Love Food Hate Waste Canada Benchmark Study Methodology – FAQs

How did we estimate the amount of food wasted in Canadian households?
For households in Canada food waste can go into the garbage can, curbside compost containers (aka green bins), backyard compost, down the drain, and fed to family pets. The bulk, about 80%, of household food waste goes into the garbage and green bins. To estimate how much food is wasted, we used a combination of data collection techniques that covered where food ends up once it is thrown out.

Data for the study came from two types of data collection regarding food waste: waste composition studies and food diary surveys. **Waste composition studies** involve physically sorting through samples of garbage and green bins and dividing the food waste into edible and inedible food waste and then into broad categories (e.g. vegetables, fruits, bread, leftovers). Waste composition studies are done by several Canadian cities who can calculate both the amount of food waste per household and composition of that food waste by category. A **kitchen diary survey** involves a person (or other members of the same household) weighing and recording all food waste generated, by category, over a fixed period of time, generally a week, by their household. Kitchen diary studies have not been done by many municipalities but are important to obtain details about the types of food wasted and estimate food waste that does not enter the municipal solid waste systems, that is the food waste that goes down the drain, into backyard composters or fed to family pets. Data obtained from kitchen diary surveys are adjusted with an under-reporting factor. The under-reporting factor was calculated by comparing the amount of food waste found in waste composition studies with the amount reported in kitchen diary surveys.

For the purposes of the Love Food Hate Waste Canada Benchmark Study, we developed a combined model that incorporates food waste data gathered from kitchen diary surveys, and waste composition studies from available data collected by several Canadian municipalities to estimate the amount of food waste generated by the average Canadian household. Total food waste per household, per year, was calculated as a weighted average based on the number of households represented in each data set. Our focus is on edible food waste, that is, the food waste that could be avoided by households changing the way they handle and store food.

How were the food facts, like the numbers of bananas wasted per year in Canada, calculated?
In our kitchen diary data set, food waste is recorded using detailed food type categories (e.g., bananas, apples, bread, milk, eggs). By dividing the estimated kilograms of these food items from our data set by the average weight of each food item, we were able to calculate the approximate quantities of each food item wasted.

$$\frac{\textit{Estimated amount of food item wasted per year (kg)}}{\textit{Average weight of food item (kg)}} = \textit{Number of food item wasted per year}$$

Similarly, for the cost of food waste, we multiplied the kilograms of each food type by the average cost per kilogram to calculate how much money a household loses related to food waste each year.

Estimated amount of food item wasted per year (kg) X
Average cost of food item ($ per kg) = *Cost of wasting that food item per year*

How was the environmental impact of food waste calculated?
To estimate greenhouse gas emissions (GHG) associated with food waste, we obtained emission factors (the equivalent amount of carbon dioxide per kilogram – CO2eq – of food waste) from the Waste Reduction Model (WARM), a life-cycle GHG calculator developed by the United States Environmental Protection Agency (US EPA). The emission factors included both the direct and indirect GHGs associated with different categories of food waste (e.g. beef, poultry, dairy, grains, fruits and vegetables) which includes emissions from growing, manufacturing, transporting, and disposal or composting of food that is not eaten and ends up in the garbage or green bin. We also added emissions associated with household energy use associated with food waste based on Second Harvest and Value Chain Management's *The Avoidable Cost of Food Waste* report. We multiplied our estimates of the amount of food waste per year in Canada by these emission factors to obtain a life-cycle GHG footprint of food waste per year (as tonnes CO2eq). We then used a variety of emission factors of common activities (e.g. driving a car, taking a plane, using electricity) to derive equivalencies of food waste GHG emissions with common activities.

For more information, please contact info@lovefoodhatewaste.ca.