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# Waste Management of Ege University during the COVID-19 period

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**Abstract.** Ege University manages packaging wastes, hazardous wastes, electronic wastes and organic wastes within the scope of integrated waste management and has been awarded the Ministry of Environment and Urbanization Zero Waste Certificate. For packaging waste, recycled and non-recyclable wastes are collected separately. Recycled wastes are collected in blue boxes and gray boxes are used for non-recyclable wastes. Along with the pandemic period, with the directive of the Ministry of Environment and Urbanization, extra gray boxes were added and used to collect waste materials such as masks, gloves, etc. The first COVID case in Turkey started in March 2020 and these studies came into effect in April. In this context, all staff and students are informed and the health of the community and the environment is protected.

**Keyword:**

waste management, mask and glove waste management, COVID-19

## 1. Introduction

Ege University was founded in 1955 in Izmir, Turkey's 3rd largest city. According to the 2019-2020 term academic performance ranking made by URAP (University Ranking by Academic Performance) Ege University, which is located in Izmir's Bornova district, ranks 7th among the 108 state universities in Turkey.

Ege University has an area of approximately 3 million m<sup>2</sup>, 40 buildings, 10,000 staff, and 60,000 students. Ege University, which has a large district population, is aware of environmental pressures, therefore it has a strategy that attaches great importance to

environmental sustainability studies and tries to reduce the pressures on the environment with many projects. Since 2016, it has been calculating its carbon footprint to combat climate change and has successfully completed its zero waste studies. Ege University, which is entitled to receive the Zero Waste Certificate issued by the Ministry of Environment and Urbanization, has determined a Waste Representative in each administrative and academic unit on the campus and has been able to reach every point of the campus with this method. For a sustainable campus, it has created the Green University Strategic Plan, which covers issues such as energy, water, and transportation as well as waste management. In the green universities ranking made by the University of Indonesia since 2016, Ege University has been getting higher and higher rankings and has been ranked 165th in 2020 with a 100 step progression. Table 1 shows Ege University rankings between 2016-2020.

Table 1. Ranking of EU between 2016-2020

Year	Rank	Total Score	Settings&Buildings	Energy	Waste	Water	Transport	Education
2016	337	3790	862	448	927	240	993	320
2017	343	4331	829	527	1128	120	1013	714
2018	287	5075	1075	650	900	300	1200	950
2019	259	5725	875	975	1050	500	1275	1050
2020	165	7050	1075	1175	1200	700	1425	1475

Ege University has been awarded a feasibility project by İzmir Development Agency in these environmental sustainability studies and has had Energy Management, Water Management, Waste Management feasibility studies done within the framework of adaptation to climate change. As a result of all these projects, it has been revealed that the most critical and urgent action plan of our university is energy and water management. The fact that the points obtained from energy and water management in the total score in the Greenmetric ranking are lower supports the urgent implementation of actions in this regard.

Our overall goals with the studies to be carried out at the university within the scope of this project are to increase Turkey's strength to fight with climate change, to ensure the protection of natural assets, to create a guide for national universities on "combating and adapting to climate change in universities", and create a great awareness in this regard. The more specific purpose of the actions to be taken will be to increase the efficiency of energy and water use in Ege University, to make it measurable, and to bring the organic wastes from our student dining halls to nature. The harmonization guide planned to be created will be based on the "Green University Strategic Plan" previously prepared by Ege University and under the leadership of the academic staff of Ege University. The aim of this guide is to be a map that all universities in our country can use to start these studies or to contribute to their existing studies.

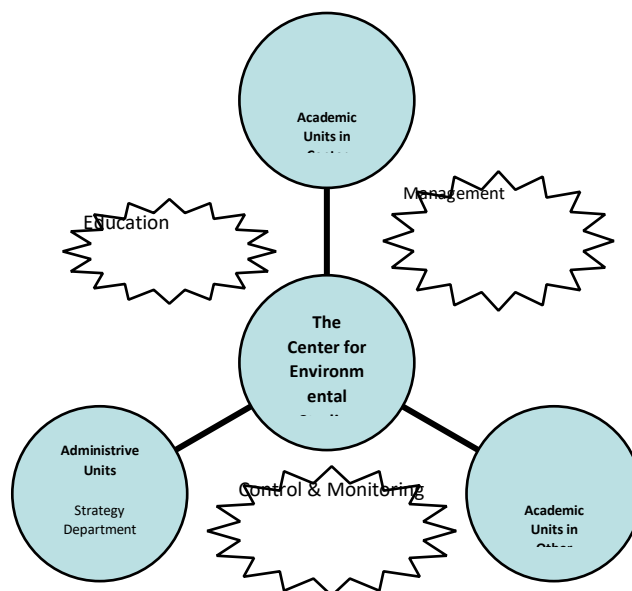


Figure 1. Waste management strategy in EU

The report "Waste Management during the COVID-19 Pandemic From Response to Recovery" mentioned that the emergence of the coronavirus disease (COVID-19) in late 2019 is much more than a global health crisis. He stated that the proper management of waste, including household, health and other hazardous wastes, is a fundamental civic service to minimize potential secondary effects on health and the environment [1]. With this in mind, as Ege University, we have included our pandemic measures in our waste management.

## 2. Ege University Integrated Waste Management

### 2.1. Aim and scope

The program aims to ensure the management of all kinds of Waste that arise in the campus. The collection, storage and transportation of wastes are managed according to waste types. The fate of all waste types are entered into the Environmental Management Unit System and checked by the Ministry.

The scope of the program includes the center campus, medical campus and the other campuses which are in different districts. The Center of Environmental Studies (EU-CEVMER) is the center that ensures the coordination in all these campuses and provides training, information, control and monitoring with a consultant firm appointed by the Rectorate (Figure 1).

### 2.2. Zero waste in Ege University (EU)

Hazardous wastes, medical wastes and electronic wastes are collected and disposed of in special boxes under the supervision of laboratory staff. Organic waste is also collected in dining halls. Apart from that, the most common waste produced by students on campus is packaging waste and these are collected in blue boxes as specified in the Zero Waste project Directive. Next to this, a gray box is added for non-recyclable waste. (Table 2).

During the pandemic period, an extra gray box was added next to this set and it was used for waste such as masks and gloves. Informative posters about this are hung above the boxes (Figure 2).

The personnel assigned to collect and store these wastes at our university close the waste bags tightly and transfer them to the temporary storage area after putting them in a second bag. The temporary storage area is an area that does not receive direct sunlight, is far from places with heavy human use and food storage areas, is always kept closed and precautions are taken so that no animals or insects can enter. The wastes accumulated in gray mask and glove boxes are kept in the temporary storage area for 72 hours and then delivered to the municipality as "non-recyclable waste" to be managed within the scope of domestic waste.

Table 2. Type of waste in EU

Type of waste	Contents	Unit	Collection box (color)
Packaging	Paper Plastic Glass Metal Composit	All campus	Blue
Hazardous	Solvents, <i>etc</i> Fluorescent lamp, Cartridge, Battery, toner	All campus	Special box
Medical	Syringe Slide Lamella Tissue,organ parts , <i>etc</i>	Medical campus and biology, pharmacy laboratory	Red
Electronic	Obsolete computer parts, cables, electronic gadgets	All campus	Special box
Organic	Food waste	Dining hall and guesthouse, dormitory	Brown
<i>Masks and gloves in Pandemi</i>	<i>Masks and gloves</i>	All campus	Grey
Others	Non-recyclable	All campus	Grey



Figure 2. Packaging waste management during COVID-19 Pandemic

### 3. Summary/ Concluding Remarks

Waste management is successfully monitored in line with the data entered into the Integrated Environmental Information System.

Due to the pandemic, the distance education system was implemented in our country and the amount of waste generated in the campus decreased, but the biggest human induced threats to the environment during the pandemic period were the mask and glove wastes released by the staff and campus visitors. For this reason, waste management is extremely important. With that in mind, From the beginning of the pandemic until now, 1440 gray boxes where mask and glove wastes can be collected have been placed in 88 units of Ege University. In cases where the number of boxes is not enough, the deficiencies are met immediately.

Because of the pandemic, the work from home system, quarantine processes and the excessive consumption of protective materials (such as gloves, masks, disinfectants, cleaning products and food items) used for the purpose of protection from disease have caused us to produce more waste than ever before in our country and in the world. Therefore, considering that awareness activities are important, as part of the European Researchers' Night program, a zero-waste seminar and three workshops will be held within the scope of waste management in a one-day event to be held throughout the European Union and partner countries, contributing to awareness raising. With this activity, it is thought that awareness can be raised about how waste can be reduced in order to understand the damage that the wastes released during the pandemic can cause to the environment and to prevent these damages.

### References

1. Waste Management during the COVID-19 Pandemic From Response to Recovery, 2020. Institute for Global Environmental Strategies, UN Environment Programme, ISBN No: 978-92-807-3794-3. Available online at <https://www.unep.org/resources/report/waste-management-during-covid-19-pandemic-response-recovery>, accessed on date, 08, 2020.