

Food Wastage: The New Nutrition Frontier



Carmen Byker Shanks PhD, RDN
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Food + Health Lab @ MSU



***Carmen Byker Shanks, PhD,
RDN***



- Nutrient loss due to food waste in preschools, schools, university, and community settings
- Household surveys
- Effects of compost on food taste and plant performance
- Creation of curriculum



Overview

- Defining food loss and food waste, food wastage
- Food wastage by the numbers
- Causes of food wastage
- Consequences of food wastage on food security and nutrition
- Food wastage in research, policy, and practice

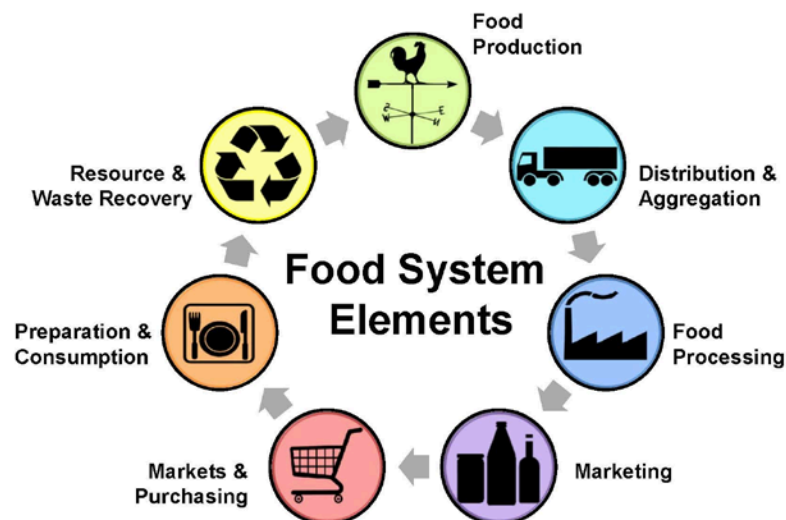


Food loss and food waste refer to the decrease of food in subsequent stages of the food supply chain intended for human consumption.

A circular inset image showing a black trash bag filled with food waste and litter. Visible items include a salad bowl, a green cup, a blue can, a white fork, a brown paper bag, a blue crumpled napkin, and various food containers and wrappers.

Where does food wastage occur?

Food loss and food waste occurs across the food system

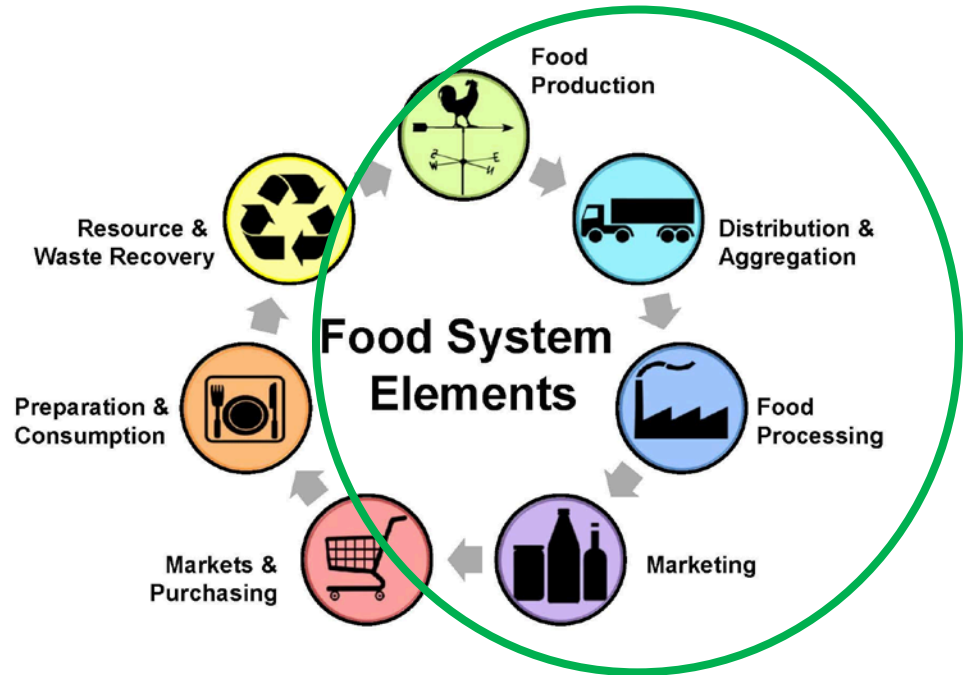


Adapted by Christy Shi, Center for Environmental Farming Systems.

From: Wilkins, J. and Eames-Sheavly, M. Discovering the Food System: An experiential learning program for young and inquiring minds. Cornell University, Departments of Nutritional Science and Horticulture. <http://www.discoverfoodsys.cornell.edu/>

Food Loss

- Poor infrastructure and logistics
- Lack of technology
- Insufficient skills, knowledge, and management capacity
- Lack of access to markets
- Processing capability or failure
- Fluctuating immigration laws
- Policies



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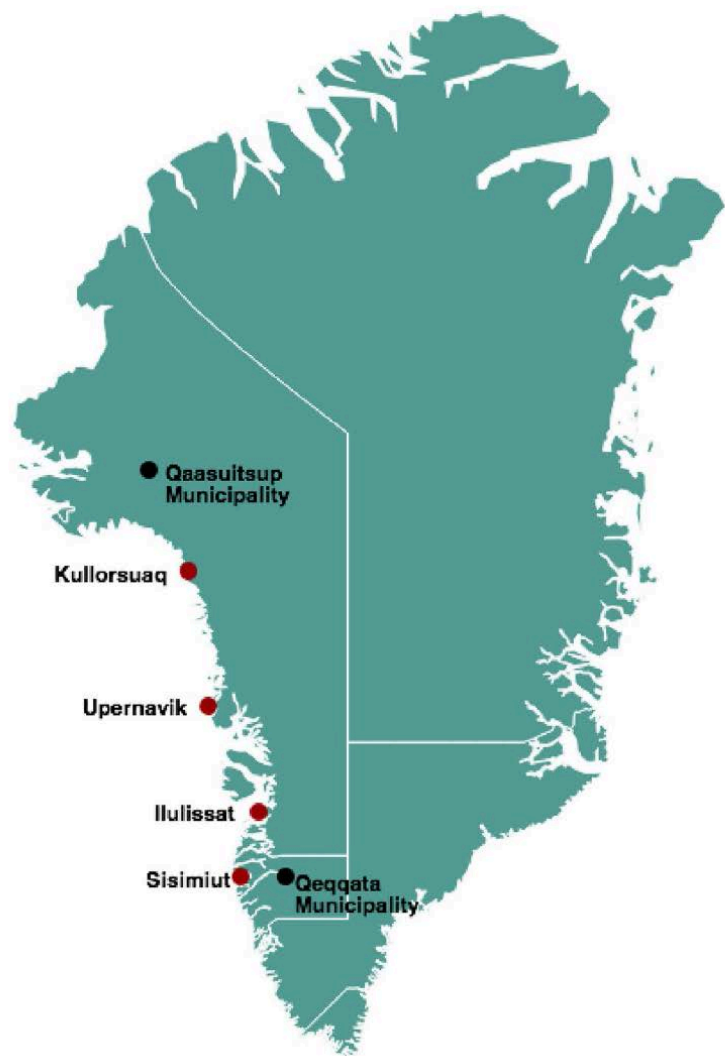
Case Study: Markets for Orange Fleshed Sweet Potatoes in Mozambique



Jenkins M, Byker Shanks C, Houghtaling B. Orange-fleshed sweet potato: Successes and remaining challenges of the introduction of a nutritionally superior staple crop in Mozambique. *Food and Nutrition Bulletin*. 2015;36(3):327-53.

Jenkins M, Byker Shanks C, Brouwer R, Houghtaling B. Factors affecting farmer willingness and ability to adopt and retain improved varieties of orange-fleshed sweet potato in Mozambique: A qualitative approach. *Food Security*. Under Review

Case Study: Storage and Spoilage in Greenland

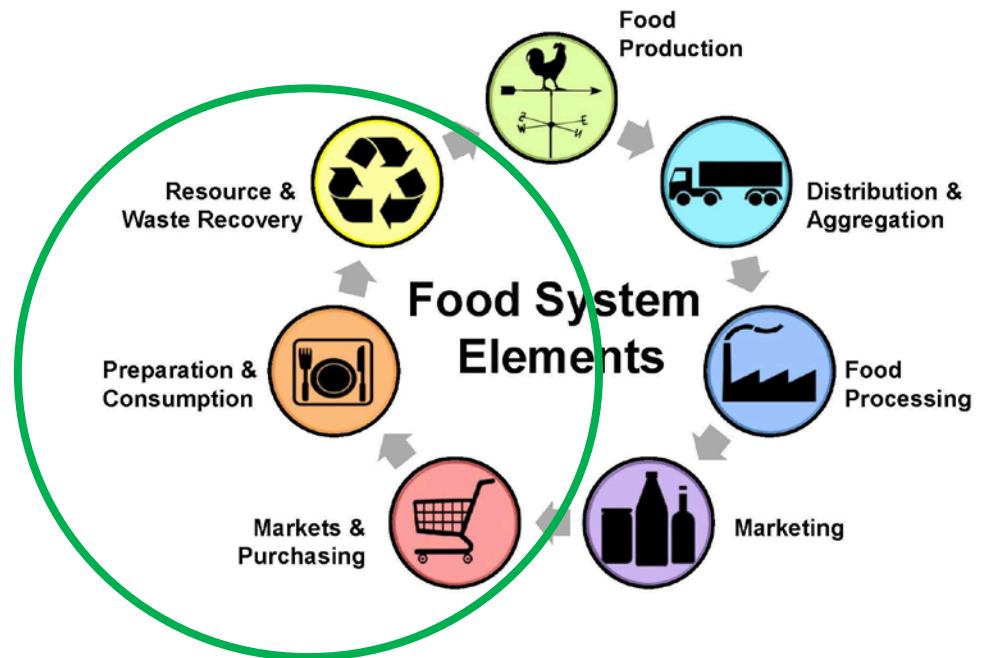


Watson ZA, Byker Shanks C, Miles MP, Rink E. The grocery store food environment in northern Greenland and its implications for the health of reproductive age women. *Journal of Community Health*. 2017.

Fig. 1 Map of Greenland including each location where food store environment measures were conducted

Food Waste

- Standards for shape and color
- Temperature and storage
- Overstocked shelves
- Overabundance of food
- Lack of markets for repurposing food
- Food labeling
- Food preference
- Portion size
- Household food management
- Policies



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Case Study: Smarter Lunchrooms



Byker C, Bark K, Stenberg M, Benke C.
Funded by Cornell BEN Center. *Building Long-Term Strategies for Student Involvement in Smarter Lunchroom Design*. 2015-2017.

Case Study: Transitioning Food Practices in Morocco



Byker C and Rural Health and Nutrition Students. Food and Nutrition Assessment of Zawiya Ahansal, Morocco.

<https://atlasculturalfoundation.org>. 2014.

Food Waste By the Numbers

30% to 40%
of all food is
wasted in the
United States

<https://www.usda.gov/oce/foodwaste/faqs.htm>

About 33% of
all food is
wasted world
wide

<http://www.fao.org/save-food/resources/keyfindings/en/>

How much do you think you throw out compared to the average American?+

- More
- The same
- Less
- *Unsure*

+Neff RA, Spiker ML, Truant PL. Wasted food: US consumers' reported awareness, attitudes, and behaviors. PloS one. 2015 10;10(6):e0127881.



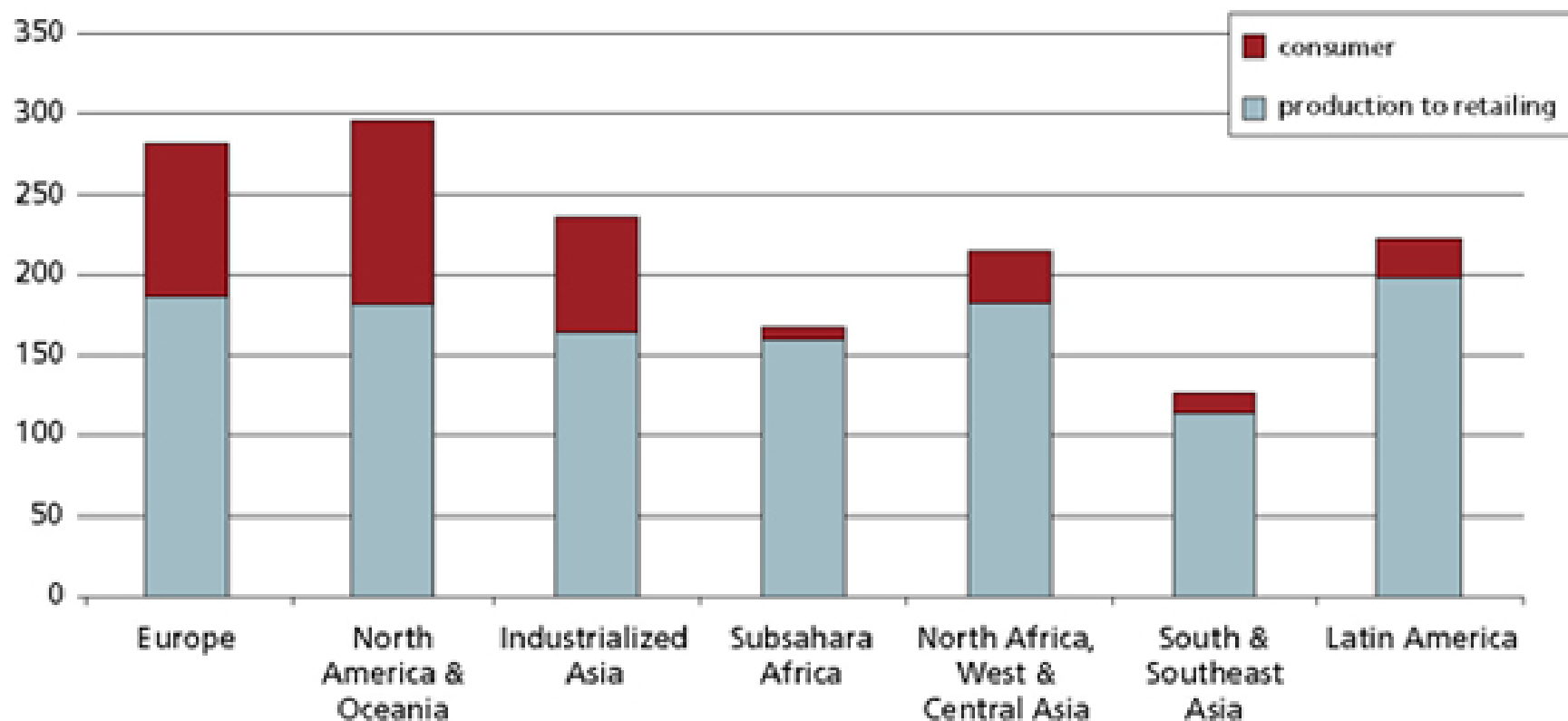
Case Study: Household Surveys

How much do you think you throw out compared to the average American?

Responses	% Montana (n = 329)	% National (n=1,010)+
More	6	3
The Same	20	24
Less	71	73
Unsure	3	--

Food Waste by Region

Per capita food losses and waste (kg/year)



Wasted Food, Wasted Nutrients

“Food wasted at the retail and consumer levels of the US food supply in 2012 contained 1,217 kcal, 33 g protein, 5.9 g dietary fiber, 1.7 μ g vitamin D, 286 mg calcium, and 880 mg potassium per capita per day.”

Spiker et al., 2017

[http://jandonline.org/article/S2212-2672\(17\)30325-8/fulltext](http://jandonline.org/article/S2212-2672(17)30325-8/fulltext)



Food Waste by Food Group



Case Study:

Food Distribution Program on Indian Reservations



Byker Shanks C, Smith T, Ahmed S, Hunts H.
Assessing foods offered in the Food Distribution
Program on Indian Reservations (FDPIR) using the
Healthy Eating Index 2010. *Public Health Nutrition*.
2016;19(7):1315-26.

Wasted Food, Wasted Nutrient, Reduced Food Security



FAO Hunger Map 2015

Millennium Development Goal 1 and World Food Summit Hunger Targets

Produced by the FAO Statistics Division
 For additional information:
<http://www.fao.org/economics>

- 1 About 793 million people in the world still lack sufficient food for conducting an active and healthy life.
- 2 Yet progress has been made, even in the presence of significant population growth. Approximately 218 million fewer people suffer from undernourishment than 25 years ago and 169 million fewer than a decade ago.
- 3 The year 2015 marks the end of the monitoring period for the Millennium Development Goal targets. Seventy-three out of 129 developing countries – more than half the countries monitored – have reached the MDG 1C hunger target of halving the proportion of the chronically undernourished.
- 4 In developing regions the target was almost achieved, with the share of undernourished having decreased during the monitoring period from 23.3 to 12.9 percent.
- 5 Some regions, such as Latin America, the east and southeastern regions of Asia, the Caucasus and Central Asia, and the northern and western regions of Africa, have made fast progress. Progress was also recorded in southern Asia, Oceania, the Caribbean and southern and eastern Africa, but at too slow a pace to reach the MDG 1C target.
- 6 In many countries that have failed to reach the international hunger targets, natural and human-induced disasters or political instability have resulted in protracted crises, with increased vulnerability and food insecurity among large segments of the population.

ACHIEVEMENT OF THE MILLENNIUM DEVELOPMENT GOAL HUNGER TARGET FROM 1990-92 TO 2014-16

SOURCES
 Undernourishment data: FAO Statistics Division (SSV)
 Political boundaries: FAO Global Administrative Unit System (GAU2)
 Global relief: ETOPO1 National Geophysical Data Center (NGM)
 Island water bodies: FAO Land and Water Division (DLW)

GOALS

Millennium Development Goal 1, target 1C: halve, between 1990-92 and 2015, the proportion of people suffering from undernourishment, or reduce this proportion below 5 percent.
 The indicator measures the proportion of the population below the minimum level of dietary energy consumption (undernourishment). The assessment is not conducted for developed regions.

Prevalence of undernourishment: measures the probability that a randomly selected individual in the population is consuming an amount of dietary energy which is insufficient to cover health requirements to lead an active and healthy life.

World Food Summit (WFS) goal: halve, between 1990-92 and 2015, the number of people undernourished.

The designations employed and the presentation of the material in the maps do not imply the expression of any opinion whatsoever on the part of FAO concerning the legal or constitutional status of any country, territory or sea area, or concerning the delineation of frontiers.

PREVALENCE OF UNDERNOURISHMENT IN THE POPULATION (PERCENT) IN 2014-16

- LEGEND**
- <2% Very low
 - 2%–<4.9% Moderately low
 - 5%–<9.9% Moderately high
 - 10%–<14.9% High
 - 15%–<19.9% Very high
 - 20% and over Very high
 - Missing or insufficient data

LEGEND

- Target 1C achieved
- Target 1C not achieved, with slow progress
- Target 1C not achieved, with lack of progress or no assessment
- Missing or insufficient data
- Not assessed

NOTES

The latest global undernourishment estimates published in SSVI 2015 have been slightly revised due to a change in the underlying data of two countries. In particular:

1. New information on agricultural production in Senegal, provided by the Agence Nationale de Statistique et de la Démographie, has led to a revision of the national per capita availability of calories. Based on the updated data, new estimates of the Prevalence of Undernourishment and Number of Undernourished people for the periods from 2010-12 to 2014-16 were calculated.

2. Estimates on food losses at the retail level for Oman were modified, leading to a minor revision

of the national per capita availability of calories. Based on the updated data, new estimates of the Prevalence of Undernourishment and the Number of Undernourished people were obtained for Oman.

As a result of these revisions, estimates for the relevant regional and global aggregates, as well as special country groups, have also been updated.

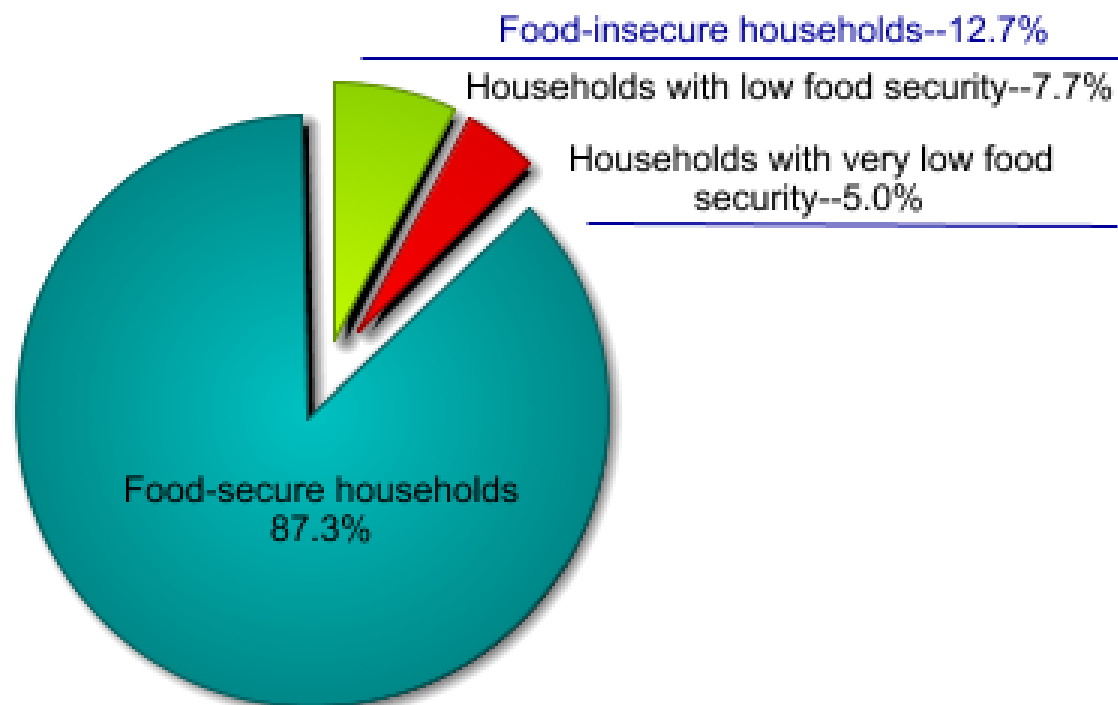
These revisions do not change the overall assessment of the state of global food insecurity described in SSVI 2015.

ACHIEVEMENT OF THE WORLD FOOD SUMMIT TARGET FROM 1990-92 TO 2014-16

- LEGEND**
- Target achieved
 - Target not achieved, with slow progress
 - Target not achieved, with lack of progress or no assessment
 - Missing or insufficient data
 - Not assessed

Wasted Food, Wasted Nutrient, Reduced Food Security

U.S. households by food security status, 2015



Source: Calculated by ERS, USDA, using data from the December 2015 Current Population Survey Food Security Supplement.

Case Study: Ample Harvest



Stop Wasting Food

Ending Hunger by Donating Excess Garden Produce

Summary Report

Report Authors: Selena Ahmed & Carmen Byker Shanks,
Montana State University Food and Health Lab

Data Analyst: Christopher Reberger,
Global Economics and Research Practice Cisco Consulting Services

AmpleHarvest.org Founder: Gary Oppenheimer, *Survey Design*



Food Wastage: The New Nutrition Frontier

The generation of food waste is everyone's problem and calls for every individual in the food system to contribute to a solution.



Food Waste Policy

Let's talk
trash.



<http://www.choosemyplate.gov/lets-talk-trash>

USDA and EPA:

Reduce food waste by 50% by 2030

<https://www.epa.gov/sustainable-management-food/united-states-2030-food-loss-and-waste-reduction-goal>



Food Wastage Policy



Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture

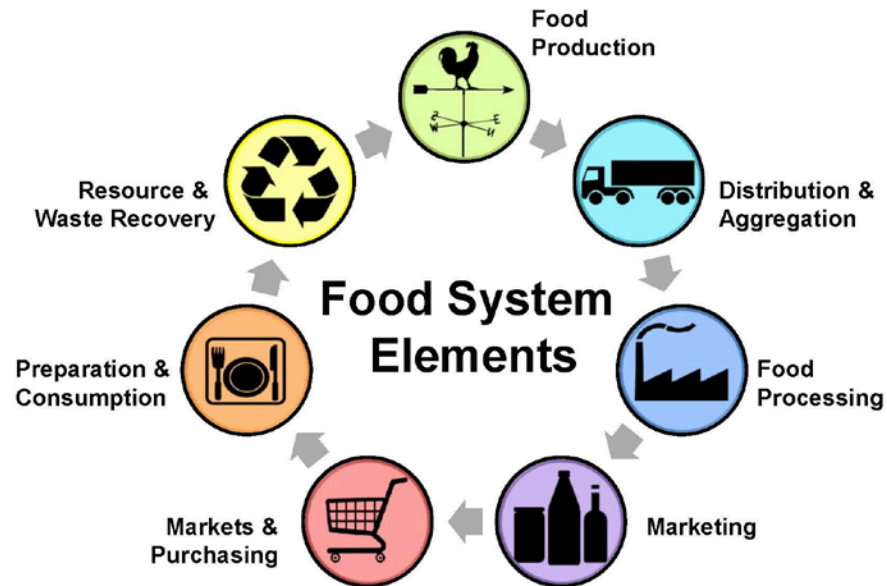
Goal 12: Ensure sustainable consumption and production patterns
Objective: Halve per capita global food waste at the retail and consumer level, and reduce food losses along production and supply chains by 2030

<https://www.eu-fusions.org/index.php/14-news/242-the-un-sustainable-development-goals-set-food-waste-reduction-target>



The New Nutrition Frontier: Food Wastage in Practice

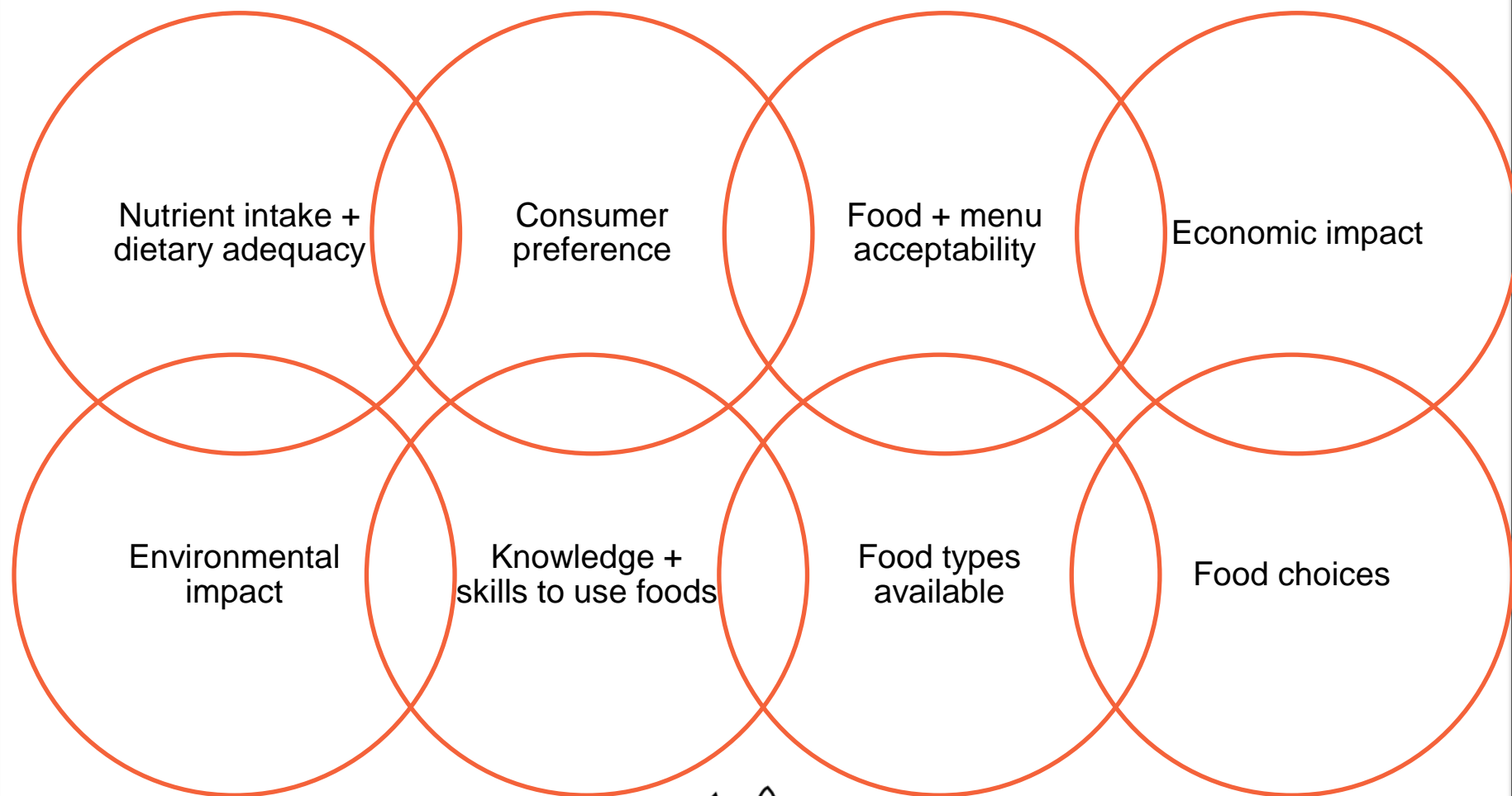
- o Reduce
- o Recover
- o Redistribute
- o Recycle



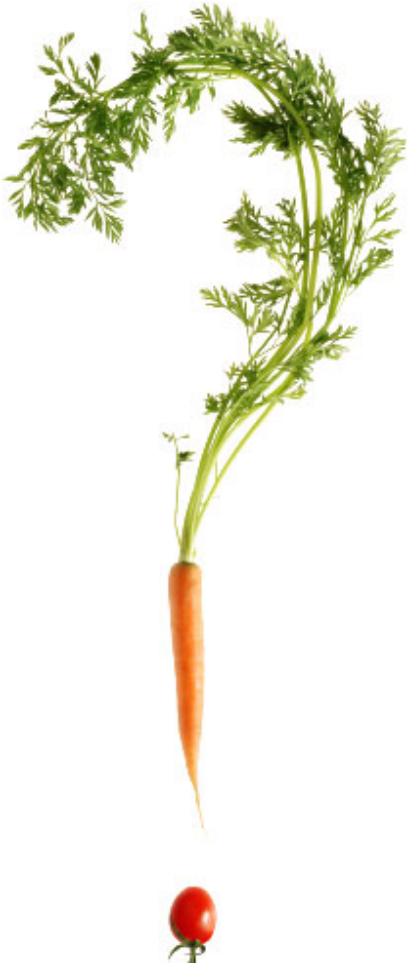
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The New Nutrition Frontier: Food Wastage Measurement in Nutrition Education and Behavior Research



Food Waste: The New Nutrition Frontier



- What is an acceptable amount of food waste?
- How can food waste be minimized across each food system?
- How do we educate actors across the supply chain what food waste is?
- How do we shift food practices that create food waste?
- How do we change retailer expectations about consumer expectations?
- What is the best strategy to measure food waste?

Let's Collaborate



E-mail **cbykershanks@montana.edu**

Phone **406 994 1952**

Website **montana.edu/foodandhealthlab**

Instagram **@msufoodandhealthlab**

