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A Decade of Food Waste Quantification in Swedish Schools

Runa Halvarsson

Swedish University of Agricultural Sciences, Department of Energy and Technology, Sweden

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Abstract

Food waste is a pressing issue. With an estimated 1.05 billion tonnes of food waste generated at retail, food service, and household level in 2024 (UNEP 2024), the environmental impact is substantial. There are several goals to reduce food waste, such as the UN SDG 12.3 to halve per capita food waste at the retail and consumer levels (United Nations General Assembly 2015). Since 2025, there are also legally binding targets for EU member states to reduce food waste by 30% per capita across retail, food services, and households by 2030 (European Parliament and Council 2025). While households are responsible for a majority of consumer food waste (UNEP 2024), public catering institutions present an opportunity for reaching many consumers daily, making it a suitable place for testing food waste interventions. In Sweden, around three million meals are served in public catering institutions daily, where schools represent the largest fraction (The Swedish Food Agency 2025). This is reflected in the waste, as a majority of the total food waste from Swedish public catering in 2022 was generated by preschools and elementary schools (Hultén et al. 2024). Many food waste interventions have been tested in schools (see e.g. Casonato et al. 2023; Liechti et al. 2024; Eriksson et al. 2025), however they are often evaluated over short time periods, limiting their credibility (Eriksson et al. 2025). Since food waste fluctuates throughout the year (Malefors et al. 2022), longitudinal quantifications of food waste are necessary to properly evaluate the effectiveness of interventions. In Uppsala municipality, Sweden, school personnel at all municipal schools' measure food waste daily, divided into different fractions such as plate waste and serving waste. Some schools have quantified food waste for over a decade, resulting in an extensive and longitudinal dataset which is unique in its kind. With some schools starting as early as 2012, the municipality have worked continuously to implement standardised quantification methods and centralised interventions over time across the municipal schools. Representativeness of the study sample varies in the dataset and increases over time. By studying median food waste (comprised of plate waste and serving waste) per school and year, we observe a decrease from 64 g/portion in 2012 to 43 g/portion in 2023 for primary schools (ages 6-15). Upper secondary schools (ages 16-19) were slower to initiate quantifications, resulting in a median food waste of 54 g/portion in 2015 to 47 g/portion in 2023. The total food waste reductions may be the result of a combination of factors, such as centralised interventions, individual efforts at different schools, and the municipality's commitment to national targets. Going forward, a mapping of centralised interventions will be conducted to analyse their effects on the changes in food waste over time.

Keywords: Plate waste, Serving waste, Longitudinal data