WEBINAR

Guidance for Retailers: Why & How to Measure Food Waste

May 16, 2018

Kai Robertson, Lead Advisor, FLW Protocol
World Resources Institute
&
Julian Parfitt, Technical Director and Programme Lead for Food Waste Prevention
Anthesis UK
Focus of the Webinar

Guidance for retailers on why and how to measure food waste

**PART 1. Webinar today (May 16, 2018)**
- Why quantify
- Steps to take
- What to quantify
- How to quantify
- Retailer reporting examples
- Other retailer-relevant resources
- Discussion

**PART 2. Deeper dive webinar (June 20, 2018)**
- Explore in greater detail some of the quantification challenges retailers face
- Discuss further how to apply a product-level approach to food waste quantification
“What Gets Measured, Gets Managed”

Measurement enables you to:

• Understand size of the opportunity

• Identify priority hot-spots for action

• Set baseline and track progress against goals

• Provides a path to co-benefits
“Transparency and measurement is essential for identifying hotspots, and in tackling the causes of food waste. It helps everyone understand how much, where, and why food is being wasted.”

As shared by supermarket retailer Tesco:

**Economic value**

“Food waste results in significant costs to our business, as well as our suppliers and our customers.

**Environmental value**

We can reduce our environmental impact since food waste puts unnecessary pressure on land and natural resources and results in additional greenhouse gas emissions.

**Reputational value**

Our customers and colleagues care about reducing food waste.”

Quote from Tesco’s Annual food waste reporting & FLW Standard case study flwprotocol.org/case-studies/
Why Address Food Loss and Waste?

All those actions have:

- Financial benefits – reduced costs from waste disposal; tax benefits for donation in some markets; and, with onsite anaerobic digestion, reduced energy costs.
- Engaged associates – the associates who launched Instock, who partnered with suppliers on the Brussels Beer Project, and who are involved in daily donations of unsold food to the communities we serve are proud to be involved and to make a difference on food waste.
- Built trust with suppliers, more and more looking at reducing food waste to minimise both environmental impact and their costs.
- Increased product innovation – using the concepts of a circular economy, we are beginning to drive product innovation that meets customers’ needs and drives down food waste.
- Benefited customers – saving money through markdowns and/or tips to reduce food waste at home.
- Supported communities – reducing hunger from programmes to redistribute unsold food from our stores.
- Appealed shareholders, who are interested in responsible investing.

Source: Food waste commitments & achievements of CGF members, October 2017
Provides a:

- Common language
- Framework for consistent and transparent reporting

“...it gives us a clear unambiguous way for talking about food waste.

... helps our full company prepare for how we can get a more consistent baseline across our business.”

From Delhaize America FLWS case study

Practical guidance supports users in:

- Understanding why to measure FLW
- What to quantify
- Options for how to approach measurement
Steps to Take in Developing An Inventory

**Why** quantify?

**What** to quantify? (January 2018 webinar)

**How** to quantify? (February 2018 webinar)

**Reporting** (March 2018 webinar)

- Define goals
- Review accounting and reporting principles
- Establish scope
- Decide how to quantify FLW
- Gather and analyze data
- Calculate inventory results
- Assess uncertainty
- Perform review (optional)
- Report FLW inventory
- Set target (optional) and track over time
Goals May Be Defined by External Targets

SDG Target 12.3
By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.

Define goals

- Consumer Goods Forum
  - 2025: 50%
- Courtauld 2025
  - 2025: 20%

Future targets:

- Now
- 2020
- 2025
- 2030

Institutions and their targets:

- US Government: 50%
- US 2030 Champions: 50%
- Global Agribusiness Alliance: 50%
A food loss and waste (FLW) inventory shall be based on five common principles:

1. **Relevance**: Contain information necessary for stakeholders to make decisions on FLW.

2. **Completeness**: Cover all FLW within the scope selected. Disclose and justify any exclusions.

3. **Consistency**: Use consistent methods to allow for meaningful tracking of FLW over time.

4. **Transparency**: Disclose quantification methods used, relevant assumptions made, and data sources.

5. **Accuracy**: Be sufficiently accurate to enable intended users to make decisions with reasonable confidence that the information in the inventory is credible.
Basic Framework For Thinking About Scope (What to Quantify)

- **Establish scope**
  - **FOOD PLANTS, FUNGI, AND ANIMALS**
    - **FOOD**
    - **INEDIBLE PARTS**
      - **FOOD (NOT CONSUMED)**
        - **POSSIBLE DESTINATIONS**
          - Animal feed
          - Bio-material/processing
          - Codigestion/anaerobic digestion
          - Composting/aerobic process
          - Controlled combustion
          - Land application
          - Landfill
          - Not harvested/plowed-in
          - Refuse/discards/litter
          - Sewer/wastewater treatment
    - **INEDIBLE PARTS**

- **Material Types** (i.e., food and/or inedible parts)
  - AND
- **Destinations** (where material goes when it leaves the food supply chain; 10 possibilities)

---

**a** Intended for human consumption (i.e., excludes crops intentionally grown for bioenergy, animal feed, seed, or industrial use)

**b** At some point in the food supply chain (including surplus food redistributed to people and consumed)

Scopes May Differ – SDG 12.3 Interpretation & CGF Food Waste Resolution

SDG 12.3 Interpretation

MATERIAL TYPE

- Food
- Inedible parts

DESTINATION

- Animal Feed
- Biomaterial/processing
- Co/anaerobic digestion
- Compost/anaerobic
- Controlled combustion
- Land application
- Landfill
- Not harvested
- Refuse/discards
- Sewer

Target 12.3
By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses


CGF Food Waste Resolution

MATERIAL TYPE

- Food
- Inedible parts
- Biomaterial/processing
- Co/anaerobic digestion
- Compost/anaerobic
- Controlled combustion
- Land application
- Landfill
- Not harvested
- Refuse/discards
- Sewer

DESTINATION

- Animal Feed
- Biomaterial/processing
- Co/anaerobic digestion
- Compost/anaerobic
- Controlled combustion
- Land application
- Landfill
- Not harvested
- Refuse/discards
- Sewer

Individual companies select: “Food only” OR “Food plus Inedible parts”

*without energy recovery

Consumer Goods Forum Food Waste Resolution
“First prevent food waste, then maximise its recovery towards the goal of halving food waste within our own retail and manufacturing operations by 2025.”

*Aligned with the FLW Standard; per unit of food sales in constant currency


Target 12.3
By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses

Tesla (example 1). Describing Scope Using the FLW Standard

**NOTE:** While multiple destinations fall under the definition of “food waste” for Tesco, food waste in this inventory only goes to the two marked with a green check: anaerobic digestion or controlled combustion (with energy recovery).

Tesco has achieved zero food waste direct to landfill since 2009.

**Financial year 2016/2017**

**Food category =** All food and beverage products sold

**Lifecycle stage =** Direct operations (stores, depots)

**Geography =** United Kingdom

**Organization =** 2,453 stores and 23 depots

**Packaging weight is excluded. No separate calculation is needed to separate the weight of packaging from the weight of the food waste.**

*Note: Tesco’s Scope Maps to the SDG 12.3 Interpretation*
Delhaize America (example 2). Describing Scope Using the FLW Standard

### TIMEFRAME
- Calendar year (2016)

### MATERIAL TYPE
- Food
- Inedible parts

### DESTINATION
- Animal feed
- Biomaterial/processing
- Co/anaerobic digestion
- Compost/aerobic
- Controlled combustion
- Land application
- Landfill
- Not harvested
- Refuse/discards
- Sewer

### BOUNDARY
- Food category = All food and beverage products sold
- Lifecycle stage = Direct operations (stores, distribution centers)
- Geography = United States (15 states in Northeast, Southeast, Mid-Atlantic)
- Organization = Delhaize America: Hannaford – 179 stores, 2 DCs; Food Lion – 1,112 stores, 5 DCs

### RELATED ISSUES
- Packaging weight is excluded from the weight of food waste. Estimates of the packaging weight are based on samples in which the food waste and packaging were separately measured.

**NOTE:** All destinations fall under the definition of “food waste” for Delhaize America. However, food waste only goes to those marked with a green check:
- animal feed
- bio-based materials/biochemical processing (rendering)
- co/anaerobic digestion
- composting/aerobic processes
- controlled combustion (incineration)
- landfill
- sewer/wastewater treatment
Customizable Visual Can Be Downloaded @ www.FLWProtocol.org

The FLW Standard makes it easy to describe the scope of what you're measuring. Download a simple visual you can use in presentations or otherwise.

Template to Visually Represent Scope Using the FLW Standard

- **TIMEFRAME**
  - (Insert timeframe)

- **MATERIAL TYPE**
  - Food
  - Inedible parts

- **DESTINATION**
  - Animal Food
  - Biocatalytic processing
  - Cismerobic digestion
  - Composting
  - Controlled combustion
  - Land application
  - Landfill

- **BOUNDARY**
  - Food category = (insert text)
  - Lifecycle stage = (insert text)

- **RELATED ISSUES**
  - Pre-harvest losses and the weight of product packaging is excluded from the weight of FLW.
  - (Modify and/or insert additional relevant text)
Guidance in the FLW Standard on How to Quantify

- The FLW Standard does not require use of a particular quantification method

- The FLW Standard does require that you: “Describe the quantification method(s) used. If existing studies or data are used, identify the source and scope.”

- Guidance on “how” is available in:
  - Chapters 7 – 9 of the FLW Standard
  - The stand-alone Guidance on FLW Quantification Methods. The most relevant chapters for retailers are:
    - Chapter 1. Direct weighing
    - Chapter 2. Counting (scanning)
    - Chapter 4. Waste composition analysis
Where to Find the FLW Standard & Related Resources

One-third of all food produced in the world is lost or wasted between farm and fork.

The Food Loss and Waste Accounting and Reporting Standard enables companies, countries, cities and others to quantify and report on food loss and waste so they can develop targeted reduction strategies and realize the benefits from tackling this inefficiency.

Learn More
How to Quantify - Two Main Steps

1. Understand current waste streams
   a) Disaggregate sources of surplus and food waste at retail (and in distribution centers, if relevant)
   b) Understand the destinations of food not sold/not distributed to stores

2. Collect and compile data to calculate food waste amount
   a) Gather and evaluate relevant data and/or records
   b) To address current data gaps/weaknesses, evaluate other quantification options
   c) Produce the initial estimate and assess quality
   d) Plan for future improvements/ refinements
1 a) Disaggregate sources of surplus and food waste at retail (and in distribution centers, if relevant)

Identify sources of food not sold/distributed

- Food Distribution/depot stage
  - Food to Stores
    - Quality Loss
    - Damage Loss
    - Other Losses: theft
  - Food not distributed to store
  - Quality Loss
  - Damage Loss
  - Other Losses: theft
  - Food sold
  - Food not sold
1 b) Understand the destinations of food not sold/ not distributed to stores

"Future proofing" strategy

- Track all the food not sold/ distributed (i.e., to all possible destinations)
- Your reduction goal may only be for a subset of destinations

Notes For Retailers

The four destinations most commonly quantified are in blue.

Also important is sewer as a disposal route (relevant in some markets).

Other destinations retailers may quantify include animal feed or biomaterial/processing. This may or may not be considered “food waste” depending on a retailer’s definition.

What about Donations/Food Rescued?

- Food rescued (redistributed or donated for consumption by people) is still in the human food supply chain. Even though it’s an economic loss for the retailer, it’s not wasted food.
- Do track the amount of food rescued but keep it separate from your food waste inventory.
A hierarchy of destinations recommended by Champions 12.3

Hierarchy based on the interpretation of SDG 12.3

For more information: https://champs123blog.files.wordpress.com/2017/10/champions-12-3-guidance-on-interpreting-sdg-target-12-3.pdf

**FIRST PRIORITY** – Food for people

**NEXT** – Aim for high valorization

- Animal feed
- Biomaterial/processing

- Co/anaerobic digestion
- Compost/aerobic
- Land application
- Not harvested
- Controlled combustion
- Landfill
- Sewer
- Refuse/discards

This falls within the definition of food waste (based on the interpretation of SDG 12.3)
Step 2: Collect and compile data to calculate food waste amount

LESSONS LEARNED

• Involves a combination of different quantification approaches
• Potential to triangulate between different measurement techniques
  • e.g. estimates based on waste contractor data/ audits may be cross-checked against measurement based on POS/ SKU data
• Staff involvement and commitment is key (training, coordination of data sources, understanding / awareness of reporting commitments)
• Pathway to compiling food waste estimates - a continuous improvement loop, rather than a single unmodified deployment
Step 2: Collect and compile data to calculate food waste amount

- a) Gather & evaluate relevant data / records
- b) To address current data gaps / weaknesses, evaluate other quantification options
- c) Produce initial estimates and assess quality
- d) Plan for future improvements / refinements
2 a) Gather and evaluate relevant data and/or records
Identify sources of data for FLW calculation

There are two typical methods for measuring retail food waste:

1. Waste contractor records – Top down method
   • Based on reported tonnage collection
   • Compositional analysis/ waste audits required for mixed waste streams

   More easily available
   Provides no granularity; waste audits subject to sampling error

2. Product (SKU) scanning – Bottom up method
   • Based on scanning unsold products and combining with standard product weights

   High level of granularity
   Necessary systems may not be in place or work needed to get different datasets to relate
Identify **who** has the data – it’s likely spread across the business.

Data elements relevant to FLW calculations (depending on method):

- **Item Master information:** Data from product category buying teams: standard product weights, packaging weight per item.
- **Facilities data:** e.g. which stores with in-store bakery/ other food prep? Identification of all stores selling food.
- **Depot inventory adjustments data:** damaged/ quality issues/ over-orders etc., pallets/ crates.
- **Store-level sales/ mark-down data:** sold/ unsold product, data relating to ‘shrink’.
- **Donations/ Food Rescue data:** may be by weights or volume donated.
- **Waste hauler data:** (general/ mixed waste) weight or volume-based; at best some breakdown of composition.
- **Transactional data:** e.g. if weighed at POS: knowing $/ weight for weighable items may be used in FLW estimates.
- **Recycling contractor data:** Segregated food waste collections, weight or volume-based.
2 b) To address current data gaps/weaknesses, evaluate other quantification options

<table>
<thead>
<tr>
<th>Quantification approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>POS scanned data based on food product weights at SKU-level for all unsold products</td>
</tr>
<tr>
<td>Direct weighing of segregated food waste as it leaves retail stores/depots, may be supplemented by more detailed waste audits: audits + waste contractor data</td>
</tr>
<tr>
<td>Waste sampling of mixed wastes leaving retail stores/depots: audits + waste contractor data</td>
</tr>
<tr>
<td>Conversion of overall financial data (product category, lost sales value) to FLW weight estimates</td>
</tr>
</tbody>
</table>

Higher level of accuracy & detail

Lower level of accuracy & detail

Higher level of effort

Lower level of effort
2 c) Produce the initial estimate and assess quality

Use the relevant data and/or records available as well as quantification approaches to address gaps and weaknesses in the data keeping in mind the following:

<table>
<thead>
<tr>
<th>Quantification approach</th>
<th>Key issues impacting data quality</th>
<th>Food packaging included/ needs subtracting?</th>
<th>Food waste estimate produced</th>
</tr>
</thead>
<tbody>
<tr>
<td>POS scanned data based on food product weights at SKU-level for all unsold products</td>
<td>SKUs without standard product weights will need to be estimated from direct weighing; data do not require scaling as generated item by item from POS scanning</td>
<td>Estimates may exclude packaging weight, depending on records available</td>
<td>Detailed SKU-level estimates, can be directly related to lost sales value and food waste reduction strategy</td>
</tr>
<tr>
<td>Direct weighing of segregated food waste as it leaves retail stores/ depots, may be supplemented by more detailed waste audits at point of disposal</td>
<td>Truck-scale measurement may not reflect food waste weight (weather/moisture, non-food contamination, poor segregation efficiency); uncertainty in scaling results</td>
<td>Includes weight of packaging, although some destinations may supply weight after de-packing</td>
<td>Basic weight data with low granularity from hauler data, more detail from audits</td>
</tr>
<tr>
<td>Waste sampling of mixed wastes leaving retail stores/ depots</td>
<td>Requires waste sorting to estimate % food waste within mixed waste, subject to seasonality, sampling error</td>
<td>Items of food will need to be de-packed to exclude packaging weights</td>
<td>Basic estimates for food waste as % mixed waste, low granularity</td>
</tr>
<tr>
<td>Conversion of overall financial data (product category/ lost sales value) into FLW weight estimates</td>
<td>Data has high availability, but uncertain relationship with product weight information</td>
<td>N/A</td>
<td>Estimated food waste at category level; low granularity</td>
</tr>
</tbody>
</table>
2 d) Plan for future improvements/ refinements

• Gather more granular data at food category/ SKU level, geographically and through time:
  • Key to acting on food waste is to understand ‘hotspots’: most wasted food products
  • Where waste occurs: stores and depots
  • Seasonal drivers: e.g., wastage around holidays

• Understand causes of food waste:
  • Food quality issues/ ‘date expiry’ versus product damage, freezer breakdown
  • Systemic issues – demand prediction and ordering systems

• Moving from FLW measurement to setting a course of action requires more detailed profiling of FLW causes and types….
  
  ........ you are not alone on this journey: learn from the experience of others!
Many Retailers Are Sharing Their Food Waste Data

Transparency and measurement is essential for identifying hotspots, and in tackling the causes of food waste. It helps everyone understand how much, where, and why food is being wasted.

As we grew our business in 2017/18 and total food sales increased, the level of waste as a % of sales remained broadly flat at 0.5%.

<table>
<thead>
<tr>
<th></th>
<th>2016/17</th>
<th>2017/18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total UK food sales</td>
<td>9,957,374 tonnes</td>
<td>10,023,559 tonnes</td>
</tr>
<tr>
<td>Total food waste</td>
<td>46,684 tonnes</td>
<td>53,126 tonnes</td>
</tr>
<tr>
<td>Waste as % of food sales</td>
<td>0.5%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Donations</td>
<td>5,700 tonnes</td>
<td>7,975 tonnes</td>
</tr>
</tbody>
</table>

How we calculate the food waste figure - UK

Scope and Definitions
The methodology outlined below is used to calculate the total tonnes of food wasted in our UK operations in the full Tesco financial year 2016/17. The information provided is in conformance with the Food Loss and Waste Accounting Standard (FLW Standard).

Publish details in Strategic Report and online, including methodology @ https://www.tescopl.com/little-helps-plan/reports-and-policies/how-we-calculate-the-food-waste-figure-uk/
Tesco notes the multiple sources of data publicly:

- Retail and depot waste
- Damaged, out-of-code, write-off, exceptional events waste
- Product data (contents weight and the packaged weight per item)
- Self-scan data
- Bakery weights
- Donation and charity data, colleague shop
- Animal Feed tonnage
In 2017 Annual Report
- Strategy, Targets, Progress, Destinations -

We have a three-pronged approach to driving down food waste. First, we reduce food waste across our operations, including stores, warehouses and transport. Ongoing actions include: smarter product ordering and supply management, providing storage guidance on food packaging, discounting perishable products that are reaching end-of-shelf-life as well as ‘imperfect’ vegetables, and raising associate awareness.

Secondly, we divert surplus food to food banks and charities and to innovative operations such as restaurants that cook with unsold food.

And thirdly, we divert food no longer suitable for human consumption to other recycling methods, to prevent it from going to landfill. These methods can include animal feed production, green energy facilities or industrial uses.

In 2017, we measured the food waste and where it went, across all Ahold Delhaize companies:

- We recycled 68% of our food waste, moving towards our 2020 goal of 90%.
- Our total food waste per food sales was 5.39 tonnes per million Euros. By 2020 we aim to reduce this by 90% from our 2016 baseline.

All these actions combined not only make us a better partner in the supply chain, but reducing food waste also improves the environment. We are reducing the need to buy new ingredients, buying decisions and reduced operational waste we can focus more on delivering great value and high quality products to customers, making us a better place to shop.

For more details please see our reporting page.

---

### Reduce food waste

<table>
<thead>
<tr>
<th>Performance indicator description</th>
<th>2016</th>
<th>2017</th>
<th>2020 Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tonnes of food waste per food sales (t/MEUR)³</td>
<td>5.31</td>
<td>5.32</td>
<td>4.25</td>
</tr>
<tr>
<td>Tonnes of food waste sent to disposal per food sales (t/MEUR)³</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of total food waste recycled</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% food waste recycled for animal feed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% food waste recycled for biogas generation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% food waste recycled for compost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% food waste recycled by rendering</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of unsold food donated to feed people⁴</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Target is a 20% reduction from 2016

Teams at Delhaize Belgium have excelled at preventing food from becoming waste by optimizing the use of automated warehouses to minimize the time between receipt and delivery of fresh products, adjusting the assortment in the stores and donating unsold food to charities – resulting in the lowest food waste per sales among all our brands.

Two of our brands – Albert Heijn and Delhaize Belgium – recycle 100% of food waste through the various means available in each market.

In 2017, we used the waste reduction model developed by the Environmental Protection Agency to estimate the impact of all of our food waste reduction activities on our greenhouse gas emissions. The model suggests we prevented approximately 224,000 tonnes of equivalent CO₂ emissions, or 5% of our total emissions.
FLW Protocol Case Studies

HOW DOES THIS INVENTORY MEET THE FLW STANDARD’S REQUIREMENTS?

The table below provides a summary of how Delhaize America’s FLW inventory meets the eight reporting and accounting requirements contained in the FLW Standard.

<table>
<thead>
<tr>
<th>FLW STANDARD REQUIREMENTS &amp; DESCRIPTION OF DELHAIZE AMERICA’S FLW INVENTORY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Base FLW accounting and reporting on the principles of relevance, completeness, consistency, transparency, and accuracy</strong></td>
</tr>
<tr>
<td>- Relevance: Data informs waste reduction activities</td>
</tr>
<tr>
<td>- Completeness: All stores and distribution centers included</td>
</tr>
<tr>
<td>- Consistency: Use same methodology each year</td>
</tr>
<tr>
<td>- Transparency: Methodology, including assumptions, is shared with internal decision-makers</td>
</tr>
<tr>
<td>- Accuracy: Calculation is validated by internal audit. Ongoing work to reduce uncertainties</td>
</tr>
<tr>
<td><strong>2. Account for and report the physical amount of FLW expressed as weight</strong></td>
</tr>
<tr>
<td>Reported as tonnes</td>
</tr>
<tr>
<td><strong>3. Define and report on the scope of the FLW inventory (see FLW Standard for additional details)</strong></td>
</tr>
<tr>
<td>Timeframe: Calendar year [2018]</td>
</tr>
<tr>
<td>Material type: Food and associated inedible parts</td>
</tr>
<tr>
<td>Destinations: All destinations fall under the definition of “food waste” for Delhaize America, but food waste only goes to same: animal feed, anaerobic digestion, bio-based materials/biobased processing (rendering), composting, controlled combustion (incineration), or landfills</td>
</tr>
<tr>
<td>Boundary:</td>
</tr>
<tr>
<td>- Food category: All food and beverage [UNCP2.C1.Div. 21 - 24]</td>
</tr>
<tr>
<td>- Lifecycle stage: Direct retail operation and distribution centers (DCs)</td>
</tr>
<tr>
<td>- Geography: US; 16 states in Northeast, Southeast, Mid-Atlantic US regions</td>
</tr>
<tr>
<td>- Organization: Hannaford - 179 stores, 2 DCs; Food Lion - 1112 stores, 5 DCs</td>
</tr>
<tr>
<td>Related issues: Packaging weight is excluded. Estimates of the packaging weight are based on samples in which the food waste and packaging were separately measured</td>
</tr>
<tr>
<td><strong>4. Describe the quantification method(s) used. If existing studies or data are used, identify the source and scope</strong></td>
</tr>
<tr>
<td>Records from waste management vendors</td>
</tr>
<tr>
<td><strong>5. If sampling and scoring of data are undertaken, describe the approach and calculation used, as well as the period or time over which sample data are collected (including starting and ending dates)</strong></td>
</tr>
<tr>
<td>N/A</td>
</tr>
<tr>
<td><strong>6. Provide a qualitative description and/or quantitative assessment of the uncertainty around FLW Inventory results</strong></td>
</tr>
<tr>
<td>Sources of uncertainty include estimates made about the:</td>
</tr>
<tr>
<td>- The weight of packaging</td>
</tr>
<tr>
<td>- Total mass of food waste in dumpsters</td>
</tr>
<tr>
<td><strong>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</strong></td>
</tr>
<tr>
<td>Extensive internal audit on process of collecting and recording data</td>
</tr>
<tr>
<td><strong>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</strong></td>
</tr>
<tr>
<td>N/A</td>
</tr>
</tbody>
</table>

Download and view online @ http://flwprotocol.org/case-studies/
### MATERIALS DIVERTED FROM LANDFILL (tonnes)

Materials diverted from landfill from Australian Supermarkets, New Zealand Supermarkets and BIG W.

<table>
<thead>
<tr>
<th></th>
<th>Australia</th>
<th>New Zealand</th>
<th>Total Australia</th>
<th>Total New Zealand</th>
<th>Total diverted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2014</td>
<td>2015</td>
<td>2016</td>
<td>2017</td>
<td></td>
</tr>
<tr>
<td>Food waste to composting or energy</td>
<td>14,655</td>
<td>17,359</td>
<td>15,791</td>
<td>16,877</td>
<td></td>
</tr>
<tr>
<td>Food to charity</td>
<td>1,381</td>
<td>2,956</td>
<td>3,231</td>
<td>4,015</td>
<td></td>
</tr>
<tr>
<td>Cardboard</td>
<td>201,165</td>
<td>192,170</td>
<td>218,535</td>
<td>222,145</td>
<td></td>
</tr>
<tr>
<td>Plastic film</td>
<td>7,869</td>
<td>7,028</td>
<td>8,226</td>
<td>9,232</td>
<td></td>
</tr>
<tr>
<td>Polystyrene</td>
<td>16</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>205</td>
<td>131</td>
<td>47</td>
<td>296</td>
<td></td>
</tr>
<tr>
<td><strong>Total Australia</strong></td>
<td><strong>225,291</strong></td>
<td><strong>219,647</strong></td>
<td><strong>245,830</strong></td>
<td><strong>252,565</strong></td>
<td></td>
</tr>
<tr>
<td>Cardboard</td>
<td>24,546</td>
<td>25,324</td>
<td>26,057</td>
<td>26,709</td>
<td></td>
</tr>
<tr>
<td>Plastic film</td>
<td>977</td>
<td>1,253</td>
<td>1,307</td>
<td>1,296</td>
<td></td>
</tr>
<tr>
<td>Food waste to farmers</td>
<td>827</td>
<td>807</td>
<td>787</td>
<td>768</td>
<td></td>
</tr>
<tr>
<td>Food to charity</td>
<td>-</td>
<td>509</td>
<td>509</td>
<td>509</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>430</td>
<td>435</td>
<td>440</td>
<td>1,193</td>
<td></td>
</tr>
<tr>
<td><strong>Total New Zealand</strong></td>
<td><strong>26,780</strong></td>
<td><strong>28,328</strong></td>
<td><strong>29,100</strong></td>
<td><strong>30,475</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Total diverted</strong></td>
<td><strong>252,071</strong></td>
<td><strong>247,975</strong></td>
<td><strong>274,930</strong></td>
<td><strong>283,040</strong></td>
<td></td>
</tr>
</tbody>
</table>
Walmart global food waste destination mix in Canada, Japan, U.K. and U.S.

- Donation to people: 26%
- Composting/aerobic processed: 8%
- Animal feed: 35%
- Controlled combustion: 2%
- Landfill: 17%
- Bio-based materials/biochemical processing: 6%
- Codigestion/anaerobic digestion: 6%
- Recycling: 55%
- Non-diverted (19%)

Note: Cited weights are all net of packaging.
Sampling of Resources for Retailers Available From Other Organizations

http://www.wrap.org.uk/content/driving-out-waste-food-drink-manufacturing-and-retailing

Food waste measurement signposting tree

http://www.wrap.org.uk/content/food-waste-measurement-principles-and-resources-guide
THURSDAY, MAY 17: EPA SMM Web Academy: Business Innovations in Reducing Food Loss and Waste
https://register.gotowebinar.com/register/7182742617092163074  
.. highlighting the actions of three United States Food Loss and Waste 2030 Champions that are leading the way in helping the U.S. reach its 50% food loss and waste reduction goal. Speakers from each company will share best practices, tools, and resources they have created to prevent food from going to waste, and will address how shifts in company culture have changed operations as well as the critical role measurement of food waste plays in achieving their goals.
ASSESSING WASTE STREAMS TO IDENTIFY DIVERSION OPPORTUNITIES

CREATE A WASTE BASELINE
- Determine diversion rates based on historical data and seasonal fluctuation (i.e., all waste and recycling service revenue, by a minimum of one year).
- This provides insight into what is being disposed.

EXECUTE WASTE ASSESSMENTS
- Identify waste diversion improvement opportunities by looking at the various material streams in a sorted and weighed sample compactor load of solid waste.
- This provides a “snapshot” of what is being disposed.

CONDUCT SITE ASSESSMENTS
- Conduct a site visit to understand policies, processes, and overlapping actions related to the collection and disposal of waste materials.
- This explains why materials end up in the solid waste container. In addition, the site visit offers insight into how a company can improve its current diversion processes, programs, and reveal new best practices.

Wegmans Solid Waste Study
- Worked with local waste management representative to arrange landfill tour for store team.
- Store team was able to watch their compactor emptied in front of them.
- Team hand sifted through trash to identify recyclables and/or food.
- Powerful visual aid in identifying what was truly junk and what could be saved.

What’s Next?

✓ Monthly webinar series to continue (third Wednesdays)
  • Next webinar (June 20, 2018) will take a deeper dive for retailers
    TELL US IN THE EVALUATION SURVEY what would you like to see covered?

✓ Sectoral guidance and other tools under development

✓ If you aren’t already signed up for the news update, do so at the bottom of
  any page @ FLWProtocol.org
Acknowledgements | Funders of WRI’s FLW Initiative

Note: The Ministry of Foreign Affairs of the Netherlands, the Royal Danish Ministry of Foreign Affairs, the Swedish International Development Cooperation Agency (SIDA) and the Department of Foreign Affairs and Trade of Ireland (Irish Aid) provided core funding of the World Resources Institute, which made possible the development of the Food Loss and Waste Protocol.