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Reducing Food Waste on University Campuses

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Abstract

The problem of food waste has continuously gained relevance in the global agenda, claiming the attention of different stakeholders as policymakers, practitioners, academics, and the general public. Moreover, Targets 2.1 and 2.2 of the second goal of Sustainable Development Goals (SDG) aim to end hunger, achieve food security, and improve human nutrition [1]. It is estimated that around 3.1 billion people worldwide cannot afford healthy diets and suffer from malnutrition and hunger [2]. Moreover, around one-third of all food produced globally is lost or wasted across the entire food chain [3], from farm to fork, much of which is preventable. This food loss and waste (FLW) can be addressed through quantitative approaches (estimating and optimizing food flows existing in the supply chain) and qualitative approaches (understanding food attributes reduced over time and their connection to consumption patterns). Higher education institutions (HEI) face this latent issue in their canteens, where FLW is preventable [4]. This seems to contradict the intention of HEI on teaching and researching sustainability [5] and serving as an example of good practices [6] while not being able to tackle these issues behind closed doors by understanding behaviors and consumption patterns and creating intervention schemes to change them. To address these concerns, the Industrial Engineering School (ETSII) at Universidad Politécnica de Madrid (UPM) in Spain and the Food and Retail Operations Lab at Massachusetts Institute of Technology (MIT) in the USA have decided to cooperate through a Ph.D. research visit to propose ways to reduce the FLW in the canteens at both university campuses. Although previous research through undergraduate and master theses and projects have been performed at both universities to identify the FWL flows, it seems that definitive solutions have not yet been identified. Therefore, the primary purpose of this project is to understand waste generation and management at the end-user level, intending to identify hot spots and most common waste-related behaviors from the end-users point of view. The methodology to be carried on this project follows a Learning-based Research technique supported by field data collection through canteen visits

(observational and experimental), followed by interviews with suppliers and students (quantitative and qualitative data collection), and culminating with final data analysis. This will allow both HEI to accurately understand and assess their food supply structure, take the necessary actions to properly address their FWL issue, and complement current initiatives at both institutions. We identified waste drivers and modified consumption patterns by providing more information, vouchers and other incentives to students, faculty and staff members to change their waste-generation habits. Several strategies were created to ease decision-making processes for canteens and we found different archetypes of consumers more (or less) prone to support food recovery and food waste reduction.

Keywords: regenerative economy, zero waste, food supply chain, strategic intervention schemes

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