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FOOD WASTE VOLUME AND COMPOSITION IN HELSINKI REGION HOUSEHOLDS

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ABSTRACT

The focus of this research is to produce detailed information on amounts and types of avoidable food waste in households using sampling analysis in landfill. We sorted and weighed food by its type e.g. vegetables, bread, fruits, potatoes, meat etc. Also we sorted food being in unopen packages, opened packages and without packages. Amounts of food waste varied by type of the housing. When extrapolated amounts for one year, largest food waste amounts was resulted houses with only one or 2-9 apartments (25-30 kg/pp), and the least houses with more than 20 apartments (15 kg/pp). The monetary value of food waste was also examined.

INTRODUCTION

The focus of this research is to produce detailed information on amounts and types of avoidable food waste in households using sampling analysis in landfill. We defined the avoidable food waste as all food or food material that could have been eaten if handled or stored differently. Helsinki metropolitan area waste management process two kind of containers that include food waste: mixed waste and bio waste. Here we studied only food waste from mixed waste and amounts of food waste from bio waste we got from study that have been made earlier 2010. Bringing together these two studies we will have the total amount of avoidable food waste amounts and types in Helsinki metropolitan area and possibility to find methods to prevention.

MATERIALS AND METHODS

We worked for one week period (10.9.-14.9.2012) in Ammässuo landfill in Espoo area. The study was divided for two different parts: one sorted all waste from loads of mixed waste collection vehicles and the other continued to investigate all the waste originally being food or food raw material. The methods of sorting was manual with sieves. The samples were from 13 different areas covering Helsinki metropolitan area and all different types of housing were studied separately (number of apartments in the house: 1, 2-9, 10-20 and more than 20 apartments). The sample covered 15106 inhabitants and 7177 households. We investigated all particles sizes including the small ones like fine material (>10 mm). For analysis we got all data from mass of the loads and number of inhabitants and households. Number of samples

were 34 and one sample size was 100 kg of mixed waste from the one load. The total volume of waste from loads was 51735 kg in households and volume of all samples 3400 kg.

We sorted and weighed food by its type e.g. vegetables, bread, fruits, potatoes, meat etc. Also we sorted food being in unopened packages, opened packages and without packages. The economic examination was done based on price data from Statistics Finland (OFS 2013). Used prices for different products were from September 2011.

RESULTS

Amounts of avoidable food waste varied by type of the housing 15-22 kg/pp/year. When extrapolated amounts for one year, largest amount was produced from houses with one apartment (detached house), row and low-rise houses with 2-9 apartments and 10-20 apartments, and the least with apartment houses with more than 20 apartment. When accounting also for avoidable food waste from bio waste containers (HSY 2011), the total amount of avoidable food waste was 22-27 kg/pp/year.

Other studies in Finland has resulted also significant differences in waste volumes between housing types: row houses and detached houses produced more mixed waste and bio waste than apartment buildings per capita (HSY 2011, HSY 2013). The row and detached houses produce more bio waste from garden but also more food waste (HSY 2011).

Avoidable food waste consists of different types of food. These food types groups were cheese and other milk products, bread, meat and fish and eggs, pasta and rice, apples, fruits and berries, potatoes, vegetables and other products. The main group to avoidable food waste was bread, vegetables and group other products (Figure 1). The group other products consist of other cereal products than bread, readymade and pickup food, gravies and spices, desserts, pastry, candy, snacks and drinks. The groups that generated the least food waste were pasta and rice, and fruit and berries. Meat, fish and egg group had relatively high percentage 14% of all avoidable food waste.

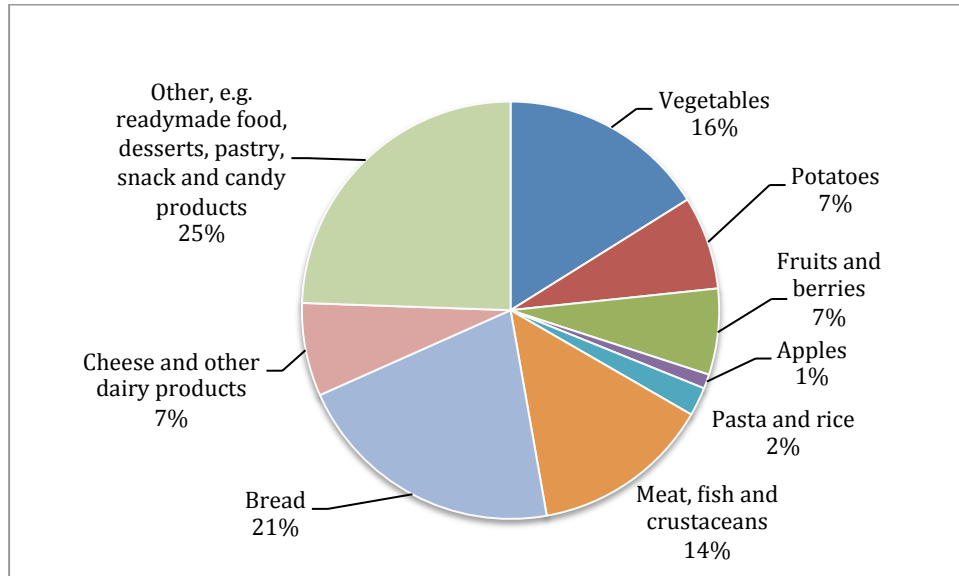


Figure 1. Contribution of avoidable food waste

We examined avoidable food waste by if item having a package. The food item could have been loose (without any package), unopened package or open package. The loose food waste was the largest proportion of these three accounting half of the total food waste. Second largest was food waste from opened packages and food waste from unopened packages was the smallest contributor. In the unopened packages category the amount of waste was nearly double compared between detached house and the over 20 apartment houses, also the amount of loose waste was over double between the two. The opened packages did not differ that much between any of the housing sizes but the over 20 apartments it was a little bit lower than the other.

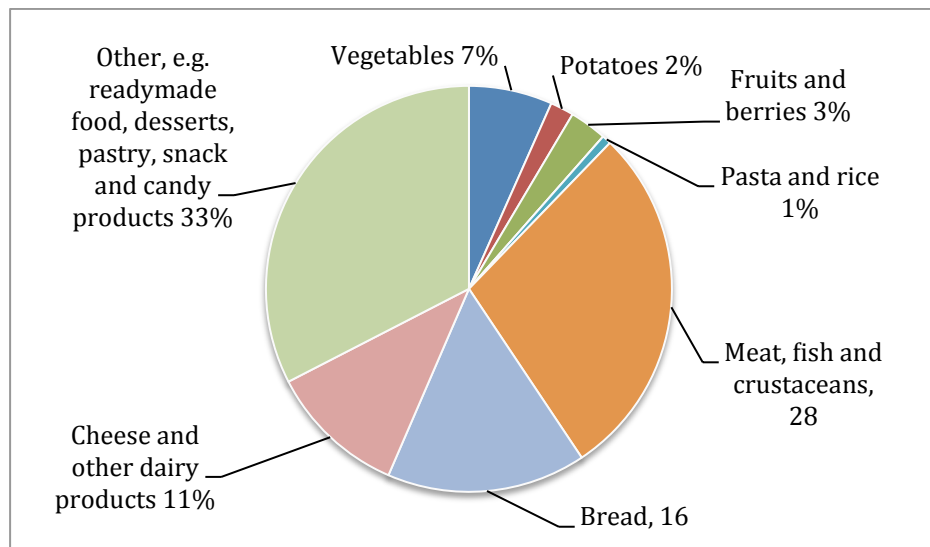


Figure 2. Contribution of monetary value food waste

When looking at the value of food waste the group others still remain the largest but meat, fish and crustacean grows to cover almost a third of the total value of the waste compared to the 14% when only looking at the volume (Figure 2). The impact of cheese and other dairy products increases from 7 to 11 %. For vegetables, potatoes and fruits and berries their effect decrease quite drastically from covering a third of the volume to being only 12% of the total value of the food waste.

The value of the avoidable food waste was about 125 € per citizen in a year, and one kilogram of waste cost about 5,6 €.

CONCLUSIONS

The study resulted that approximately 24 millions of kilograms of food is wasted in Helsinki metropolitan area every year by households, average 23 kilograms per citizen.

The most wasted food groups were group other (including e.g. ready made food, pastry, snack and candy), bread, vegetables and meat products. The group other have large economical value having products like snack and other very processed food, also meat products value high comparing vegetables, potatoes or fruits.

Comparing our results to other studies amounts of food waste seems to rather low, and some of the international studies (Gustavsson 2011) have shown rather large food waste volumes. Anyway this study and the earlier diary study (Silvennoinen et al 2012) showed similar volumes of avoidable food waste amounts in Finnish households.

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