Waste management in a university campus

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Abstract

In this study, we discussed how can be the management hierarchy and management process in a university campus. Erciyes University is in the middle of the Anatolia Region that has about 60.000 population. The university has faculty /institutional administrations and hospital-related buildings and research centers. It has an area of about 20 m^2 for each person on the campus. The university is responsible in terms of legislative directives that are in operation. The waste directive is published by the university in 2017 that shares the responsibilities and distributes the tasks for each unit on the university campus. In Turkey, zero waste projects and zero waste legislation are also in operation by 2019. The importance of waste management strategy is important for Sustainable Development Goals (SDG) that is published by the United Nations and put in consideration of Times Higher Education (THE) which is one of the most confidential ranking systems for universities. There is also, environmental assessment system for university campuses, the Green-Metric. One of the grading subjects of the Council of Higher Education (YÖK) in Turkey is the zero waste strategy on the campus. Therefore, the operation of a zero-waste strategy gains importance.

Keywords: Zero waste; University; Campus; Management

1. Introduction

Zero waste is a defined target that covers recycling, preventing waste, making resources more efficient, reducing the amount of waste generated, the effective establishment of the collection system, and recovery of waste as a waste prevention approach [1]. With the high acceleration in the world population, industry and the development of the economy have also increased consumption. This situation also increased the need for our limited resources and our need to use our natural resources more efficiently. In Turkey, therefore, the government improved a strategy targeting zero waste all around Turkey, starting firstly in the Environment and Urbanism Ministry and in the Presidential Complex of Turkey [2]. Zero waste regulation is published in Turkey in July of 2019 [3]. This regulation pushes the municipalities, governmental institutions, and universities to convert waste management strategies to zero waste strategy. Universities and their departments in Turkey have lots of responsibilities in terms of environmental and waste management and have many regulations (zero waste, waste management, hazardous waste, waste batteries, medical waste, excavation wastes, etc.). Also, universities are attending ranking systems that include waste and other environmental management strategies such as Times Higher Education (THE) Sustainable Development Goals (SDG) and Green Metric [4]. While SDG aims at lots of problems the Earth is facing, Green Metric mostly focused on environmental parameters such as water and waste

management, setting and infrastructure, and energy. In this study; waste management strategies are discussed with the current legislations and ranking systems at university campuses in Turkey.

2. Materials and method

Erciyes University has 29 academic units (faculties, colleges, institutes, etc.), 39 research centers and 70.000 people including students, academic and administrative staff [5]. In this study, waste management strategies are evaluated in the light of zero waste regulation, and other regulations in Turkey, while aiming the goals in the ranking of universities like THE-SDG and Green Metric. Erciyes University has also a waste management directive published 3 years ago.

3. Results and Discussion

3.1. Erciyes University waste management directive

Erciyes University's waste management directive has a management hierarchy as shown in Fig. 1. In this, the main coordination is operated by Environmental Problems and Cleaner Production Research Center. There are responsible personals in departments and other research centers. There are also responsible personals in sub-divisions in these coordination units.

Figure 1. Erciyes University waste management hierarchy

3.2. University rankings, Green Metric and THE-SDG

Erciyes University is 3rd in 2019 Green Metric in Turkey and 133 in total. Most of the points for the green metric are coming from educational activities and water management (79% and 75 % to maximum points, respectively) while the least point is coming from waste and energy and climate change (50 and 57%, respectively). Fig. 2 showed for each category that the green metric rankings are calculated. These results showed that it has a capacity in terms of waste management in the university [6].
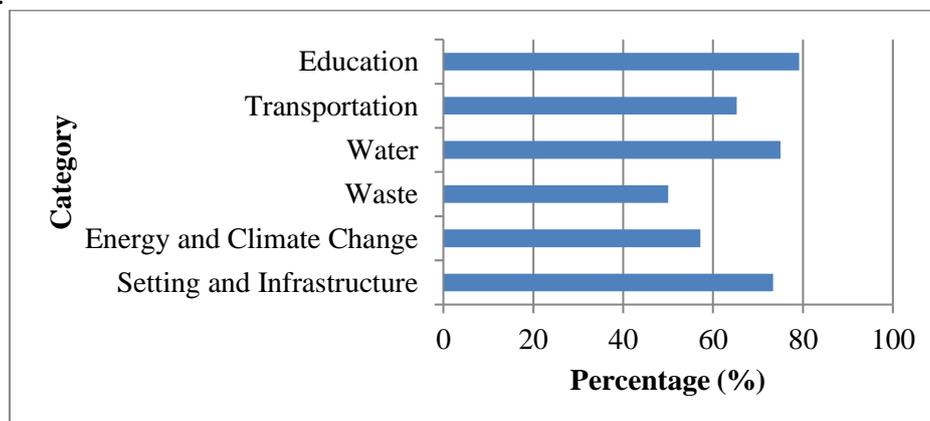

Figure 1. Green Metric Performance of Erciyes University

THE-SDG has several environmental goals to reach such as clean water and sanitation, affordable and clean energy, responsible consumption and production, sustainable cities and communities, and climate action. Erciyes University ranked between 101-200 ranges in all universities while it is 7th in Turkish universities. Although the ranking details were not known, the range it has implies that a lot of actions could be taken (Table 1).

Table 1. Erciyes University SDG rankings\

SDG No	Sustainable Development Goal (SDG)	Rank
3	Good Health and Wellbeing	101–200
4	Quality Education	201–300
5	Gender Equality	101–200
8	Decent Work and Economic Growth	101–200
9	Industry, Innovation and Infrastructure	81
10	Reduced Inequalities	201+
11	Sustainable Cities and Communities	101–200
12	Responsible Consumption and Production	88
13	Climate Action	101–200
16	Peace, Justice and Strong Institutions	101–200
17	Partnership for the Goals	101–200

3.3. Zero waste regulation in Turkey

Zero waste regulation was published in July of 2019 and it had policies to prevent and reduce the amount of waste. Zero waste regulation expectations for universities are:
- To collect all types of wastes separately and properly,
- Education, and
- Composting.

Zero waste certification award is given to universities who; i) reduce the wastes by 15%, ii) other activities to prevent and reduce the wastes [3]. It is important to collect data and make waste amount inventory to manage and calculate the waste minimization, reduction, and prevention. In this manner, education activities are important for the proper waste separation. One of the grading subjects of the Council of Higher Education (YÖK) in Turkey is the zero waste strategy on the campus since universities in Turkey graded as a "research university". If the zero waste strategy is good for a university, it is a plus for selection as a research university in Turkey.

4. Conclusion

Since Erciyes University is like a big district that has a population of more than 60.000 daily, it is very hard to put new rules for waste management and following the new rules without any qualified personals. At Erciyes University, recyclable wastes are now separated and collected by municipalities. Medical wastes are managed and sterilized properly. There are individual initiatives to make compost and worm manure productions. However, all the wastes like dining and cafeteria wastes are not converted to any useful products like biogas or compost.

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