

## Accounting for the Water Footprint Impact of Food Waste within Korean Households

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### Abstract

Globally, the demand for food and water resources are increasing rapidly with the growing concerns of meeting the projected population upsurge, specifically by 2050. The global population is projected to hit 9.8 billion in 2050 while the food demand is expected to increase by 77% from the 2007 base year. Moreover, the already scarce water resources, especially in the food-producing regions, expected to be significantly affected as food production already accounts for over 70% of the global water resources. However, the estimated food demand encapsulated the actual demand for both human consumption and animal feed in addition to the exuberant food waste at the consumption stage of the supply chain, notably in the developed countries. Managing the food consumption demand and food waste can have across-the-board benefits on water resources and other associated food production impacts. This study assessed the water-saving potentials through food waste in Korean households using the food waste data obtained from the direct weighing analysis. The household food waste collection and characterization were carried out during the summer (July), fall (September), and winter (December) seasons of 2019. The water footprint related to the food waste within Korean households was based on the water footprint concept, i.e. indirect water use. The results of our estimation showed that an average Korean household wasted  $6.15 \pm 4.36$  kg daily, amounting to  $12.53 \pm 11.10$  m<sup>3</sup> of water resources associated with the waste. On the per capita basis, an average of  $0.024 \pm 0.017$  kg/capita/day of food was wasted resulting to  $0.049 \pm 0.044$  m<sup>3</sup>/capital/day of water resources wasted. The food waste types that accounted for the principal share in the water footprint were beef, soybean, rice and pork with values 30.7, 10.1, 9.6, and 7.5%, respectively. Considering that the production of meat and meat products are water intensive and the agricultural water use in Korea is largely for rice production, addressing the food waste of these two important agricultural products can be a hotspot for water saving potential in the country. This study therefore provides an insight to addressing the water scarcity in the country through reducing household food waste.

**Keywords :** Water saving, food waste, household, water footprint

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