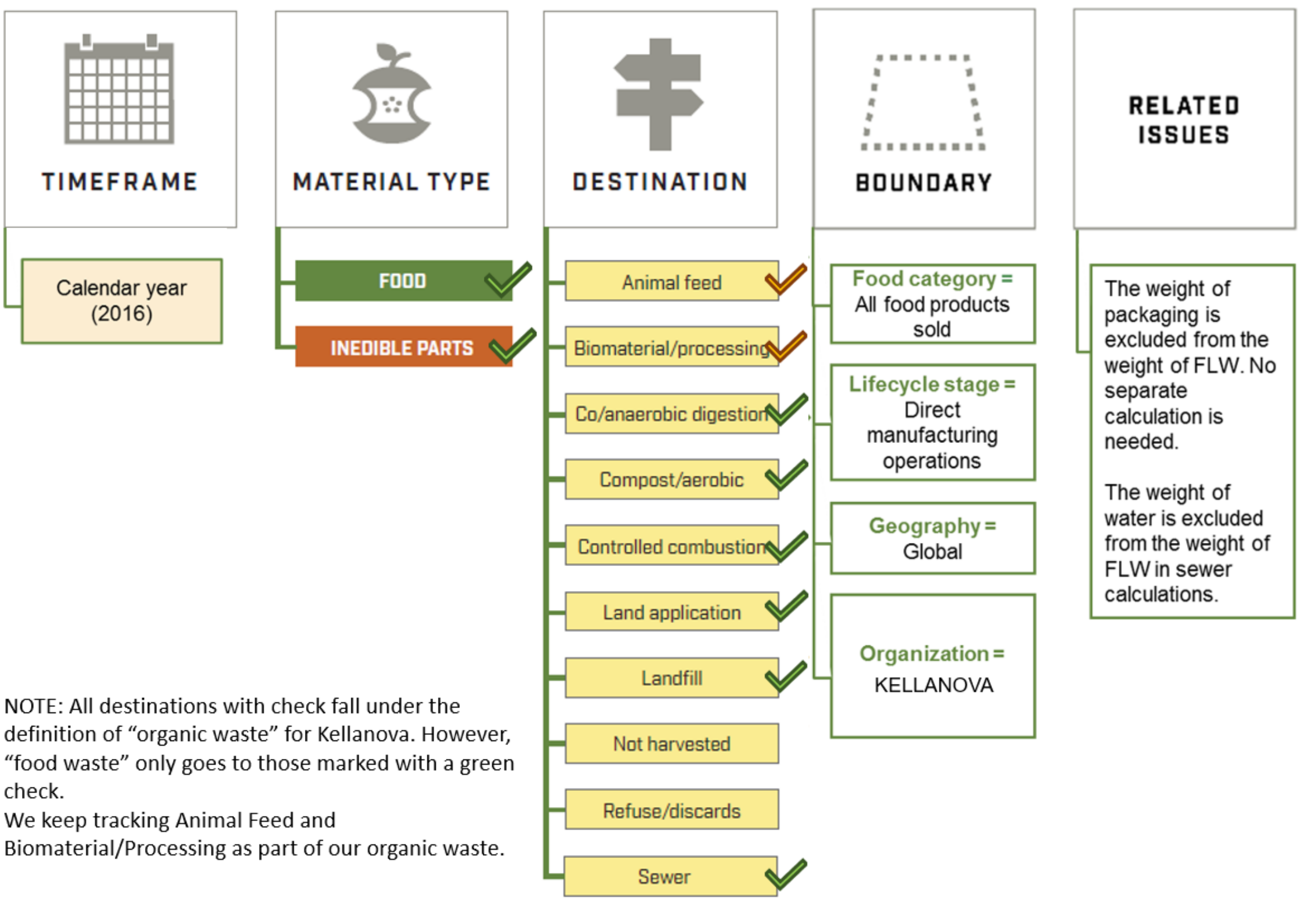
Kellanova
Food Loss and Waste Reporting Methodology
September 2023

As a global food company, we believe we have a significant role to play in helping to end hunger, achieve food security, improve nutrition and promote sustainable agriculture. We're committed to supporting the United Nations Sustainable Development Goal 2-Zero Hunger and U.N. Development Goal 12.3. to halve per capita global food waste at the retail and consumer level, and to reduce food losses along the production and supply chains including post-harvest losses by 2030.

A critical element of our work to support food security and help eradicate hunger is helping to eliminate food waste from the global food system. Please see our Food Waste Position Statement for more information.

The following figure visually represents the scope of Kellogg Company's food waste inventory, using the Food Loss and Waste (*FLW) Standard.* The FLW Standard is a global accounting and reporting guideline for quantifying food and associated inedible parts removed from the food supply chain. It will enable countries, companies and other organizations to account for and report in a credible, practical and internationally consistent manner how much food loss and waste is created and identify where it occurs, enabling the targeting of efforts to reduce it.




NOTE: All destinations with check fall under the definition of "organic waste" for Kellanova. However, "food waste" only goes to those marked with a green check.
We keep tracking Animal Feed and Biomaterial/Processing as part of our organic waste.

The table below provides a summary of how the Kellanova FLW calculation meets the eight reporting and accounting requirements contained in the *FLW Standard*.

| *FLW STANDARD* REQUIREMENTS & DESCRIPTION OF KELLOGG COMPANY'S FLW INVENTORY |
|---|
| **1. Base FLW accounting and reporting on the principles of relevance, completeness, consistency, transparency, and accuracy**<br>• **Relevance:** Data informs waste reduction activities<br>• **Completeness:** All global manufacturing facilities are included<br>• **Consistency:** Use same methodology each year<br>• **Transparency:** Methodology, including assumptions, is published<br>• **Accuracy:** Varies depending on destination; described below under Methodology; ongoing work to reduce uncertainties |
| **2. Account for and report the physical amount of FLW expressed as weight**<br>Food waste reported in metric tons |
| **3. Define and report on the scope of the FLW inventory. (*FLW Standard* includes additional details) Material type:** Food and associated inedible parts (note: mass of inedible parts is very minimal)<br>**Destination:** All destinations fall under the definition of "food waste" for Kellanova, but food waste only goes to six: anaerobic digestion, compost/aerobic digestion, controlled combustion (with or without energy recovery), land application, landfill, or sewer/wastewater treatment.<br>**Boundary:**<br>o *Food category:* All food and beverage (UNCPC2.1 Div. 21–24)<br>o *Lifecycle stage:* Direct Manufacturing Operations<br>o *Geography*: Global<br>o *Organization*: All global manufacturing operations<br>**Related issues**: The weight of packaging is excluded from the weight of FLW. No separate calculation is needed. The weight of water is excluded from the weight of FLW in calculations to the<br>sewer/wastewater treatment. |
| **4. Describe the quantification method(s) used. If existing studies or data are used, identify the source and scope**<br>Quantification methods include: direct weighing, records, waste composition analysis, volume, and<br>proxy data; additional details are provided below under Methodology |
| **5. If sampling and scaling of data are undertaken, describe the approach and calculation used, as well as the period of time over which sample data are collected (including starting and ending dates)**<br>See details below under Methodology |
| **6. Provide a qualitative description and/or quantitative assessment of the uncertainty around FLW inventory results**<br>See details below |
| **7. If assurance of the FLW inventory is undertaken (which may include peer review, verification, validation, quality assurance, quality control, and audit), create an assurance statement**<br>Assurance not undertaken |
| **8. If tracking the amount of FLW and/or setting an FLW reduction target, select a base year, identify the scope of the target, and recalculate the base year FLW inventory when necessary**<br>• Base year is 2016<br>• Total Waste reduction target in place; Organic and Food Waste target in place<br>• Methodology in place to determine when baseline recalculation is necessary |

Additional information about the quantification methods used to calculate our annual food waste inventory, along with key assumptions and an explanation of uncertainty can be found in the table below. Uncertainty is a qualitative estimate based on a scale of 1-10, with 10 signifying very accurate data. As noted above, the majority of food waste was originally intended as edible food; therefore our food waste definition under the FLW Protocol is almost entirely documented as food, not inedible parts.

| Destination | Quantification Methods Used | Uncertainty |
|---|---|---|
| Animal Feed | **Type:** Food<br>**Quantification method:** Records from waste management vendors, primarily derived from direct weighing at the destination **Assumptions:** Assumes that minimal amounts of water are added for disposal as dry feed is much preferred by vendors than wet | 7<br>Minimal verification of vendor data |
| Biomaterial/ processing | **Type:** Food, including used food grade oils<br>**Quantification method:** Records from waste management vendors, primarily derived from direct weighing at the destination **Assumptions:** None | 7<br>Minimal verification of vendor data |
| Co/anaerobic digestion | **Type:** Food and sludge<br>**Quantification methods:**<br>1. Records from waste management vendors, primarily derived from direct weighing at the destination<br>2. Assumptions from sludge waste composition analysis<br>**Assumptions:** Assumes 15% of sludge weight represents food waste and the remaining 85% is water. Assumption based on average of 2015-2016 sludge analysis from one cereal manufacturing location in UK. During anaerobic/aerobic digestion some food is consumed, but bacteria also generate waste and die; this is assumed to be negligible | 5<br>Minimal verification of vendor data Assumptions scaled up from limited waste composition analysis |
| Compost/ aerobic | **Type:** Food<br>**Quantification method:** Records from waste management vendors, primarily derived from direct weighing at the destination **Assumptions:** None | 7<br>Minimal verification of vendor data |
| Controlled Combustion | **Type:** Food and sludge<br>**Quantification method:**<br>1. Records from waste management vendors, primarily derived from direct weighing at the destination<br>2. Assumptions from sludge and general waste composition analysis<br>**Assumptions:**<br>1. See sludge assumption above<br>2. Assumes that 25% of general waste sent to incineration is food waste. Assumption based on 2009 waste analysis from two manufacturing locations (covering both cereal and snack production) in UK | 5<br>Minimal verification of vendor data Assumptions scaled up from limited waste composition analysis |
| Land Application | **Type:** Food and sludge<br>**Quantification method:**<br>1. Records from waste management vendors, primarily derived from direct weighing at the destination<br>2. Assumptions from sludge waste composition analysis<br>**Assumptions:**<br>1. See sludge assumption above | 5<br>Minimal verification of vendor data Assumptions scaled up from limited waste composition analysis |

| Destination | Quantification Methods Used | Uncertainty |
|---|---|---|
| Landfill | **Type:** Food and sludge<br>**Quantification method:**<br>1. Records from waste management vendors, primarily derived from direct weighing at the destination<br>2. Assumptions from sludge and general waste composition analysis<br>**Assumptions:**<br>1. See sludge assumption above<br>2. Assumes that 25% of general waste sent to landfill is food waste. Assumption based on 2009 waste analysis from two manufacturing locations (covering both cereal and snack production) in UK | 5<br>Minimal verification of vendor data<br>Assumptions scaled up from limited waste composition analysis |
| Sewer | **Type:** Food and sludge<br>**Quantification method:**<br>1. Sludge records from waste management vendors, primarily derived from direct weighing at the destination<br>2. Assumptions from sludge waste composition analysis<br>3. Calculations using sample TSS concentration records and global effluent volume data<br>4. Calculations using sample BOD and COD concentration records, proxy BOD/COD data for carbohydrates, and global effluent volumes. (Biochemical oxygen demand (BOD) is the amount of oxygen it takes to degrade organic matter. Chemical oxygen demand (COD) is the amount of oxygen required to oxidize organic compounds. Total suspended solids (TSS) is the total amount of suspended materials.<br>**Assumptions:**<br>1. See sludge assumption above<br>2. Sample concentration data (TSS, BOD and COD) was selected to represent each type of manufacturing plant, including cereal, crackers, frozen foods, Pop Tarts, and Pringles<br>3. Kellanova plants complete various wastewater treatment techniques before discharging to various destinations. Treatment techniques include but are not limited to; no treatment, coarse screening, anaerobic digestion, and aerobic digestion. Included in this destination are various discharge destinations. These include but are not limited to: municipal wastewater treatment plants, surface water, and water reuse for onsite irrigation. Sample effluent concentration data was selected to represent average treatment for each type of manufacturing<br>4. Effluent data was not available for a small number of sites; therefore existing effluent volume data was scaled up from plants with similar types of manufacturing<br>5. Assumes that all TSS is food waste<br>6. BOD and COD calculations assume that all BOD/COD present in the effluent are a result of dissolved carbohydrates; therefore, proxy data for carbohydrates was used to calculate the mass of carbohydrates present in the effluent. We used the volume method, based on the raw milk example provided in the *Guidance on FLW Quantification Methods, Supplement to the Food Loss and Waste Accounting and Reporting Standard, Version 1.0* | 3<br>Minimal verification of vendor data<br>Assumptions scaled up from limited waste composition analysis<br>Assumptions scaled up from limited TSS, BOD, and COD data |