

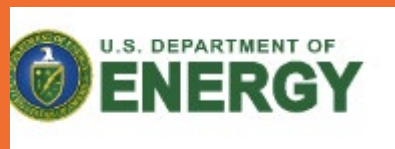
PACKAGING TECHNOLOGY & RESEARCH

- Industry, government and social trends driving food packaging science
- Essential F&B packaging research underway to match needs
- Gaps in F&B packaging research

Fall 2024

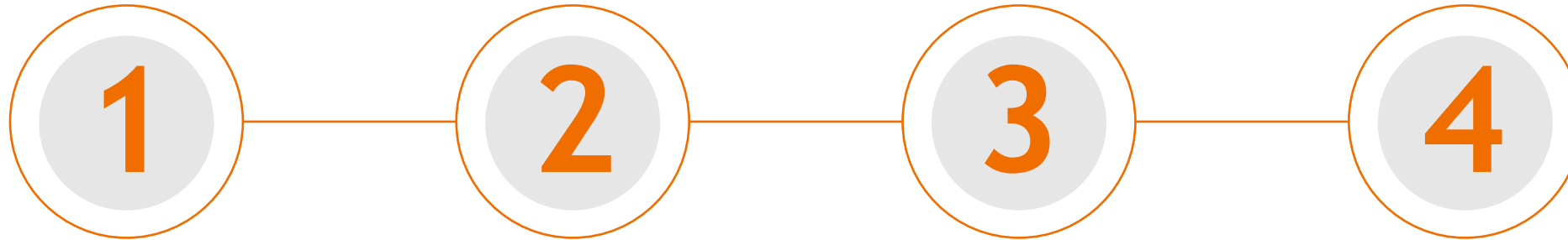
Decarbonization Challenges and Priorities
in the U.S. Food and Beverage Industry

2024 Joint IEDO-AMMTO Sustainable
Food and Beverage Packaging Workshop



PackagingTechnologyAndResearch.com
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TODAY'S TOPIC



Introduction

Trends

Research
Underway

Gaps

ABOUT PTR

Dr. Claire Sandthinks “all food packaging all the time”



Claire’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

- 35+ years of food packaging experience
- Ranks innovative packaging science and value chain solutions to extend shelf life
- Generates implementation roadmaps and aligns business cases
- IFT Fellow, Riester-Davis-Brody life-time achievement in food packaging award recipient
- Doctorate in Food Science and Nutrition at University of Minnesota
- MS and BS in Packaging at Michigan State University

Monthly Columnist



Current Leadership & Editorial Boards



Recent Awards



*Riester-Davis-Brody
Food Packaging
Lifetime Achievement Award*



IFT Fellow

PTR CAPABILITIES

Our services – 4 areas

Strategy Consulting

- Value Chain & Technology Roadmaps
- Directed Market & Science Alignment
- Increase Packaging Platform Sustainability
- Reduced Food Waste

CLIENTS PACKAGING AND FOOD COMPANIES AND ASSOCIATIONS

Technical Consulting

- Technology Development
- Cost Reductions
- More Sustainable Packaging solutions
- Food Waste reduction

CLIENTS PACKAGING AND FOOD COMPANIES

Technology Evaluations

- Ecommerce
- Migration
- Consumer Research on Sustainability
- Intelligent Packaging
- More Sustainable Packaging
- Global Research Institutes

CLIENTS PACKAGING AND FOOD COMPANIES

Expert Witness

- Food packaging expert report, deposition, and trial support

CLIENTS LEGAL FIRMS

PTR CLIENT BASE

Selected clients

Food Industry



Packaging Industry



Associations



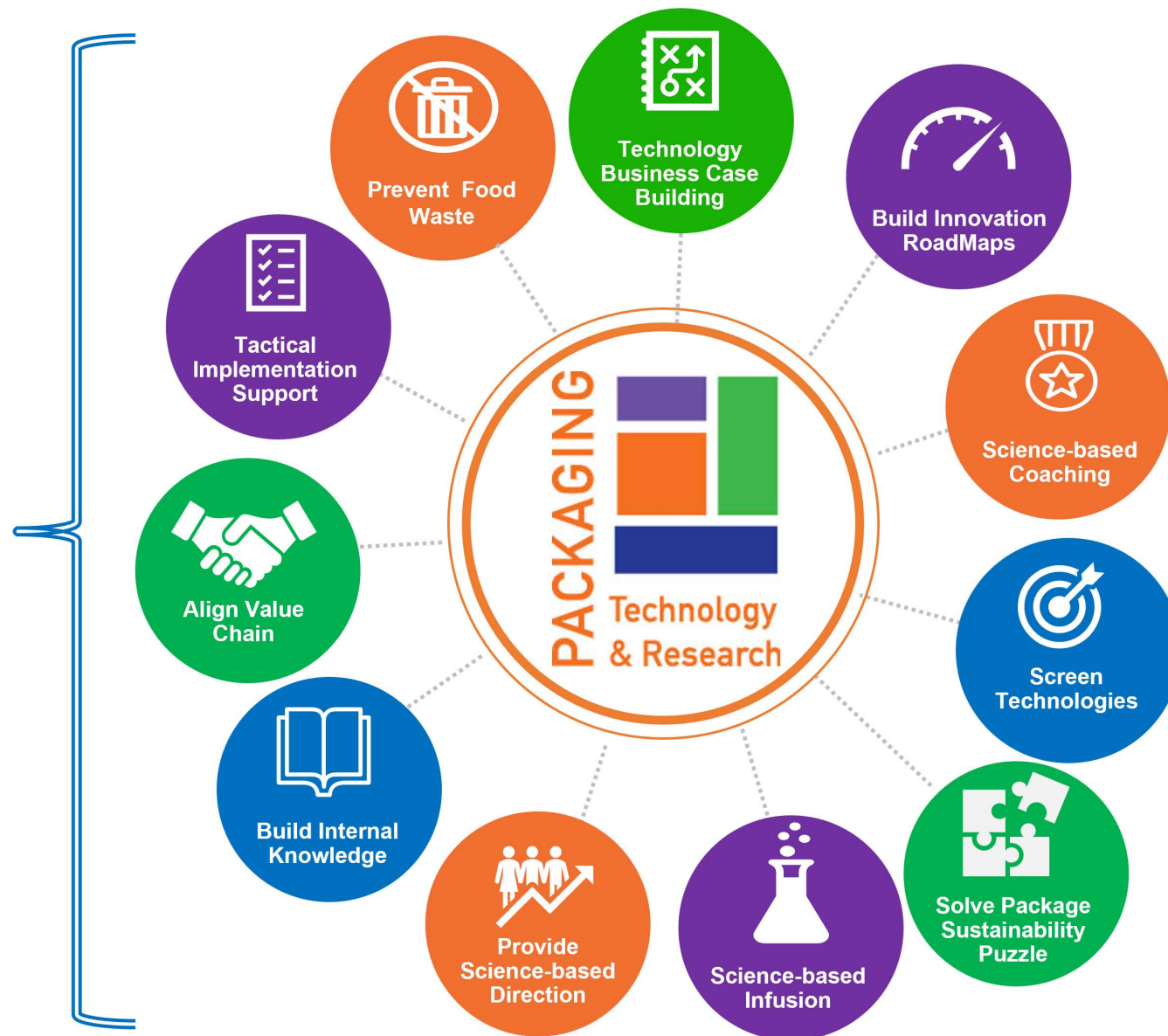
Agricultural Utilization Research Institute



PTR'S EDGE

What we do

Provide tailored packaging
science & value chain
solutions to the
food & packaging industry



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Trends – Overview of Tailwinds

Focus on the End Game

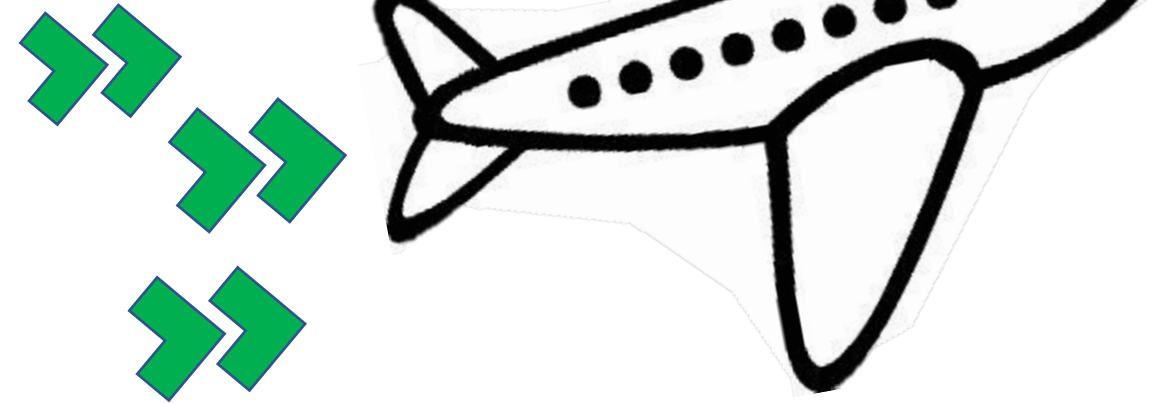
- + More sustainable food system is advancing
- + UNSDGs link food waste and packaging
- + Business case can align

Packaging has power

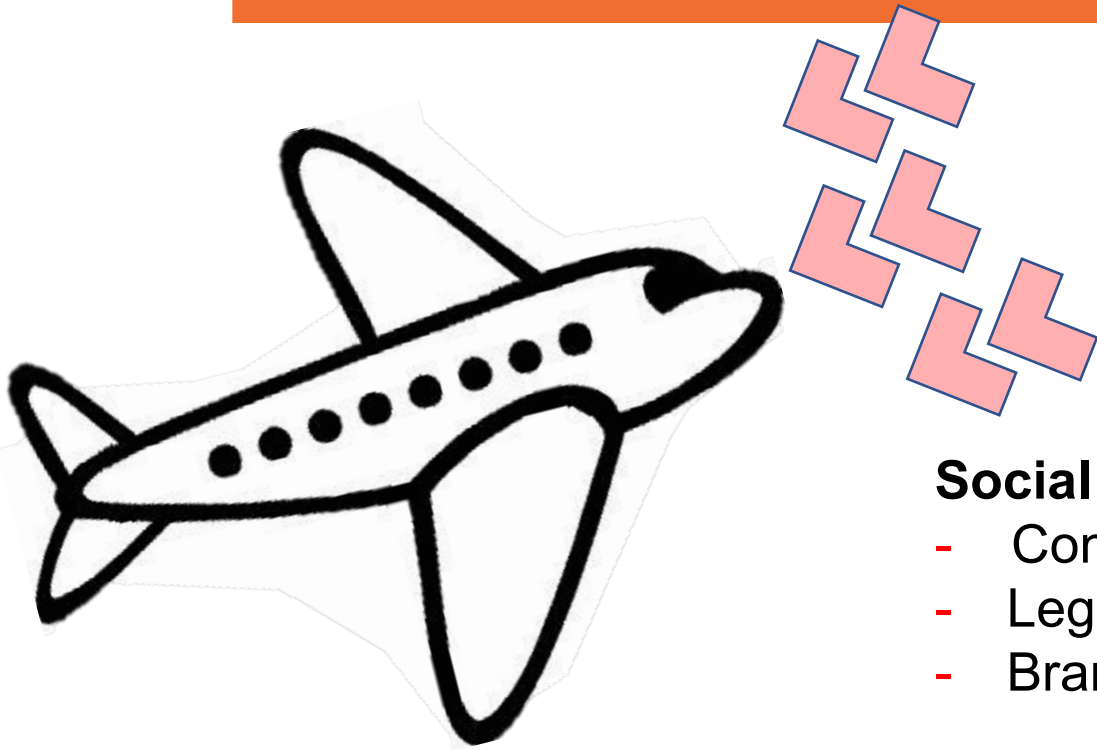
- + 5th Industrial Revolution linking information with emotions
- + Unique position/power of Retailers
- + Shared Value

Material science delivers

- + Useful 100% Bioderived polymers advance
- + Compostable un-reality is eminent
- + Chemical and mechanical recycling finesse



Trends – Overview of Headwinds



Packaging not leading in concerted manner

- Reactionary Industry Leadership remains after trust has eroded
- “we have been here before” feeling from established leaders

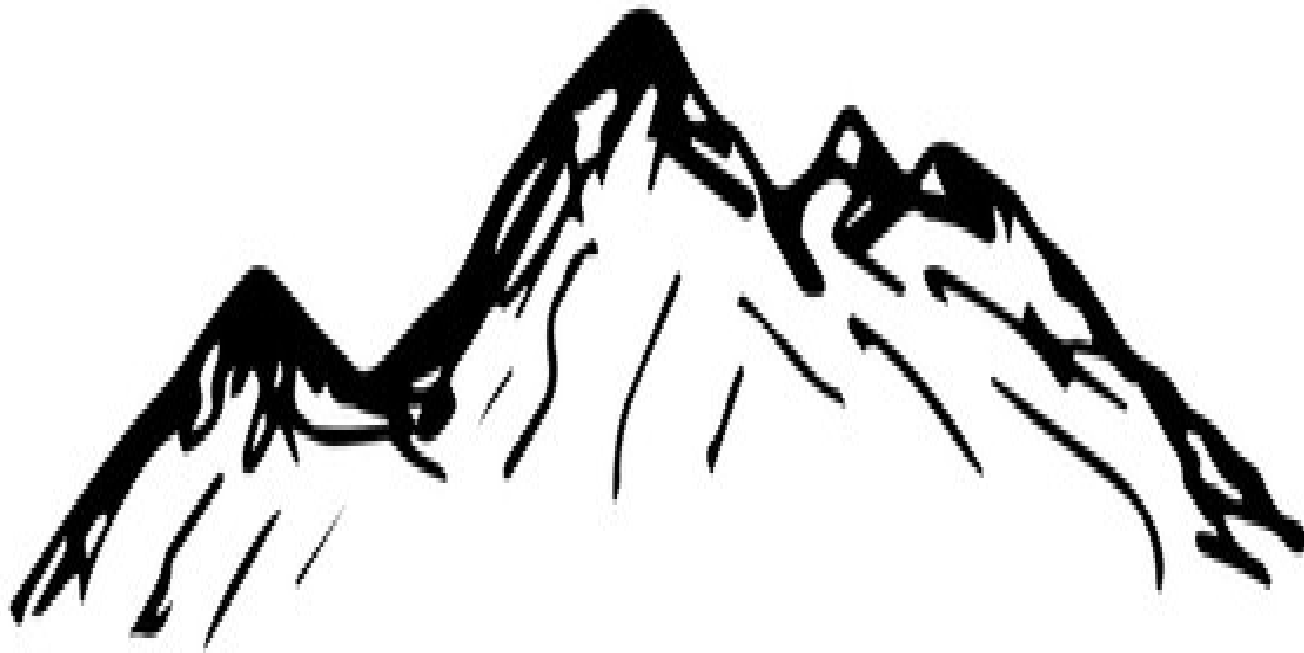
Social pressure & not Science dominating discussion

- Consumer opinions are
- Legislation lack scientific understanding
- Brands are being bullied into bad decisions

Lack of Responsibility

- Lack of focus on common need for collection and sorting
- Brands and packaging industry continue to erode trust
- Research Investment disconnected to End Game

Research Underway



1. Processing – packaging interactions
2. Antimicrobials migrating from materials that will never be used
3. Petri dish bioderived (“non-plastic”) materials that lack basic properties needed in packaging
4. Distribution packaging

Future of Food Packaging

Scale - specific
supply chains

ESCAPE
the cluster for
true innovation

**Material
Meshes**

**Beyond the
Bling
Intelligent**

**Beta
Packaging**

**AI integrated
Package
Research**

**Applied
Nanotechnology**

**Focused
Active
Packaging**

**Hack
the Hack**

**Shareability
DIY**

**Intuitive
Design &
Handling**

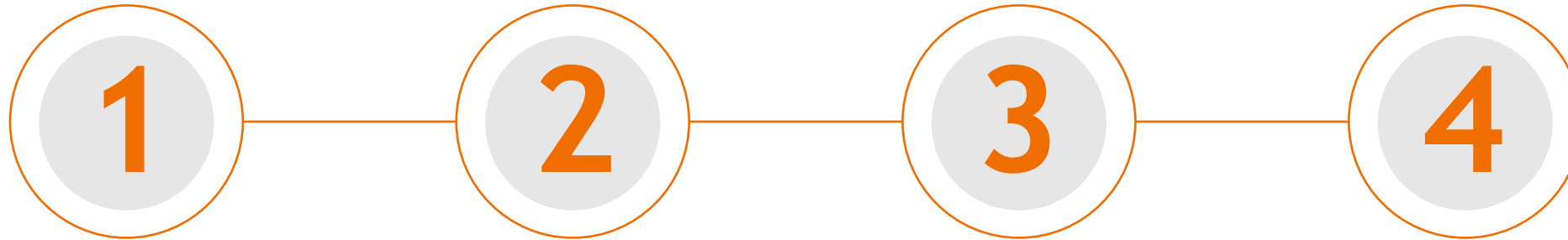
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Research Gaps



1. Food Safety and Chemicals of Concern
2. More sustainable food system focus that is rationale, defensible, achievable and linked
3. Boring Collection and Sorting
4. Small Value Chain logistics
5. Intelligent packaging that aligns with Retailer needs

TODAY'S TOPIC



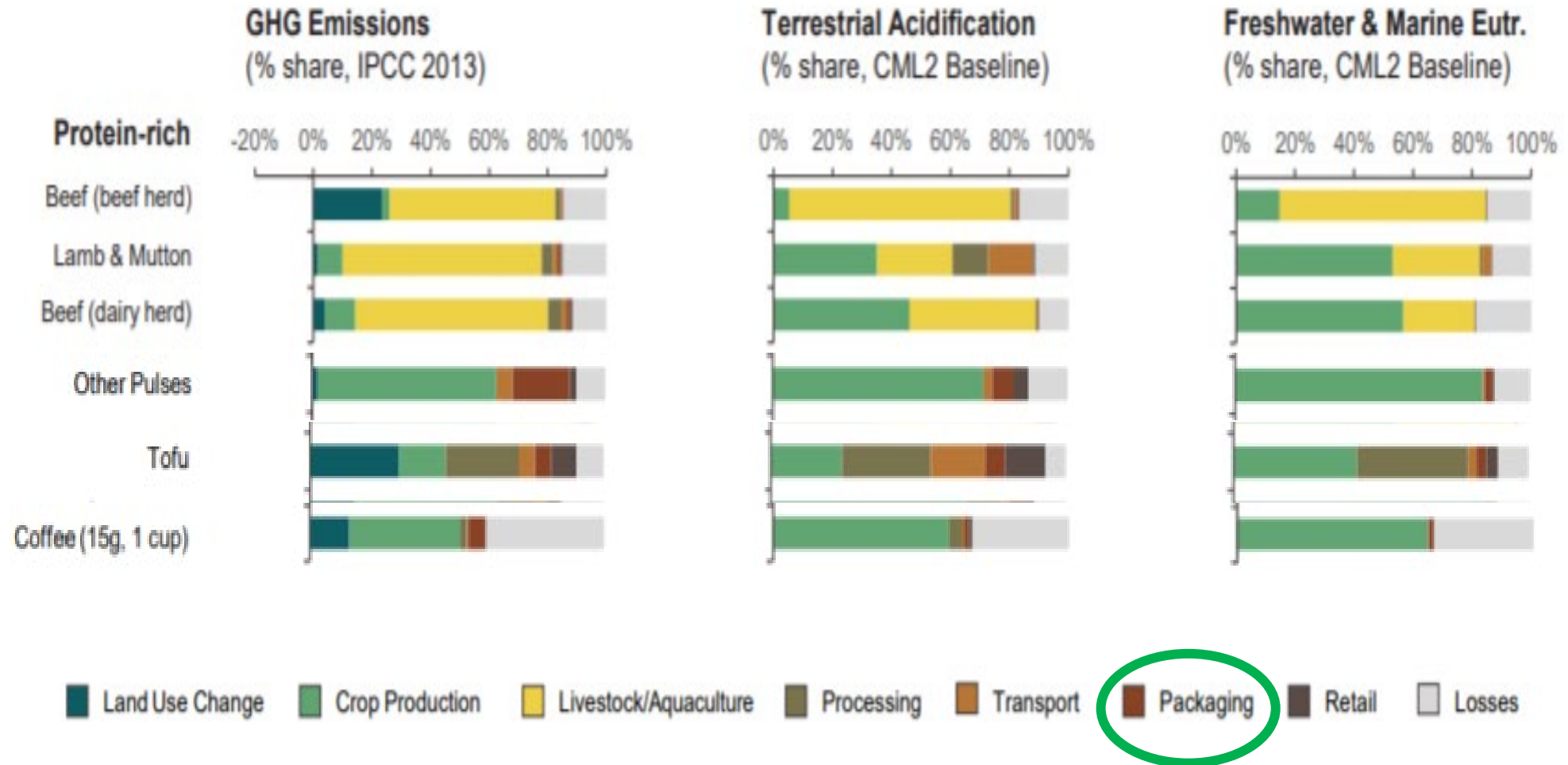
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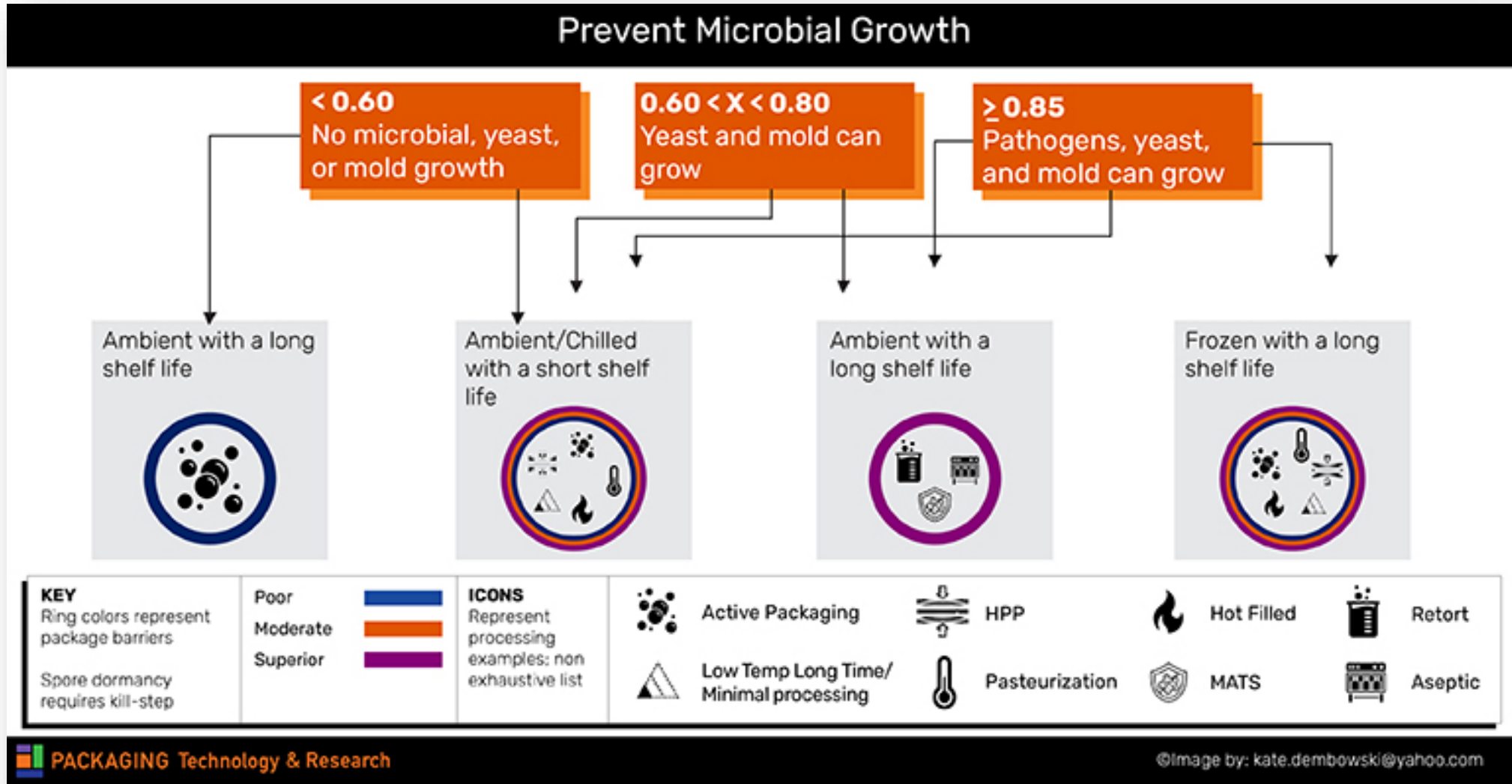
Gaps 1 Refocus on the Actual Objective



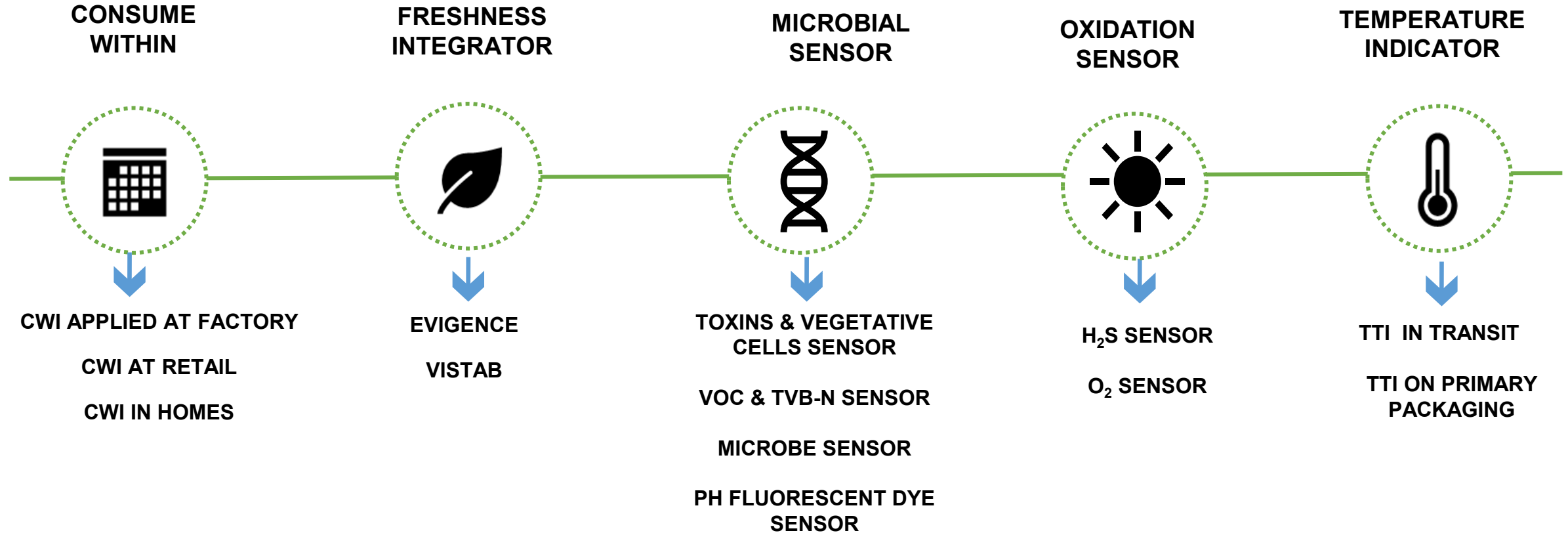
Packaging Solutions that Prevent Food Waste as a Function of Feasibility and Impact



Modeling degradation kinetics is product and package specific



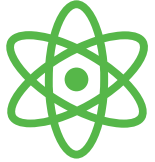
Gaps - Add value with Intelligent Packaging



Future of intelligent packaging



Bayesian decision making



Energy

- Printed batteries



Responsive Science

- Active packaging linkage to release preservatives
- Chlorine dioxide, ZnO, ethanol



Material science

- Paperboard substrate to detect and act



Reading

- Reading package shelf life via phone sensors
- Reactive inks

Gaps – Restore confidence with Intelligent Packaging

CLIENT PROFILE- Major Food Company
RTE brand at QSRs faced major food safety concerns



PTR CLIENT WORK SAMPLE

SOLUTION

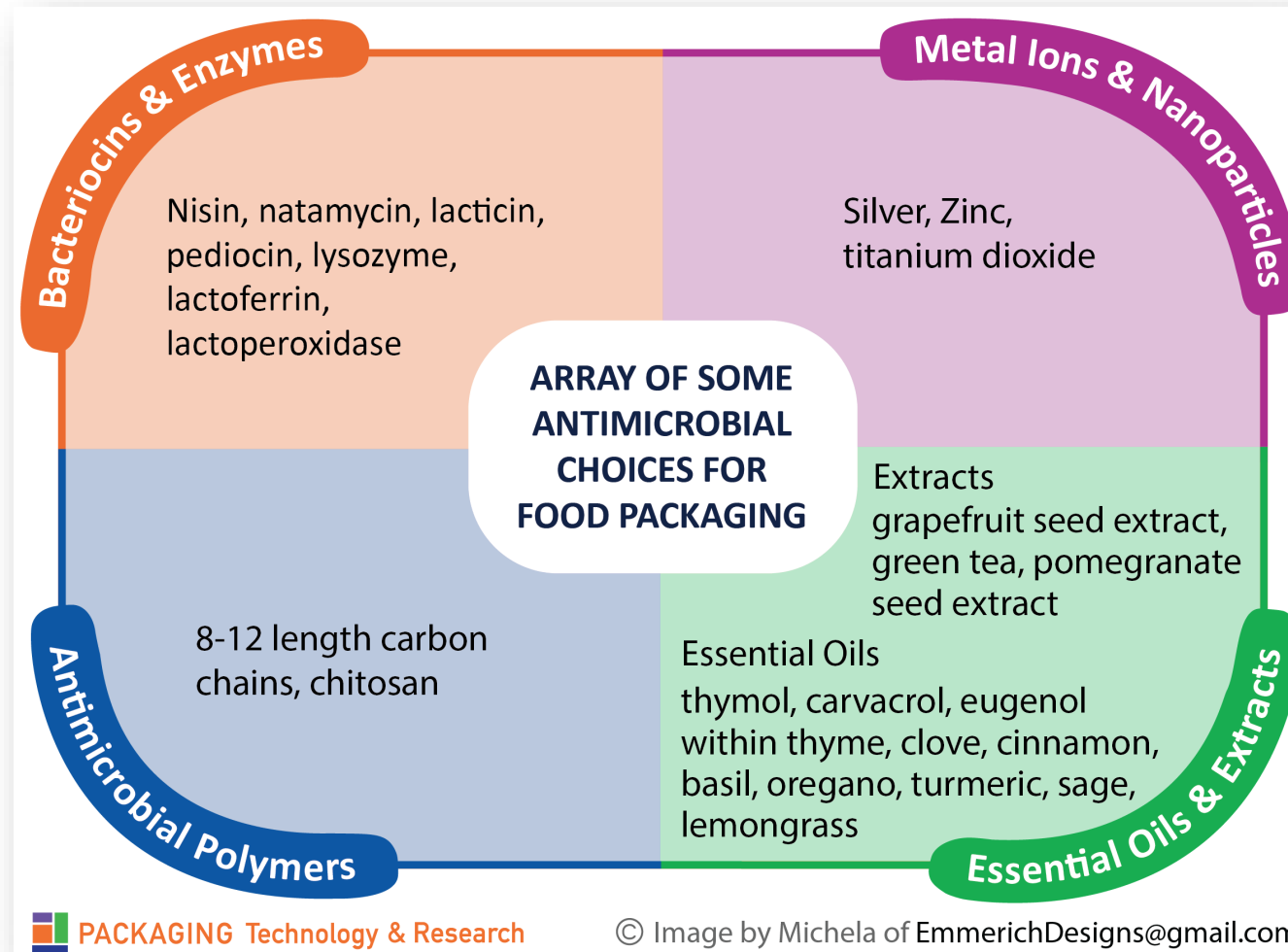
- Identified optimal solution to address a **food safety concern & restore brand confidence**
- Ranked specific intelligent packaging - to be calibrated to accurately **match listeria growth kinetics** - solutions for a specific product
- **Prototyped** 3-5 best viable options to meet defined success 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 or UNSDGs
- Expanded sales 15% due to less waste



Gaps - Add value with Antimicrobial Packaging



Gaps – Shift to Packaging Value Chain Innovation

Consumer view

- Consumers in charge of formulations
- Packaging when consumers need it
- Less packaging for to dispose of and 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



Gaps – Shift to Packaging Value Chain Innovation

Challenges

- Space external to retail
- Planogram issues
- Restocking innovation needed
- Shifted focus to bulk shipments

“Factory” in the Store “Mobile” factory





Free

By Project

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Stay current with the hottest food science and food packaging trends & insights



My Newsletter

Sign up and stay informed!



My Network

Let's Connect!



My Presentations

Check out my presentations on SlideShare



Everything Else

Stay current with the hottest food science and food packaging trends & insights



Thank you



Claire Sand

Founder & Owner



**Reach out to connect for
a virtual coffee**