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Decomposition analysis of food waste management with explicit consideration
of priority of alternative management options and its application to the Japanese
food industry from 2008 to 2015

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Abstract: The prevention and recycling of food waste contribute to a circular economy due to improvements in resource efficiency and energy recovery. This study introduces a framework for evaluating the prevention and utilization of food waste using Japanese food industry data from 2008 to 2015. To elucidate the changes in the amount of unutilized food waste, this study applies a decomposition analysis framework that classifies five factors: waste prevention, food recycling, heat recovery, volume reduction, and production scale. The results show that the amount of unutilized food waste throughout the food industry decreased between 2008 and 2011, primarily due to three factors: increased food waste recycling, volume reduction, and a decrease in production scale. However, the key factors driving changes in food waste management varied by food industrial sectors. The primary drivers of the decline in unutilized food waste were recycling in the food manufacturing industry, waste prevention in the retail industry, and a decrease in production scale in the food service industry. Thus, policies for food waste management should account for the diversity of characteristics across food industries and the food waste management strategies employed.

Keywords: Food waste management; Decomposition analysis; Waste prevention; Recycling; Japan

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