

# Food Loss Prevention Case Studies

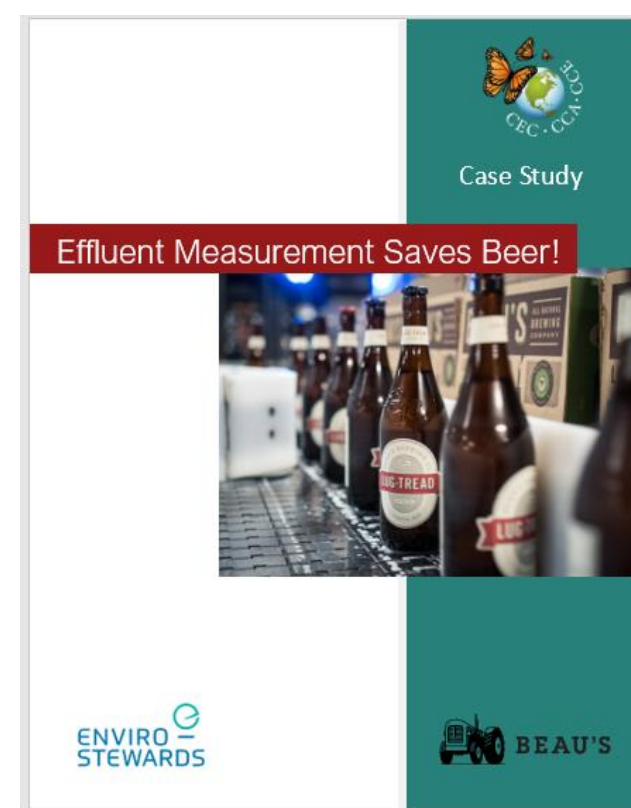
## Food & Beverage Manufacturing

# CEC 1.0 Case Study

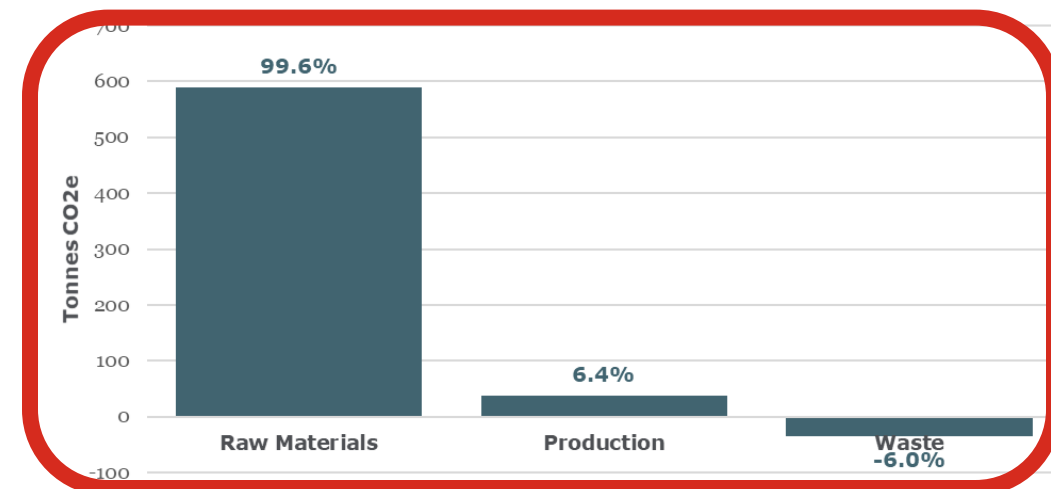
## KEY FACTS

- ❖ **Beer Saved:** 395,000 liters per year
- ❖ **Money Saved:** C\$722,000 per year
- ❖ **Average Payback:** 0.8 years
- ❖ **Embedded GHG:** 590 tonnes per year
- ❖ **Equivalent Meals:** 165,000 per year

1. **Satisfy growth without more water, grain, energy, labour or capacity**
2. **Avoid wastewater loading**
3. **Reduce supply chain footprint**
4. **Nearly double profits**



## Footprint reduction



# Preventing Manufacturing Food Loss

- 50 facilities across Canada
- CEC case study, CBC interviews
- Top 3 Project in Canada for 2020

Save \$350/tonne of (embedded) GHG



# CEC 2.0 Case Studies

## 1. Protein Manufacturing Saved 3.8 million protein servings/year!

## 2. Baking

Integrated food, energy  
& water saves 1,500,000  
kg/yr of bread!

**Smithfield**  
Good food. Responsibility.™

**ENVIRO-STEWARDS**  
engineering change

**Smithfield Foods**  
Going beyond diversion saves 3.8 million protein servings!

*Food Loss and Waste Measurement Case Study*

As part of its industry leading sustainability program, Smithfield Foods strives to maximize the social, environmental and economic value of food. To do so, the company is committed to reducing food loss and waste. At its facility in Junction City, Kansas, a process-level prevention assessment with Enviro-Stewards identified and implemented measures that have reduced food loss to rendering by 30% and retained 3.8 million protein servings (943,400 lbs.) per year in the food supply chain.

**Organization**  
Headquartered in Smithfield, Virginia, since 1936, **Smithfield Foods** is an American food company with agricultural roots and a global reach. Its 40,000 employees in the United States are dedicated to producing "Good food. Responsibility.™" and have made Smithfield one of the world's leading vertically integrated protein companies. The company has pioneered sustainability standards for more than two decades, including many industry firsts, such as its ambitious commitment to cut its carbon impact by 25 percent by 2025. Smithfield's portfolio includes high-quality iconic brands, such as Smithfield®, Eckrich®, and Nathan's Famous®, among many others. Smithfield's environmental achievements were recognized with a **2020 Most Valuable Pollution Prevention (PVPP) award**, which is presented by the National Pollution Prevention Roundtable (NPPR) to celebrate the successes of innovators in the areas of pollution prevention and sustainability.

**Introduction**  
Smithfield recognizes its leadership role in sustainably feeding the world and is committed to implementing efforts to solve the biggest issues facing society and the planet—of which food waste is a significant one.

**What was measured?**  
A food loss and waste (FLW) prevention assessment was conducted at Smithfield's Junction City, Kansas, processing facility (the facility), which produces sausage.

**How was it measured?**  
The assessment team measured FLW in the facility's raw processing and packaging areas. Food losses identified in the raw processing and packaging operations were collected and weighed. Based on operating hours, procedures, and potential avoidable losses, annual estimated savings and payback periods were calculated.

**What were the outcomes?**  
Since 2017, food loss prevention has reduced the amount of material lost to rendering (per unit of production) by 30%. This has saved 943,400 lbs (428,000 kg) of food per year, valued at \$615,000. This represents a savings of 2,400 tonnes/year of embedded greenhouse gas emissions and 3.8 million servings of protein per year.

The highest societal, environmental, and economic values of food are realized when it is consumed by people. Hence, preventing food waste at-source retains the social, environmental and economic value embedded in that food. This approach is in alignment with the USEPA's Food Recovery Hierarchy, which places prevention/source reduction (of food waste) as the most preferred option.<sup>1</sup>

As such, Smithfield has elected to participate in Champion 12.3's **10x20x30** initiative, which sets a target to reduce FLW sent to destinations other than animal feed and bioprocessing by 50%, measure baselines and progress, and take action to reduce the baseline values.<sup>2</sup>

1) [www.epa.gov/foodwaste-reduction/food-waste-recovery-hierarchy](#)  
2) [Champion 12.3 10x20x30](#). Retrieved January 6, 2021, from [www.champion123.com](#)

**BIMBO CANADA'S**

**ENVIRO-STEWARDS**  
engineering change

**Bimbo Canada**  
Integrated Food Loss & Waste Assessment at Bakeries -  
How Bimbo Canada saves a lot of dough at its production facilities

*Food Loss and Waste Measurement Case Study*

**What was measured?**  
Integrated utility conservation assessments were conducted at 10 Bimbo Canada (Bimbo) facilities, eight of which included food loss and waste (FLW) prevention. The assessment teams measured FLW related to the facilities' baking processes, including mixing, baking, and packaging.

**How was it measured?**  
Most of the identified food losses were quantified at the process level using direct measurement techniques.

**What were the outcomes?**  
The potential total FLW prevention opportunities will save 1,500 tonnes (3.3 million lbs.) of food per year, worth \$16 million/year, with an average payback of under one month.

The measures will also reduce (embedded) GHG losses by 2,200 tonnes/year and retain 5.5 million meals per year in the food supply chain (based on calories).

practical affordable path to secure this objective as well as their other reduction targets, including a reduction of water of 29%, thermal energy by 31% and electricity by 12% by 2025).

Many of the Bimbo Canada facilities already had good metrics on waste quantities generated, but the financial value assigned to the waste was generally based on disposal costs. And, in some cases, they were receiving a nominal revenue stream for the waste. However, by adding in the embedded ingredient and processing costs (up to the point of product loss), the economic driving force for loss prevention measures was found to be a hundred times larger than previously thought.

**Organization**  
Bimbo Canada is a proud member of Grupo Bimbo, which operates in 32 countries around the world. Bimbo Canada has 16 bakeries, 15 distribution centres and is the largest producer and distributor of packaged fresh bread and bakery products, with brands such as Dempster's®, Villaggio®, POM®, Bon Motin®, Ben's®, McGavin's®, Vachon®, Stonemill®, Sanissimo, and Tols. In business for more than 100 years, the company employs more than 4,000 associates and had sales of nearly \$1.3 billion (2020).

Bimbo Canada is an organization committed to being a sustainable, highly productive and deeply humane company, while nourishing the world with delicious baked goods and snacks. The company is launching its new 2030 sustainability strategy in early 2021, with a focus on eight key areas: *Net Zero Emissions, Regenerative Agriculture, Towards Zero Waste, Caring for our People, Strengthening our Communities, Enabling Plant-Based Diets, Best Nutritional Profile and Transparent Sustainable Brands.*

**Introduction**  
Bimbo Bakeries USA (also part of the Grupo Bimbo family) has corporately committed to Champions 12.3's **10x20x30** challenge (that commits to reducing food loss by 50% by 2030). Bimbo Canada shares this commitment and is targeting a 50% reduction in food waste by 2025. Bimbo Canada's integrated food loss, water and energy conservation assessments are designed to identify a





# FOOD SUPPLY CHAIN

Potential food loss and waste



**FIRST PRIORITY:**  
Food to people

**NEXT:**  
Aim for high valorization



Contributes to meeting  
SDG Target 12.3

Prevention and redistribution to people

High valorization

Animal feed

Biomaterial/processing

Does not contribute to  
meeting SDG Target 12.3

Some valorization

No valorization

Cofanaerobic digestion

Compost/aerobic

Land application

Not harvested

Controlled combustion

Landfill

Sewer

Refuse/discards

WITH ENERGY RECOVERY  
WITHOUT ENERGY RECOVERY

**TARGET:**  
Waste stream to be  
reduced by 50%

943,400 lbs/yr  
of food saved

Already diverting  
more than 99%  
to rendering

**3.8 million protein servings  
per year saved thus far:**  
Reducing food loss to rendering  
by 30%!

## Smithfield Foods

Going beyond diversion saves 3.8 million protein servings!

### Food Loss and Waste Measurement Case Study

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**Organization**  
Headquartered in Smithfield, Virginia, since 1936, Smithfield Foods is an American food company with agricultural roots and a global reach. Its 43,000 employees in the United States are dedicated to producing "Good food. Responsible." and have made Smithfield one of the world's leading vertically integrated protein companies. The company has pioneered sustainability standards for more than two decades, including many industry firsts, such as its ambitious commitment to cut its carbon impact by 25 percent by 2025. Smithfield's portfolio includes high-quality iconic brands, such as Smithfield's Edamam® and Nathan's Famous®, among many others. Smithfield's environmental achievements were recognized with a 2020 Best Value Award by the National Pollution Prevention Roundtable (NPPR) to celebrate the success of innovators in the areas of pollution prevention and sustainability.

**Introduction**  
Smithfield recognizes its leadership role in sustainably feeding the world and is committed to engineering efforts to solve the biggest issues facing society and the planet—of which food waste is a significant one.

As such, Smithfield has elected to participate in Champion 12.3, a global initiative, which sets a target to reduce FFW sent to destinations other than animal feed and bioprocessing by 50%, measure baselines and progress, and take action to reduce the baseline values!

#### What was measured?

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#### How was it measured?

Food losses identified in the raw processing and packaging operations were collected and weighed. Based on operating hours, procedures, and potential available losses, annual estimated savings and payback periods were calculated.

#### What were the outcomes?

Since 2017 food loss prevention has reduced the amount of material lost to rendering (per unit of production) by 30%. This has saved 943,400 lbs (428,000 kg) of food per year valued at \$465,000. This represents a savings of 2,600 servings/year of embedded greenhouse gas emissions and 1.8 million servings of protein per year.



# Bimbo Canada Case Study

1. Assessed 10 Bimbo Baking Facilities Across Canada
2. Identified measures to retain 1,600,000 kg of food in the Supply Chain
3. Will Save:
  - 6.1 million meals/yr
  - \$1.7 million/yr CDN
  - 4,100 tonnes of embedded GHG
4. Integrated water, energy & food finds \$2,800,000/yr of practical affordable conservation measures

The infographic is titled "Bimbo Canada Integrated Food Loss & Waste Assessment at Bakeries - How Bimbo Canada saves a lot of dough at its production facilities". It features the logos for Bimbo Canada, ENVIRO STEWARDS (with the tagline "engineering change"), and CEC-CCN-CCP. The main title is "Food Loss and Waste Measurement Case Study". The infographic is divided into several sections: "What was measured?", "How was it measured?", "What were the outcomes?", "Organization", and "Introduction".

**What was measured?**  
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**Organization**  
Bimbo Canada is a proud member of Grupo Bimbo, which operates in 32 countries around the world. Bimbo Canada has 16 bakeries, 15 distribution centres and is the largest producer and distributor of packaged fresh bread and bakery products, with brands such as Dempster's®, Villaggio®, PGM®, Bon Motin®, Ben's®, McGovins®, Vochon®, Stonemill®, Sanissimo, and Tolls. In business for more than 100 years, the company employs more than 4,000 associates and had sales of nearly \$1.3 billion (2020).

**Introduction**  
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practical affordable path to secure this objective as well as their other reduction targets, including a reduction of water of 29%, thermal energy by 31% and electricity by 12% by 2025.

Many of the Bimbo Canada facilities already had good metrics on waste quantities generated, but the financial value assigned to the waste was generally based on disposal costs. And, in some cases, they were receiving a nominal revenue stream for the waste. However, by adding in the embedded ingredient and processing costs (up to the point of product loss), the economic driving force for loss prevention measures was found to be a hundred times larger than previously thought.

# Bimbo Canada

## Examples of Opportunities

### 1. English Muffin bottleneck at transfer

- Opportunity: \$41,500/yr,  
**70,000 meals/yr**

### 2. Buns sticking at de-panner

- Opportunity: \$47,300/yr,  
**33,500 meals/yr**

### 3. Rework of tortillas

- Opportunity: \$128,400/yr,  
**298,600 meals/yr**

### 4. Rework flour from catch trays

- Opportunity: \$26,000/yr,  
**238,500 meals/yr**



**Over a half million meals/yr!**



# Bimbo Canada

*“The CEC guide was useful in helping us to determine our scope, ask the right questions along the way and most importantly, to educate our associates about why we need to look at our food loss differently and the value of preventing it at the source.”*

*Teresa Schoonings – Senior Director, Government Relations & Sustainability*



## Bimbo Canada

Integrated Food Loss & Waste Assessment at Bakeries -  
How Bimbo Canada saves a lot of dough at its production facilities

### Food Loss and Waste Measurement Case Study

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**What were the outcomes?**  
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The measures will also reduce (embedded) GHG losses by 2,300 tonnes/year and retain 5.5 million meals per year in the food supply chain (based on calories).

practical affordable path to secure this objective as well as their other reduction targets, including a reduction of water of 29%, thermal energy by 31% and electricity by 12% by 2025.

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# Bimbo Canada

- Why?
  - Why Bimbo Canada participated in sustainability assessments, including FLW
- How?
  - How Bimbo Canada gained alignment and commitment to conducting assessments and implementing findings
- Who?
  - Who really benefits from this undertaking and how to leverage that.
- What?
  - What has been the biggest ‘win’ about this journey so far.

Towards Zero Waste



## **Our Commitment:**

Promoting circularity and reducing waste along our value chain through sustainable packaging, efficient operations and food waste reduction.

## **Key activity as part of this commitment:**

Reduce food waste generated in our operations by 50%.



*engineering*  
*change*

Bruce Taylor

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