

Food Loss + Waste

PROTOCOL

TWO PART WEBINAR

Part 1. The Scope of a Food Loss and Waste Inventory

Part 2. Open Question & Answer

January 17, 2018

By Kai Robertson
Lead Advisor, FLW Protocol, World Resources Institute

Part 1.

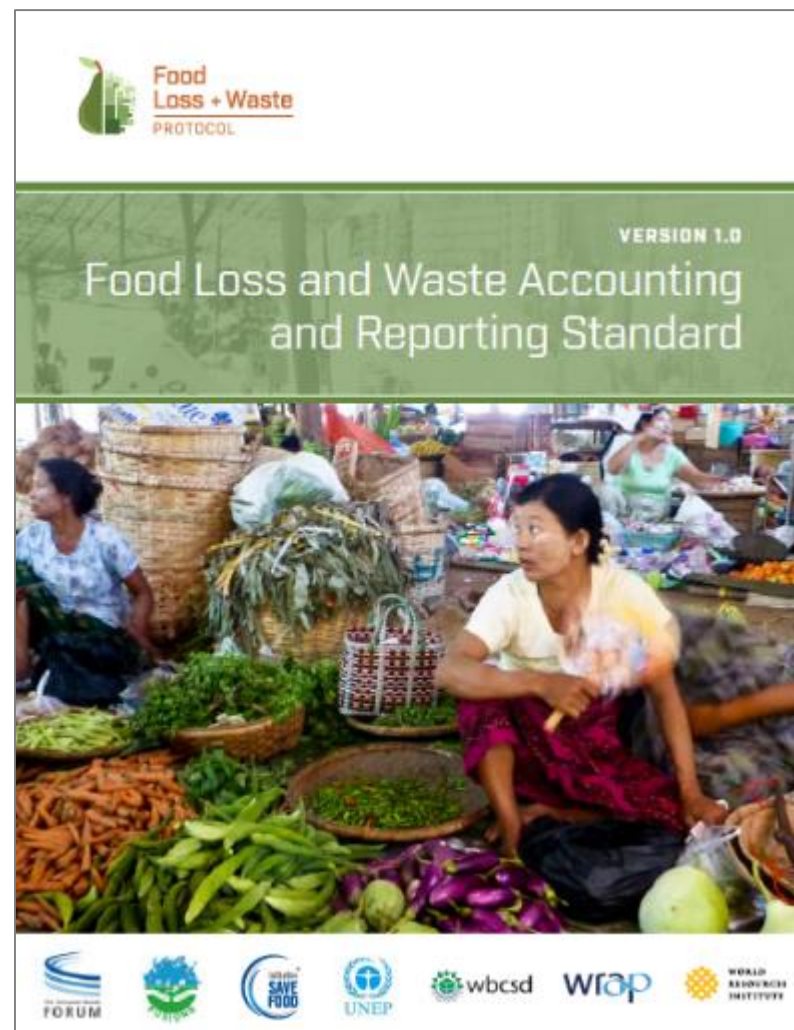
The Scope of a Food Loss
and Waste (FLW) Inventory

Value Gained By Using the *FLW Standard*

- ✓ **Common language**
- ✓ **Reporting framework**
- ✓ **Practical guidance**

“... provides consistent language to use ... and standard ways to measure and report.”

Kellogg Company



[Why Measure?](#)[FLW Standard](#)[News & Updates](#)[About the FLW Protocol](#)

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](#)

DOWNLOADS

FLW Standard Executive Summary

📄 (PDF) - [ENG](#) | [CHI](#) | [JAP](#) | [POR](#) | [SPA](#)

FLW Standard

📄 (PDF) - [ENG](#) | [SPA](#)

Sample Reporting Template for FLW Standard

📄 (XLS) - [ENG](#)

Guidance on FLW Quantification Methods

📄 (PDF) - [ENG](#)

FLW Quantification Method Ranking Tools

📄 (XLS) - [ENG](#)

[Learn to Use These Resources](#)

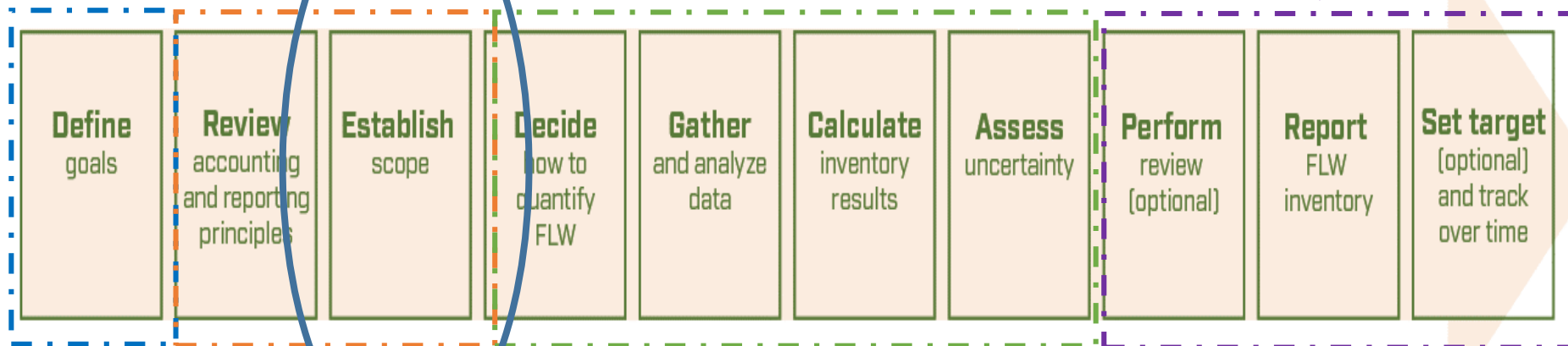
Steps to Quantify and Report on FLW

Why quantify?

What to quantify?

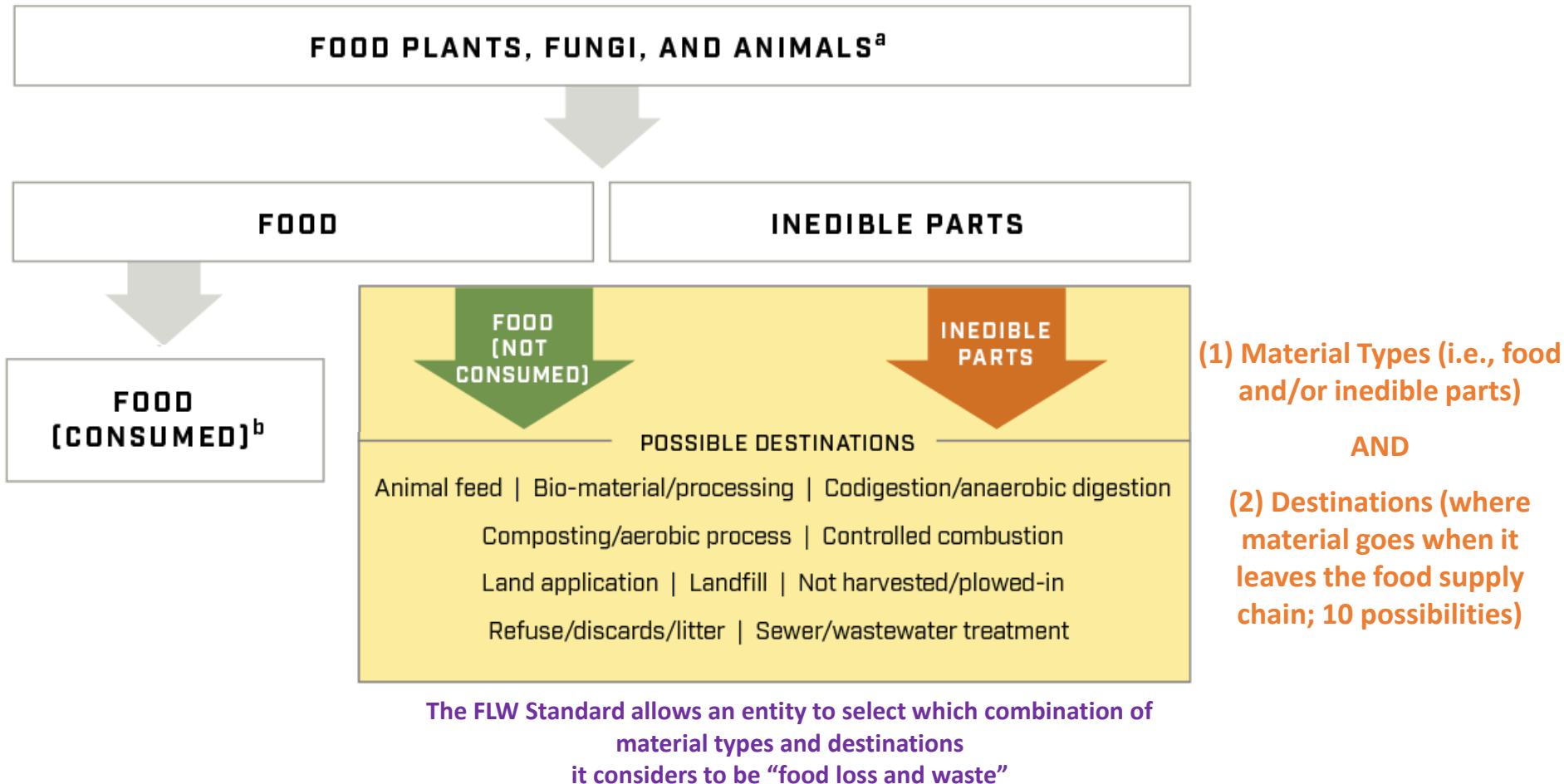
How to quantify?

Reporting



Focus of
the webinar

Material Types & Destinations

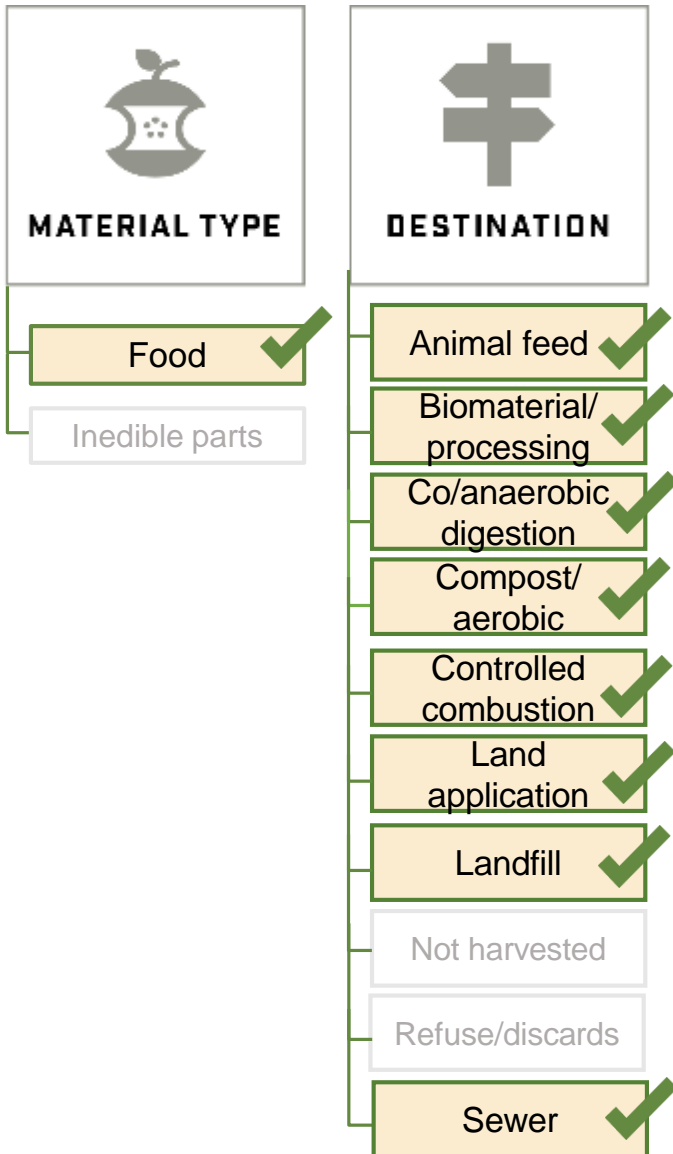


^a Intended for human consumption (i.e., excludes crops intentionally grown for bioenergy, animal feed, seed, or industrial use)

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

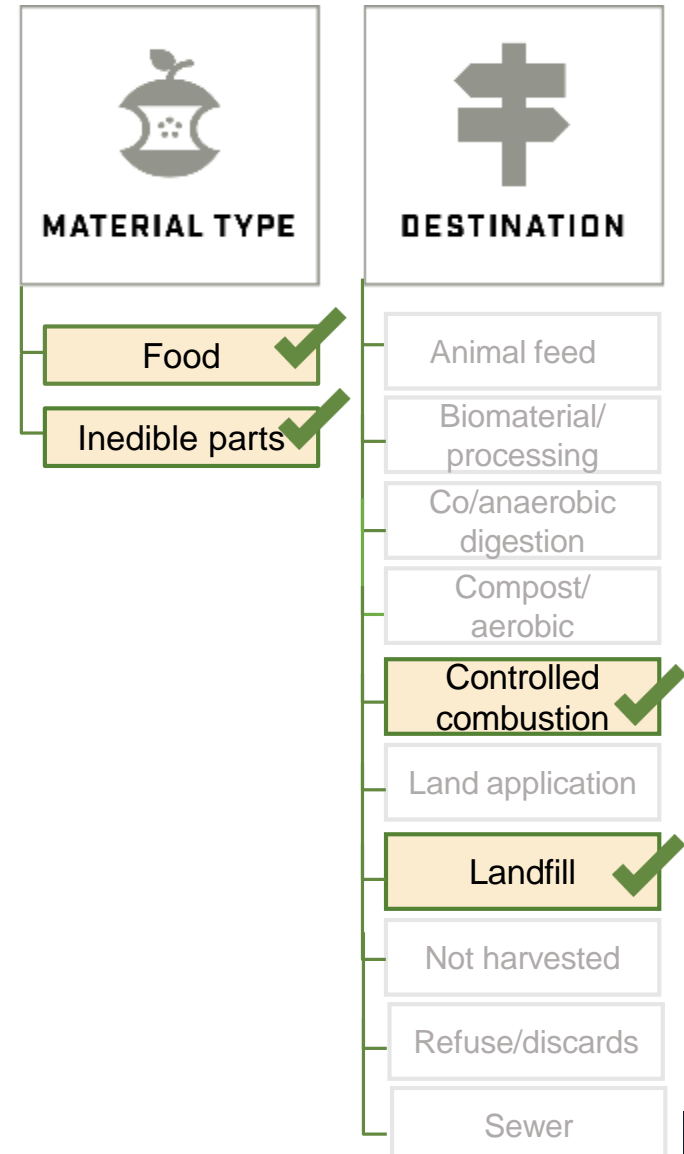
Why Scope Matters

USDA: 66.5 million tons



V
E
R
S
U
S

US EPA: 36.46 million tons *disposed*



Additional details @ <https://furtherwithfood.org/how-much-is-there/>

Interpreting the Scope of 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



Why the interpretation?

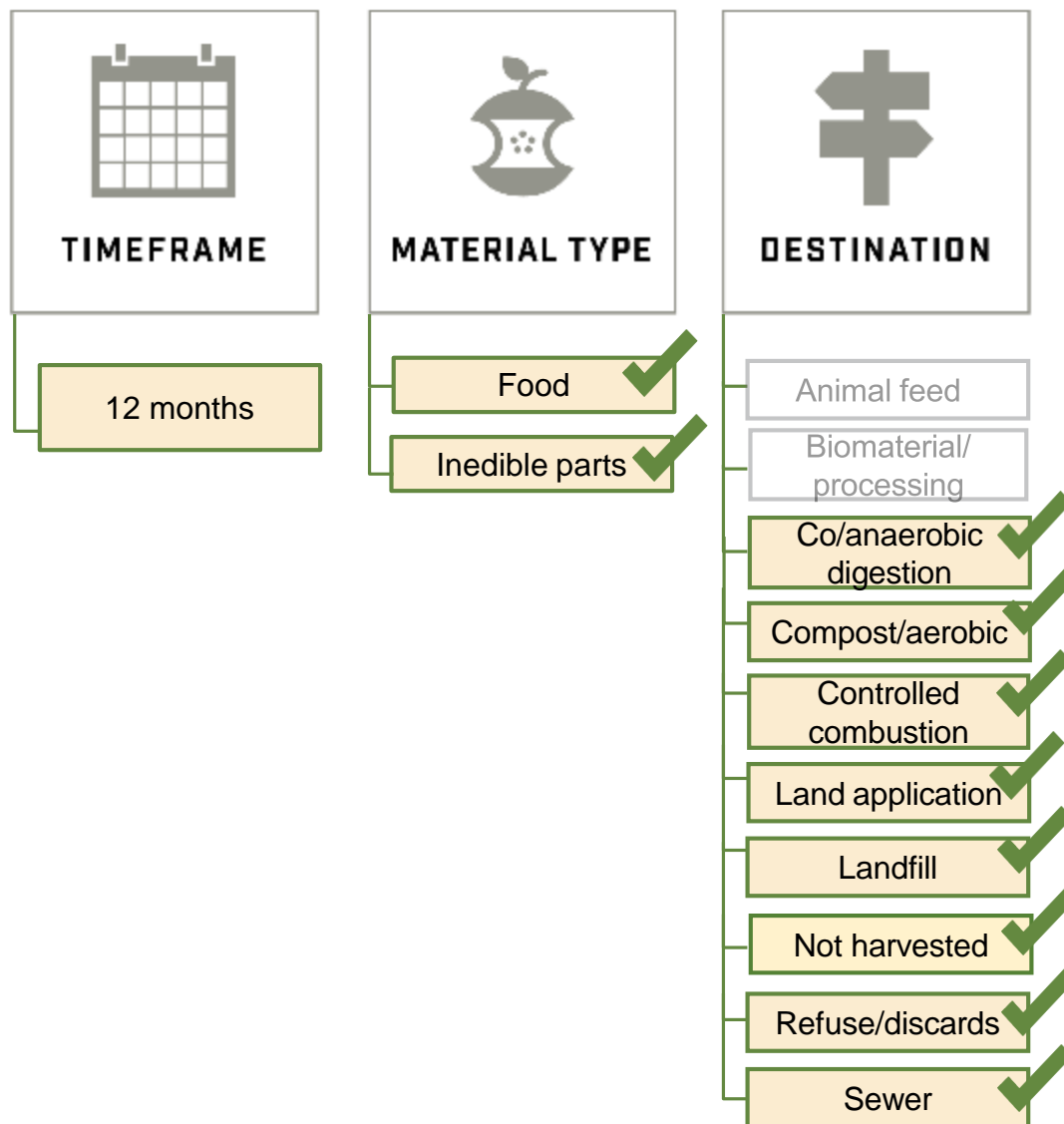
Lack of clarity including what is defined as food waste (i.e., the material types and destinations)

GUIDANCE ON INTERPRETING
SUSTAINABLE DEVELOPMENT GOAL TARGET 12.3

12 RESPONSIBLE
CONSUMPTION
AND PRODUCTION



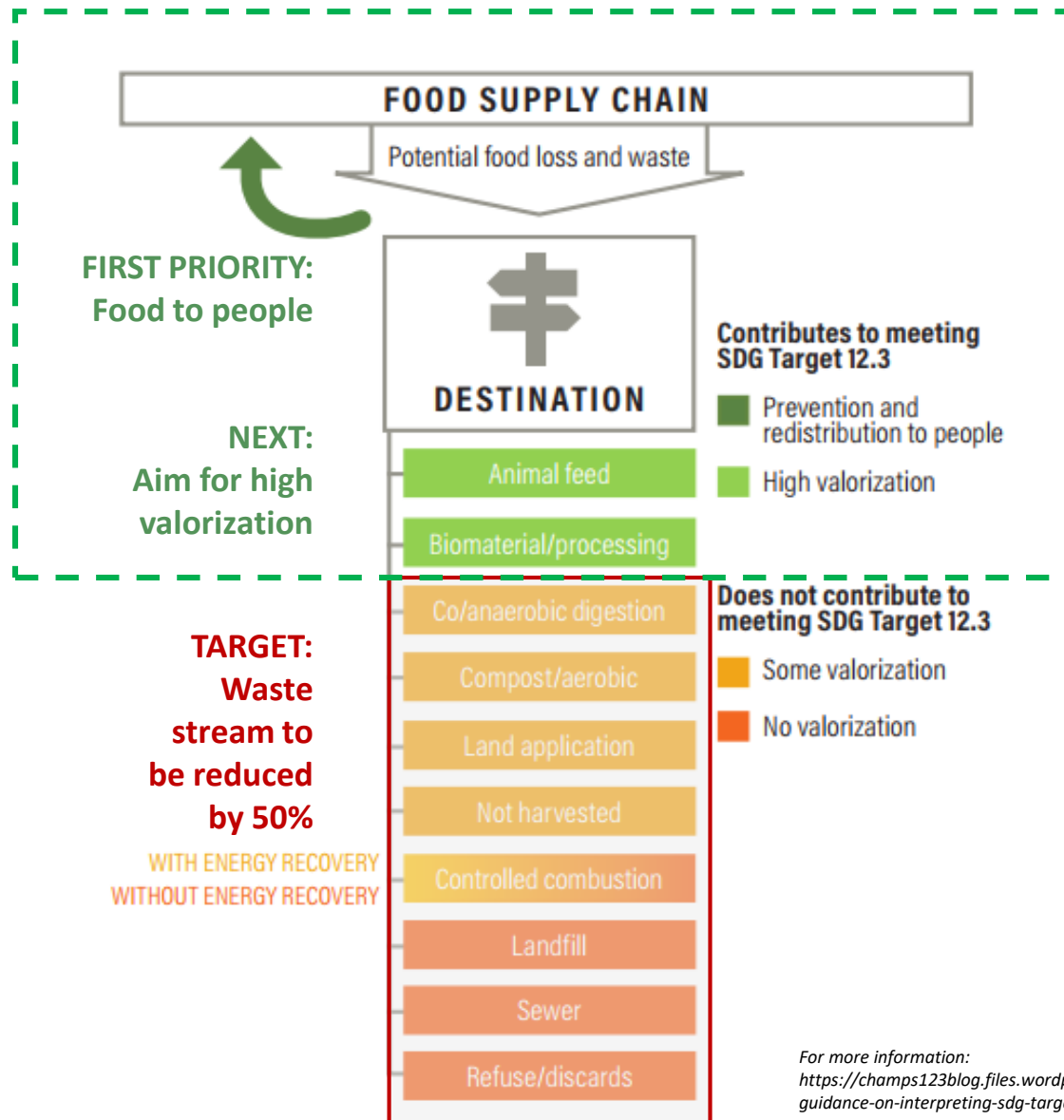
Scope of SDG Target 12.3 Interpretation (Best Practice)



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”

Hierarchy of Destinations for Achieving SDG Target 12.3



Important Note:

- 50 percent reduction target applies to both food and associated inedible parts
- If you can measure and report on food and associated inedible parts separately, you can apply the 50 percent reduction target only to the food portion
- But still take steps to reduce the amount of inedible parts as much as possible

For more information:

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

Other Questions Related to SDG Target 12.3



GUIDANCE ON INTERPRETING
SUSTAINABLE DEVELOPMENT GOAL TARGET 12.3







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”

Other questions:

- **What sectors are covered?** The entire food supply chain. Food manufacturing is encompassed by the term “production” in the target. Hospitality and food service sectors are encompassed by the term “retail”
- **What is the target for food losses?** “Halve per capita” should apply to “food losses” as well, not just to “food waste”
- **What indicator should be used?** To monitor country progress, ideally should cover “food loss and waste per capita” (based on a country’s population), measured in kilograms/person/year

Describe Scope Using the *FLW Standard*

 TIMEFRAME	 MATERIAL TYPE	 DESTINATION	 BOUNDARY	RELATED ISSUES
<div>(insert timeframe)</div>	<div>Food</div> <div>Inedible parts</div>	<div>Animal Feed</div> <div>Biomaterial/ processing</div> <div>Co/anaerobic digestion</div> <div>Compost/aerobic</div> <div>Controlled combustion</div> <div>Land application</div> <div>Landfill</div> <div>Not harvested</div> <div>Refuse/discards</div> <div>Sewer</div>	<div>Food category = (insert text)</div> <div>Lifecycle stage = (insert text)</div> <div>Geography = (insert text)</div> <div>Organization = (insert text)</div>	<div>Pre-harvest losses and the weight of product packaging is excluded from the weight of FLW.</div> <div>(modify and/or insert additional relevant text)</div>



BOUNDARY

Food category
= (insert text)

Lifecycle stage
= (insert text)

Geography
= (insert text)





Organization
= (insert text)

Boundary (Definitions and Examples)

Definition	Examples
The type(s) of food included in reported FLW*	<ul style="list-style-type: none">• All food• Dairy products• Fresh fruits and vegetables• Chicken
The stage(s) in the food supply chain or food lifecycle within which reported FLW occurs	<ul style="list-style-type: none">• Entire food supply chain• Two stages: manufacture of dairy products, and retail of food and beverage• At home
Geographic borders within which reported FLW occurs	<ul style="list-style-type: none">• World (all countries)• Eastern Asia• Ghana• Nova Scotia, Canada• Lima, Peru
Organizational unit(s) within which reported FLW occurs	<ul style="list-style-type: none">• All sectors in country• Entire company• Two business units• All 1,000 stores• 100 households

* "Food category" is not the same as "material type."

Template to Visually Represent Scope Using *FLW Standard*

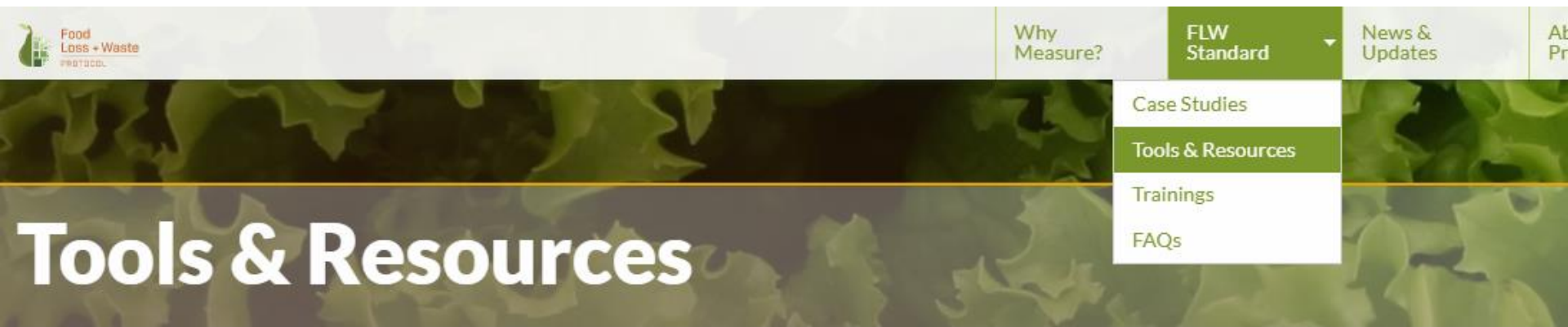
 TIMEFRAME	 MATERIAL TYPE	 DESTINATION	 BOUNDARY	RELATED ISSUES
(insert timeframe)	<div>Food</div> <div>Inedible parts</div>	<div>Animal Feed</div> <div>Biomaterial/ processing</div> <div>Co/anaerobic digestion</div> <div>Compost/aerobic</div> <div>Controlled combustion</div> <div>Land application</div> <div>Landfill</div> <div>Not harvested</div> <div>Refuse/discards</div> <div>Sewer</div>	<div>Food category = (insert text)</div> <div>Lifecycle stage = (insert text)</div> <div>Geography = (insert text)</div> <div>Organization = (insert text)</div>	<div>Pre-harvest losses and the weight of product packaging is excluded from the weight of FLW.</div> <div>(modify and/or insert additional relevant text)</div>

This template should be customized to show your scope

Indicate what material types and destinations are included as the scope – color in the box and add a check mark ✓

Where to Find the Customizable Visual

@ www.FLWProtocol.org



We've created a number of tools and resources to help you use the **FLW Standard**. You can download below the following:

- Guidance on quantification methods
- A summary of the requirements in the FLW Standard
- A sample reporting form
- A customizable visual to summarize the scope of an FLW inventory
- Key terms and definitions used in the FLW Standard

An Easy Way to Find Guidance in the FLW Standard

[Why Measure?](#)[FLW Standard ▾](#)[News & Updates](#)[About the FLW](#)

Download & Explore the FLW Standard

Establish
scope

PART II MAIN REQUIREMENTS

6. ESTABLISHING THE SCOPE OF AN FLW INVENTORY

6.1 Guide to Chapter 6

6.2 Defining the Scope of an FLW Inventory

6.3 Timeframe

6.4 Material Type

6.5 Destination

6.6 Boundary

6.7 Related Issues

6.8 The Influence of Goals

7. DECIDING HOW TO QUANTIFY FLW

7.1 Selecting a Method for Quantifying FLW

7.2 Overview of Quantification Methods

TIP: Hover over each box to see the table of contents; clicking on the Section of interest will take you right to that part of the FLW Standard

When in Doubt, Turn to the Basic Principles of Accounting and Reporting

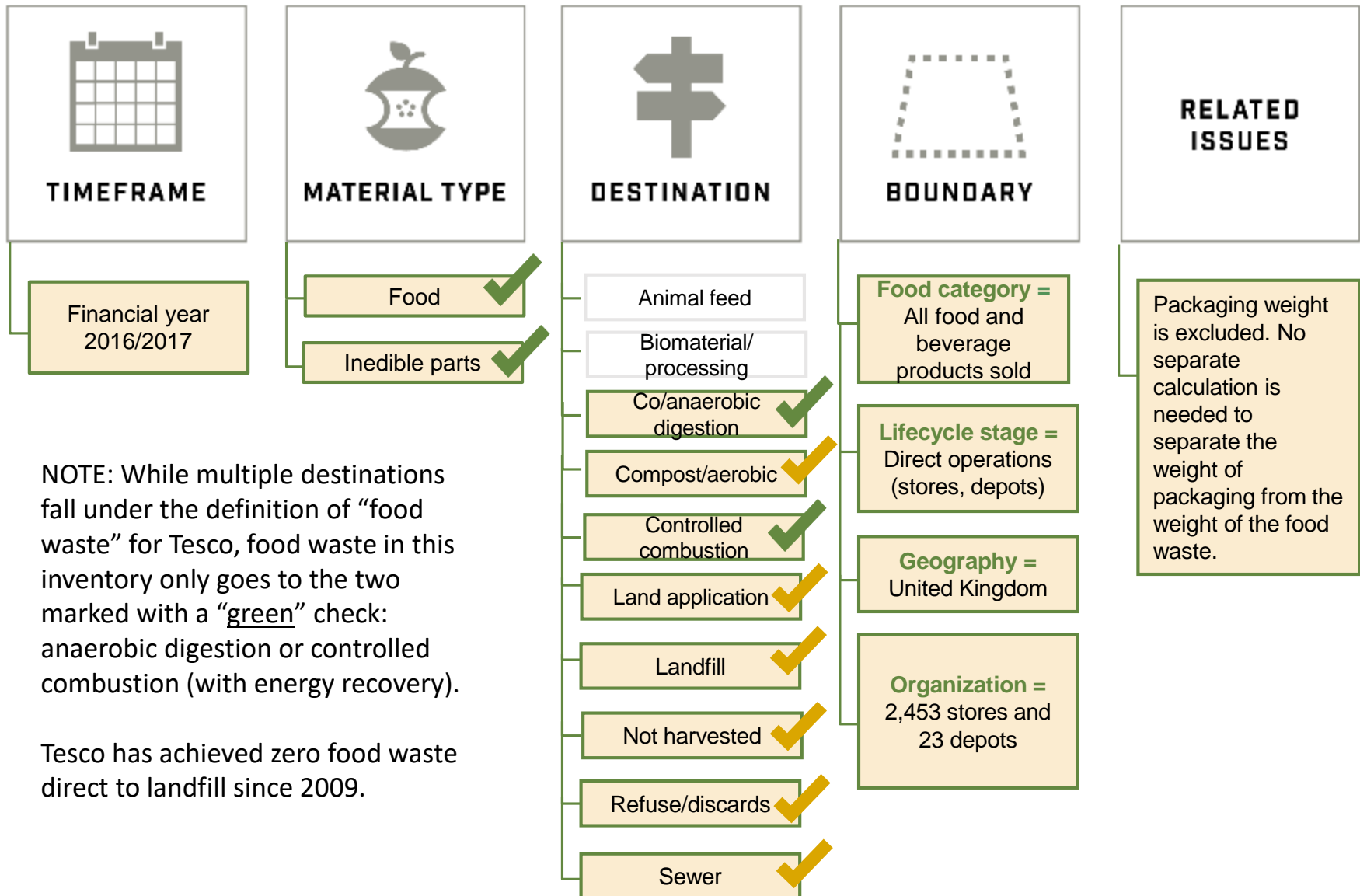
Review
accounting
and reporting
principles

Establish
scope

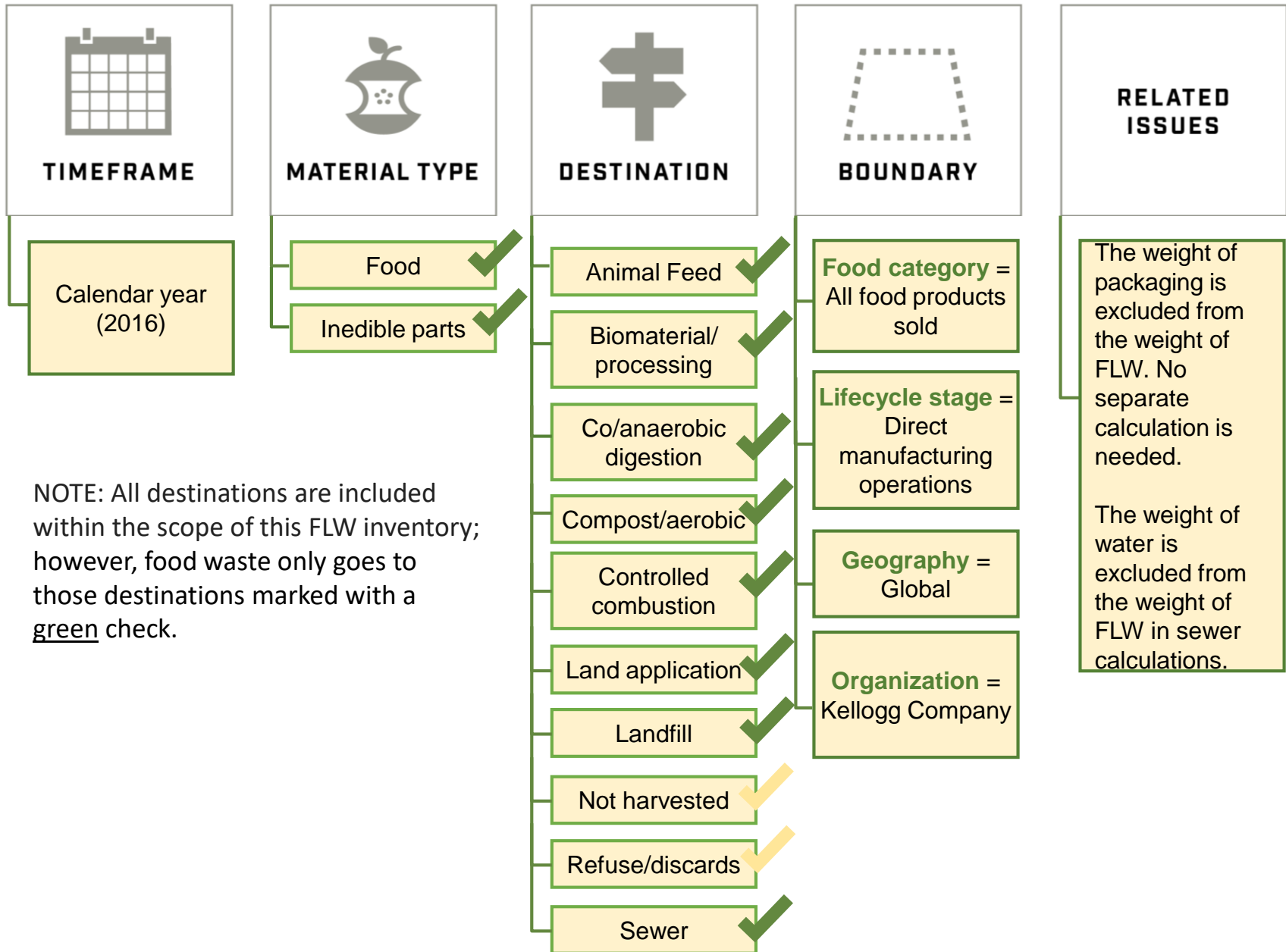
A food loss and waste (FLW) inventory shall be based on five common principles:

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.

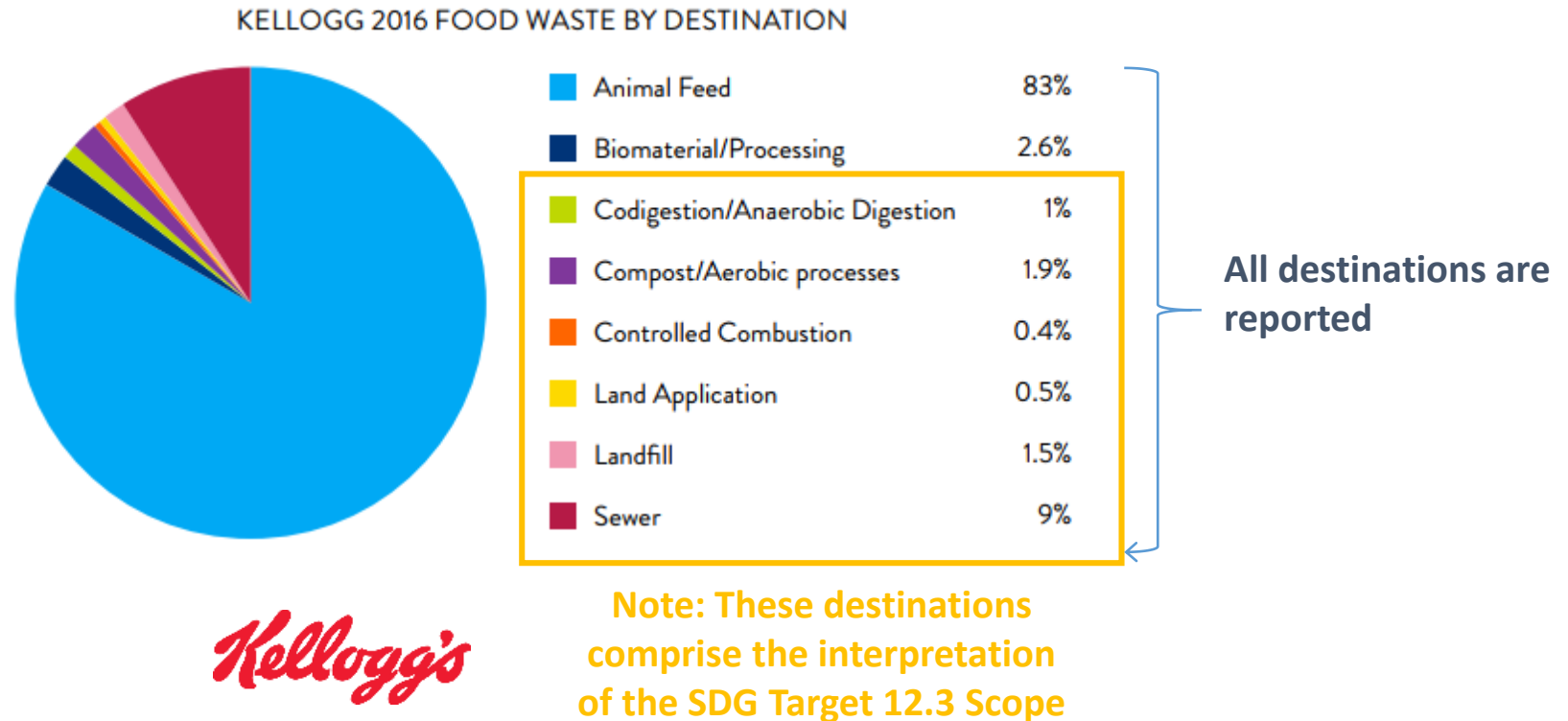
Example 1. Retailer's Scope (Tesco)



Example 2. Manufacturer's Scope (Kellogg Company)



Kellogg's Food Waste by Destination



Source: Kellogg Company 2016/2017 Corporate Responsibility Report

More on the Scope

Material Types - Definition



FOOD: Any substance – whether processes, semi-processed or raw – that is intended for human consumption. It includes drink, and any substance that has been used in the manufacture, preparation, or treatment of food.

“Food” also includes material that has spoiled and is therefore no longer fit for human consumption. It does not include cosmetics, tobacco, or substances used only as drugs. It does not include processing agents used along the food supply chain, for example, water to clean or cook raw materials in factories or at home.

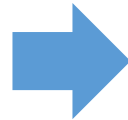
INEDIBLE PARTS: Components associated with a food that, in a particular food supply chain, are not intended to be consumed by humans. Examples of inedible parts associated with food could include bones, rinds, and pits/stones. “Inedible parts” do not include packaging.

What is considered inedible varies among users (e.g., chicken feet are consumed in some food supply chains but not others), changes over time, and is influenced by a range of variables including culture, socio-economic factors, availability, price, technological advances, international trade, and geography.

Caution: The Language We Use Can Get in the Way

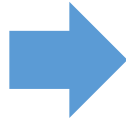


Still food but in a different state!



This is edible = fit for human consumption

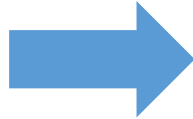
These are both “food” – originally
intended for human consumption



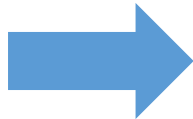
This is no longer edible (not edible) = some might
call it “inedible”

**TIP: It’s confusing to refer to “edible” versus “inedible”
because there are also... inedible parts**

...Inedible Parts (Versus “Inedible” Food)



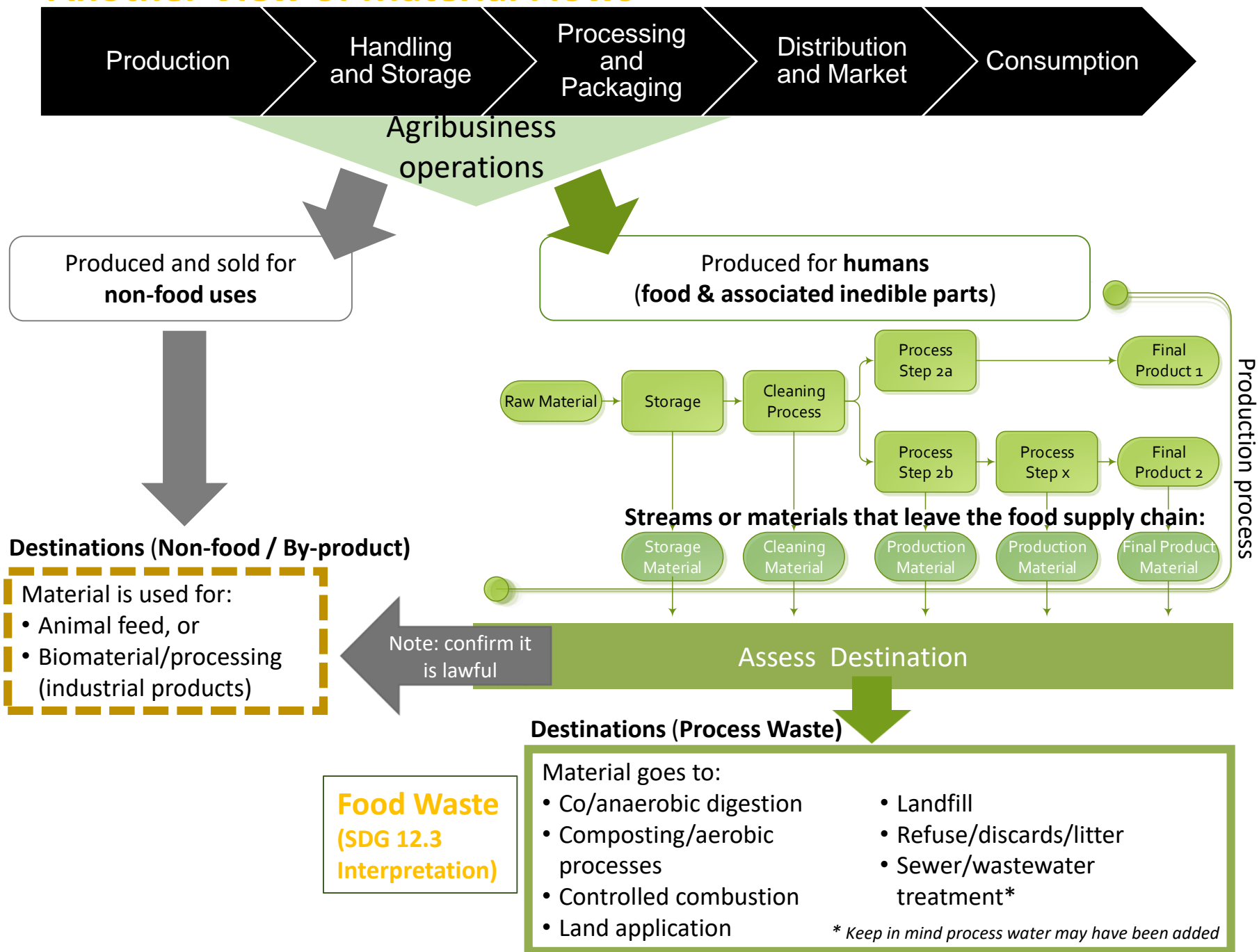
This is (Inedible) **Food** = no longer edible, i.e., not fit for consumption



This is the **Inedible Parts** = bones, rinds, pits/stones not intended for consumption

TIP: Avoid confusion and use “food” and “inedible parts”

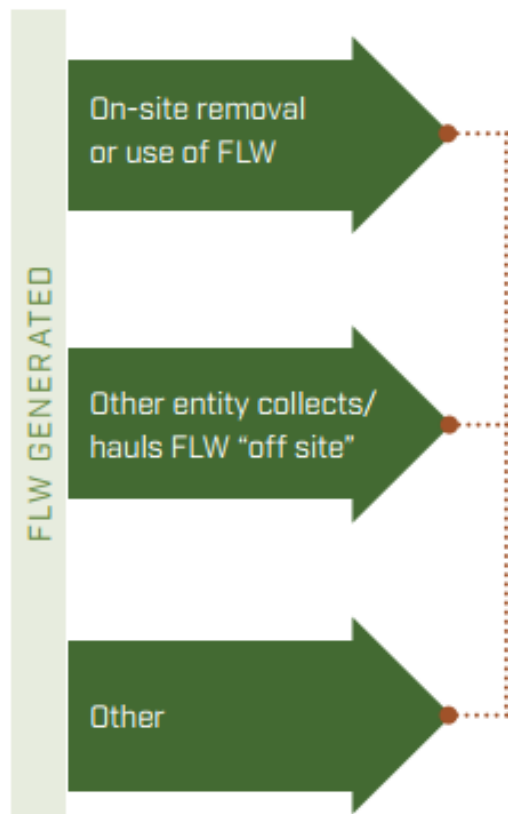
Another View of Material Flows



Some More About Destinations

Figure 6.3 | Paths, Destinations, and Valorization of FLW

If destination is unknown, users shall report:
What is the path?



If destination is known, users shall report:
What is the destination?

Animal feed

Bio-material/processing

Co/anaerobic digestion ● Yes/No

Compost/aerobic ● Yes/No

Controlled combustion ● Yes/No

Land application

Landfill ● Yes/No

Not harvested

Refuse/discards

Sewer ● Yes/No

For certain destinations, users should also report:
Is FLW valorized through recovery of energy, solid material, and/or liquids?

Definition of Animal Feed & Bio-based Materials / Biochemical Processing

Destination	Definition
Animal feed	Diverting material from the food supply chain ^a (directly or after processing) to animals
Bio-based materials/biochemical processing	<p>Converting material into industrial products.</p> <p>Examples include creating fibers for <u>packaging</u> material, creating <u>bioplastics</u> (e.g., polylactic acid), making “<u>traditional</u>” materials such as leather or feathers (e.g., for pillows), and <u>rendering</u> fat, oil, or grease into a raw material to make products such as soaps, biodiesel, or cosmetics.</p> <p>“Biochemical processing” does not refer to anaerobic digestion or production of bioethanol through fermentation</p>

^a Excludes crops intentionally grown for bioenergy, animal feed, seed, or industrial use

Where to Find Key Definitions

@ www.FLWProtocol.org



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- A sample reporting form
- A customizable visual to summarize the scope of an FLW inventory
- Key terms and definitions used in the FLW Standard

Standard.

Why Measure?

FLW Standard ▼

News & Updates

About the FLW Protocol

DEC 13, 2017

10:00 TO 11:00 AM EST

Case Studies

Tools & Resources

Trainings

FAQs

VIDEO TUTORIALS

These short 3- to 5-minute tutorials include:

- > An introduction to why and how the FLW Standard was created
- > How to describe the scope of a food loss and waste inventory
- > An overview of the possible destinations for food loss and waste
- > Ten of the most common food loss and waste quantification methods

FLW Standard Introduction



FAQs

About the FLW Standard

What does the FLW Standard help me do?	+
What's the benefit of using the FLW Standard?	+
Who can use the FLW Standard?	+
Why should I measure food loss and waste?	+
Who is using the FLW Standard?	+

Defining Food Loss and Waste

Does the FLW Standard prescribe a particular definition for "food loss and waste" (FLW)?	+
How does the FLW Standard define "food"? How does it define "inedible parts"?	+
What are the different destinations I can use to describe "loss and waste"?	+
Does the FLW Standard apply to food rescued and secondary markets for food?	+

FLW Standard Accounting and Reporting Requirements


Report FLW inventory

- 1. Base FLW accounting and reporting on the principles of relevance, completeness, consistency, transparency, and accuracy**
- 2. Account for and report the physical amount of FLW expressed as weight**
- 3. Define and report on the scope of the FLW inventory**
 - a. Timeframe
 - b. Material type
 - c. Destination
 - d. Boundary
- 4. Describe the quantification method(s) used.**
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
- 6. Provide a qualitative description and/or quantitative assessment of the uncertainty around FLW inventory results**
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
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

See Examples of Scope in the Case Studies



- ✓ Benefits from using the FLW Standard
- ✓ Challenges faced and overcome in measuring
- ✓ How to summarize an FLW inventory using the FLW Standard
- ✓ Actions being taken to reduce FLW

TESCO'S OPERATIONS IN THE UNITED KINGDOM:
FOOD WASTE IN STORES AND DEPOTS
A Case Study 


KELLOGG COMPANY: FOOD WASTE IN
GLOBAL MANUFACTURING OPERATIONS
A Case Study 

DELHAIZE AMERICA'S OPERATIONS IN
THE UNITED STATES: FOOD WASTE IN STORES
AND DISTRIBUTION CENTERS
A Case Study 

NESTLÉ DAIRY FACTORIES IN PAKISTAN:
LOSSES ACROSS THE VALUE CHAIN
A Case Study 

More in the Pipeline:

Cranswick plc, Danone, Campbell's,
Sobey's, Walmart

FOOD WASTE IN CITIES: NRDC REPORT USING FLW
STANDARD (SEE APPENDIX A AND B) 

Next Steps

- ✓ Sectoral guidance and other tools under development
- ✓ Monthly webinar series to continue February 21st (third Wednesdays)
 - Send us your thoughts on questions and topics to address
- ✓ If you aren't already signed up for the news update, do so at the bottom of any page @ FLWProtocol.org



A sign-up form titled "STAY IN TOUCH AND INFORMED" on a light green background. The form includes fields for First Name, Last Name, Email, Company, Job Title, City, State, and Country, followed by a "Sign Up" button.

STAY IN TOUCH AND INFORMED

Sign up to stay updated on the latest FLW news, case studies, tools, and training events.

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*Email

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Job Title

City

State

*Country

Sign Up

Part 2.

Open Question & Answer



Acknowledgements | Funders of WRI's FLW Initiative



Ministry of Economic Affairs

The Netherlands Ministry of Economic Affairs



Ministry of Foreign Affairs of the
Netherlands

MINISTRY OF FOREIGN AFFAIRS OF DENMARK
DANIDA INTERNATIONAL
DEVELOPMENT COOPERATION



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.

Contact Us With Questions



Food Loss + Waste

PROTOCOL

www.flwprotocol.org

For questions and suggestions, contact:
Kai Robertson (robertson.kai@gmail.com)
Brian Lipinski (blipinski@wri.org)
Craig Hanson (chanson@wri.org)

APPENDIX

DEFINITION: *DESTINATIONS*

Destination	Definition
Animal feed	Diverting material from the food supply chain ^a (directly or after processing) to animals
Bio-based materials/biochemical processing	Converting material into industrial products. Examples include creating fibers for packaging material, creating bioplastics (e.g., polylactic acid), making “traditional” materials such as leather or feathers (e.g., for pillows), and rendering fat, oil, or grease into a raw material to make products such as soaps, biodiesel, or cosmetics. “Biochemical processing” does not refer to anaerobic digestion or production of bioethanol through fermentation
Codigestion/anaerobic digestion	Breaking down material via bacteria in the absence of oxygen. This process generates biogas and nutrient-rich matter. Codigestion refers to the simultaneous anaerobic digestion of FLW and other organic material in one digester. This destination includes fermentation (converting carbohydrates—such as glucose, fructose, and sucrose—via microbes into alcohols in the absence of oxygen to create products such as biofuels)
Composting/aerobic processes	Breaking down material via bacteria in oxygen-rich environments. Composting refers to the production of organic material (via aerobic processes) that can be used as a soil amendment
Controlled combustion	Sending material to a facility that is specifically designed for combustion in a controlled manner, which may include some form of energy recovery (this may also be referred to as incineration)
Land application	Spreading, spraying, injecting, or incorporating organic material onto or below the surface of the land to enhance soil quality
Landfill	Sending material to an area of land or an excavated site that is specifically designed and built to receive wastes
Not harvested/plowed-in	Leaving crops that were ready for harvest in the field or tilling them into the soil
Refuse/discards/litter	Abandoning material on land or disposing of it in the sea. This includes open dumps (i.e., uncovered, unlined), open burn (i.e., not in a controlled facility), the portion of harvested crops eaten by pests, and fish discards (the portion of total catch that is thrown away or slipped)
Sewer/wastewater treatment	Sending material down the sewer (with or without prior treatment), including that which may go to a facility designed to treat wastewater
Other	Sending material to a destination that is different from the 10 listed above. This destination should be described

^a Excludes crops intentionally grown for bioenergy, animal feed, seed, or industrial use

BOUNDARY (Classification sources to use)

Boundary dimension	Classification source to use (select the most current version)	Selected examples with relevant codes
Food category	<ul style="list-style-type: none"> Select one or more categories from either the Codex General Standard for Food Additives (GSFA) system or United Nations Central Production Classification (CPC) system If more detailed information is used, include appropriate codes from more granular sources including: <ul style="list-style-type: none"> Global Product Category (GPC) codes (online, or download an Excel, Word or XML copy) United Nations Standard Products and Services Code (UNSPSC) 	<ul style="list-style-type: none"> All food (GSFA 01.0 –16.0) or (CPC2.1 Divisions 21–24) Dairy products (GSFA 01.0) or (CPC2.1 Group 221 & 222) Fresh fruits and vegetables (GSFA 04.1 & 04.2.1) or (CPC2.1 Group 012 & 013) Chicken (GSFA 08.1.1 [Fresh meat, poultry, and game, whole pieces or cuts]; GPC Brick 10005769) or (CPC2.1 Subclass 21121)
Lifecycle stage	<ul style="list-style-type: none"> Select one or more United Nations International Standard Industrial Classifications of All Economic Activities (ISIC) codes (At the time of publication, the latest version is “Rev.4”) Regional and national classification systems may be used as well, most of which are derived from the ISIC (e.g., NACE for Europe). The UN Statistics Division lists national classification systems If no code exists, write in the lifecycle stage 	<ul style="list-style-type: none"> Entire food supply chain (select relevant group of ISIC codes) Two stages: manufacture of dairy products (ISIC Group: 105) and retail of food and beverage (ISIC Class: 4721) At home (ISIC Class: 9820)
Geography	<ul style="list-style-type: none"> Select one or more UN regions or country codes Write in description for narrower geographic scope. Where available, use a national classification system (e.g., U.S. Census) 	<ul style="list-style-type: none"> World/all countries (UN Code 001) Eastern Asia (UN Code 030) Ghana (UN Code 288) Nova Scotia, Canada Lima, Peru
Organization	<ul style="list-style-type: none"> Write in number and type of unit(s) and any additional descriptive detail 	<ul style="list-style-type: none"> All sectors in country Entire company Two business units All 1,000 stores 100 households

FLW STANDARD ACCOUNTING AND REPORTING REQUIREMENTS

1. Base FLW accounting and reporting on the principles of relevance, completeness, consistency, transparency, and accuracy

2. Account for and report the physical amount of FLW expressed as weight (e.g., pounds, kilograms, tons, metric tons)

3. Define and report on the scope of the FLW inventory

a. *Timeframe*. Report the timeframe for which the inventory results are being reported (including starting and ending date)

b. *Material type*. Account for and report the material type(s) included in the FLW inventory (i.e., food only, inedible parts only, or food and associated inedible parts).

If food or associated inedible parts removed from the food supply chain are accounted for separately in the inventory:

- Describe the sources or frameworks used to categorize a material as food or as inedible parts. This includes stating any assumptions that were used to define whether or not material was “intended” for human consumption
- Describe the approach used to calculate the separate amounts. If applicable, describe all conversion factors used and their sources

c. *Destination*. Account for and report the destinations included in the FLW inventory (i.e., where material removed from the food supply chain is directed). If the destination is unknown, then report the initial path(s) at a minimum.

d. *Boundary*. Report the boundary of the FLW inventory in terms of the food category, lifecycle stage, geography, and organization (including the sources used to classify them).

e. *Related issues*.

Packaging and other non-FLW material. Exclude from an FLW inventory any material (and its weight) that is not food or associated inedible parts removed from the food supply chain (i.e., FLW). If a calculation is needed to separate the weight of FLW from non-FLW materials (e.g., subtracting the weight of packaging), describe the approach and calculation used

Water added/removed from FLW. Account for and report the weight of FLW that reflects the state in which it was generated before water was added, or before the intrinsic water weight of FLW was reduced. If a calculation is made to estimate the original weight of FLW, describe the approach and calculation used

Pre-harvest losses. Exclude pre-harvest losses from the scope of an FLW inventory. Users may quantify such losses but shall keep data separate from the FLW inventory results

4. Describe the quantification method(s) used. If existing studies or data are used, identify the source and scope

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)

6. Provide a qualitative description and/or quantitative assessment of the uncertainty around FLW inventory results

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

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