Consumer/Market Drivers and Direction for More Sustainable Packaged Food

Fall 2019

CREATED FOR

Food Packaging Division
Webcast

PRESENTED BY
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CREATED BY PTR www.PackagingTechnologyAndResearch.com

Executive Summary

ABOUT THIS PRESENTATION

15 min discussion on drivers and the role for more sustainable packaging to reduce food waste

1. More Sustainable Packaged Food
2. Drivers for More Sustainable Packaging
3. Drivers for Less Food Waste
4. Direction

About PTR | Actionable innovation to reduce food waste with sustainable packaging solutions

Approach

The future of more innovative food packaging is **complex, enchanting, and promising**

Numerous choices result in catharsis and focus is needed

Innovation requires a **business case**

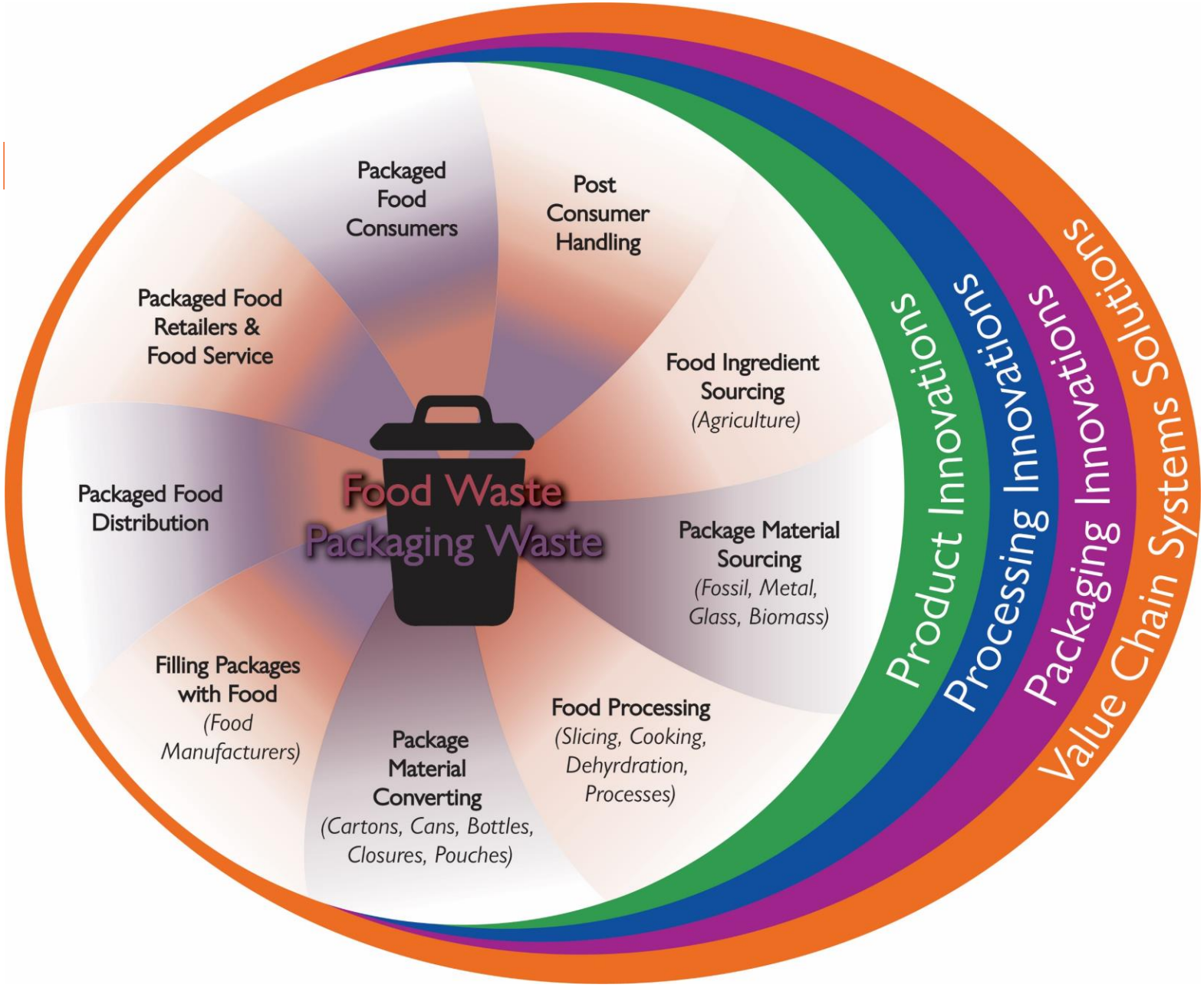
A rational, defensible, and achievable strategy is needed

Gaps can be found

Technology can be used to **enable better alignment between consumer needs and market delivery**

Value chain connections **build in agility** for future

Hesitancy can be reduced with **more levers to drive switching**


Packaged Food Consumers
Post Consumer Handling
Packaged Food Retailers & Food Service
Food Ingredient Sourcing
(Agriculture)
Packaged Food Distribution
Food Waste
Packaging Waste
Package Material Sourcing
(Fossil, Metal, Glass, Biomass)
Filling Packages with Food
(Food Manufacturers)
Food Processing
(Slicing, Cooking, Dehyrdration, Processes)
Package Material Converting
(Cartons, Cans, Bottles, Closures, Pouches)
Product Innovations
Processing Innovations
Packaging Innovations
Value Chain Systems Solutions

About PTR | Dr. Claire Sand - Owner

PACKAGING Technology & Research

Focused compelling food packaging expertise

Dr. Claire Sand is a Global Packaging Leader with 30+ years of broad experience in the food science and packaging spectrum. *Sand leads food packaging efforts involving packaging solutions to food waste and more sustainable packaging, as well as provides compelling technology business cases and implementation roadmaps for innovative technologies. Dr. Sand is Owner and Founder of Packaging Technology and Research, LLC., and Adjunct Professor, and holds a doctorate in Food Science and Nutrition from the University of Minnesota and MS and BS in Packaging from Michigan State University.*

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- Phi Tau Sigma Strategic Relations & Affairs Chair
- Author
- Category Manager
- Principal
- Technical Business Manager
- Packaging – Gerber Baby Food

"I am passionate about leading efforts to reduce climate change by preventing food waste with more sustainable packaging."

- *Solutions using Strategy and Science*
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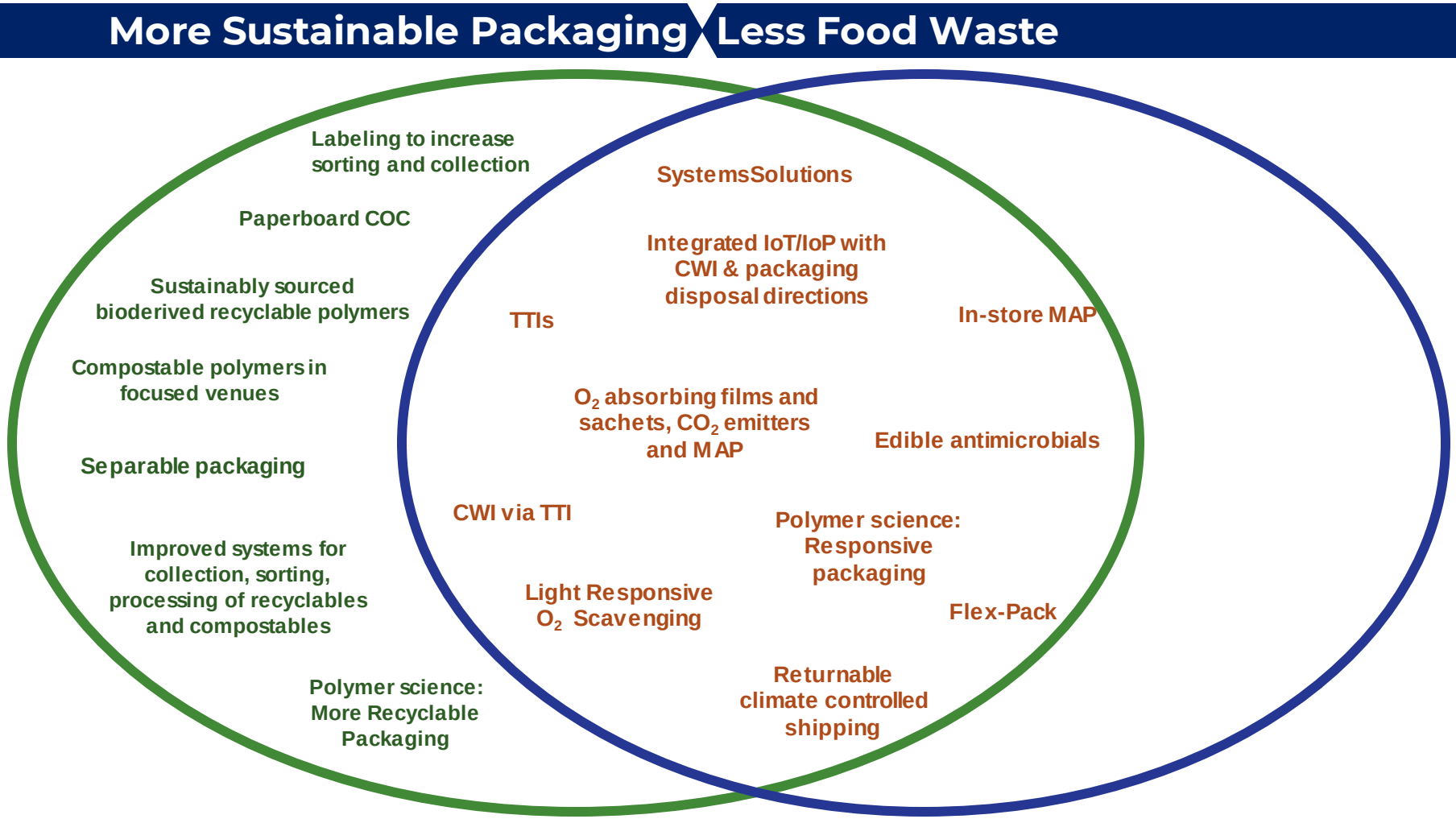
1

Consumer/Market Drivers and Direction for More Sustainable Packaged Food

Nexus of More Sustainable Packaging and Less Food Waste

More Sustainable Packaged Food = Least Food Waste with the Most Sustainable Packaging



Defining Sustainability

The food industry is not considered wholly sustainable now

the development that meets the needs of the present without compromising the ability of future generations to meet their own needs

Brundtland Report UN (1987)

*Consumer Behavior T*heory can Guide

More Sustainable Packaged Food

Consumers want a more sustainable food supply

Value-action gap	**Metamotivation**	**Barriers to Sustainable Behaviors**
Theory of Reasoned Action & Theory of Planned Behavior	**Spillover Effect**	**Social Desirability Bias**

Consumers Driven to Sustainability Differently

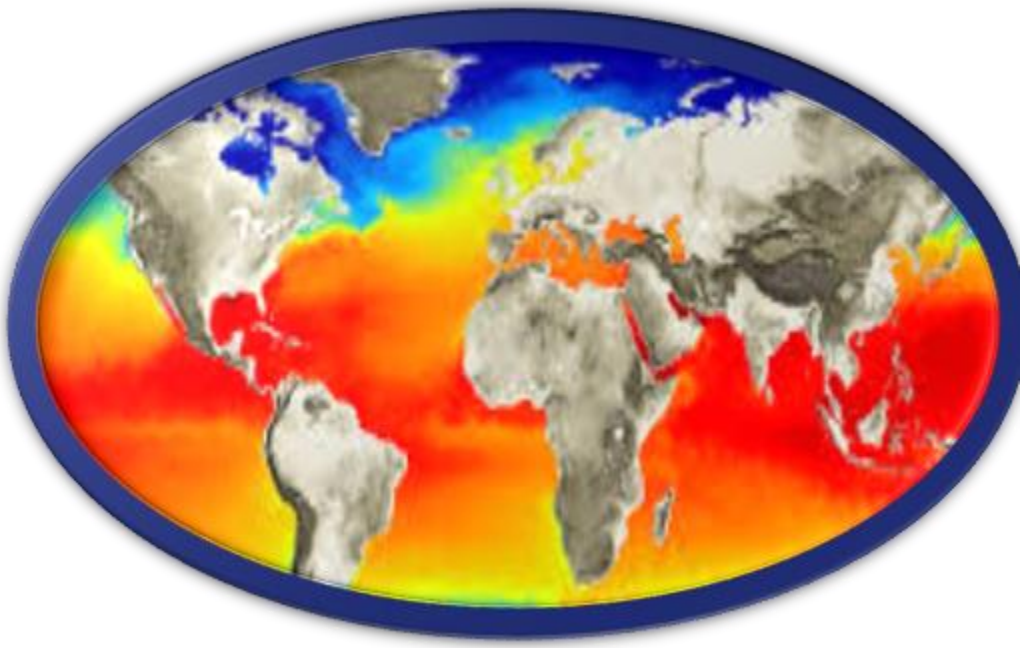
Many drivers with many solutions

Demographics

Norms and Values

income

Country of Origin

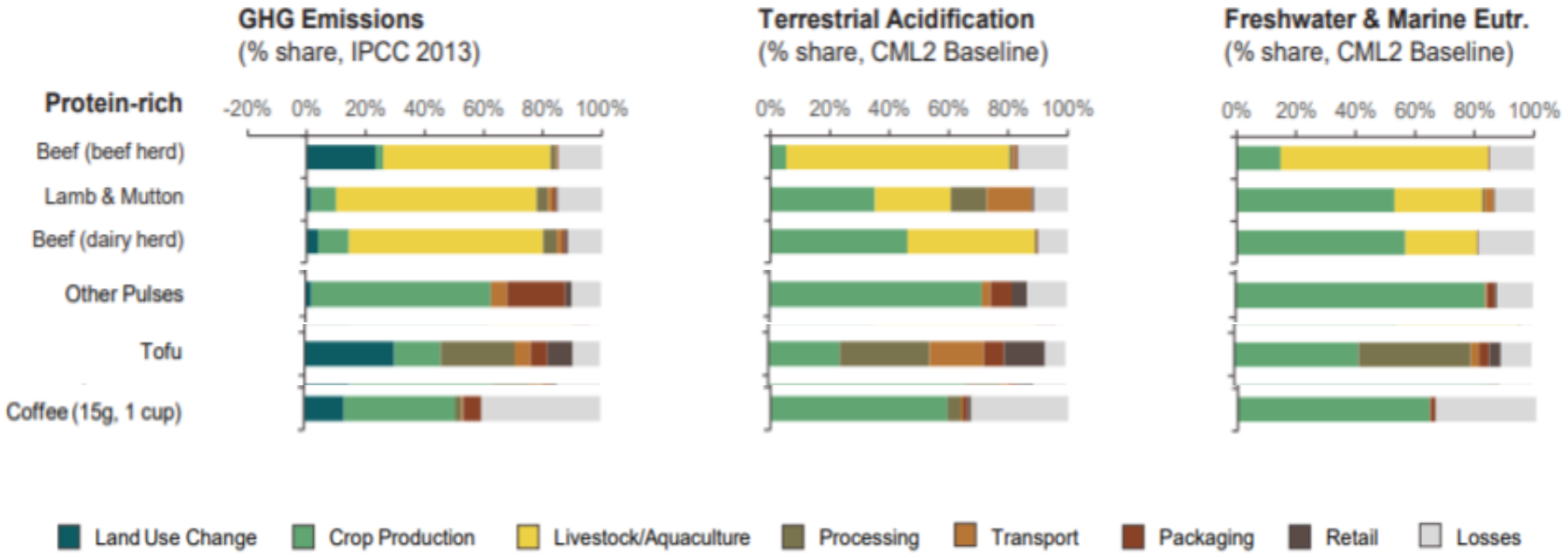


Individual Consumer Views on Sustainability

Consumers Driven to Sustainability Differently

More Sustainable Packaged Food

Impact on the environment is complex



Poore and Nemecek, 2018

2

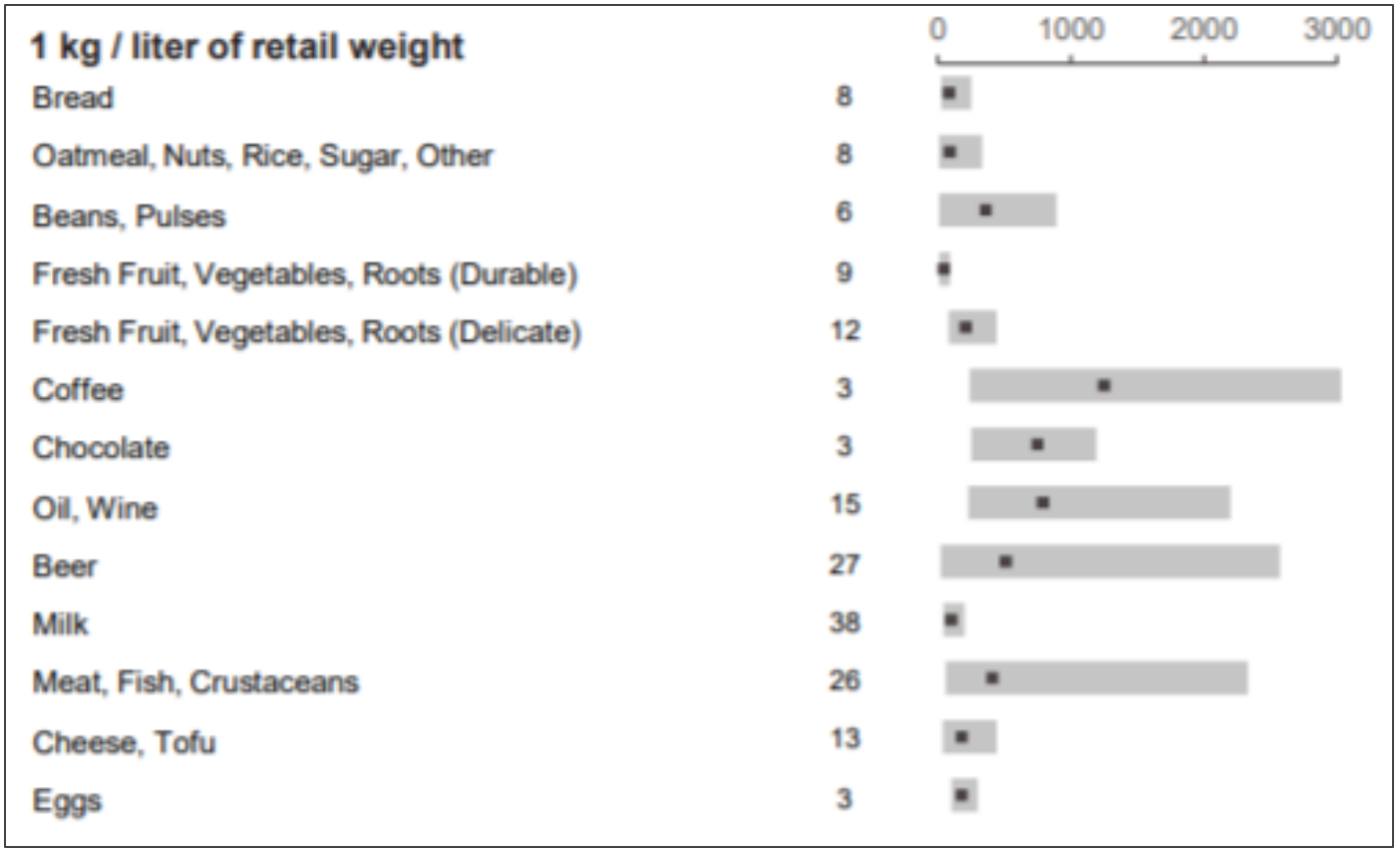
Consumer/Market Drivers and Direction for More Sustainable Packaged Food

Drivers for More Sustainable Packaging

Packaging Impacts the Environment

More Sustainable Packaging

The impact of packaging varies by product and package types



GHG emissions for different post-farm processes, pack types, and retail types

Incentives Guide Consumer Behavior

More Sustainable Packaging

USA-66%

EU-35%

of recyclable packaging is not recycled

- Incenting recycling works
  - Bottle bill states had higher recycling rates
  - Incentive states did not have a higher WTP for bottles
- Tradeoffs are made with other behaviors they consider sustainable
- Elasticity
  - Price
  - Time

WTP Driven by Package Design

More Sustainable Packaging

Package design communicates sustainability to consumers

- Graphics, materials, verbal text, and colors do not communicate well individually to consumers on sustainability
  - ”Eco-friendly” claims, green leaf symbols
  - Use of only green without claims affected efficacy perception
- Consumers WTP is lowest for more sustainable packaging when flavor is poor and price is higher
- There is an opportunity to connect sustainable packaging to low-income populations

WTP Driven by Material Changes

WTP is highest for material properties consumers consider sustainable

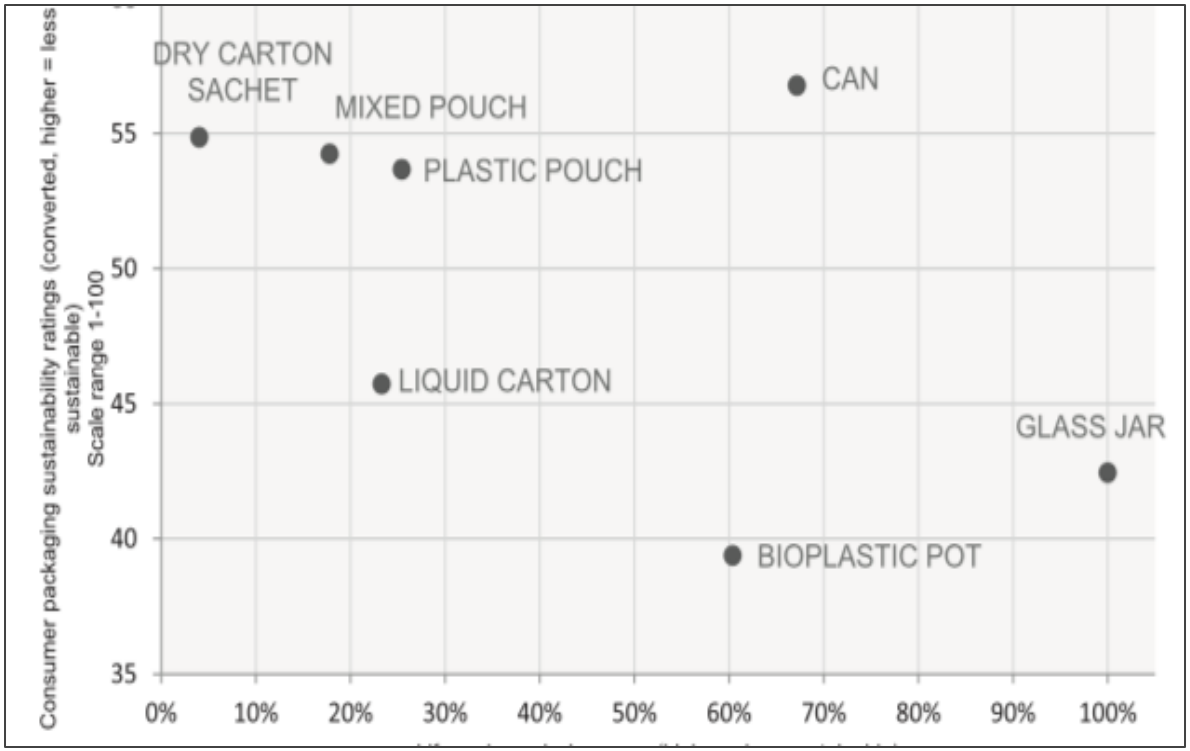
Consumer rank was:

1. Degradable bioplastic
2. Glass
3. Liquid carton
4. Plastic pouch
5. Mixed pouch
6. Dry Carton sachet
7. Aluminum can

Education works

Factual LCA rank is:

1. Dry carton sachet
2. Aluminum can
3. Plastic pouch
4. Mixed pouch
5. Liquid carton
6. Degradable Bioplastic
7. Glass jar



Steenis et al, 2017

Table 3
Percentage of the respondents providing the correct answer/not knowing the meaning of the eco-labels for packaging during a multiple choice test. The full details of all responses are reported in section A.5 of the Supplementary information.

Label	Name	Correct answer	Do not know
	The Green Dot	6.1%	11.7%
	Universal Recycling Symbol	51.0%	6.6%
	Resin Identification Codes	22.4%	39.3%
	Seedling® compostable label	32.7%	43.4%
	Forest Stewardship Council (FSC) label	72.4%	12.2%
	Cradle to cradle® certification label	50%	29.6%
	PITCH-IN Symbol (Don't litter)	43.9%	4.1%

S. Boesen et al. / Journal of Cleaner Production 210 (2019) 1193e12061200

Table 2. Possible approaches in life cycle assessment (LCA).

Issue	Possible Approaches	References
General modeling approach	• Attributional • Consequential	[47,48]
End-of-life allocation procedure	• Recycled content/Cut-off • Avoided burden • 50/50 approach • etc	[49–54]
Database for secondary data	• GaBi • Ecoinvent • etc	[55–58]
Impact assessment methods	• CML • ReCiPe • TRACI • UBP 2013 • etc	[59]
System boundaries	Scope: • Cradle-to-grave • Cradle-to-gate • Gate-to-gate • Gate-to Grave • Geographical and temporal coverage of study • Cut-off criteria	[60,61]
Indicator selection procedures	• Correlation-based • Normalization w/o weighting • Normalization with weighting	[62,63]
Co-Product allocation	• Economic • Physical	[64]

Sustainability 2019, 11, 925;
doi:10.3390/su11030925

traditional and environmental attributes which require new design concepts and engineering specifications. To deal with this challenge, we conceptualize "design efficiency" as a key measurement of design performance in terms of how well multiple product specifications and attributes are combined in a product design that leads to lower environmental impacts. A two-stage network DEA model is developed for sustainable design performance evaluation within an industrial design module. To demonstrate the applications of our DEA-based methodology, we use data of key engineering specifications, product attributes, and emissions performances in the vehicle emissions testing database published by the U.S. EPA to evaluate the sustainable design performances of different automobile manufacturers. Our test results show that sustainable design does not need to mean compromise between industrial and environmental

To aid the selection of food waste disposal technologies, the EU provides guidelines on which disposal technologies are preferable (EC, 2014). This so-called food waste hierarchy (Fig. 1), stipulates that governments should prioritise efforts for (i) most to least preferable) to (i) reduce food waste, (ii) redistribute it (e.g. to the homeless), (iii) recycle it as animal feed and (iv) compost, (v) recover energy through an aerobic digestion and finally (vi) landfill the remainder.

the EU memberstates andindustry requested the European Commission to develop a standardized European method for the calculation of the envir

Forgoodreasons, ISO14044 requires high standards for comparative assessments. A harmonized approach can gradually improve comparability, but not provide full and fair cross-study comparability. Reproducibility and cost reduction will be achieved by reducing the number of methodological choices. ironmental footprint of products and organizations

Over 300 Definitions

Industry does not enable Consumer clarity

- Definition by SPA
  - Effective, Efficient, Cyclic, Clean

- Definition by SPC
  - Beneficial, safe & healthy
  - Market criteria, performance, cost
  - Processing and transportation via renewable energy
  - Healthy materials
  - Material and energy optimization
  - Recovery/use in closed loop cycles

3

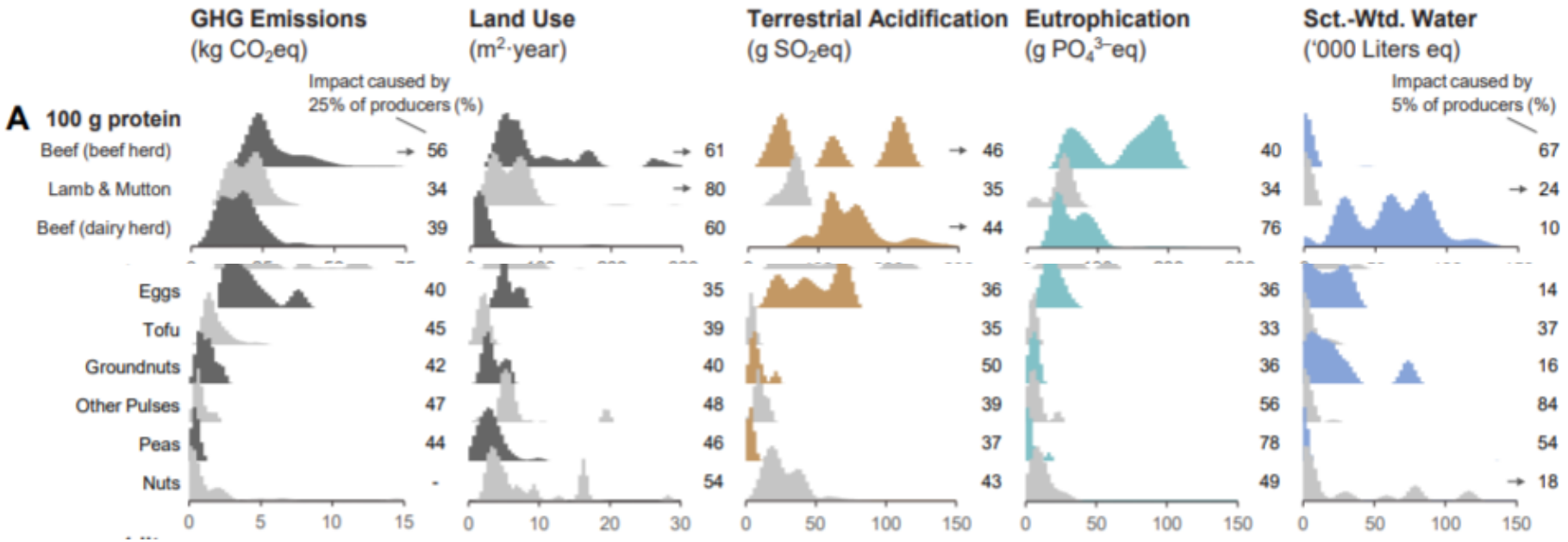
Consumer/Market Drivers and Direction for More Sustainable Packaged Food

Drivers for Less Food Waste

Consumers cannot see many Drivers to Reduce Food Waste

Less Food Waste

Consumers not directly impacted by environment they cannot see



12 drivers on food systems for change, none connect to food waste (Bene, 2019)

Rise of Shared value!

Social welfare

Less climate change

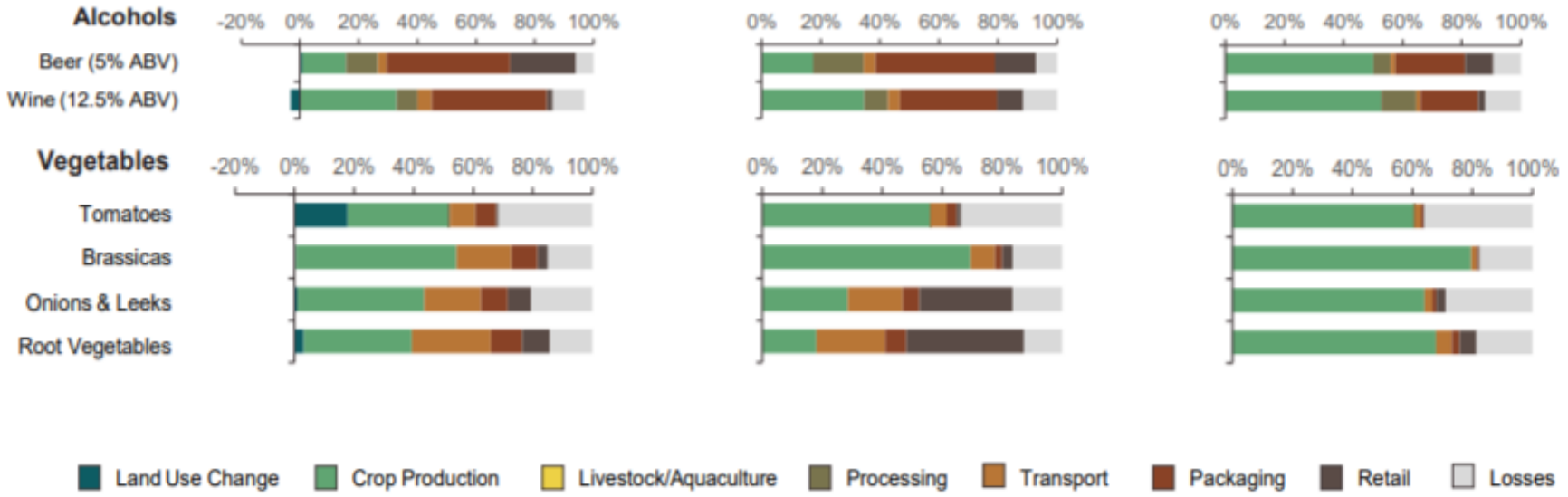
Food equity

Econvrinomental capital

Consumers have Strong Connections to Environment

Less Food Waste

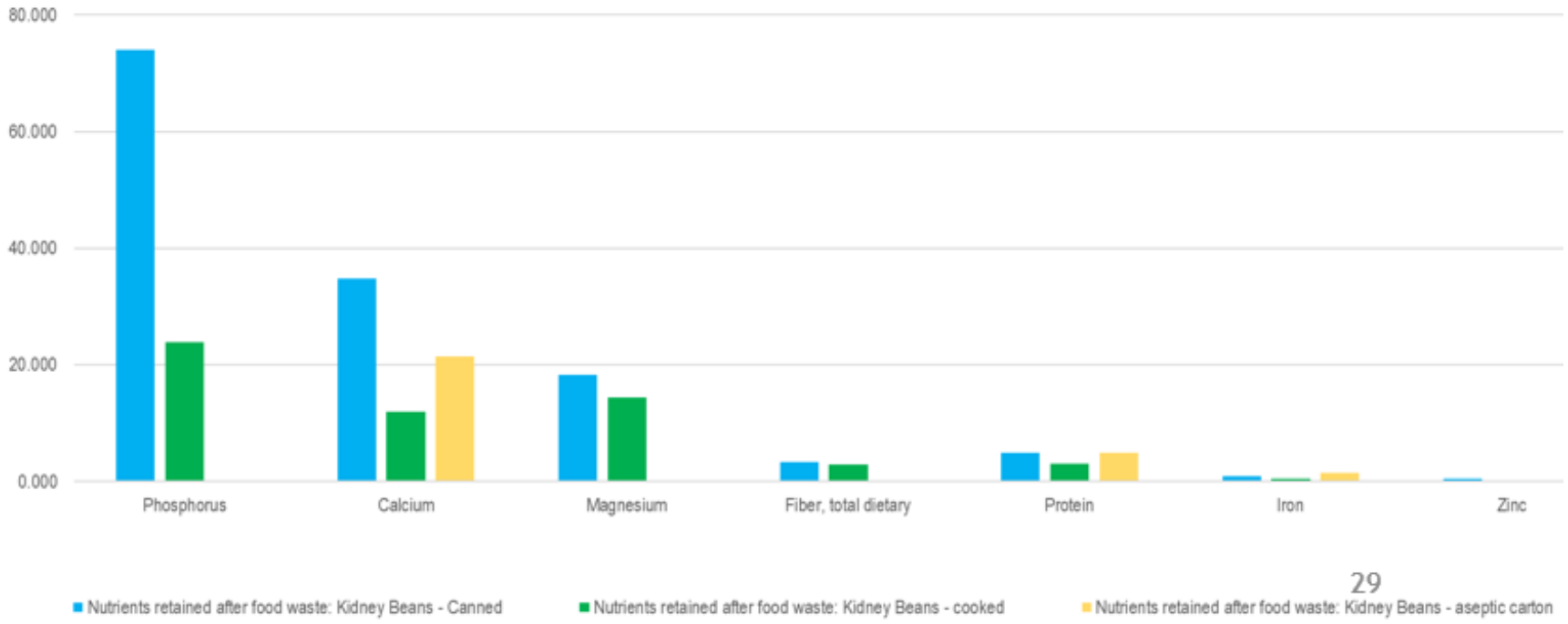
- Connection to the impact of food & packaging on the environment is strong
- Consumers need information to drive their decision making
- Now it is smoke and mirrors in food as well as packaging



Poore and Nemecek, 2018

Nutrient Waste is Relevant to Consumers

Less Food Waste



Canned kidney beans retain more nutrients when food and nutrient waste are combined

Economic Drivers to Reduce Food Waste Differ

Differing drivers are due to economic imbalance

- Brand Owners
  - Have made major progress in economically driven food waste reduction from farm to retail
  - Have limited economic drivers reduce consumer-derived food waste
  - Gap in clear information filled by non-fact based misinformation

- Extending the value chain to Consumers who waste 30% of packaged food is needed
- Link to convenience and adding value of food waste reduction
  - Drivers on consumer sustainability
  - Drivers on Nutrient waste
  - WTP for less nutrient waste and less money lost on spoiled food
  - “Easy to empty” connects with consumers due to food waste reduction

4

Consumer/Market Drivers and Direction for More Sustainable Packaged Food

Direction

Direction-Consumers

Path Forward

- Engage with consumer meaningfully on sustainability
  - Buy-local
  - Local
    - Mailing in empty packaging is not more sustainable and we need local infrastructure
    - Flexitarian
  - Global impacts more clearly understood

- Realize that Consumers see packaging as a window into a Brand's positioning on sustainability

- Extend value chain beyond Retail to Consumers at Food Banks and Food Donations
  - Food waste from Retail to Food Banks is high

Direction-Leadership

Path Forward

- Leadership is needed for uniform assessment tools
  - LCAs on product and package
  - LCAs on packaging versus “wag the dog” material switches

- Respect Consumer need for clear communication
  - Clarity drives change
    - Voluntary carbon-footprinting (UK) and How2Recycle labels, and EPR fees guide
    - Universal (nonculture-specific) to identify more sustainable packaging

- Employ value chain linked intelligent packaging
  - Decrease time and effort to recycle on consumer recycling rate
  - Link food track-&-trace with consumer incentives for proper package disposal

Direction-Leadership

Path Forward

- SystemsSolutions
  - Rethink who needs what shelf life
  - Urban vs Rural specific packaging
  - Change packaging consumers have to handle

- Category-wide initiatives on food waste reduction and more sustainable packaging

- Use Food Service as means to guide Consumers
  - Food waste reduction at Consumer and BOH & FOH Food Service level
  - Opportunity and value drivers are higher

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