Food Loss + Waste PROTOCOL

WEBINAR

Two New Food Loss and Waste Tools to Know

October 18, 2018

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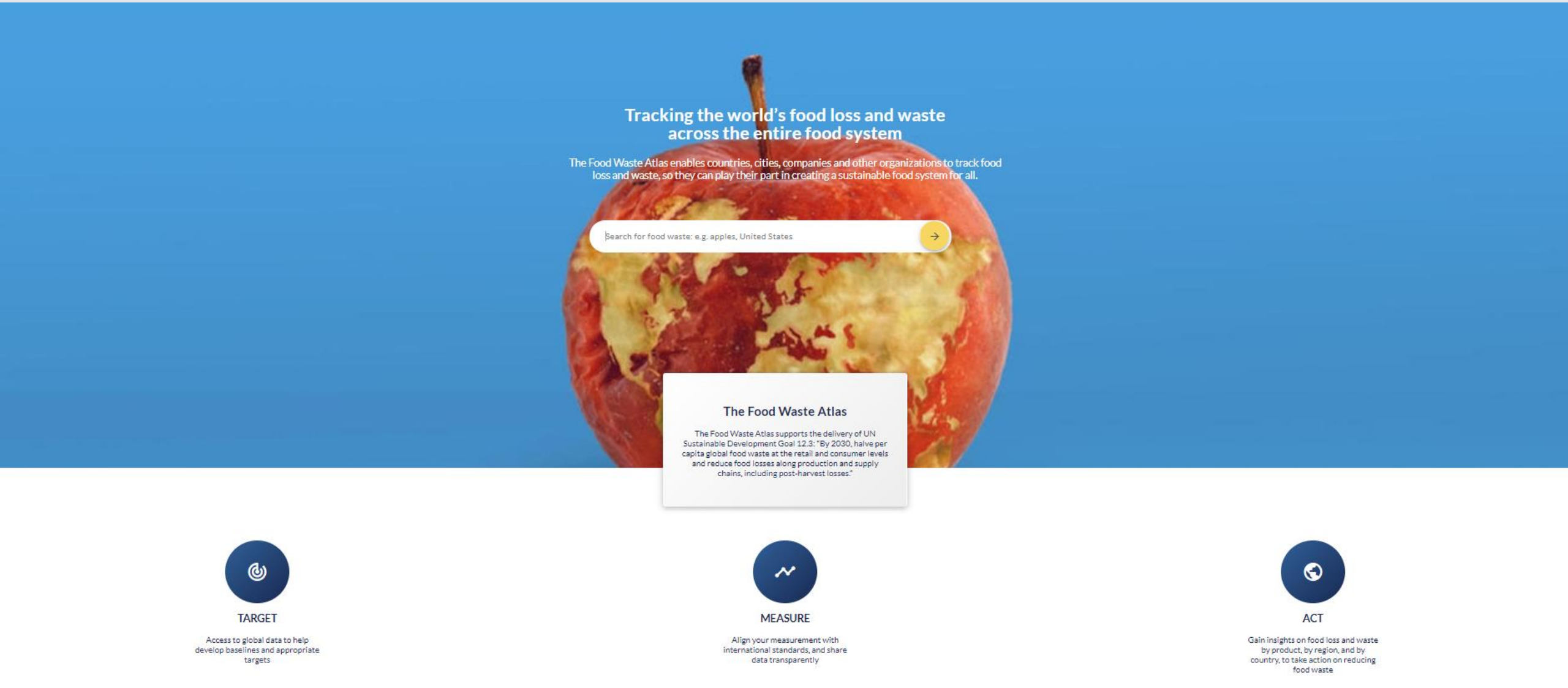
Focus of the Webinar

PART 1. **The Food Waste Atlas (thefoodwasteatlas.org)**
Developed by World Resources Institute and WRAP, is the world's first global repository of food loss and waste data. It enables governments, companies, and researchers around the globe to find and report data on food loss and waste across the entire food supply chain, allowing you to search by food type, country, and stage in the supply chain.

PART 2. **The Food Loss and Waste Value Calculator (http://flwprotocol.org/why-measure/)**
Created by Quantis as part of WBCSD's FReSH program (with input from WRI), gives you a snapshot of the environmental and nutritional impacts associated with the loss and waste of different types of food. This insight can help you prioritize different food loss and waste streams.

The Food Waste Atlas - The world's first free online tool bringing global food loss and waste data together



Drivers

SDG 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

The Food Waste Atlas - The Vision

To provide one universal space for Food Loss and Waste (FLW) reporting

To provide a free global repository for FLW data allowing users to search for and submit FLW data.

To promote a single standard for measuring and reporting on FLW data

To ultimately help businesses, governments, academia, and individuals to gain better understanding on FLW levels and help them to tackle the problem

Target Users

Private Sector

Farmers

Retailers

Manufacturers

Hospitality and Food Service

Public Sector

Academia

Governments

NGOs

Development Team

- **Idea Developed with: UN Environment, FAO, WBCSD, CGF and EU-Refresh**
- **Project Team: WRAP Global, WRI and PredictX**
- **Funded by: WRAP, WRI and the Walmart Foundation**

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Food Loss and Waste

To support the UN Sustainable Development Goals.

The success of SDG 12.3 will be measured by food waste and loss indices.

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

Food loss and waste amounts to economic losses of $940 billion worldwide per year. If it were a country, food loss and waste would be the third largest emitter of greenhouse gas after China and the United States.

Reducing this food loss and waste is a triple win

It saves money for farmers, companies, and households; it makes more food available to those in need; and reduces both greenhouse gas emissions and the pressure on climate, water, and land resources.

The Food Waste Atlas allows governments, companies and countries to understand how much, where, and why food loss and waste is occurring so they can measure and manage it, playing their part in creating a more sustainable food system.

The Food Loss and Waste Accounting and Reporting Standard

The Food Waste Atlas adheres to the global Food Loss and Waste Accounting and Reporting Standard (known as the FLW Standard). Developed by the Food Loss and Waste Protocol, a multi-stakeholder partnership including WRAP and WRI, the Standard enables 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, facilitating efforts to reduce it.

The FLW Standard is used in several significant initiatives focused on measuring and reducing food loss and waste. These include The Consumer Good Forum's Food Waste Resolution, US Food Loss and Waste 2030 Champions, and EU-FUSIONS Quantification Manual.

The Food Waste Atlas is brought to you by

wrap

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Funders

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Walmart Foundation

Supporters

UN environment

wbcsd

- What is the Food Waste Atlas?
- Who is the Food Waste Atlas for?
- What does the Food Waste Atlas help me to do?
- What are the benefits of using the Food Waste Atlas?
- How can the Food Waste Atlas help me develop an FLW inventory?

www.thefoodwasteatlas.org

Future Developments

- Import of data from additional sources
- Automated feed of data from approved sources
- Data quality grading
- Simple and advanced benchmarking and analytics
- Ability to generate sector/national estimates based on available data (i.e. ability to scale-up, subject to certain criteria being met)
- Internationalisation (additional languages, currencies etc.)
- Mobile Optimization

Food Reform for Sustainability & Health

Food Loss and Waste Value Calculator
Beta Release

Alexi Ernstoff
Kai Robertson

October 18, 2018

Supplement to the *FLW Accounting and Reporting Standard*

www.FLWProtocol.org

Quickly estimate the value of food loss and waste in terms of nutritional and environmental impacts.

The FLW Value Calculator (in beta test version) creates a snapshot of the impacts related to the loss and waste of different types of food. With this knowledge you can demonstrate how your efforts to prevent food loss and waste provide nutritional and environmental value.

Created by Quantis as part of WBCSD's FReSH program and with input from World Resources Institute

Guidance and Tools for Using the FLW Standard Online

Hover over each box to see the table of contents

Clicking on the section of interest will take you directly to that part of the FLW Standard

Hover over each box to see the table of contents

Clicking on the section of interest will take you directly to that part of the FLW Standard

Food Loss and Waste
Value Calculator

Why it exists
Who is involved

How it works

What you can do

- Program through WBCSD
- Science-based
- Food loss and waste is a major work stream
- Work stream members are shown to the right

https://www.wbcsd.org/Programs/Food-Land-Water/Food-Land-Use/FReSH

Why use the Calculator and why is it unique?

Communicate value.

Demonstrate how efforts to prevent food loss and waste provide nutritional and environmental value

Prioritize actions.

Prioritize food loss and waste efforts based on environmental sustainability and nutrition security goals

Explore options.

Explore different destinations and scenarios for food loss and waste to reduce impacts

Caveat: Results are based on a set of assumptions that may differ from your situation, and the calculator results have not been peer reviewed. This must be taken into account in any communication or decision making.

Decision guidance

Prioritising and screening for questions related to:

- multiple regions
- multiple food types
- different destinations
- life cycle stages
- environmental impacts (GHG, land, water, nutrients)
- nutrition

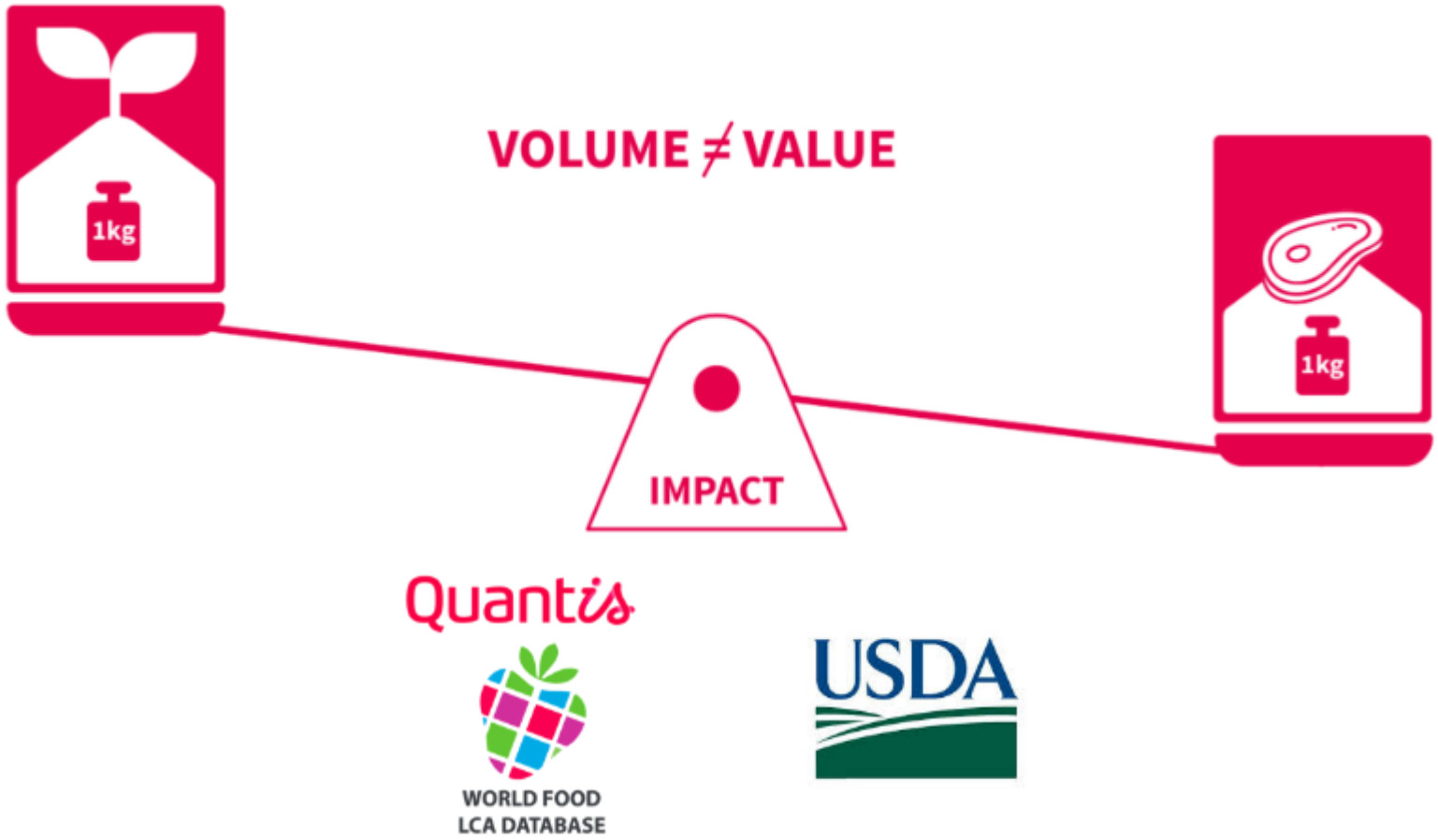
Food Loss and Waste
Value Calculator

Why it exists
Who is involved

How it works

What you can do

The calculator links your input to databases on environmental impacts and nutrition



CEREAL
maize
rice
wheat
DAIRY
cheese
milk
yogurt
FRUIT & VEGETABLE
apple
banana
carrot
grape
lettuce
tomato
MEAT
beef
pork
poultry
PULSES & OILSEEDS
soy bean
ROOTS & TUBERS
potato
OTHER
palm oil
sugar cane

- Agricultural Production data is **region specific** where available (country archetypes used as proxy).
- Averages for the food categories (in capital letters) are average of the food items in the category within the calculator, and food categories are **not a market average**.
- Destination data are **not sensitive** to region.
- Both of these caveats **can be updated in a future version**—just a question of data availability.

The calculator has two main interfaces

Quick assessment

- **3 FLW scenarios** can be compared at once.
- **Landfill** is the default destination.
- **User selects** the type of food, and the region of agricultural production (if known).
- **User enters the quantity** of FLW to be assessed.
- In the same tab, the **calculator automatically** generates:
  - results for **environmental impacts** related to the agricultural production of the food, and impacts related to this food going to landfill.
  - **graphics comparing** the GHG-related impacts.
  - the related **nutritional values** for the type of food and amount of FLW entered.

Detailed assessment

- **6 FLW scenarios** can be compared at once**.**
- **User selects** the type of food, and the region of agricultural production if known.
- **User enters the quantify** of FLW for each:
  - **life cycle stage** (whatever is applicable, e.g., post-harvest handling, distribution etc.).
  - **destination** (e.g. landfill etc.).
- In separate tabs, the **calculator automatically** generates:
  - **numeric results in tables** for environmental impacts (for the life cycle stages and destinations selected) and nutritional value (overall).
  - **graphics showing an overview** of what the user entered (summary of FLW amount and destination allocation).
  - **graphics showing the environmental impacts.**
  - **graphics showing nutritional values.**

Food Loss and Waste
Value Calculator

Why it exists
Who is involved

How it works

What you can do

Playing scenarios (all hypothetical)

1. **Quick assessment**
   - Packaging design prioritisation
2. **Detailed assessment 1: Screening agricultural-level losses across different locations**
   - Overview of operations
   - Prioritisation
3. **Detailed assessment 2: Nutritional security case study**
   - Prioritising where to work from a nutrition security standpoint

Sorry, no time in today's webinar to go into detail of an example across the life cycle.

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Play Scenario 1: Quick Assessment

Food Loss and Waste Value Calculator

Beta Release

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Scope problem: packaging example
(a quick assessment)

A retailer finds different food waste rates associated with different packaging designs. They estimate they are losing 10% of the following items:

- lettuce
- potatoes
- beef

Assuming alterations to packaging would reduce losses, and not drastically increase impacts of the packaging**: for which products should they prioritise packaging design improvements** in order to minimize the associated greenhouse gas impacts?

Gather data: packaging example
(a quick assessment)

- 10% of lettuce * 10 tonne per day stocked

  = 1 tonnes lost

- 10% of potatoes * 10 tonne per day stocked

  = 1 tonnes lost

- 10% of beef * 1 tonne per day stocked

  = 0.1 tonnes lost

Select up to three combinations of food and region of agricultural production (if known). Enter the lost or wasted amount in tonnes (1000 kg). Note that regional proxies are used (e.g. France for Europe) as indicated, however, most regions have a proxy available.

	Food	Region	Enter the amount		Food	Region	Enter the amount		Food	Region	Enter the amount	
1	lettuce	unknown	1	tonnes	potato	unknown	1	tonnes	beef	unknown	0.1	tonnes
	Regional proxy:	Global			Regional proxy:	Global			Regional proxy:	Global		

2 Results: environmental impacts (landfill used as default option, and only influences carbon footprint)

	1. lettuce, region: unknown			2. potato, region: unknown			3. beef, region: unknown		
	Agricultural impacts	Landfill impacts	Total	Agricultural impacts	Landfill impacts	Total	Agricultural impacts	Landfill impacts	Total
Climate change (kg CO2 eq	160.32	469.37	629.69	352.90	1,940.13	2,293.02	2,900.33	427.30	3,327.63
Water scarcity footprint (m	437.65	-	437.65	3,054.42	-	3,054.42	1,079.01	-	1,079.01
Land use (Points)	12,341.76	-	12,341.76	3,777,226.20	-	3,777,226.20	254,122.03	-	254,122.03
Eutrophication (kg P eq)	0.03	-	0.03	1.84	-	1.84	2.08	-	2.08
Eutrophication (kg N eq)	1.34	-	1.34	34.63	-	34.63	9.53	-	9.53

0.1 Introduction | 0.2 FAQs | A1. Quick assessment & results | B1. Detailed assessment | B2. Res ...

Calculate!

- Beef has 10x less waste, but highest impact.
- Between potatoes and lettuce, potatoes should be prioritized (if the assumption about landfill with no methane gas capture as the destination is correct)

The "screening results" caveat is added to figures, as this Beta version is not peer-reviewed and emissions are calculated with basic assumptions: e.g. a landfill with no methane capture.

Learn: packaging overview

- Gives a quick idea of scale and where to focus
- Gives an idea of where uncertainties are important, and where you may need to understand more of the scenario context → is the destination landfill? Is it a landfill with no methane gas capture?
- To see how the impacts would change if FLW goes to destinations other than landfill, use the “detailed assessment” tab

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Play Scenario 2: GHG impacts from *rice production*

Food Loss and Waste Value Calculator

Beta Release

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Scope problem

- A multinational producer of rice and wants to know where to prioritise across various supply chains.

e.g. US

e.g. China

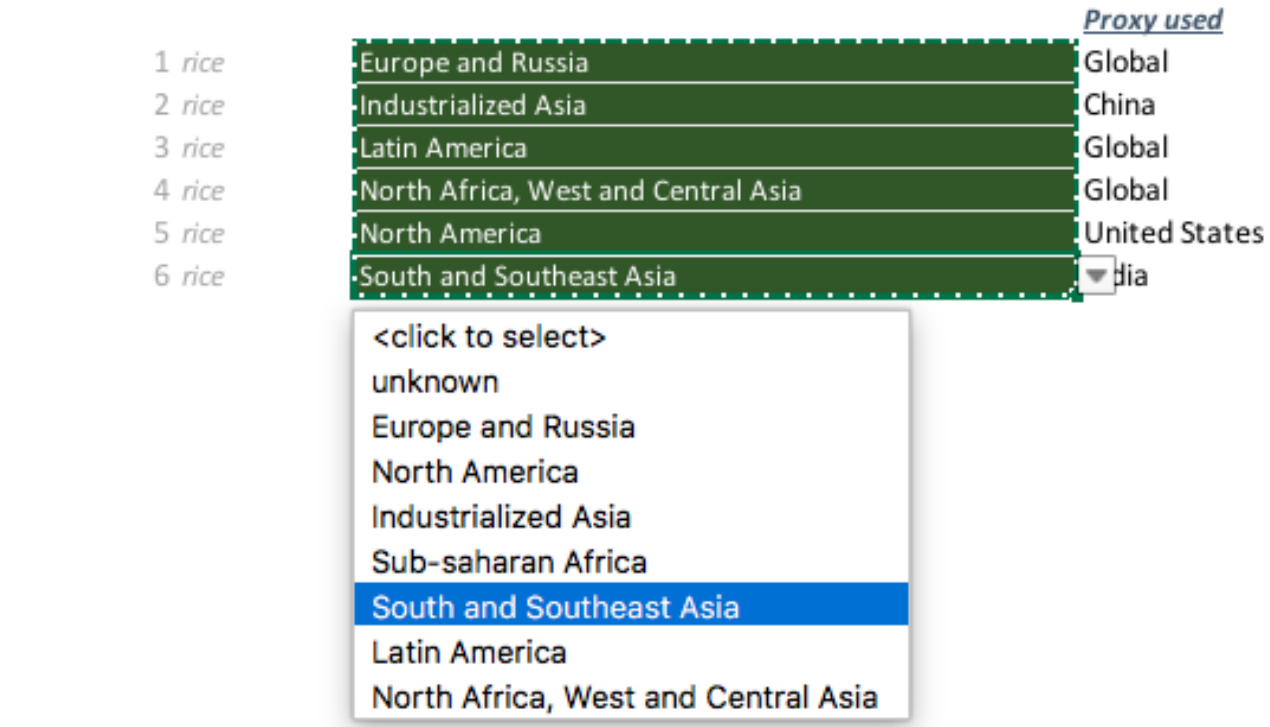
Gather data

- They find that there are **no reliable data** available on FLW quantity in their supply chains.
- Gustuvsson et al. 2011 suggests between **2-6% cereals losses** in various regions.
- **Data on the destinations** can be obtained from business units, or assumptions can be made based on literature.
- **Destinations (hypothetical):**
  - Europe→Controlled combustion
  - Industrialised Asia→Anaerobic digestion
  - Latin America→Animal feed
  - Central Africa→Discards
  - North America→Land application
  - Southeast Asia→Composting

Calculate!

1) **Select rice**
2) **Select the regions** in the calculator where you have rice agricultural production

Note: most regions do not have data available, and thus a global proxy was used.



More about proxies

- Country archetypes were chosen to represent regions commonly used by the FAO, keeping in mind production volume.
- Agricultural production data are not available for all regions.
- "Global" proxies are used as default, when data are not available.
- Keep these points in mind when interpreting results.
- Future versions of the calculator can have more regional data available.
- A table of the proxies used is included in the calculator (see tab: technical methods overview)

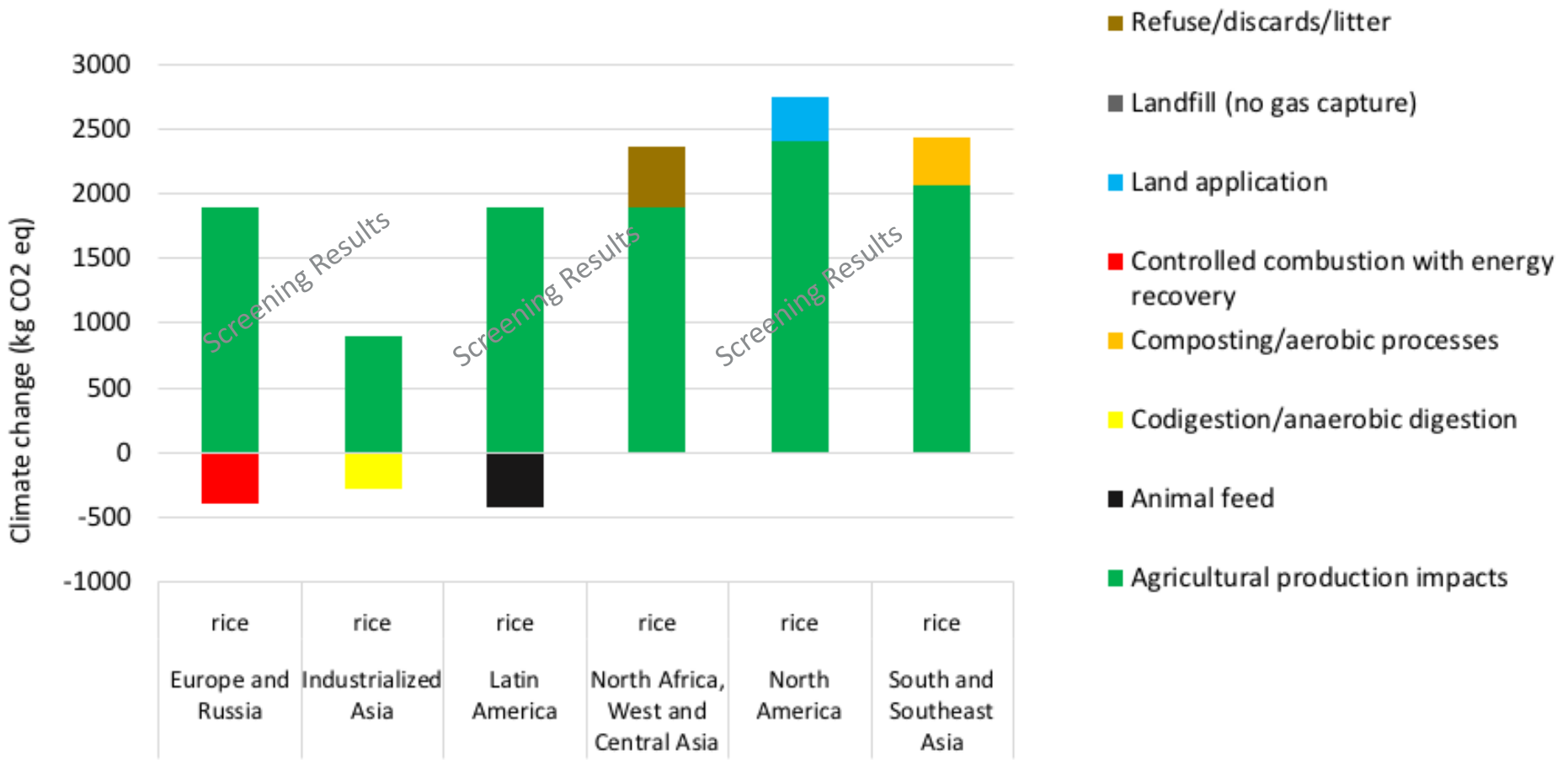
Enter FLW values (in orange) as totals and per destinations

A.	Food:	rice	rice	rice	rice	rice	rice
	Region:	Europe and Russia	Industrialized Asia	Latin America	North Africa, West and Central Asia	North America	South and Southeast Asia
Total agricultural production losses:	***tonne***	1	1	1	1	1	1
Total with known destination	*tonne*	1	1	1	1	1	1
Total with unknown destination	*tonne*	0	0	0	0	0	0
Destinations							
Animal feed	***tonne***			1			
Bio-based materials/biochemical processing	***tonne***						
Codigestion/anaerobic digestion	***tonne***		1				
Composting/aerobic processes	***tonne***						1
Controlled combustion	***tonne***	1					
Land application	***tonne***					1	
Not harvested/plowed in	***tonne***						
Landfill	***tonne***						
Refuse/discards/litter	***tonne***				1		
Sewer/wastewater treatment	***tonne***						
Unknown	***tonne***						

By populating the FLW amounts with "1", results compare per tonne of FLW. Likewise if the calculator is populated with "0.001" results compare per kilogram of FLW. This can be useful when no data are available.

Understand and visualise priorities

Figure 4. Absolute impacts per each scenario for the different contributions

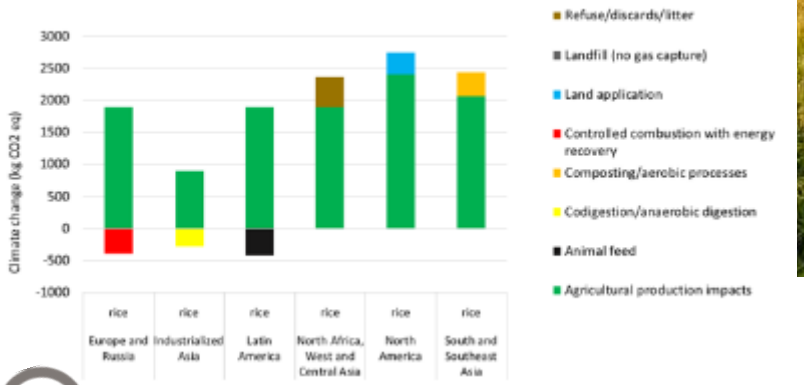


!! No time today to discuss the details of the differences in impacts come talk to us for the Nov 2 office hours if you have questions !!

Learn

Given the chosen destinations, the US rice farms have more GHG than the Chinese rice farms per tonne of FLW. The next step would be to understand the orders of magnitude of FLW in these various regions in order to know where to prioritise with respect to GHG.

Figure 4. Absolute impacts per each scenario for the different contributions



Be attentive when focusing on one indicator of sustainability (e.g. GHG) as other indicators, and e.g. issues of nutrition and food security may be overlooked. Be creative and look at the problem from different angles.

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Play Scenario 3: *Nutrition security*

Food Loss and Waste Value Calculator

Beta Release

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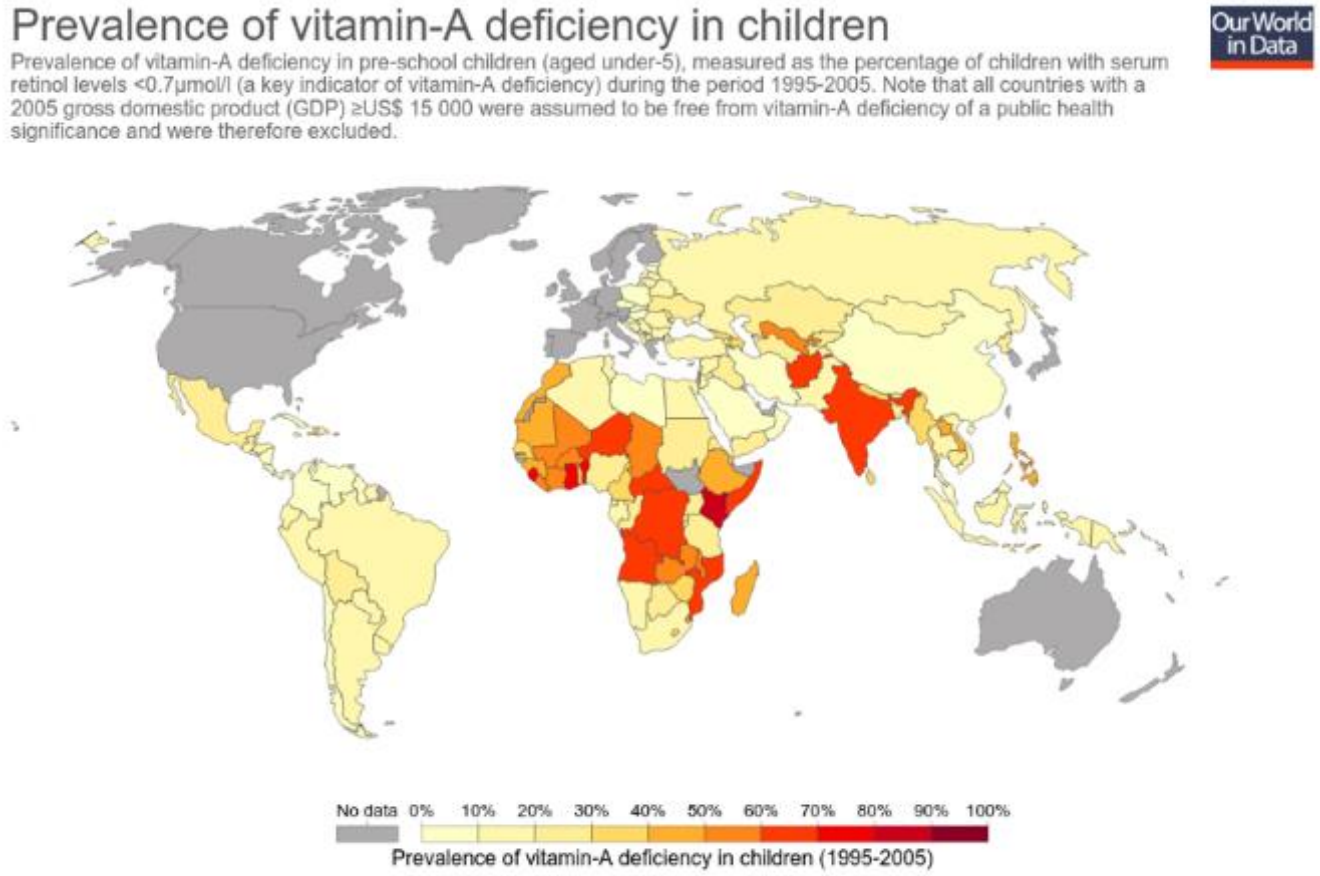
Scope problem

You have funding to research **nutrition security related to vitamin A deficiency** and you are looking to link with FLW. You decide to focus on India.



Gather data

An NGO in India has obtained **regional food loss data**, which you use for your study.

FLW data (hypothetical):

- Banana→1 tonne per day
- Carrot→0.1 tonne per day
- Grape→1 tonne per day
- Lettuce →1 tonne per day
- Sugar cane→0.1 tonne per day
- Tomato →1 tonne per day

You are told losses are preventable and could satisfy market needs

Calculate!

Same steps as before: 1) select food, 2) production region, 3) enter amount of FLW

1. Select food category of interest (max 6).

Note: future versions of the calculator can include more or different crops and food products. Categor

1	banana
2	carrot
3	grape
4	lettuce
5	sugar cane
6	tomato

2. Select the region of original agricultural production (based on FLW regions commonly used by FA

Note: most regions do not have data available, and thus a global proxy was used.

		Proxy used
1 *banana*	South and Southeast Asia	India
2 *carrot*	South and Southeast Asia	Global
3 *grape*	South and Southeast Asia	Global
4 *lettuce*	South and Southeast Asia	Global
5 *sugar cane*	South and Southeast Asia	India
6 *tomato*	South and Southeast Asia	Global

3. Enter FLW data for scenarios (food & region) selected above. FLW is entered for each relevant life cycle stage and destination when known. Feel free to skip irrelevant life cycle

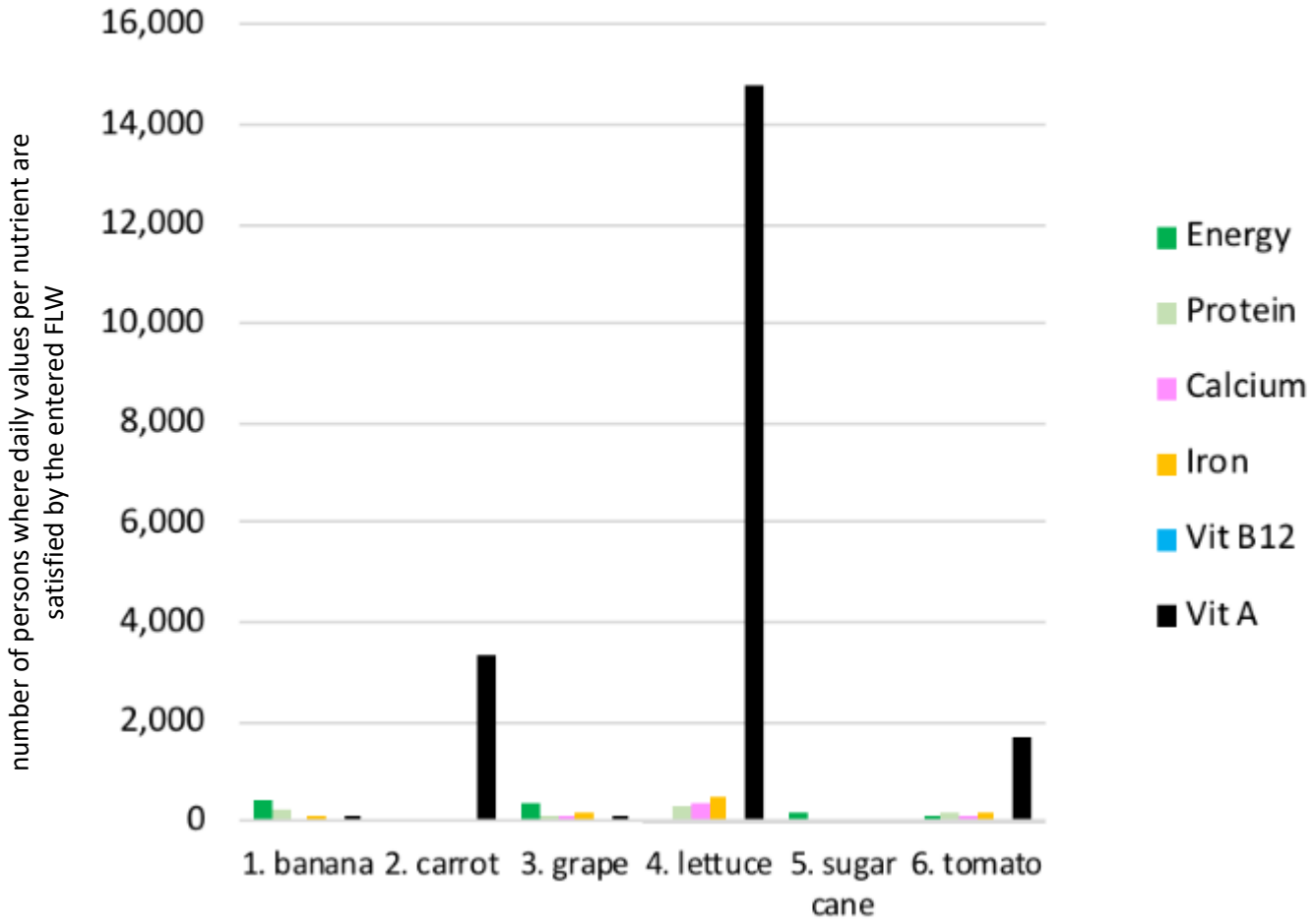
	Food:	banana	carrot	grape	lettuce	sugar cane	tomato
A.	Region:	South and Southeast Asia	South and Southeast Asia	South and Southeast Asia	South and Southeast Asia	South and Southeast Asia	South and Southeast Asia
Total agricultural production losses:	***tonne***	1	0.1	1	1	0.1	1
Total with known destination	*tonne*	0	0	0	0	0	0
Total with unknown destination	*tonne*	1	0.1	1	1	0.1	1

Understand and visualise priorities

Banana→1 tonne per day
Carrot→0.1 tonne per day
Grape→1 tonne per day
Lettuce →1 tonne per day
Sugar cane→0.1 tonne per day
Tomato →1 tonne per day

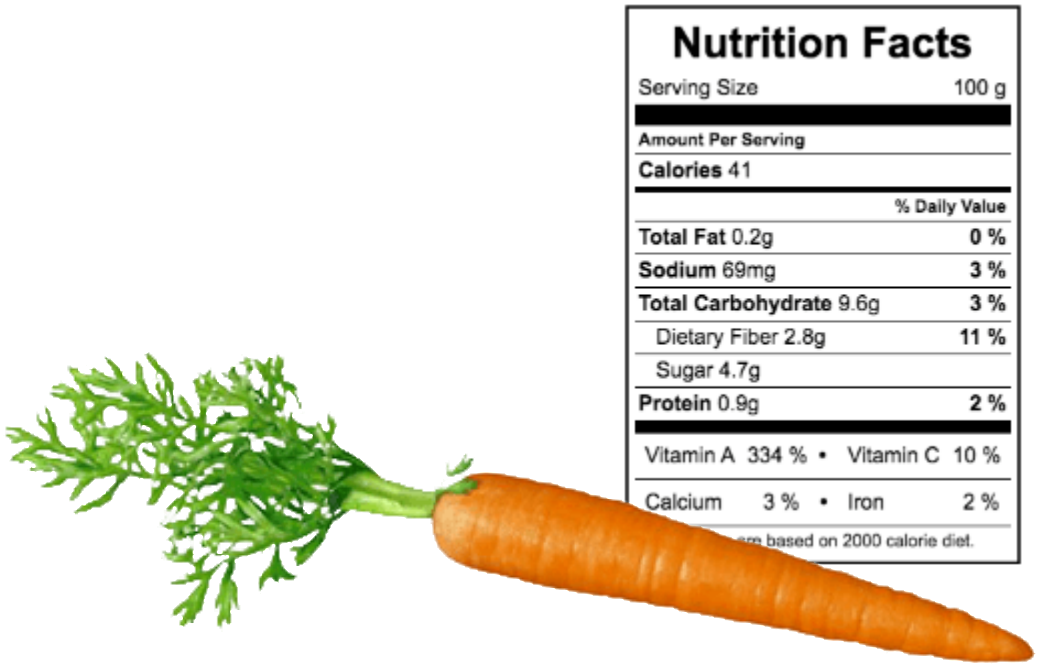
These results are a function of the quantity of FLW and the nutrition content of the food. The nutritional content of the FLW is assumed equal to the food. These results do not indicate the local feasibility of increasing consumption of a food, if the FLW is reduced. This is a socioeconomic issue.

Figure 5. Summary of key nutrients (number of US FDA daily values per nutrient that could have been fufilled by the report FLW)



Learn

For this hypothetical project, reducing FLW of lettuce by 50% could help bring more vitamin A to market than the other choices. Carrots are also of interest; they have low FLW in this scenario but high vitamin A content.



Nutrition Facts

Serving Size	100 g
Amount Per Serving	
Calories 41	
	% Daily Value
Total Fat 0.2g	**0 %**
Sodium 69mg	**3 %**
Total Carbohydrate 9.6g	**3 %**
Dietary Fiber 2.8g	**11 %**
Sugar 4.7g	
Protein 0.9g	**2 %**

Vitamin A 334 % • Vitamin C 10 %

Calcium 3 % • Iron 2 %

...are based on 2000 calorie diet.

Nutrition Facts

Serving Size 1½ cups shredded (86g)

Amount Per Serving	
Calories 40	Calories from Fat 0
	% Daily Value*
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	0%
Cholesterol 0mg	0%
Sodium 160mg	7%
Total Carbohydrate 10g	3%
Dietary Fiber 5g	20%
Sugars 0g	
Protein 2g	

Vitamin A 70% • Vitamin C 25%

Calcium 6% • Iron 20%

* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories	2,000	2,500
Total Fat	Less Than	65g	80g
Saturated Fat	Less Than	20g	25g
Cholesterol	Less Than	300mg	300mg
Sodium	Less Than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:

Fat 9 Carbohydrate 4 Protein 4

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Interested? Be a Beta User!

Food Loss and Waste Value Calculator

Beta Release

Powered by:

Quantis

Join us for virtual office hours!
Nov. 2nd
9:00 – 10:30 ET

Food Loss and Waste
Value Calculator

We want this tool to work for you.

To be a Beta tester, we invite you
- to explore the calculator
- tell us what you think

Beta tester feedback form:

https://docs.google.com/spreadsheets/d/1ihgsUzojlBk7LFieMjZcCWOngCnt8A0K45alWQbIrQU/edit#gid=0

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Food Loss + Waste PROTOCOL

www.flwprotocol.org

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