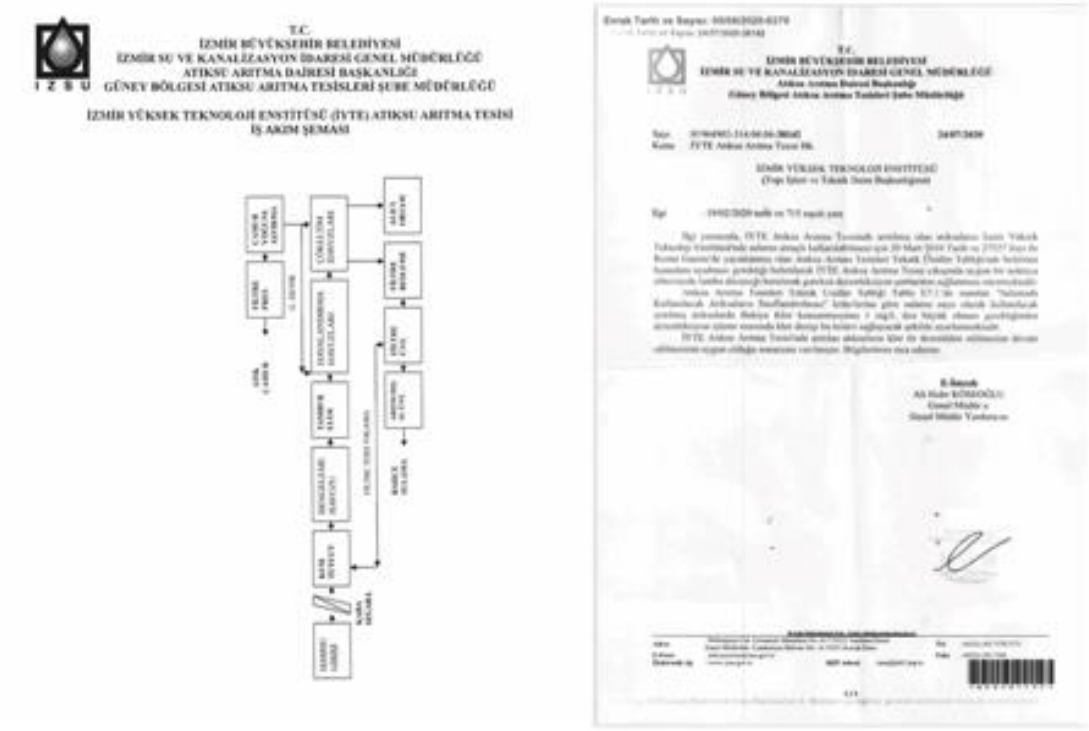
Refrigerated interim toxic waste storage

Toxic/hazardous waste transport and disposal company

Figure 5. Toxic waste management at IZTECH, Turkey.

4.6. Sewage Disposal:

Sewage is collected through pipes and channels at IZTECH campus. Sewage flows towards the IZTECH Wastewater Treatment Plant, that is managed and operated by İzmir Metropolitan Municipality (IzMM) Water Directorate. Previously, treated water did not meet the national standards for irrigation. Therefore, IZTECH Rectorate has contacted IzMM Water Directorate officially, in order to implement a disinfection unit on the effluent stream, producing treated water that is suitable for irrigation use. Following the disinfection unit's implementation, IZTECH's wastewater is currently treated for downcycling (irrigation of all green areas on campus).



Flow scheme of the IZTECH wastewater treatment plant	Official document for improving water quality for water reuse

Sewage Disposal at İzmir Institute of Technology, TR

Figure 6. Sewage treatment and reuse at IZTECH, Turkey.

5. WATER

Water conservation and water recycling/reuse are two main topics IZTECH has undertaken in order to tackle the water scarcity problem in the region. The water axis has been a critically focus and improved domain in terms of research, education, and execution/implementation at the IZTECH campus. As a leading research university in Turkey, IZTECH commits to become an exemplary community and to conduct educational outreach activities on the topics of water conservation, efficiency, and recycling.

5.1. Water Conservation Program:

We have a natural surface runoff pool that is being rehabilitated for use in plant watering at IZTECH campus. Also, a previously water-logged area in the campus is restored to a park, preventing occasional water flooding at nearby buildings and directing the water to olive trees (Figure 7).

The “Water Route” project (BAP, 2021IYTE-1-0113)is prepared by our IZTECH scholars to raise awareness about drought in order to improve the water culture in Turkey. Problems caused by drought can be solved by protecting underwater resources. The awareness project named 'Water Route', prepared by IZTECH to draw attention to drought, aims to develop water culture in Turkey. There are 200-year-old wells, which the people living between the İçmeler District of Urla and the Ildır District of Çeşme had borne as a result of the drought they experienced in the past. The project got its name from this well route. Vice-Rector and Head of IZTECH International Water Resources Department Prof. Dr. Alper Baba said "We want to emphasize the water resources in the peninsula region of İzmir in order to develop the water culture by creating awareness of water resources. Today, there are over 100 wells in villages such as Barbaros and Kadıovacık. The people of that period built them to sustain their lives. We aim to show beautiful examples of cultures from the past of water harvesting." (Figure 7).

IZTECH surface runoff pool image from Google Earth™

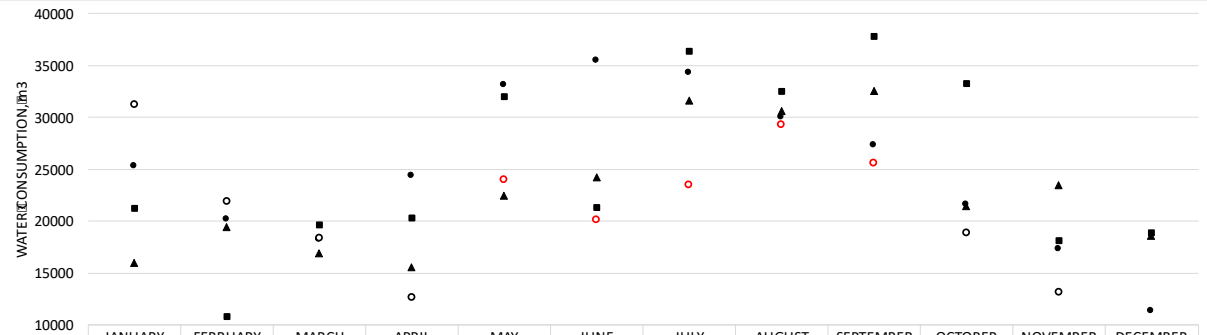
Surface runoff pool in IZTECH campus area.

Hydromorphological construction of a natural water dam

Figure 7. Water conservation at IZTECH campus, Turkey.

5.2. Water Recycling Program:

Official correspondence between IZTECH and Izmir Water and Sewerage Directorate ensured treated water to be supplied to IZTECH campus on demand from a nearby wastewater treatment plant. A disinfection unit had to be implemented to the end of the wastewater treatment plant's flow scheme, so that the national regulations were met. Correspondence regarding the implementation of the disinfection unit was led to production of irrigation quality water. In 2020, 246350 m^3 water was consumed on IZTECH campus. The red circles shown on the graph represents the water consumption in months May, June, July, August and September 2020 (Figure 8). During these months watering of green areas and trees on campus is done on a daily basis. Considering the plant was able to provide 1000 m^3 of water on a daily basis, approximately 48.7% of water was recycled for plant watering.



	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
■ 2017	21260	10800	19590	20340	32030	21280	36380	32510	37790	33280	18100	18840
● 2018	25.310	20.160	18.270	24.390	33.170	35.460	34.350	30.060	27.310	21.570	17.300	11.310
▲ 2019	16010	19460	16930	15520	22410	24230	31660	30640	32580	21400	23460	18580
○ 2020	31.260	21.880	18.330	12.630	23.950	20.060	23.470	29.280	25.600	18.910	13.150	7.830

Figure 8. Monthly water consumption for years 2017 to 2020 on IZTECH campus

5.3. Water Efficient Appliances:

Motion-activated hand washing taps were installed in the campus at buildings for the following departments: Biology, Mathematics, Food Engineering, Civil Engineering, Electrical and Electronics Engineering, newly constructed Bioengineering and the Rectorate (Table 1).

Table 1. Motion activated water faucets.

Appliance	Total Number	Total number water Efficient appliances	Percentage
Taps	655	180	27.5 %
		Average Percentage	**27.5 %**

5.4. Consumption of Treated Water:

Treated water is consumed for plant and tree watering on IZTECH campus. In order to ensure a health reuse that abides with the national regulations, a much-needed disinfection unit was implemented as a result of official correspondence between IZTECH and Izmir Water and Sewerage Directorate. The red circles shown on the graph represents the water consumption in months May, June, July, August and September 2020 (Figure 8). During these months watering of green areas and trees on campus is done on a daily basis. The IZTECH wastewater

treatment plant is capable of producing 2000 m^3/day treated water. During the summer season, we calculated that approximately 120000 m^3 of water is used for watering green areas and trees, which corresponds to approximately 48.7% of the total annual water consumption (246350 m^3 for the year 2020).

5.5. Handwashing and Sanitation Facilities during Pandemic:

Hand disinfection units were placed at the entrance of every building. Also, free masks are distributed for everyone upon request. There are also hand disinfectants on every floor and at the meeting rooms. Therefore 100% of the buildings have sanitation facilities (Figure 9).

Figure 9. Sanitation facilities during Covid-19 pandemic (IZTECH, Turkey)

6. TRANSPORTATION

To decrease the carbon footprint around the campus, students and staff are encouraged to walk or biking in the campus area. In IZTECH campus, the close locations of buildings (common usage buildings such as library, sports center, swimming pool, shopping mall, central cafeteria are located at the center of the campus) provide an efficient distance for sustainable transportation modes like walking and biking.

All the sidewalks parallel to roadways are lighted and separated with the roads by elevation. Additionally, all elevated sidewalks have guiding blocks and ramps and they are accessible for pedestrian having physical disabilities. All crosswalks are marked with pavement markings and traffic signs. The roads on IZTECH Campus are designed to provide safe and comfortable

transportation of pedestrians. Maintenance and repair work of sidewalks and pedestrian paths are done regularly. Bicycles and vehicles share the same platform and the speed limit in the campus is 30 km/h. The elevated crosswalks serve as speed ramps (traffic calming) on campus streets and provide easy access for physically disabled persons.

University owns 59 bicycles which were donated by Ministry of Health. These bicycles can be used free of charge and IZTECH Cycling Community is managing their usage in the campus area. There is also a bike sharing system called “Unibike” within the campus and 50 bikes serve to the users with very little charge. However, last winter Unibike’s bicycles were stored indoor to prevent them from disuse problems because of pandemic and decreasing population. This semester, bicycles are being maintained and will be put into circulation soon. In the campus, secure bicycle parking facilities are located nearby to the buildings.

University is providing a free shuttle for the travels in the campus (a ring service) in every 30 minutes and the shuttle extents its route four times in a day (once in the morning, twice at midday and once in the evenings) to the nearest settlement, Gulbahce, where most of the students live. The shuttle has 50 passenger capacity (with 27 seats) and everyone in the campus (staff, students, or visitors) can take the shuttle for free. Route and schedule of the shuttle can be seen on the university website.

Every year a protocol is signed between a transportation company and the University for transporting campus members (students & staff) to the university from different locations of the city, Izmir. Last two semesters, because of pandemic, the higher education policy was distance education in our country and all students attended their classes virtually so that there was no face to face classes in our campus in last year. Addition to the students, faculty and administrative staff have worked from home or in turns in most of the year because of the COVID-19 regulations or restrictions. So, campus population and cars entering to the university decreased drastically. Number of the bus services serving to the campus were arranged according to the demand and minimum five campus service busses (25 busses were serving in previous year every day)continued to transport staff/students, who had to come to the campus, from different parts of the city. After shifting to face-to-face education, 24 busses have started to transport university members (staff/students) to the campus, in the current semester (2021-2022 Fall). Transportation of the people to the campus with these busses correspond to more than 30% reduction of private car usage in campus.

There is a strong public transportation service in the city İzmir which is operated by Izmir Metropolitan Municipality. There are 3 regular bus lines (882, 883 and 982) serving to IZTECH campus and timetables and the schedules of these bus lines can be followed by smart phone applications. These lines are also interconnected with other bus lines and transportation modes. By mutual agreement of university rectorate and İzmir Metropolitan Municipality (IMM) two electric buses have started to serve to the campus location, regularly. IMM will increase the number of the electric busses in near future. The use of environmentally friendly public transportation will decrease the carbon footprint around campus.

This year, university has bought two electric vehicles (light mini trucks) and they are used for routine freight transportation in the campus. In near future, university rectorate is planning to buy an electric bus which will be used as shuttle bus to decrease the CO2 emissions.

Existing shuttle bus, campus bus services and bike sharing system are the main transportation policy tools to limit the number of motor vehicles on campus and playing an important role in carbon emission reduction.

7. EDUCATION AND RESEARCH

As a leading national research institute, IZTECH aims to integrate principles of sustainability into its pioneering research and education. In IZTECH, the total number of courses offered, including graduate and undergraduate degrees, are 1399. Among them, 195 courses are related to sustainability. These courses are offered in engineering, natural sciences, and architecture faculties. In recent years, there have been efforts to offer sustainability related courses common to whole students in IZTECH. For example, the course of "Global Sustainable Development" offered by the department of Chemical Engineering for the last two years is open to all students

IZTECH has a research ecosystem that is unique for Izmir as the campus area also includes a planned technology development zone, Technopark IZMİR, Innovation Center, Technology Transfer Office, and Research Centers. Also, the bureaucratic processes continue to open a research center titled "Center for Sustainability and Resiliency". These research departments and individual researchers/faculty members have been conducting research funded by different institutions such as EU, The Scientific and Technological Research Council of Turkey and Scientific Research Projects funded by IZTECH. In 2020, total research funds are calculated as 5.856.385 USD, while thetotal research funds dedicated to sustainability research are calculated as 5.655.742 USD. Already representing a majority in the overall research, research funded dedicated to sustainability is expected to increase in the next years. In the last three years, total of 488 articles were published on the issues of sustainability which makes average of 163 publications per annum.

It is important to mention the sustainability related events, student organizations, cultural activities existing in the campus to explain social dimension of sustainability in IZTECH. The total number of events related to environment and sustainability issues which were hosted or organized by different departments, units, and members of the University in the academic year 2018-2020 is 87. These events include conferences, workshops, awareness raising and practical trainings. While this number is 7 in 2018, it increased to 47 in 2019 and 33 in 2020 respectively even though the uncertain environment caused by the pandemic. This increase is partly related to increased attention towards sustainability issues because of the pandemic. Additionally, student initiatives focusing on sustainability and environmental issues also exist within the campus. For example, a workshop was organized by the faculty members from Architecture with the title of "Designing the University Campuses of the Future" in December 2020. The workshop was open to students from all universities in Izmir and aimed at developing sustainable strategies for the respective universities that students were attended from. In terms of student organization at IZTECH campus, there are 28 student organizations at total. Among them, some student communities are founded specifically on the issues

covering sustainability and environment such as Permaculture and Ecological Living Community, Environment and Young TEMA Community, ECO-Motion Community, Natural Research Community. Concerning cultural activities, there were online cultural events and activities conducted within university under Covid-19 measures.

There is a website titled "Sustainable Green Campus" which was established on 2020 (https://surdurulebilir.iyte.edu.tr/en/). The website is regularly updated and designed to include announcements of sustainability related events, projects, student organizations and news. Also, the website is connected to collection of publication and these related to sustainability under IZTECH Library Catalogue.

With the Covid19 pandemic, IZTECH initiated several programs to enhance online research, learning, and education practices and campus life. A website (https://covid19.iyte.edu.tr/) was developed to list all steps that the Institute has taken during the pandemic. IZTECH get the 3rd rank among the state universities in Turkey that was found successful in transition to distant education. Trainings were given to both students and faculty members to ease the transition process to distant and online learning systems. Microsoft Teams that offer classrooms and meeting spaces was adopted. An online classroom was established to be used by faculty members to record their lectures. More than 1000 lectures were recorded by using Microsoft Teams and Adobe Connect. Tablet computers were distributed to support faculty members and students to continue education by online means. Apart from that, sanitation related measures (i.e. signs and mask/disinfection stands) were adopted all around the campus.

Sustainability related community services projects including students is another dimension of research and education environment that IZTECH offers. The number of such projects are increasing as there were 5 projects conducted in 2019 and 7 projects in 2020. These projects include issues such as improving animal rights, supporting underprivileged children, improving disability barriers in the campus and food waste management. In addition, IZTECH is home to 18 of sustainability-related startups. The number is expected to increase in the coming years. To initiate this, IZTECH has become a part of scheme that funds innovate start-ups. The call for this year supports startups that are in line with Green Growth approach (https://biggsinerji.com/)

8. CONCLUSIONS

IZTECH has investigated its sustainability within the scopes of Setting and Infrastructure, Energy and Climate, Waste, Water, Transportation, Education and Research. In the second year running, IZTECH has analysed its weaknesses based on the 2020 Greenmetric Ranking report and improved the relevant scopes.

9. REFERENCES

1. Akpinar, I., Can-Traunmüller, I., Özçam, Z., Özkavaf Şenalp, S., "Unveiling the Experience of IZTECH: Critical Overview of GreenMetric Measures", Emerging Approaches in Design and New Connections With Nature, E.G. Özdamar, O. Tandoğan (eds), forthcoming from IGI Global, 2021.
2. Harmandali Landfill, İzmir Metropolitan Municipality, (https://www.izmir.bel.tr/tr/AtikKabuluVeBertarafUcretleri(harmandaliDuzenliKatiAtikDepolamaAlani)/46/91)