



**GLOBAL
POUCH** FORUM

JUNE 7-9, 2022

Top 3 Packaging Solutions to Prevent Food Waste

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ABOUT PTR | Dr. Claire Sand



Owner  **PACKAGING
Technology
& Research**

Adjunct Professor  

Monthly Columnist  

- Claire Sand is a Global Packaging Leader with 35+ years of broad experience in the food and packaging science spectrum in industry - from basic research to marketing - and in academia - tenured professor and director.
- Sand's mission is to enable a more sustainable food system with science and value chain innovations that more sustainably increases food shelf life and prevents food waste.
- She solves packaging and food industry challenges using a blend of packaging and food science and value-chain expertise.
- Dr. Sand holds a PhD in Food Science and Nutrition from the University of Minnesota and MS and BS in Packaging from Michigan State University.

Current Leadership



CoChair
Consortium on
Food Waste



Advisor
Food Waste
Repackaged



Executive
Board



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National Science Foundation

Recent Awards



Riester-Davis-Brody
Food Packaging
Lifetime Achievement Award



IFT Fellow

Current Editorial Boards



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Editorial Board



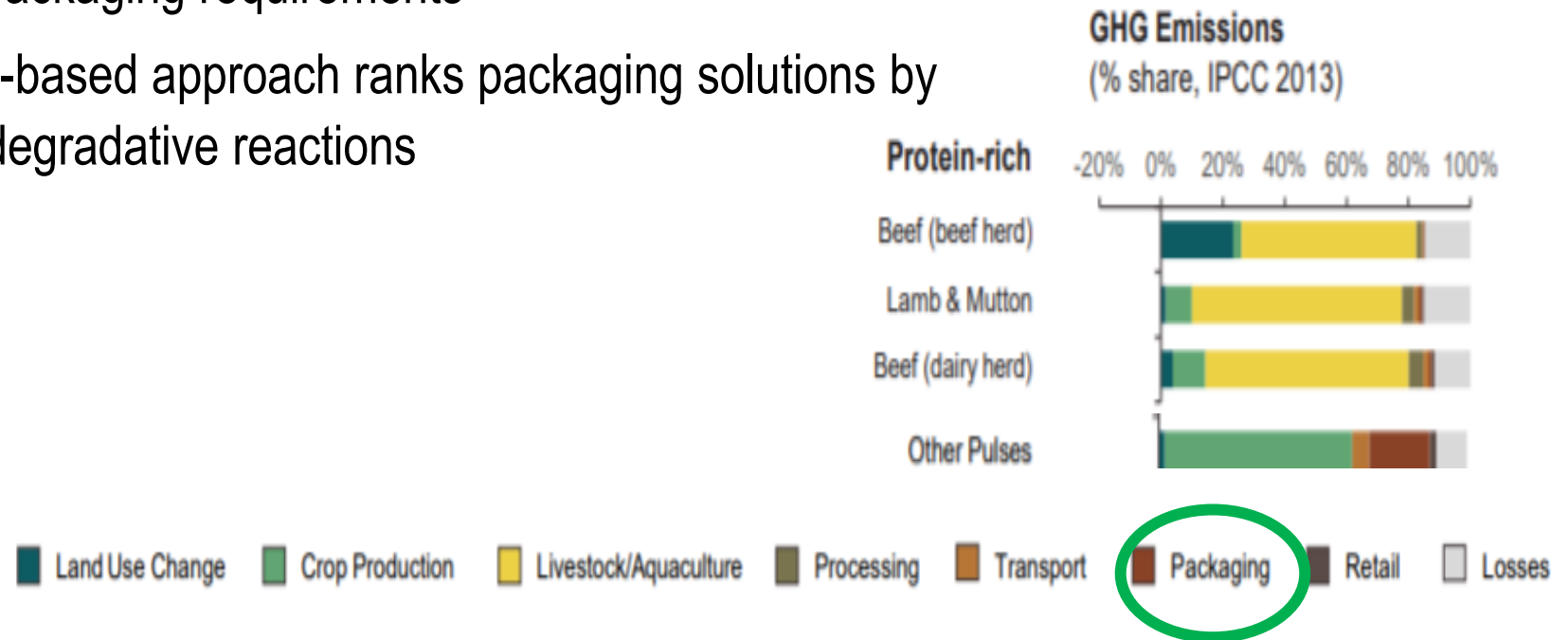
Editorial Board

Packaging Solutions that Prevent Food Waste as a Function of Feasibility and Impact



Perspective on food waste

- If food waste was a country, it would rank 3rd in CO_{2eq} behind China and the United States
- Science-based and value-chain based packaging solutions to prevent food waste are abundant
- Foods demand different packaging requirements
- A pragmatic- and science-based approach ranks packaging solutions by their ability to halt major degradative reactions



Poore and Nemecek, 2018



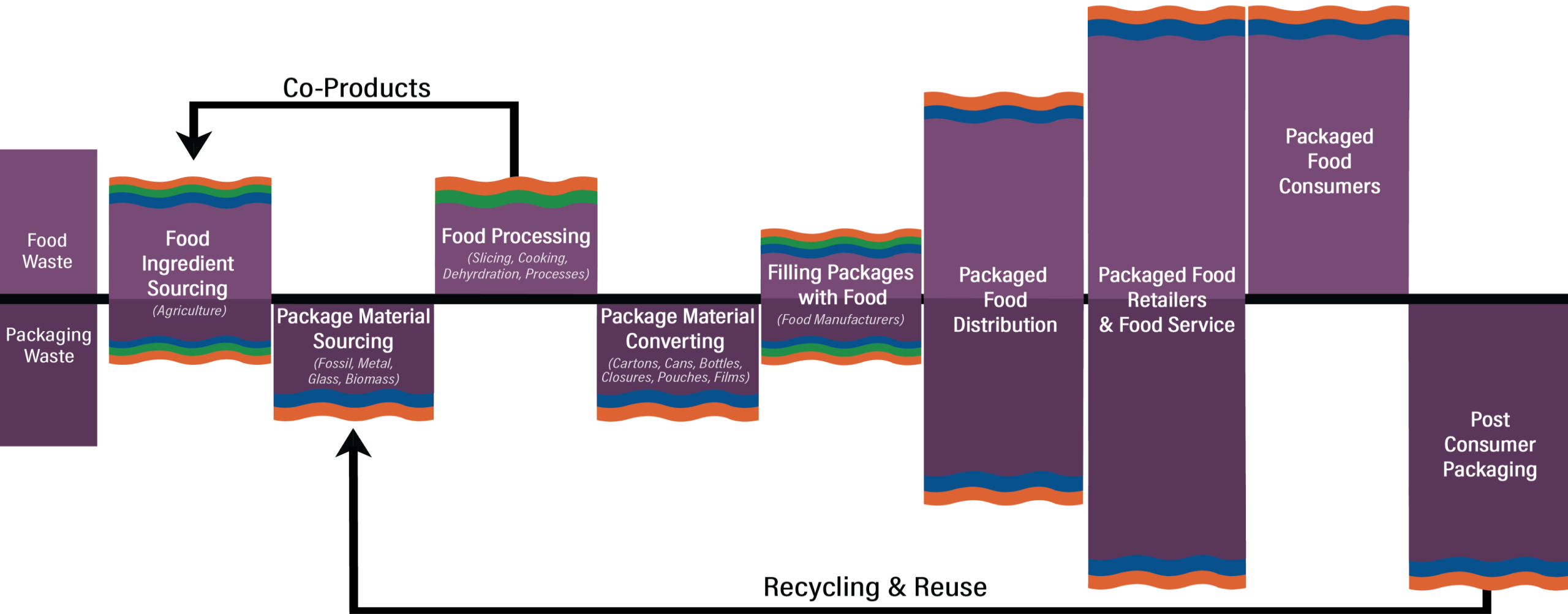
PTR Prevents Food and Packaging Waste Where It Happens

Packaging Solutions

Product & Process Solutions

Value Chain System Solutions

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Packaging Solutions that Prevent Food Waste as a Function of Feasibility and Impact



More investment in consumer and restaurant packaging is needed to reduce GHGs associated with food waste

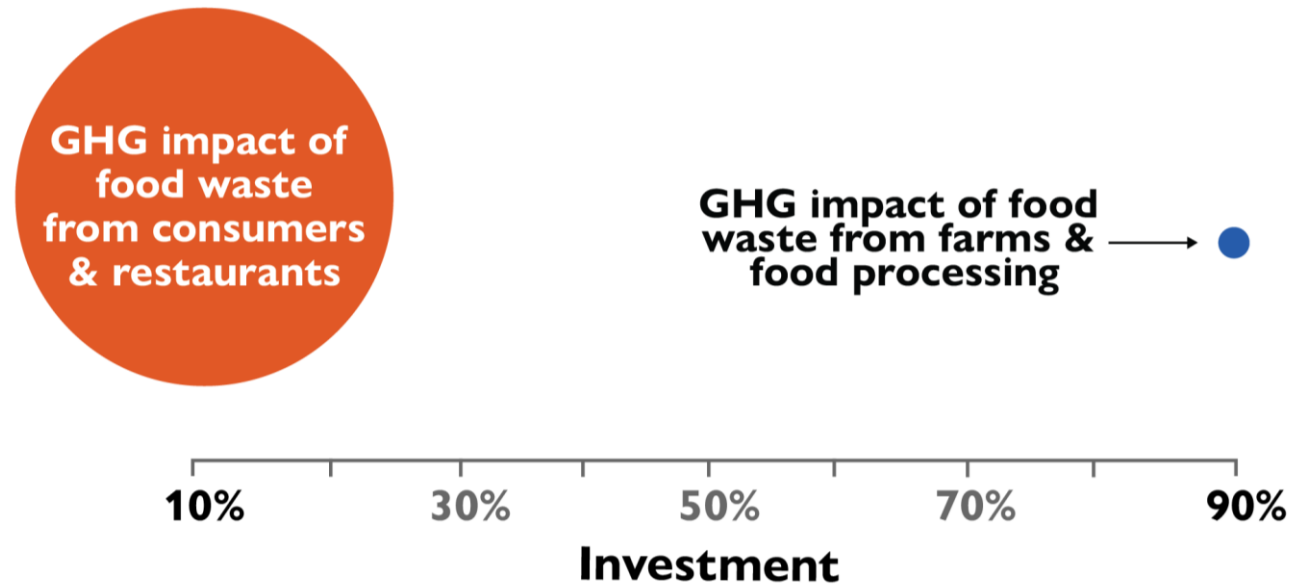
GHG impact of food waste from consumers & restaurants

GHG impact of food waste from farms & food processing



What is needed to **move the conversation** forward on **packaging that prevents food waste**

1. Connect packaging solutions to business case
2. Use a pragmatic- and science-based approach to rank packaging solutions by their ability to halt major degradative reactions and create brand switching



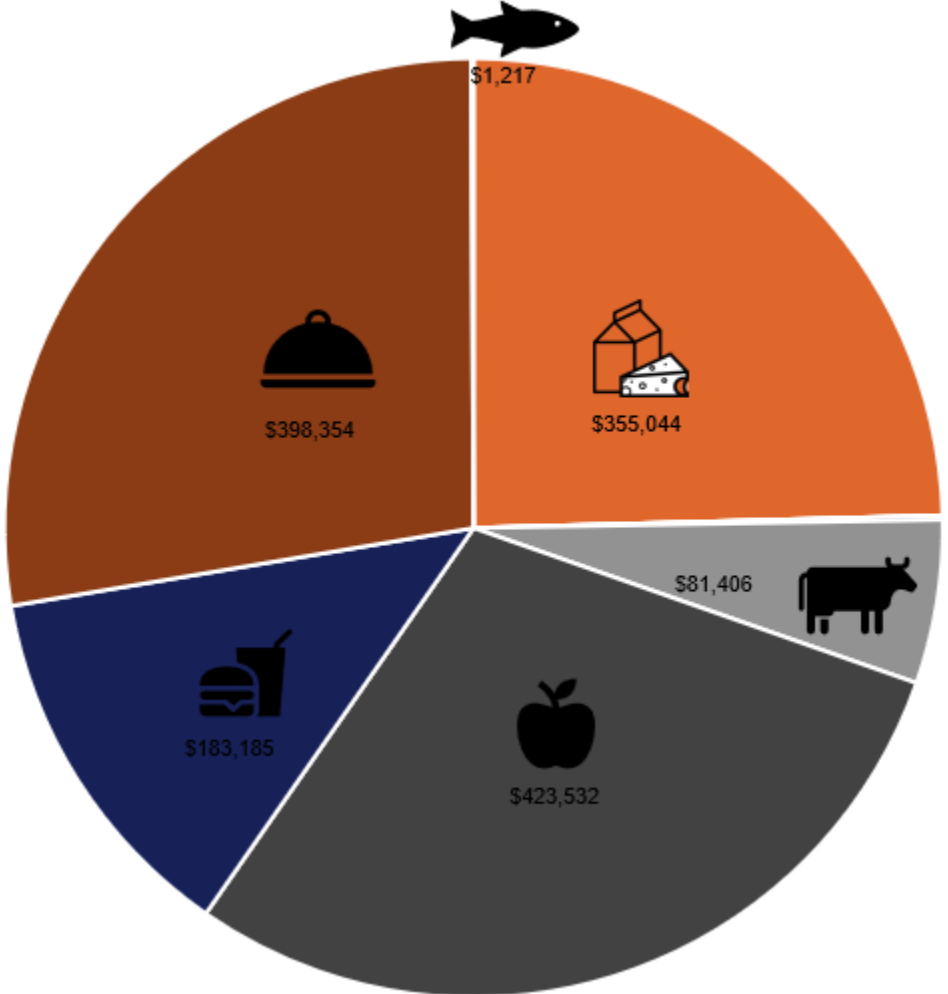
Intelligent Packaging



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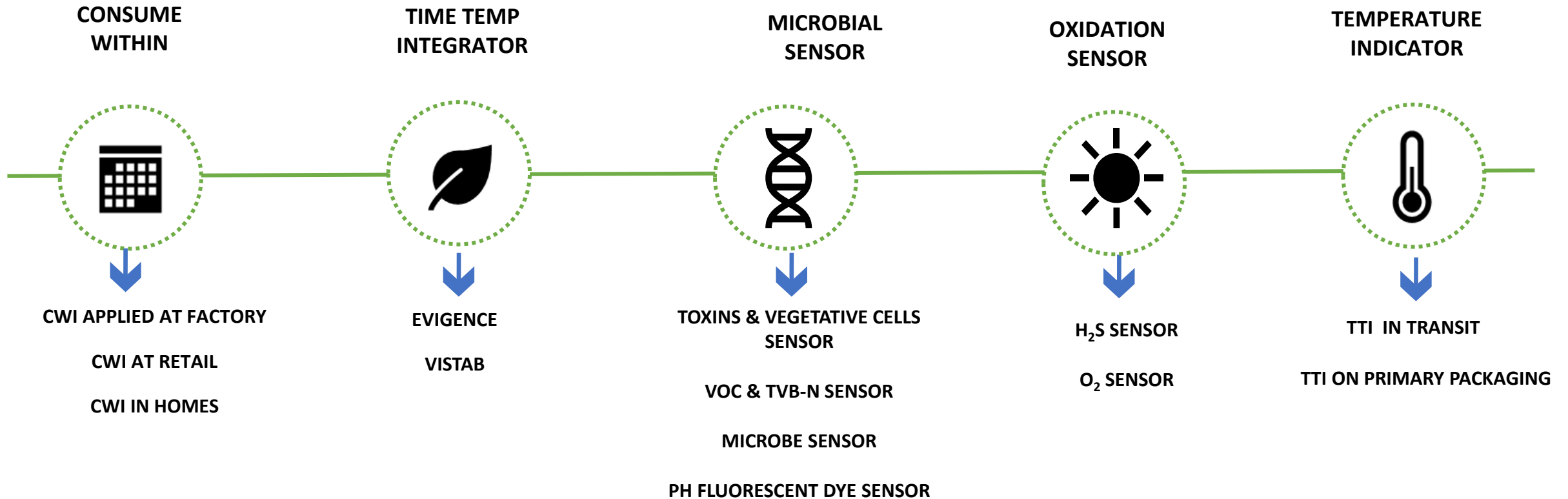
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Intelligent Packaging Prevents Food Waste



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Intelligent Packaging Prevents Food Waste I Overview



Intelligent Packaging Prevents Food Waste | Example

CLIENT PROFILE- Major Food Company

RTE brand at QSRs faced major food safety concerns

SOLUTION

- Identified optimal solution to address a **food safety concern & restore brand confidence**
- Ranked specific intelligent packaging - to be calibrated to accurately **match listeria growth kinetics** - solutions for a specific product
- **Prototyped** 3-5 best viable options to meet defined success factors
- **Built business case** to garner higher price for intelligent packaging

RESULTS

- Competitive advantage with intelligent packaging to lower labor costs
- Eliminated food safety as a concern unlike competitors
- Connected with reduced food waste platforms on UNSDGs
- Expanded sales 15% due to less waste



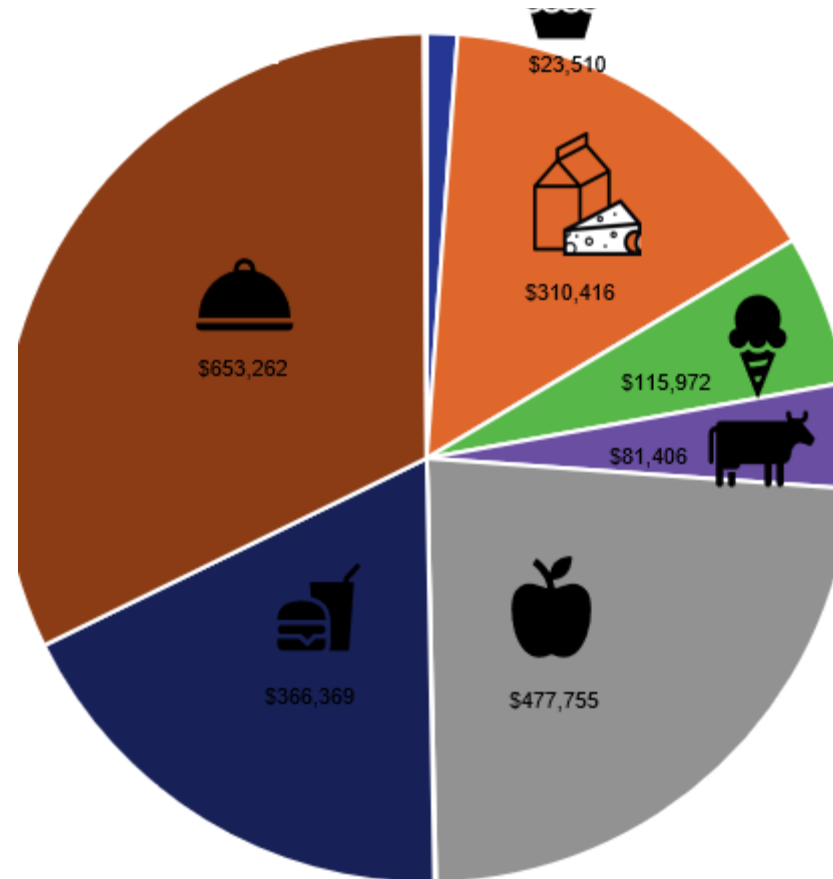
Nano Antimicrobial Packaging



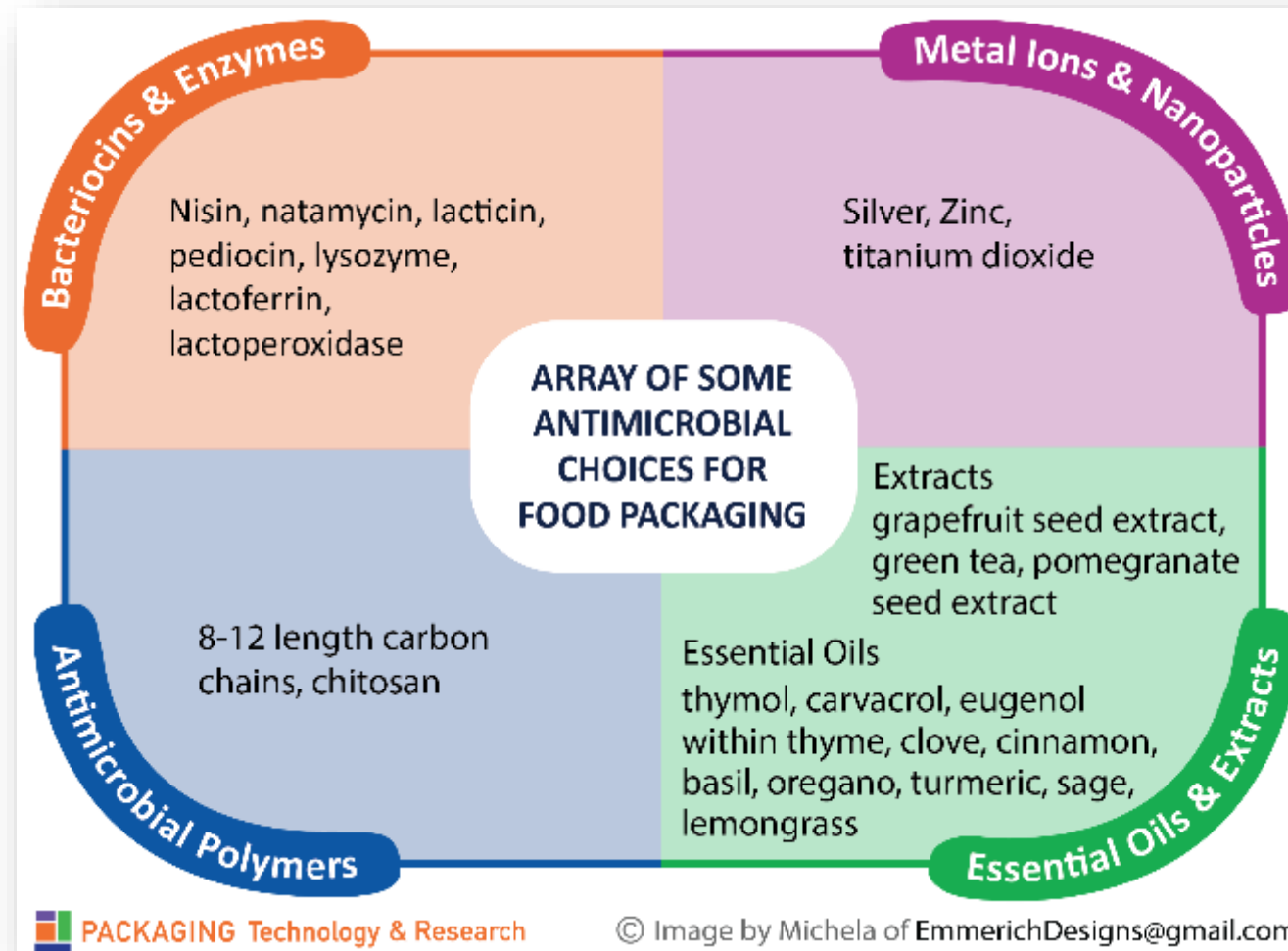
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Antimicrobial Packaging Prevents Food Waste



Antimicrobial Packaging Prevents Food Waste



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Antimicrobial Packaging Prevents Food Waste | Example

CLIENT PROFILE- European Chemical Company

Needed to commercialize existing antimicrobials into food packaging

SOLUTION

- Determined **science-based value proposition** in markets of interest
- **Applied rubric** to assess competitors, pricing, and capital, brand and packaging company propensity for innovation

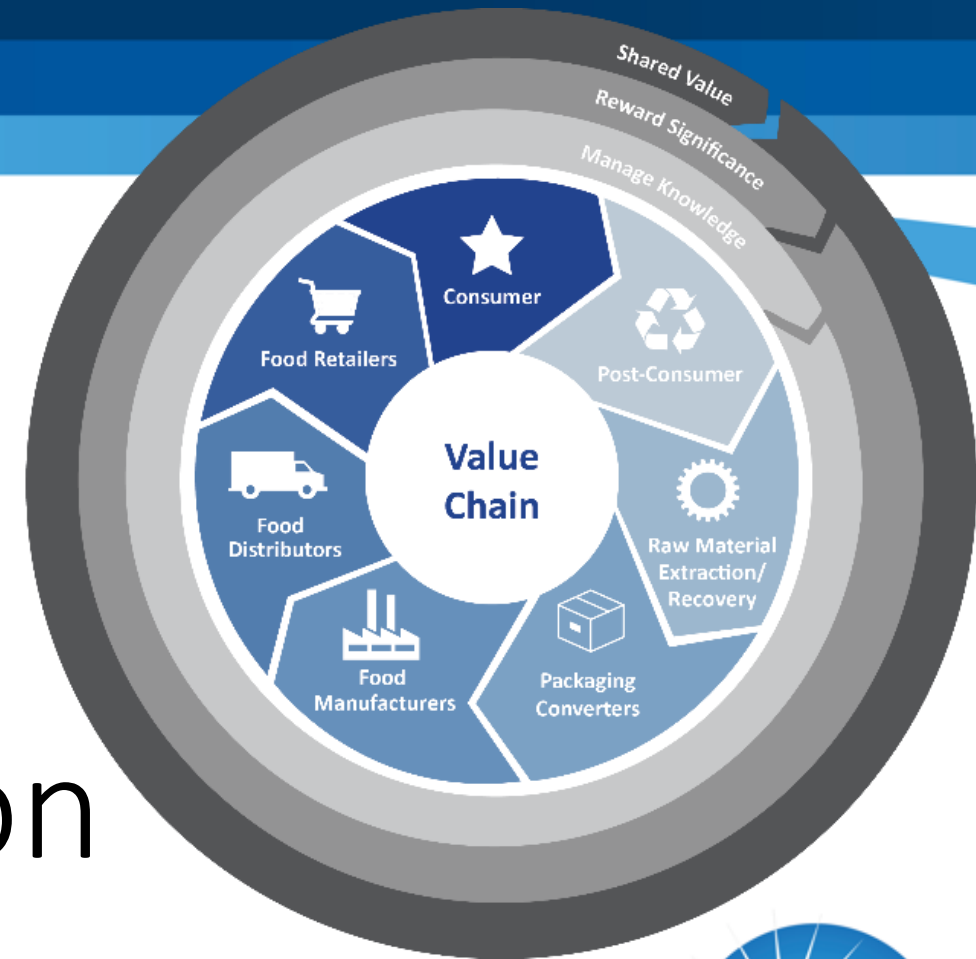
RESULTS

- Market sizing at the brand and packaging film level
- 3 target brands
- 2 target packaging partners
- Implementation Value Chain drivers



Value Chain Innovation

Beta Packaging
Flip the Barrier

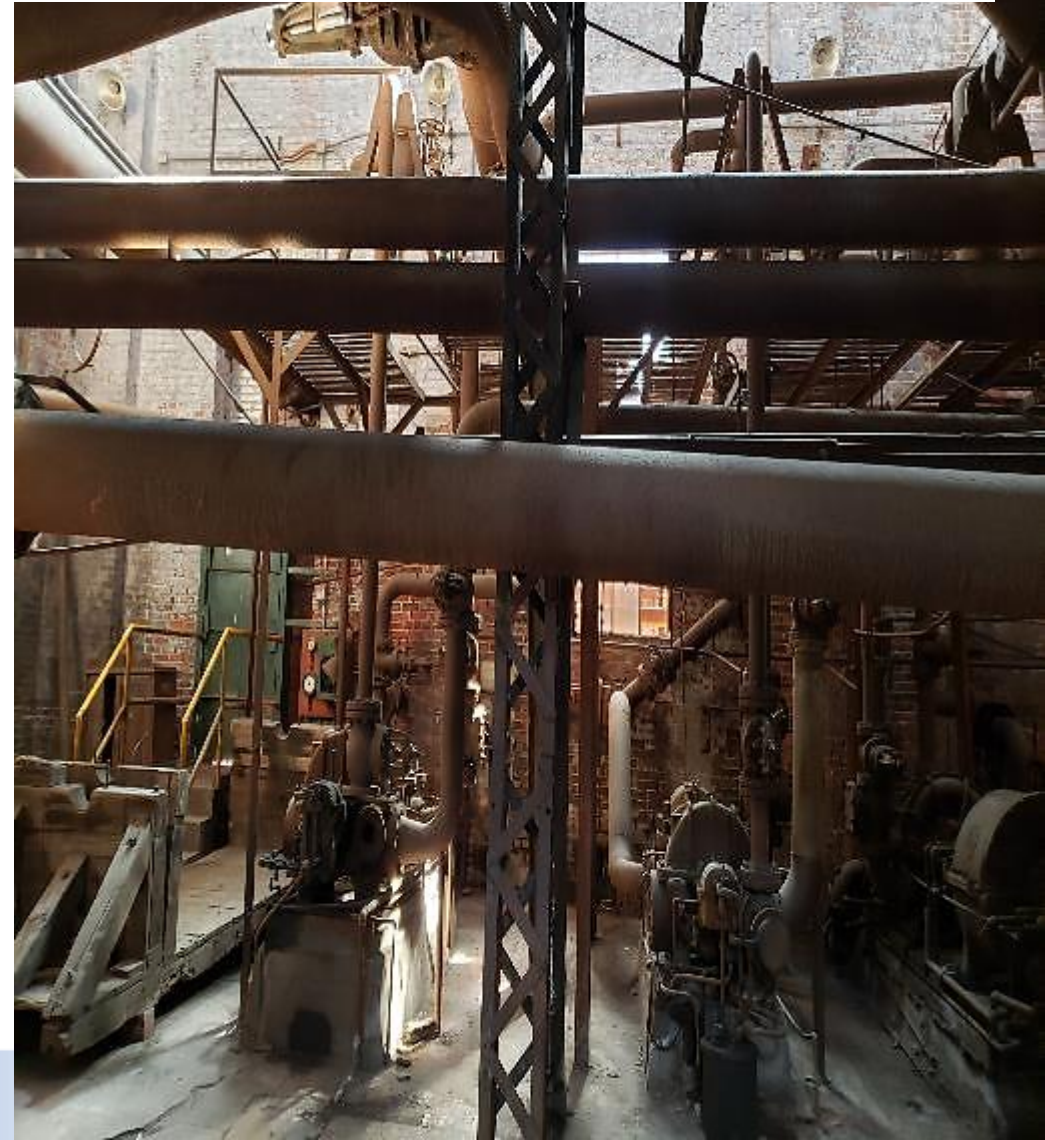


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Value Chain Innovation Prevents Food Waste | Beta Packaging

Beta design:

- Beta-packaging focuses on **agility**
- Incorporates **5th** industrial revolution
- Generative **use-focused** design
- Allows retailers and consumers to adjust package
- Packaging that senses then acts
- Aligns with inherent variability of our food system



Value Chain Innovation Prevents Food Waste | Beta Packaging Example

Consumer view

- Consumers in charge of formulations
- Packaging when consumers need it
- Less packaging for MSWs to handle

Business Case

- Personalization always hits the mark
- Logistics stress transferred to retail and consumers
- Alter Primary packaging
 - <\$\$\$
 - < barrier requirement
 - > recyclability
- >Agility
- Returnable tertiary packaging cost savings

“Pick” and pack produce in store



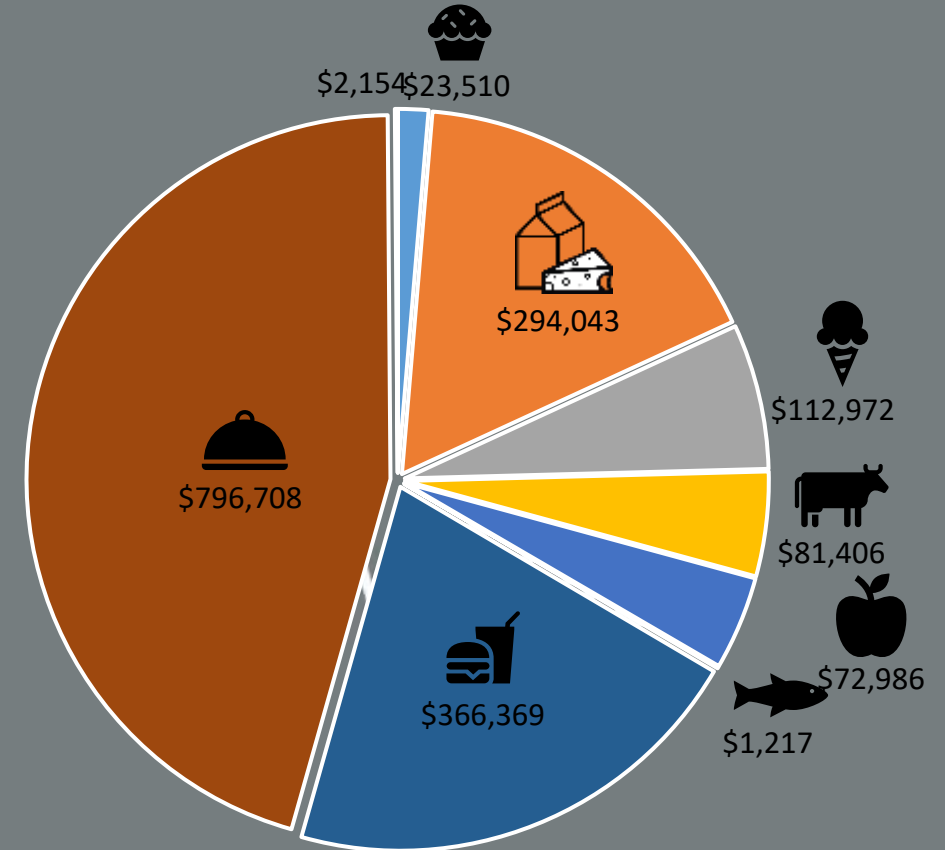
Value Chain Innovation Prevents Food Waste | Flip the Barrier

MasterPack Expansion

- Minimal primary packaging for consumer
- Reusable high-barrier MasterPacks opened to restock shelves

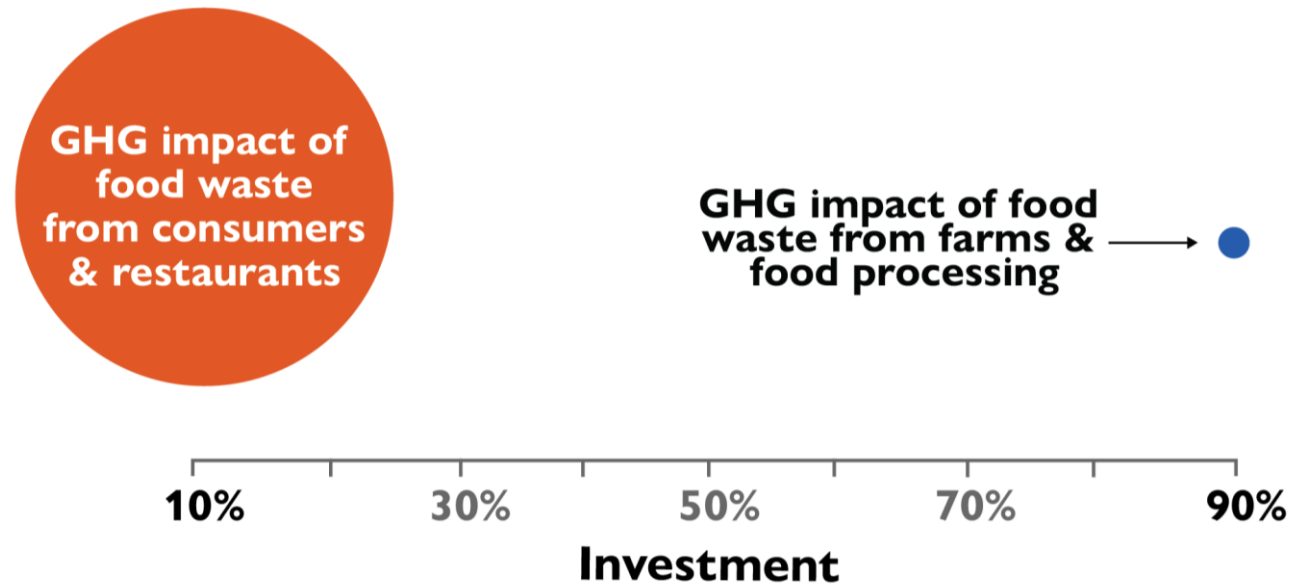
Impact

- Longer shelf life from manufacturer to retailer
- Consumer packaging focused on required shelf life
- Less primary packaging for consumer and MSW
- Potentially more recyclable primary packaging
- Less food waste



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Thank you & Next Steps



Set up a virtual coffee with
Claire

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