



# Characterization and Management of Food Waste in North America



Sources, Quantities and Causes



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Sources: Just Eat It, A Food Waste Story, 2014; Tetra Tech, 2014

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Source: Tetra Tech, 2014



FOOD PRODUCTION  
POST-HARVEST



PROCESSING



DISTRIBUTION



RETAIL



FOODSERVICE



# Definitions – Food Loss and Food Waste (FLW)

- **Food loss**

- Any edible and inedible parts of food that are removed from the food supply chain to be recovered, recycled or disposed. Food loss encompasses food waste. *Adapted from FUSIONS 2014*

- **Food waste**

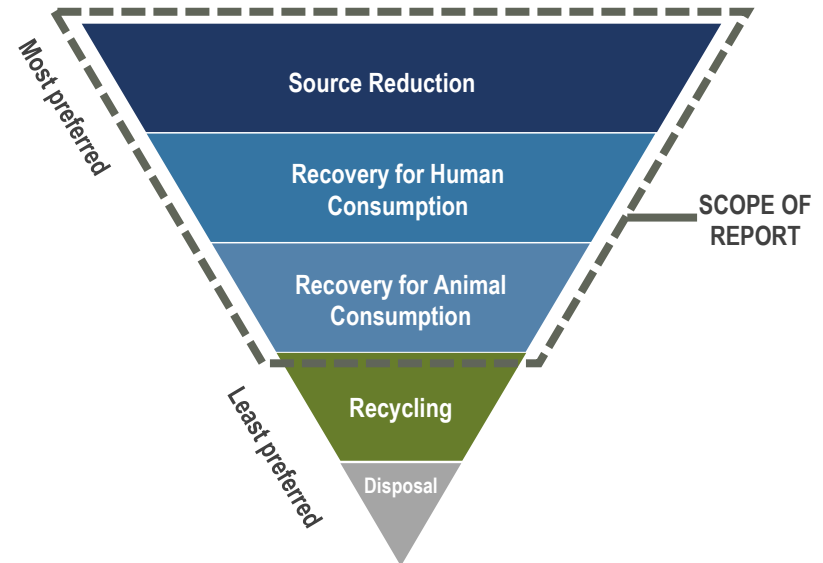
- Losses occurring at retail, food service and consumer stages are termed food waste to factor in behaviour at those stages. *Adapted from Parfitt et al. 2010; Gustavsson 2011 (for FAO)*



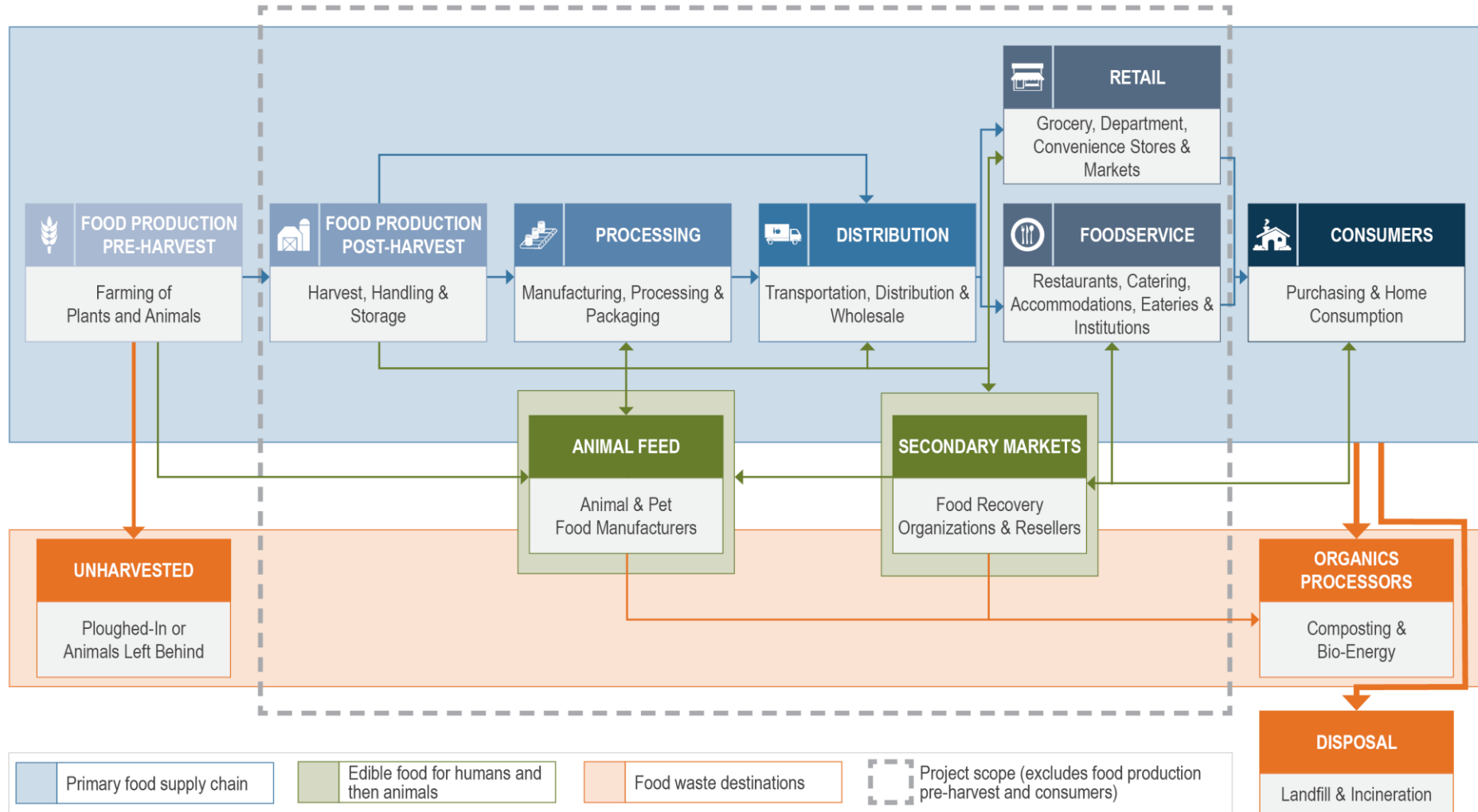
Sources: Tetra Tech, 2016; Alimento para Todos, 2016

# Definitions – Food Recovery Hierarchy

- **Source Reduction** – Actions to minimize surplus food generation and prevent avoidable FLW generation.
- **Recovery for Human Consumption** – Actions to recover safe and nutritious food for human consumption by receiving, storing, or processing food, with or without payment, which would otherwise be discarded or wasted.
- **Recovery for Animal Consumption** – Actions to recover safe and nutritious food for animal feed through receiving, storing, or processing, with or without payment, food, which would otherwise be wasted.
- **Recycling** – Actions to recycle food for non-food-related uses, through processes such as industrial processing for compounds like fats and oils, composting, and anaerobic digestion.
- **Disposal** – Actions to dispose of food through controlled and uncontrolled means, such as landfilling, open dumping, incineration and sewage.



# What Does the Food Supply Chain Comprise?



# Food Supply Chain Stages – Project Scope



## Post-Harvest Food Production

Food handling and storage at farm level, following growing plants or raising animals



## Processing

Transformation of raw food into products suitable for consumption, cooking or storage



## Distribution

Transportation of food products from post-harvest to consumer, including wholesale and brokering throughout food supply chain



## Retail

Sale of food in a consumer-facing store or market



## Foodservice

Food and beverage providers serving meals or snacks within commercial and institutional settings

# Stakeholder Types

- **Industry**
  - Organizations processing, preparing, preserving and distributing food and beverages, and their respective associations
- **Business**
  - Commercial entities that make, buy, or sell food or provide food services in exchange for money
- **Government**
  - Local, regional, state/provincial and federal entities that have responsibilities related to food and food waste
- **Food Recovery Nongovernmental Organizations**
  - Nonprofit or voluntary groups of individuals formed to provide services or advocacy for public policy. Most NGOs referenced in this context work on food recovery to distribute surplus food to food insecure populations

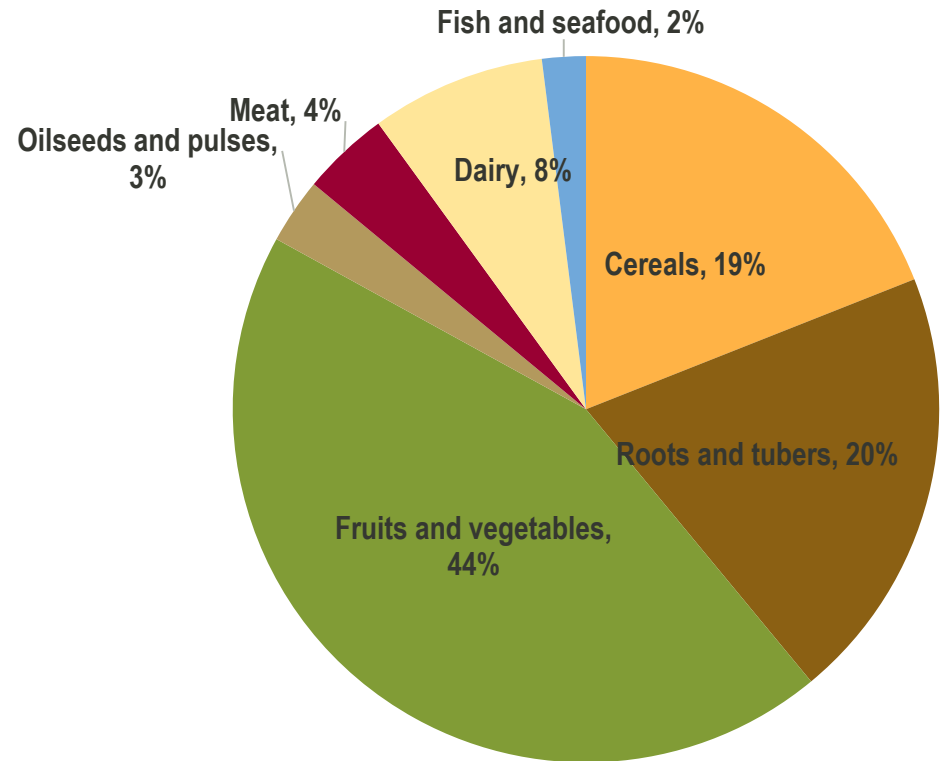
# Global and North American Food Waste Efforts

- Global Highlights
  - Sustainable Development Goal to halve food waste (2015),
  - Think.Eat.Save campaign (2013), SAVE FOOD Initiative (2011)
  - Food Loss and Waste Protocol – FLW Standard (2016)
- Regional
  - North American Climate, Clean Energy and Environment Partnership Action Plan – methane strategies (2016)
  - Community of Latin American and Caribbean States – halve food waste (2015)
  - Commission for Environmental Cooperation – collaboration on voluntary measures (2015)



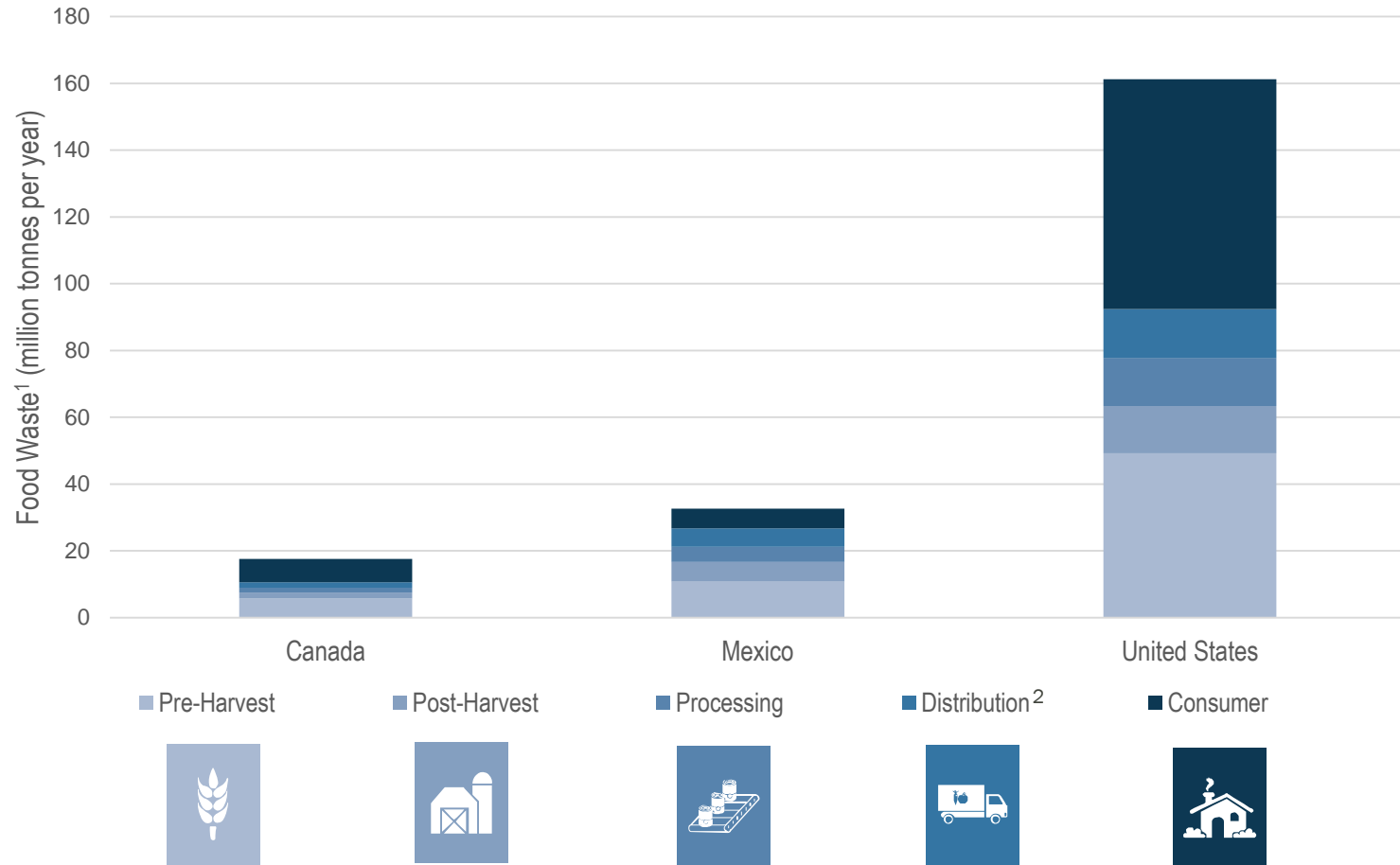
# Global Food Waste by Weight

- **1.3 billion tonnes of food are wasted annually**
  - Approximately one-third of the food produced for human consumption
  - The United Nation's Food and Agriculture Organization (FAO) uses commodity production volumes reported by the country to generate these estimates



Source: Gustavsson et al., 2011 for FAO

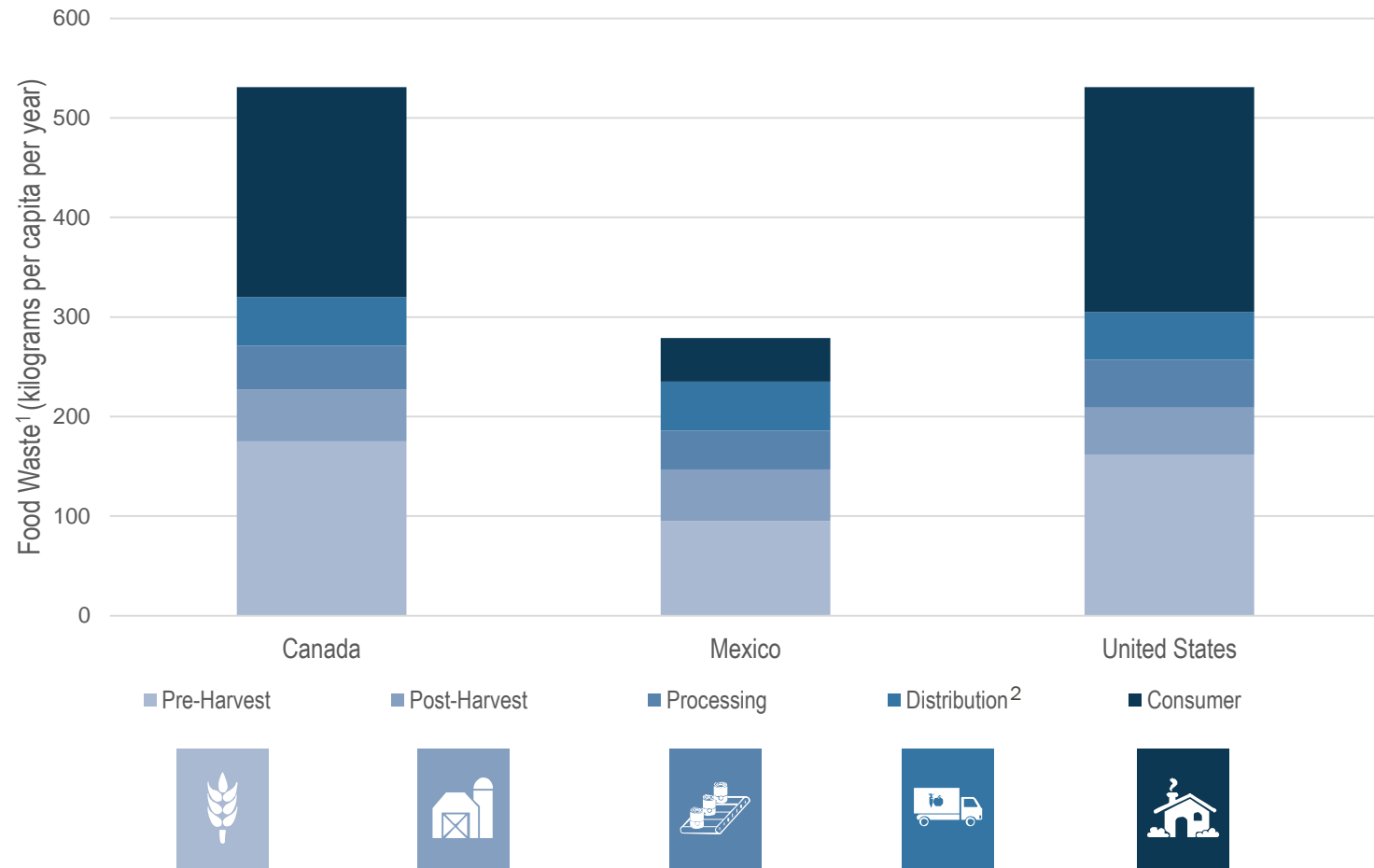
# North American Food Waste By Country



1. Food waste tonnage includes food and inedible parts, based on estimates from FAO Food Balance Sheets

2. FAO data includes the market system in distribution (e.g., retail and foodservice)

# North American Food Waste Per Capita



1. Food waste tonnage includes food and inedible parts, based on estimates from FAO Food Balance Sheets

2. FAO data includes the market system in distribution (e.g., retail and foodservice)

# Food Waste Causes – Overview for North America

Most prevalent food waste causes across the food supply chain<sup>1</sup>:

- Overproduction from processors, wholesalers and retailers
- Damage
- Lack of cold chain infrastructure
- Food grading specifications
- Customer demand
- Market fluctuations



Source: Fairway Market NYC, 2016

1. Causes listed pertain to all three countries with the exception of cold chain management, which is being actively addressed in Mexico



# Food Waste Causes – Post-Harvest Food Production

- Damage
- Order cancellation
- Rigid contract terms
- Variable market prices/high labor costs
- Cosmetic expectations
- Lack of storage infrastructure



Sources: Tetra Tech, 2016; Alimento para Todos, 2016





## Food Waste Causes – Processing

- Trimming for consistency
- Order cancellation
- Customer demand
- Overproduction
- High cost of investment
- Improper labelling
- Misshapen products
- Contamination



Source: ReFED, 2016



# Food Waste Causes – Distribution

- Inadequate packaging
- Damage
- Lack of cold chain infrastructure



Source: Alimento para Todos, 2016



Source: ReFED, 2016



## Food Waste Causes – Retail

- Adverse to change stocking practices or product sizes
- Overstocking
- Misinterpretation of food safety standards
- Customer demands
- “Sell by” date labeling
- Unreliable cold storage
- Modification or cancellation of orders



Source: Medellín Market, 2016



# Causes of Food Waste – Foodservice

- Poor food preparation and training techniques
- Overfilling dishes
- Large plates and trays
- Difficulty assessing demand
- Variety in menu options
- Fixed price buffets
- Hygiene rules
- Lack of cold storage



Sources: Feeding the 5000, 2016





Thank you  
Questions?



Source: Tetra Tech, 2015