

## Sustainability Teachers' Academy Lesson Plan

# Zero Food Waste Challenge

### Topics Covered

Sustainability  
Food Systems  
Food Waste

### Grades

6-8

### Duration

55 Minutes

### Sustainability Competencies

Values Thinking  
Systems Thinking  
Collaborative Thinking  
Action Orientation

### Online Resources

[The Big Waste: Why Do We Throw Away So Much Food?](#)

[National Resource Defense Council](#)

[ReFED](#)

### Key Questions

Why is food wasted? What happens to uneaten food in our communities? How can individuals and businesses work to solve the problem of food waste?

### Overview

Students will develop profitable solutions to common food waste problems. Working in small groups, students will imagine a hypothetical business that turns unused food into valuable resources and profits, and create a marketing brochure describing the services their company provides.

### Objectives

Students will be able to:

- Identify sources of food waste
- Explain how discarding uneaten food wastes valuable resources and contributes to environmental problems
- Propose realistic strategies for dealing with food waste

### Materials

Per working group

- Printer paper, pens, markers
- Food Waste Source Cards

Technology

- Projector, screen, and computer
- ["The Big Waste" video on YouTube](#)

### Teacher Preparation

Students should be familiar with basic concepts in sustainability science, such as the *Three Pillars of Sustainability*. It may also be useful for students to explore the food system through the lesson "Food Systems are Dynamic". Organize students into 6 small groups (3-5 students). Print and cut out Food Waste Source Cards, providing one card per student group.

### Background Information

Up to 40% of the food produced in the United States is wasted. Not only do individual consumers waste large amounts of food (about 20lbs per person per month), but food is regularly discarded by pro-

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ducers, restaurants, and grocery stores as well. For example, when fruits and vegetables are harvested in the field, almost half is left behind to rot because it does not conform to arbitrary standards of size, shape, or color. Grocery stores routinely over stock their shelves because they know shoppers buy less when the supply gets low. In order to avoid running out, restaurants often make large batches of popular menu items. At the end of each day, food that isn't purchased may end up in the trash. In most cases, the discarded food is buried in municipal landfills. Here, these valuable resources are broken down by anaerobic processes to produce methane, a powerful greenhouse gas.

In recent years, entrepreneurs, non-profit organizations, and small businesses have begun to recognize the value of food waste. Organizations that collect and use discarded food are on the rise. Some, like non-profit food banks, simply redistribute uneaten food to people who need it. Others, use food waste to feed their livestock. For every source of food waste, there is an example of an organization that can turn those resources into profit.

### Recommended Procedures

#### **1. Engagement: This activity will focus students on the topic**

Project "The Big Waste" video, which introduces the topic for this activity. Allow students to share what they know about the numerous reasons why food may be wasted, and suggest possible solutions.

#### **2. Exploration: A student-led activity with guidance**

Organize students into six working groups. Each group should receive one of the six "Food Waste Source" cards. Students should read, think about and discuss the source of food waste on their card, brainstorming different ways that this food could be put to use.

#### **3. Explanation: Students discuss their understanding of the concept**

After 7-10 minutes of brainstorming, allow students to read their "Food Waste Source" cards to the class, and share some of the solutions they have come up with. Allow other students to critique their solutions, offer possible improvements, or suggest additional ideas.

#### **4. Elaboration: Students apply the idea in a new context**

Students should work in their groups to imagine a hypothetical business that collects food waste from the source described on their card and uses it as a resource. Once they have determined what services their company will provide, and how it will deal with the food waste, students should use printer paper, pens and markers to create a tri-fold brochure featuring their company.

#### **5. Evaluation: Students assess their knowledge, skills, abilities**

If time permits, students can share their brochures with their classmates, explaining what their company will do and how it will make a profit. Alternatively, collect the completed brochures for evaluation.

### Extensions

Encourage students to examine the entire food system from production, transportation, processing, consumption, and end of life. Challenge them to combine the services provided by the

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companies they've created to address potential food waste at every part of the food system.

Broaden the assignment to include a discussion of the various stakeholder that are impacted by each source of food waste. Encourage students to consider how they might encourage those stakeholders to reduce food waste. Discuss the possible laws or regulations that might need to be enacted to eliminate food waste.

### Vocabulary

**Sustainability:** The ability to meet the needs of the future, without compromising the ability of future generations to meet their needs

**Food Waste:** Food ingredients or parts that are discarded though edible

### References

Gunders, D. (2012, August). Wasted: How America is Losing Up to 40 Percent of Its Food from Farm to Fork to Landfill. Retrieved March 11, 2016, from [www.nrdc.org](http://www.nrdc.org)

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## Next Generation Science Standards

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Obtaining, evaluating, and communicating information	ESS2.A Earth materials and system	Cause and effect: Mechanism and explanation
Asking questions (for science) and defining problems (for engineering)	ESS3.A Natural Resources	Systems and system models
Constructing explanations (for science) and designing solutions (for engineering)	ESS3.C Human impacts on Earth systems	

## Common Core English Language Arts

Reading: Informational Text	Writing	Speaking & Listening	Language
RI.6.2, RI.6.7, RI.7.2, RI.7.7, RI.8.2, RI.8.7	W.6.1, W.6.2, W.6.3, W.7.1, W.7.2, W.7.3, W.8.1, W.8.2, W.8.3	SL.6.1, SL.6.4, SL.7.1, SL.7.4, SL.8.1, SL.8.4	L.6.3, L.7.3, L.8.3

## Common Core Mathematics

6 through 8	9 and 10
N/A	N/A

## Other Common Core

Science & Technical Subjects	History/Social Studies
CCSS.ELA-LITERACY.RST.6-8.4, CCSS.ELA-LITERACY.RST.6-8.7	CCSS.ELA-LITERACY.RH.6-8.4, CCSS.ELA-LITERACY.RH.6-8.7