FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

Identifying Behavioral Drivers of Effective Food Safety Policy

Feed the Future Innovation Lab for Food Safety

April 27, 2021

USAID FROM THE AMERICAN PEOPLE

PURDUE UNIVERSITY

Cornell University

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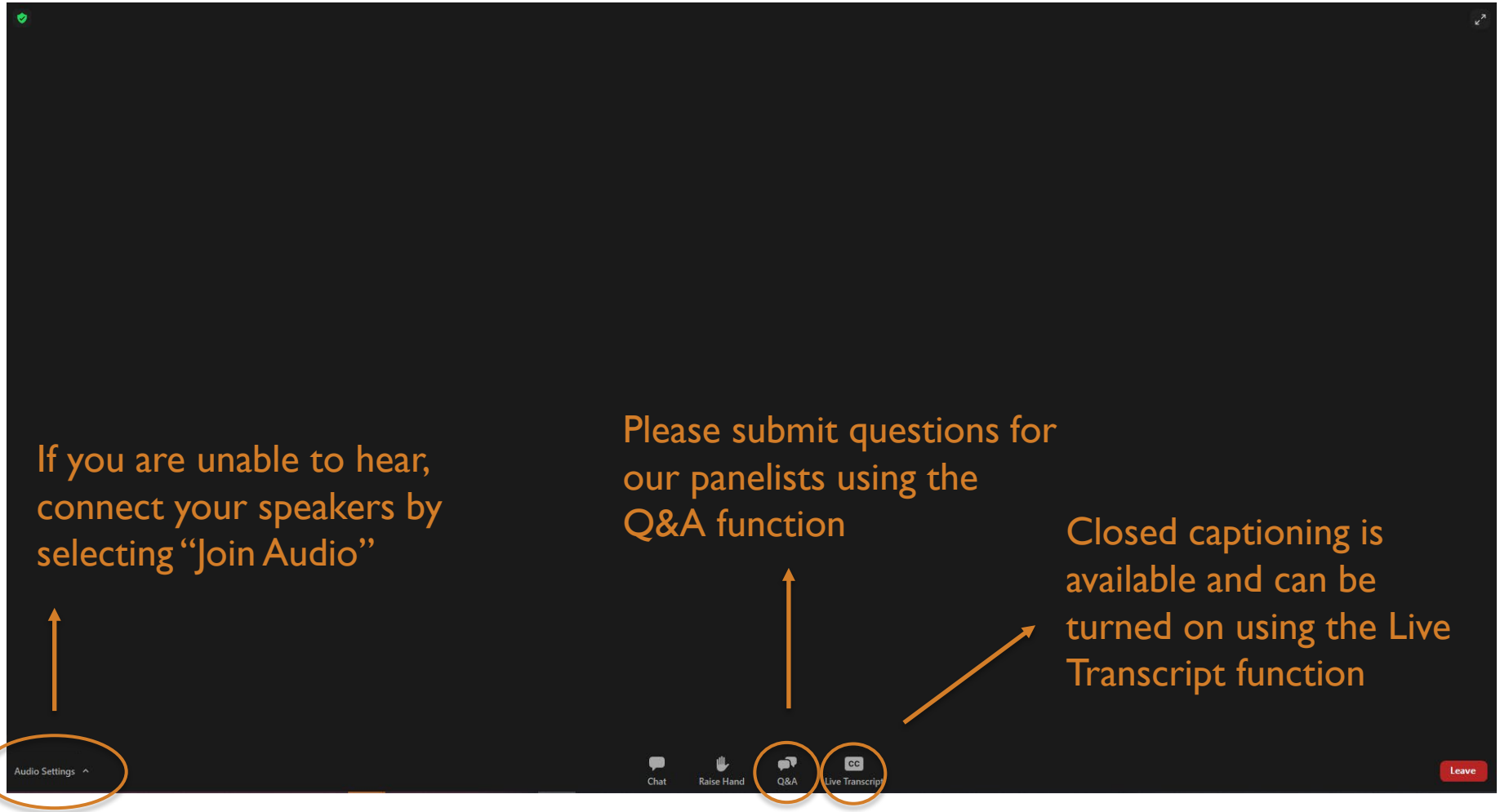
The U.S. Government's Global Hunger & Food Security Initiative

WELCOME



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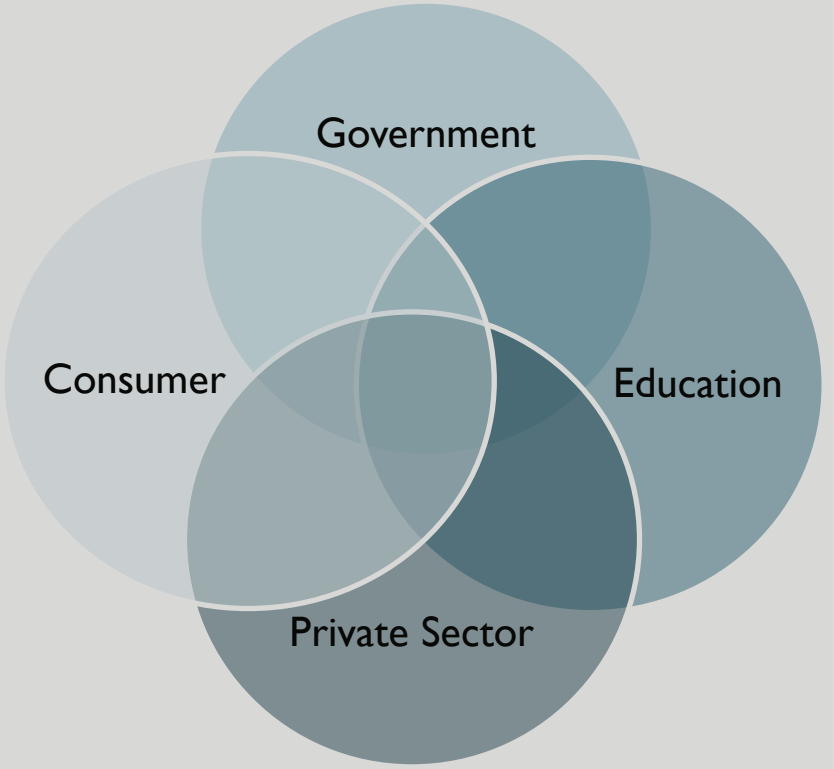
MODERATOR

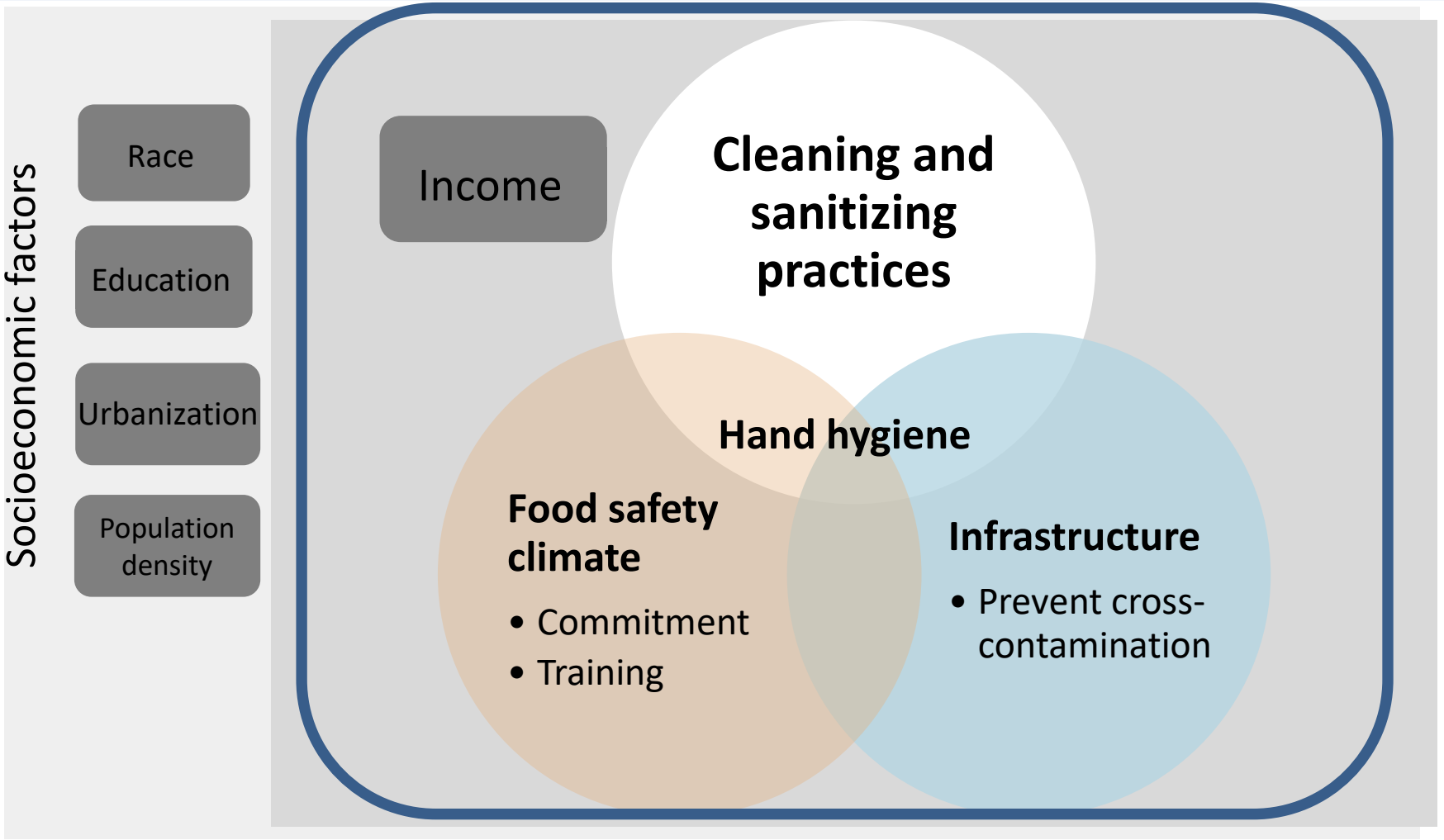
Haley Oliver

Director of the Feed the Future
Innovation Lab for Food Safety

Professor of Food Science
Purdue University

Food safety influencers





Amin et al., in prep; Wu et al., 2019

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AGENDA

- **Meera Chandra – 10 min.**
  AAAS Fellow
  United States Agency for International Development (USAID)

- **Lone Jespersen – 10 min.**
  Principal and Founder
  Cultivate

- **Vivian Hoffmann – 10 min.**
  Senior Research Fellow
  International Food Policy Research Institute (IFPRI)

- **Madan Dey – 10 min.**
  Professor of Agricultural Business and Economics
  Texas State University

- **Panel discussion – 30 min.**

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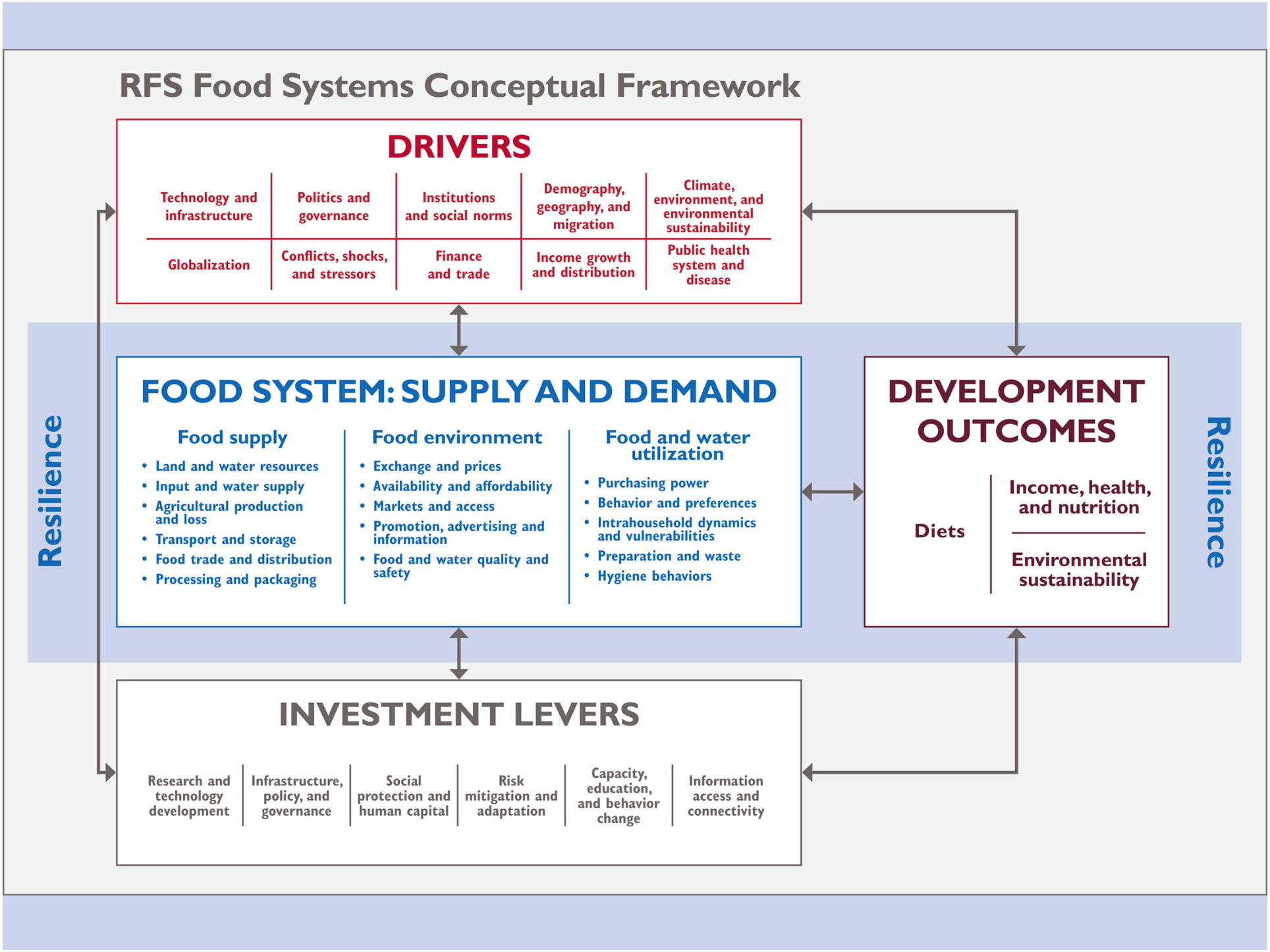
SPEAKER

Meera Chandra

AAAS Fellow

Food Safety Division, Center for Nutrition

United States Agency for International Development (USAID)


RFS Food Systems Conceptual Framework
DRIVERS
Technology and infrastructure
Politics and governance
Institutions and social norms
Demography, geography, and migration
Climate, environment, and environmental sustainability
Globalization
Conflicts, shocks, and stressors
Finance and trade
Income growth and distribution
Public health system and disease
FOOD SYSTEM: SUPPLY AND DEMAND
Food supply
Land and water resources
Input and water supply
Agricultural production and loss
Transport and storage
Food trade and distribution
Processing and packaging
Food environment
Exchange and prices
Availability and affordability
Markets and access
Promotion, advertising and information
Food and water quality and safety
Food and water utilization
Purchasing power
Behavior and preferences
Intrahousehold dynamics and vulnerabilities
Preparation and waste
Hygiene behaviors
DEVELOPMENT OUTCOMES
Diets
Income, health, and nutrition
Environmental sustainability
INVESTMENT LEVERS
Research and technology development
Infrastructure, policy, and governance
Social protection and human capital
Risk mitigation and adaptation
Capacity, education, and behavior change
Information access and connectivity
Resilience
Resilience

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SPEAKER

Lone Jespersen

Principal and Founder

Cultivate

Identifying Behavioural Drivers of Effective Food Safety Policy

April 27, 2021

Today

Connect	Culture and food safety.
Discuss	Consequences of your current culture.
Share	Three steps you can take tomorrow to improve your culture of food safety.

Bindi and Sue

one harvest

Culture dimensions: Risk and Hazard Awareness

Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
The organization relies mostly on external sources and inspections to understand and act on its risks and doesn't identify risks internally.	Actions to manage risks are mostly taken in response to external audits or inspections and internal identification is sometimes incorrect.	Risks are understood and continually challenged by a cross-functional team through planned risk management.	Understanding and reducing risks are an integral part of the organization's continuous improvement efforts.	The organization relies on frontline teams to manage existing risks and to identify new ones through peer observations.

Reference: "Path to financial gain through food safety culture maturity" Lone Jespersen et al, 2019

Consequences of your current culture

Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
The organization relies mostly on external sources and inspections to understand and act on its risks and doesn't identify risks internally.	Actions to manage risks are mostly taken in response to external audits or inspections and internal identification is sometimes incorrect.	Risks are understood and continually challenged by a cross-functional team through planned risk management.	Understanding and reducing risks are an integral part of the organization's continuous improvement efforts.	The organization relies on frontline teams to manage existing risks and to identify new ones through peer observations.

Using external consultants only and likely no one would catch the issue with the CoOL label.

Reference: "Path to financial gain through food safety culture maturity" Lone Jespersen et al, 2019

Consequences of your current culture

Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
The organization relies mostly on external sources and inspections to understand and act on its risks and doesn't identify risks internally.	Actions to manage risks are mostly taken in response to external audits or inspections and internal identification is sometimes incorrect.	Risks are understood and continually challenged by a cross-functional team through planned risk management.	Understanding and reducing risks are an integral part of the organization's continuous improvement efforts.	The organization relies on frontline teams to manage existing risks and to identify new ones through peer observations.

QA is the sole owner of food safety and would likely not have caught the label issue on their own.

Reference: "Path to financial gain through food safety culture maturity" Lone Jespersen et al, 2019

Consequences of your current culture

Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
The organization relies mostly on external sources and inspections to understand and act on its risks and doesn't identify risks internally.	Actions to manage risks are mostly taken in response to external audits or inspections and internal identification is sometimes incorrect.	Risks are understood and continually challenged by a cross-functional team through planned risk management.	Understanding and reducing risks are an integral part of the organization's continuous improvement efforts.	The organization relies on frontline teams to manage existing risks and to identify new ones through peer observations.

All team members from CEO to frontline know their food would likely have understood the mislabelling issue.

Reference: "Path to financial gain through food safety culture maturity" Lone Jespersen et al, 2019

Consequences of your current culture

Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
The organization relies mostly on external sources and inspections to understand and act on its risks and doesn't identify risks internally.	Actions to manage risks are mostly taken in response to external audits or inspections and internal identification is sometimes incorrect.	Risks are understood and continually challenged by a cross-functional team through planned risk management.	Understanding and reducing risks are an integral part of the organization's continuous improvement efforts.	The organization relies on frontline teams to manage existing risks and to identify new ones through peer observations.

The issue would have been discussed and prioritised as a point for the supplier to improve.

Reference: "Path to financial gain through food safety culture maturity" Lone Jespersen et al, 2019

Consequences of your current culture

Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
The organization relies mostly on external sources and inspections to understand and act on its risks and doesn't identify risks internally.	Actions to manage risks are mostly taken in response to external audits or inspections and internal identification is sometimes incorrect.	Risks are understood and continually challenged by a cross-functional team through planned risk management.	Understanding and reducing risks are an integral part of the organization's continuous improvement efforts.	The organization relies on frontline teams to manage existing risks and to identify new ones through peer observations.

Frontline team member would as part of the HACCP team have raised the near-miss.

Reference: "Path to financial gain through food safety culture maturity" Lone Jespersen et al, 2019

Some behavioural drivers

Make food safety personal

Owner and Farm Manager behaviours

Simply focus

Make food safety personal

Stop Foodborne Illness

For more information: STOP CEO Mitzi Baum (mbaum@stopfoodborneillness.org)

Teach your leaders to behave…

Track delivery of training and connect with team members to discuss their unique responsibilities.

Weekly conversation with crew about food safety challenges.

Walk-the-Talk and become a food safety teacher.

Embrace the uniqueness of your industry e.g., multi-cultural, people intense by simplifying training and communication tools.

Ask, ask, ask…

Strictly Focus

General

- Site food safety principles (e.g., “never deviate from food safety procedures” and “see something, say something")
- Product knowledge and associated hazards.

Job specific

- Picker – stones and glass (physical hazards)
- Tractor driver – pesticides (chemical hazards)
- Farm manager – water quality (biological and chemical hazards).

In summary

What can you practically go away and do tomorrow?

Make food safety personal

Team member photos and family days

Owner and Farm Manager behaviours

Walk the Talk

Become a food safety teacher

Simply focus

Two tier training program; overarching and role specific

Lone Jespersen, PhD
lone@cultivatefoodsafety.com
www.cultivatefoodsafety.com

FEED THE FUTURE
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SPEAKER

Vivian Hoffmann

Senior Research Fellow

International Food Policy Research Institute (IFPRI)

Behavioral drivers of food safety in poorly regulated markets

Evidence from Kenya and Ghana

Vivian Hoffmann
International Food Policy Research Institute

FSIL Webinar | April 27, 2021

RESEARCH PROGRAM ON Agriculture for Nutrition and Health
Led by IFPRI

Foodborne disease: a public health crisis in low-income countries

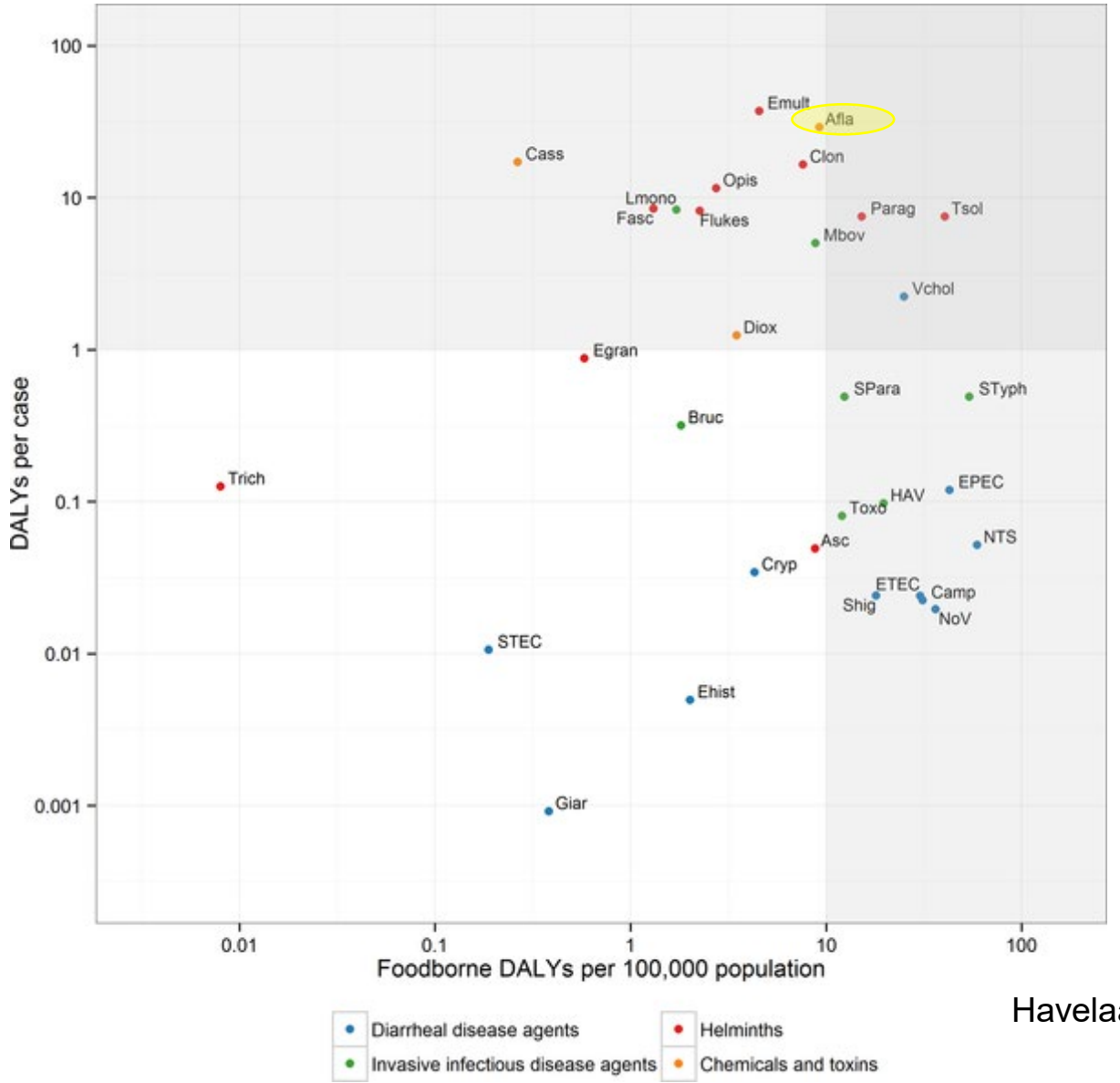
- Foodborne disease causes 6 million illnesses, 420,000 deaths per year
  - Similar health burden as (each of) HIV/AIDS, TB, malaria
  - Receives about 5% the US aid investment as “big 3"

- 95% of this burden is in low-income countries
  - Large informal sector
  - Weak regulatory enforcement

- **Question: what can drive better food safety in these settings?**
  - Consumers → Processors → Farmers

IFPRI

Aflatoxin: a major food safety problem

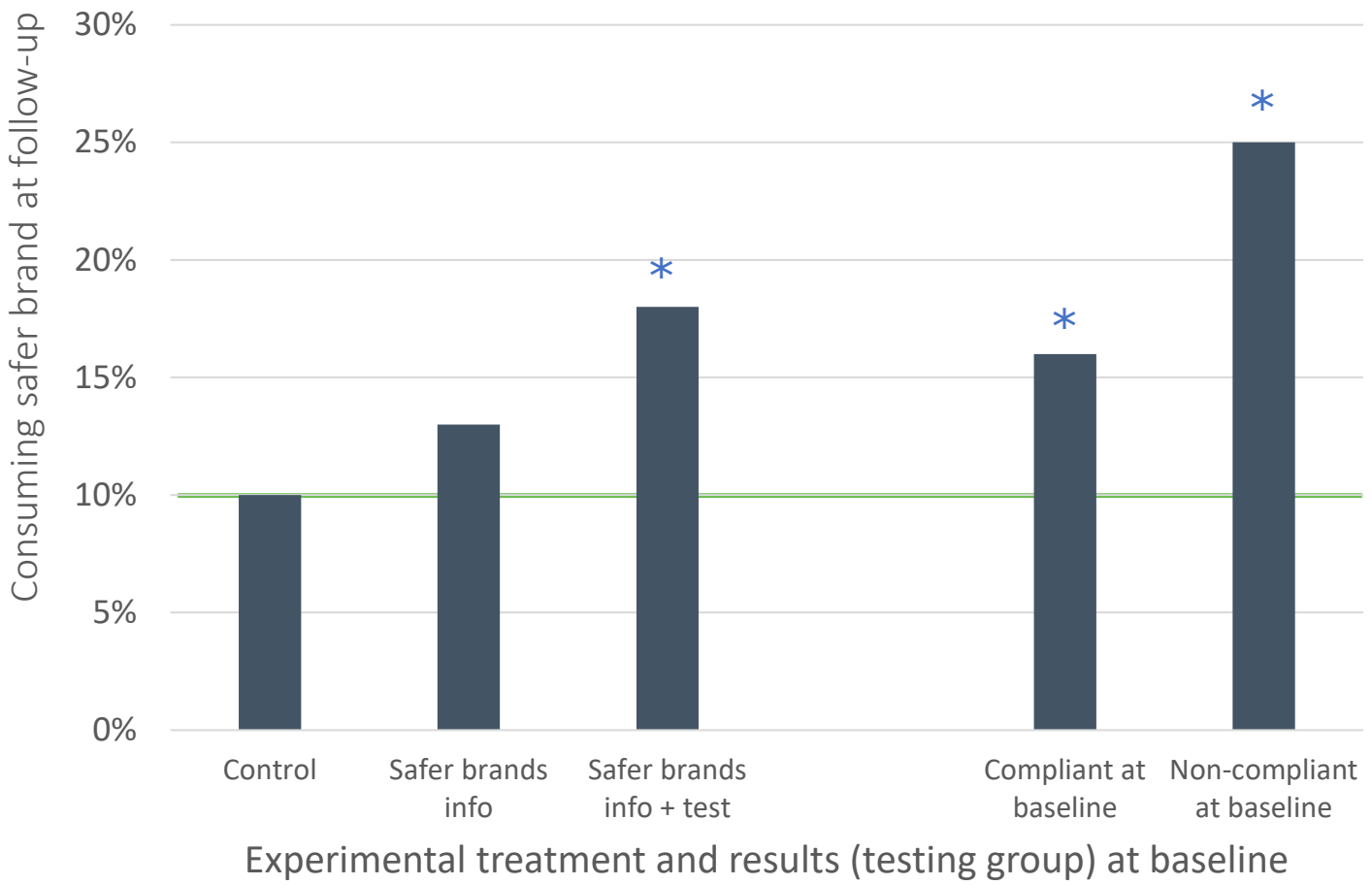


- Produced by fungus present in soil
- Common in maize, groundnut
- Simple post-harvest practices can reduce by 50% or more
- Testing is relatively low-cost and simple

Havelaar et al., 2015

IFPRI

Consumers: information on relative risk affects food choice

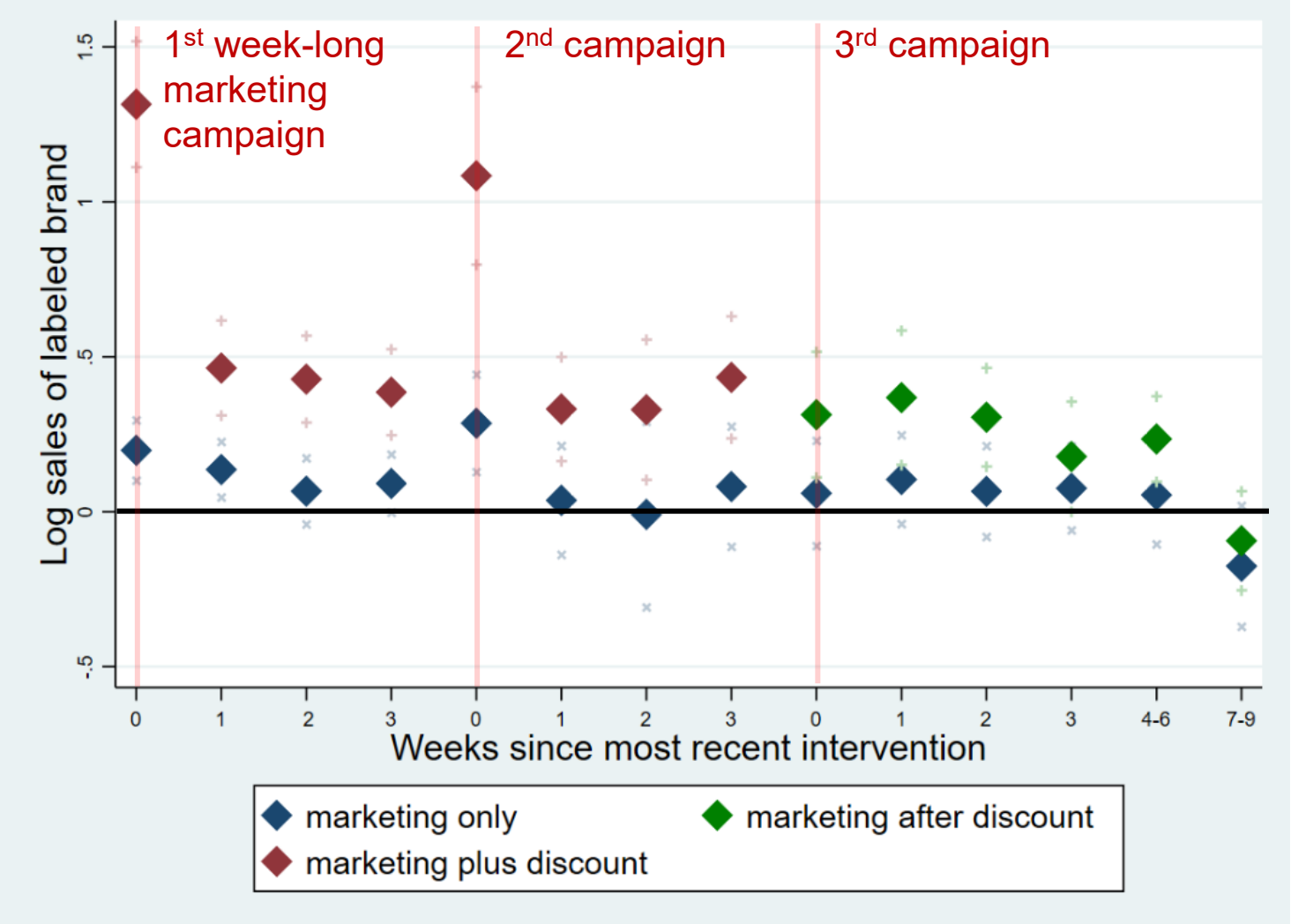


* statistically different from control mean

Kariuki & Hoffmann, under review

IFPRI

Consumers: Food safety marketing claims not as effective



Hoffmann, Moser & Herrman, 2021

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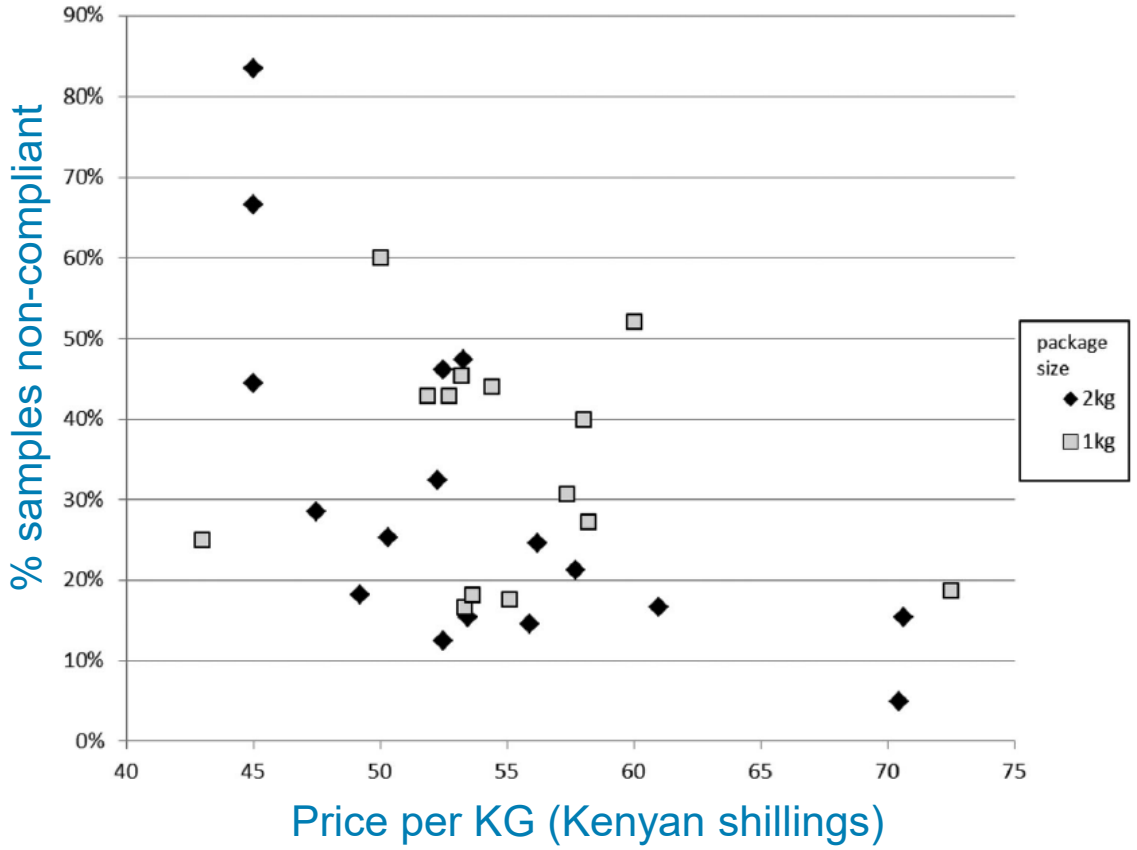
Processors: Reputation + threat of regulatory enforcement



Hoffmann & Moser, 2017

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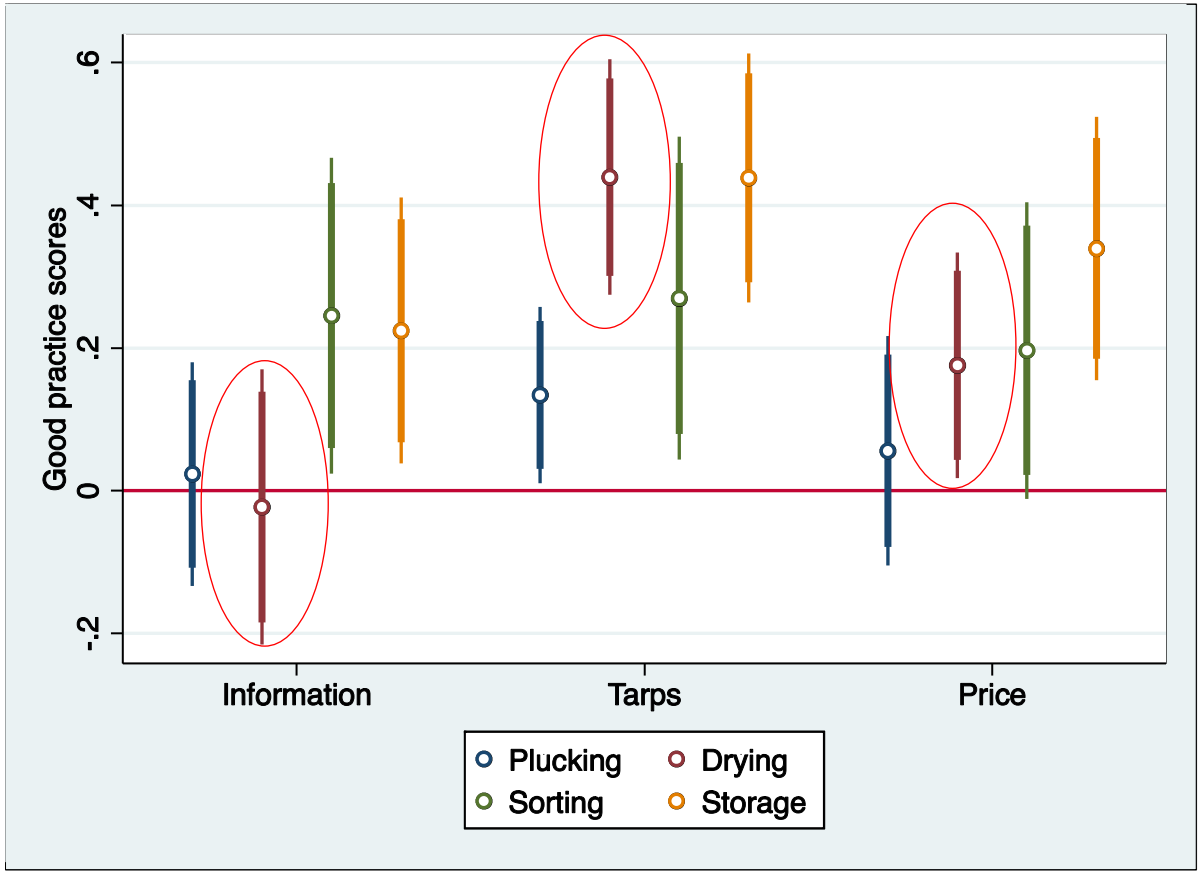
Farmers: Information, access to technologies, incentives



Magnan et al., 2021: Groundnut practices, Northern Ghana

IFPRI

Integrating value chains is key to pass-through of incentives

- Not easy – failures abound
  - Commercial maize flour market, Kenya
  - Therapeutic peanut-based food manufacturer, Ghana
- When successful, can achieve big results
  - Ugandan boarding schools: maize income ↑ 36% over 4 seasons (Bold et al., 2021)
- New opportunities
  - ICT-based platforms make it easier to link farmers directly to markets
    - Twiga Foods (Kenya)

IFPRI

Summary & Conclusions

- Consumers respond to credible information on relative risk
  - *"A is better than B"* more impactful than "*A is good"*
  - Can improve informal sector practices through training, certification, monitoring approach
    - ILRI projects in Vietnam, Cambodia, India, Kenya
- Regulatory enforcement need not be perfect to achieve results
  - Firms with brand equity are terrified of government recalls
  - Of large USAID food safety projects, 20% to gov't, 65% to private sector (GFSP, 2019)
- Producers need access to information, tools, and incentives
  - Information alone can improve practices among semi-subsistence farmers
  - Access to food safety technologies has strong immediate effect
  - Incentives also highly effective, may take longer to achieve results (learning, trust)

IFPRI


Thank you

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SPEAKER

Madan Dey

Professor of Agricultural Business and Economics

Texas State University

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Behavioral Drivers of Effective Food Safety Policy along Seafood Value Chains:
An Economist's View

Madan M. Dey, Ph.D.
Texas State University

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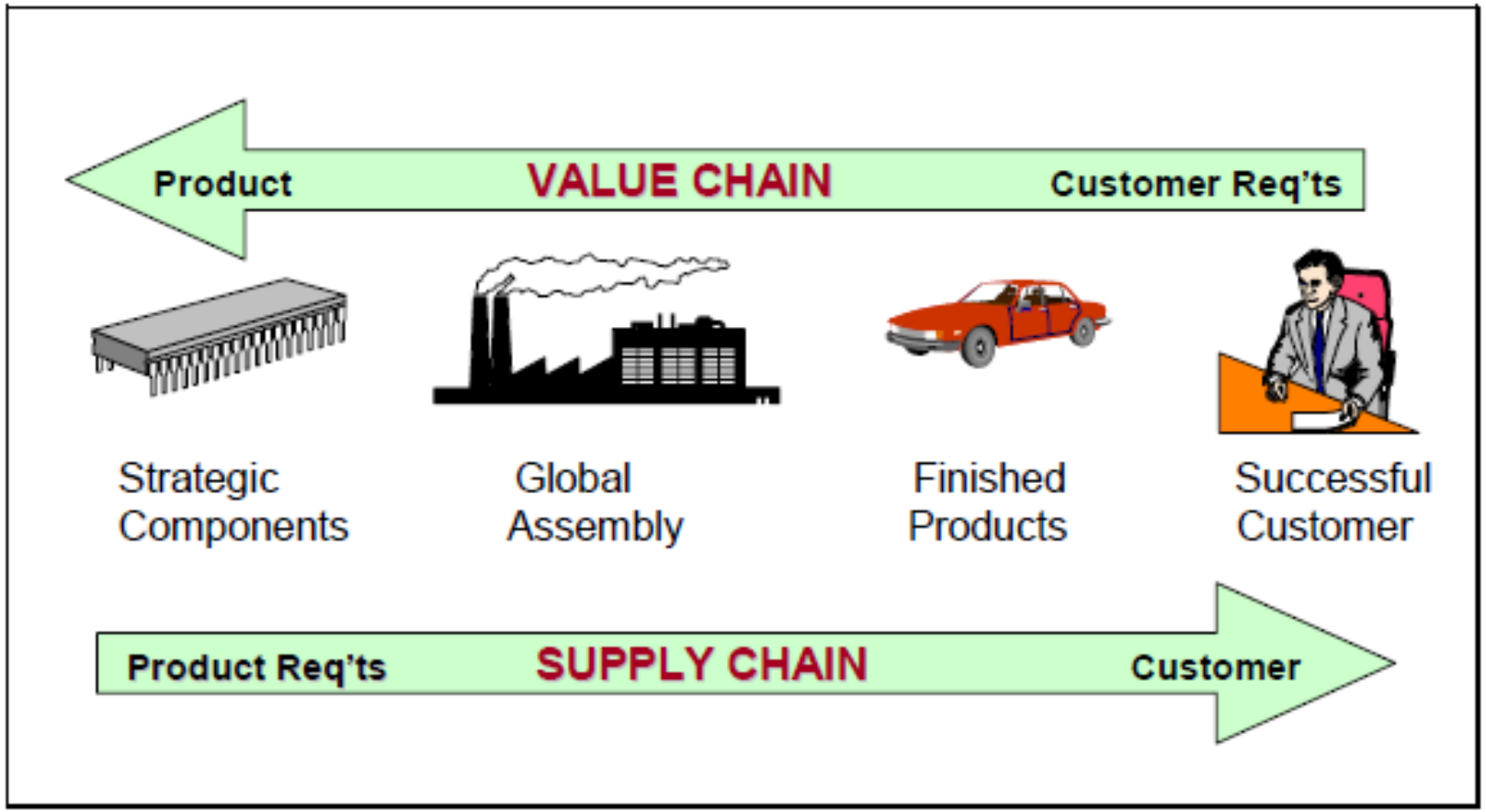
The rising STAR of Texas

Presentation Outline

- Concept: value chain vs. supply chain
- Seafood Safety 101 (through the eyes of an economist)
- Market framework for seafood safety analysis
- Behaviors of different actors
- A very short introduction to a new FSIL project
- Take home messages

Value Chain vs. Supply Chain



Value Chain and Value Chain Analysis (Dey et al., 2015)

- Value Chain:
  - Strategic management of the supply chain in meeting the increasing requirements of consumers
  - Value chain literature focuses on the value added to the consumer and information exchange in the chain, in comparison with the focus of supply chain literature on production requirements.
- Value Chain Analysis:
  - How value is created and gains, distributed
  - Businesses participate or are integrated into existing value chains if they are able to obtain a sustainable role in adding value to a product
  - Also focus on barriers to entry and rents, governance, and upgrading

Quality Along the Seafood Value Chain

- Quality is a powerful engine in the food value chain
- Fish, as a product, is a bundle of characteristics which gives rise to utility
- Consumers' preferences and prices are expressed though these characteristics
- Quality:
  - Intrinsic quality attributes (size, fat content, safety attributes, etc.)
  - Extrinsic quality cues (labeling, branding, packaging, etc.)
- Product safety includes various safety attributes (including quality perception of consumers)
- Food Safety: Credence (usually the case), search and experience attributes

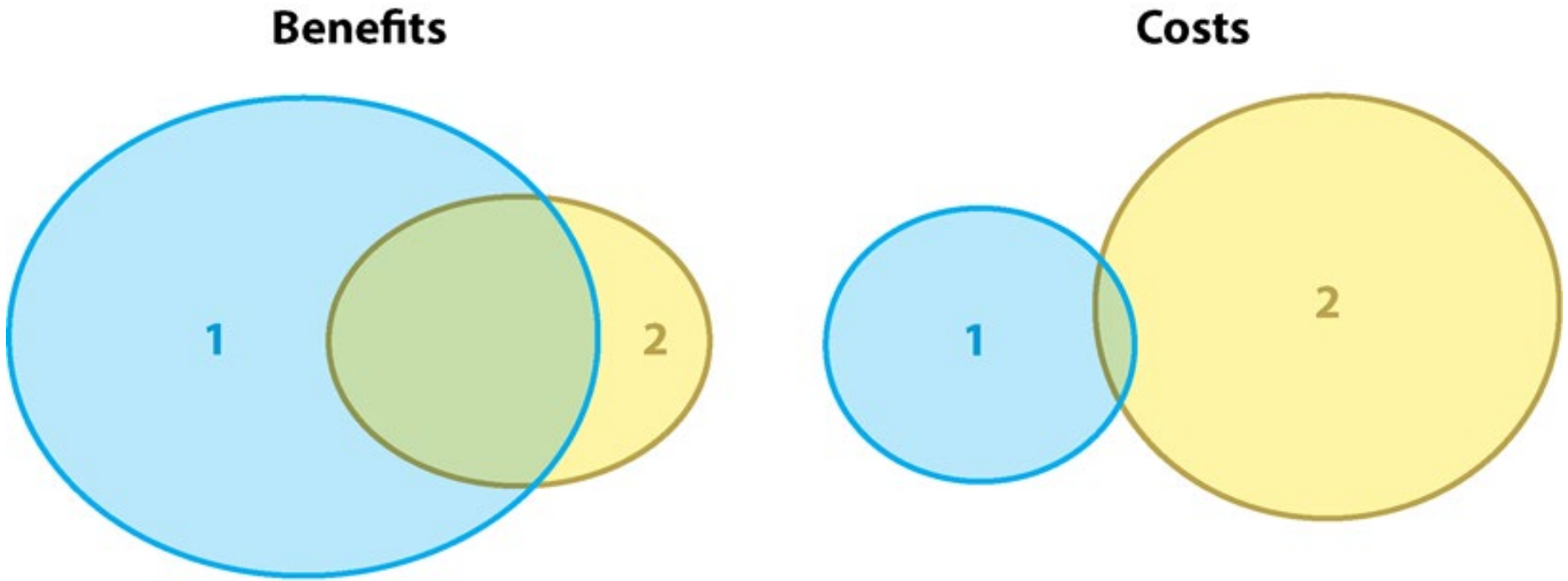
Food Safety Concerns Along the Seafood Value Chain

- Concerns at the farm level (intensive farming in particular)
  - Increased use of inputs such as antibiotics, growth promoting hormones, pesticides, etc.
  - Incidences of heavy metals in feed ingredients, such as tannery byproducts
  - Farming conditions: water and soil quality
- Concerns at the retailing and wholesaling levels of the fish value chain
  - Use of preservatives such as formalin
  - Poor hygiene, especially at informal markets
  - Product traceability; Consumer trust of product quality

Food Safety Behavior

- Motivation for improving food safety varies by party
- Parties:
  - Government
  - Marketing Intermediaries
  - Producer
  - Consumer
- All parties: benefit vs. cost

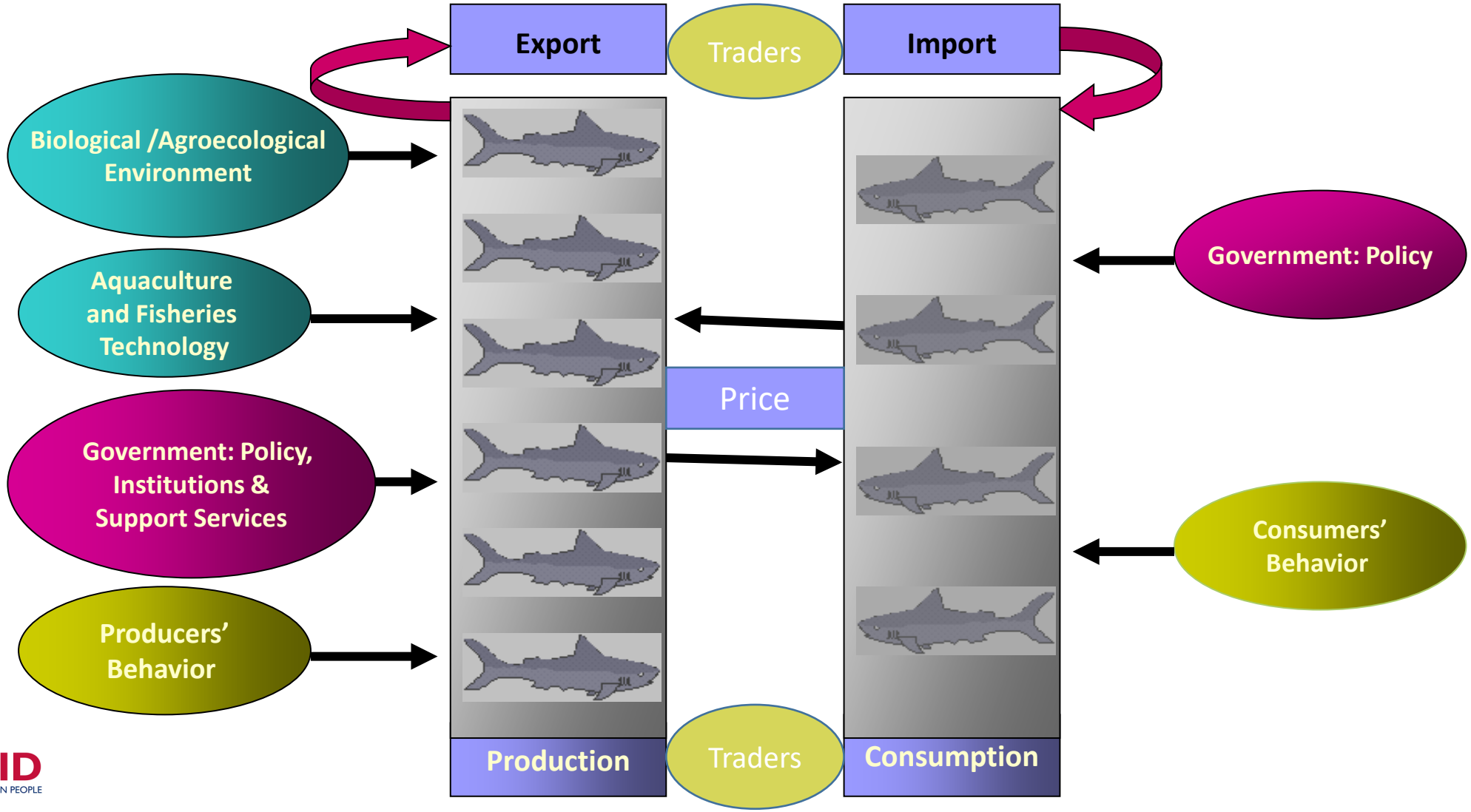
Benefit and Cost of Food Safety Measures



Pouliot S, Wang HH. 2018.
Annu. Rev. Resour. Econ. 10:83–103

General Framework for Analyzing Seafood Safety Behavior

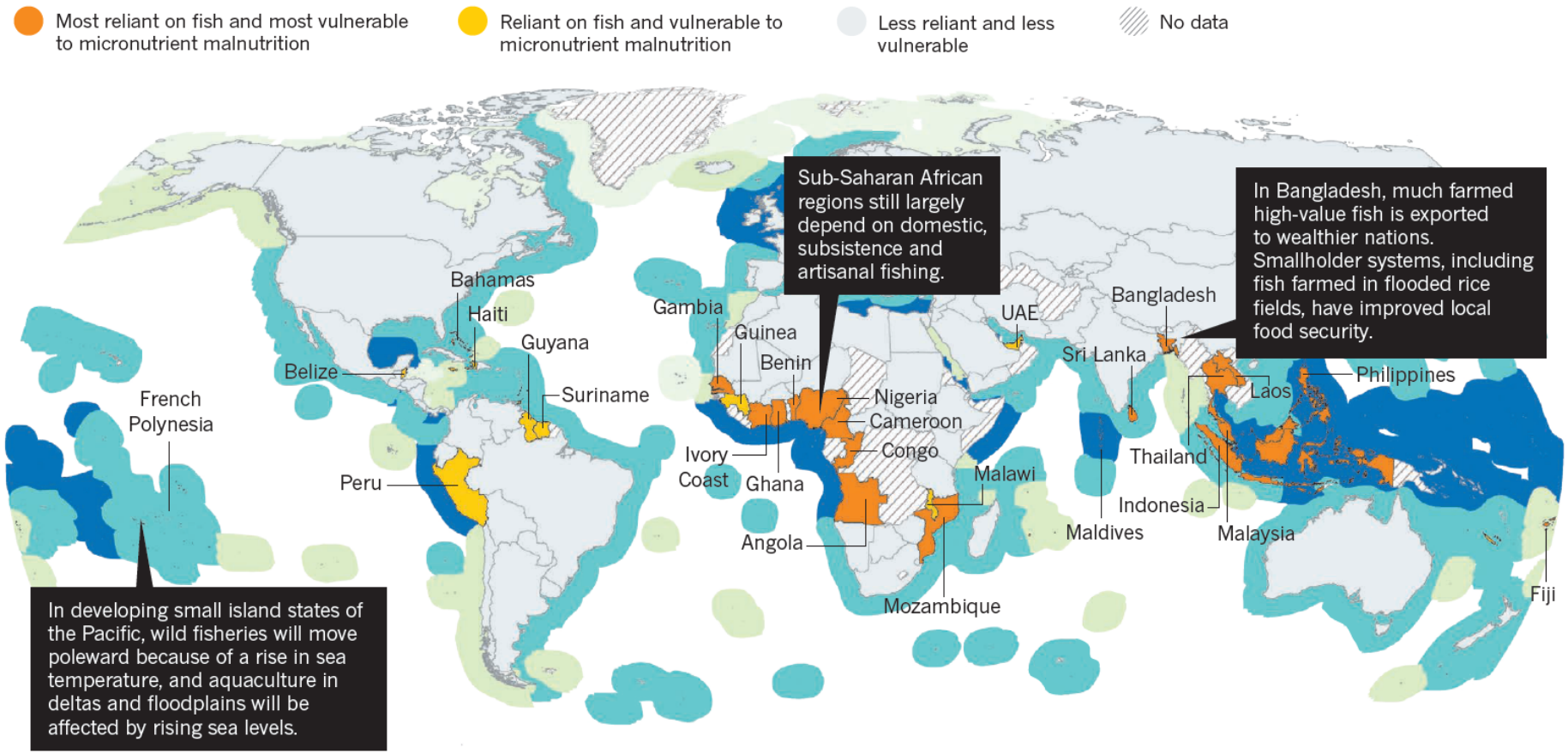
(modified from Dey et al. 2005)



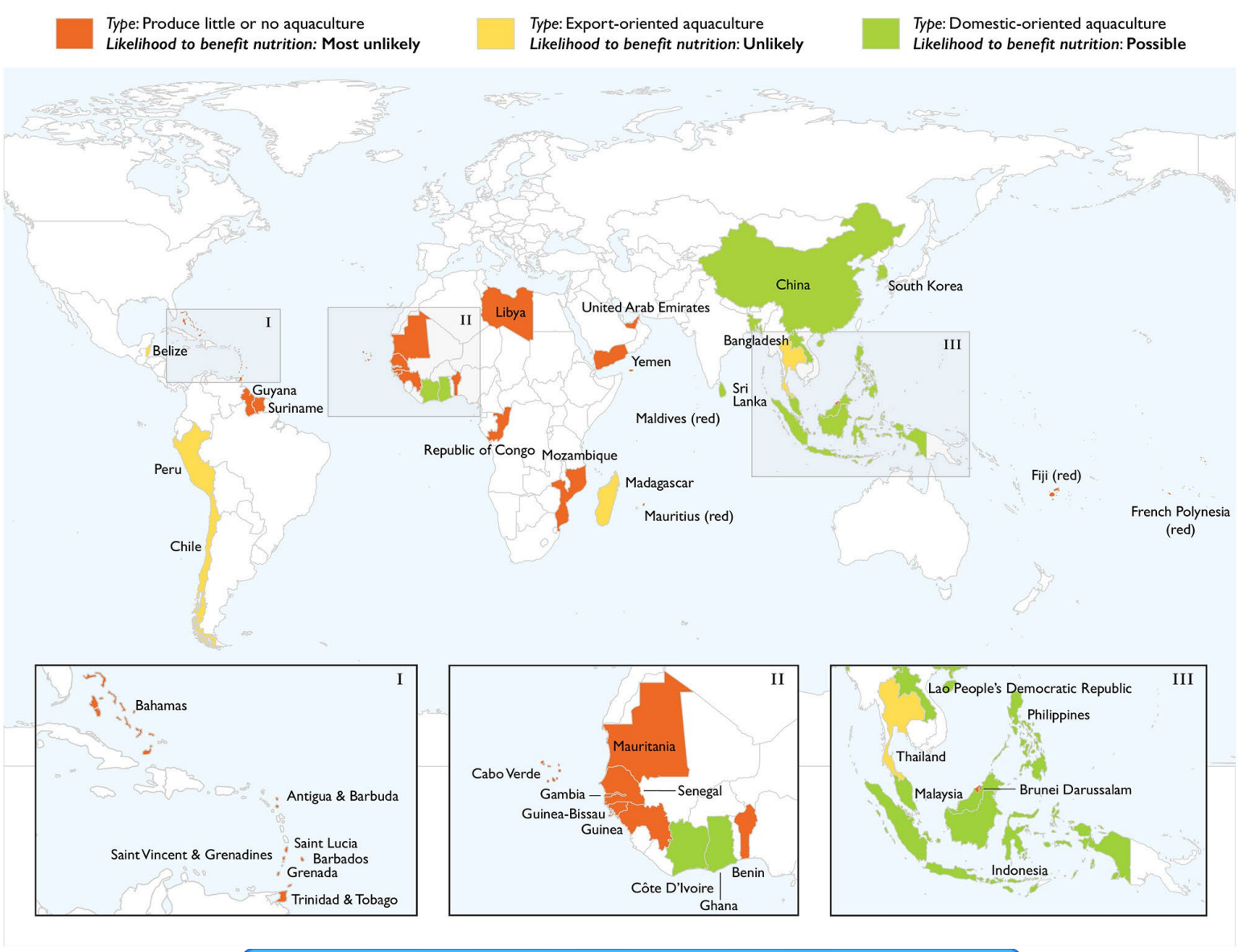
TROUBLED WATERS

In the low-latitude developing nations, human nutrition is most dependent on wild fish, and fisheries are most at risk from illegal fishing, weak governance, poor knowledge of stock status, population pressures and climate change. These countries urgently need effective strategies for marine conservation and fisheries management to rebuild stocks for nutritional security.

SOURCE: V. LAM, G. REYGONDEAU, M. SMITH & W. CHEUNG

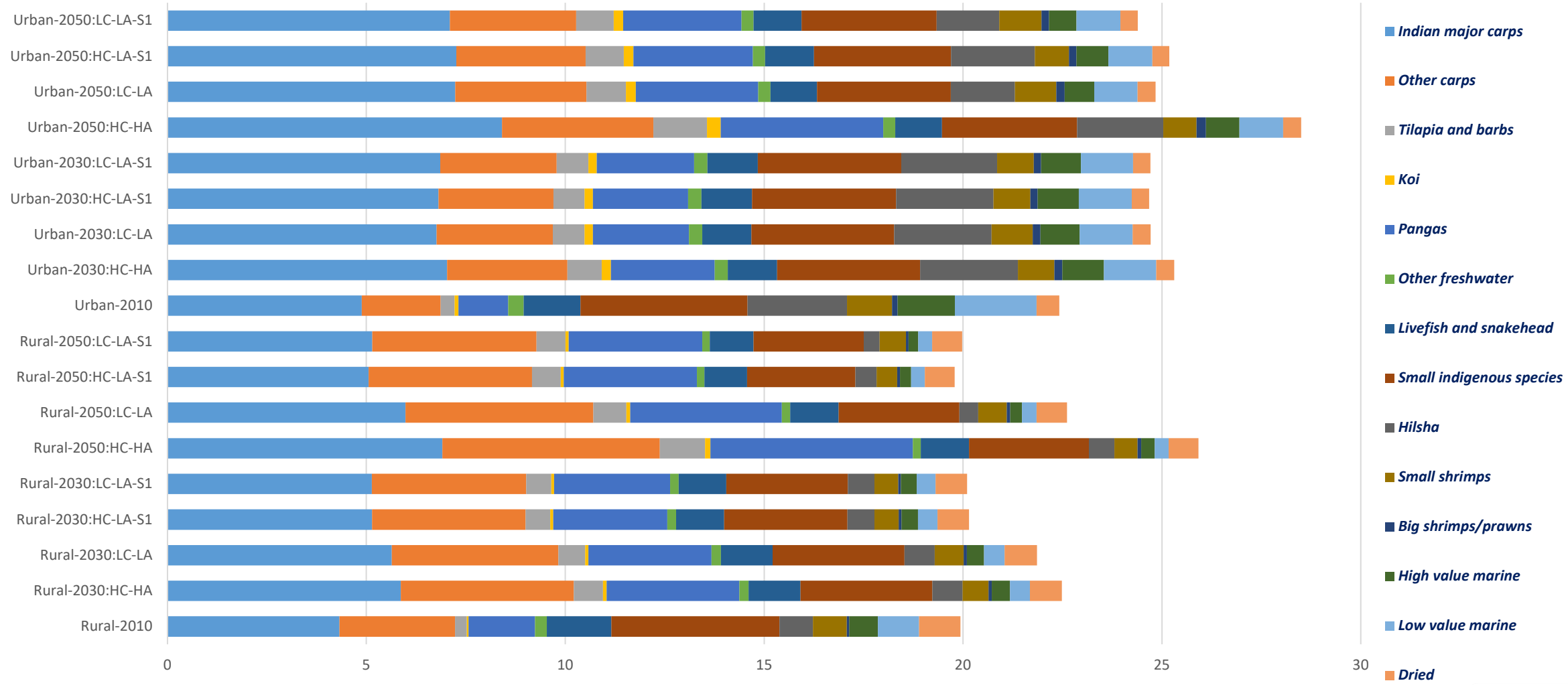


Golden et al., (2016), Nature



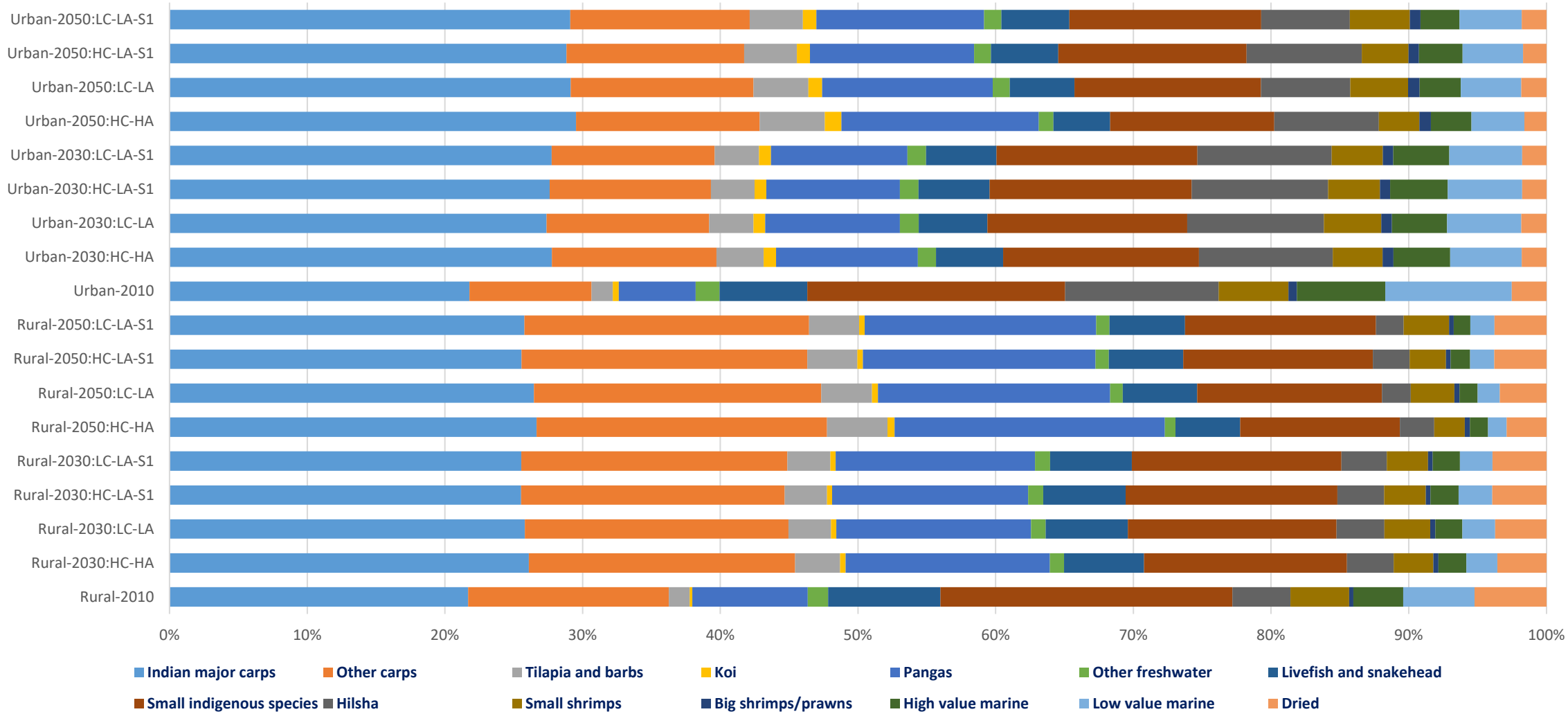
Golden et al. (2017), Frontier in Marine Sciences

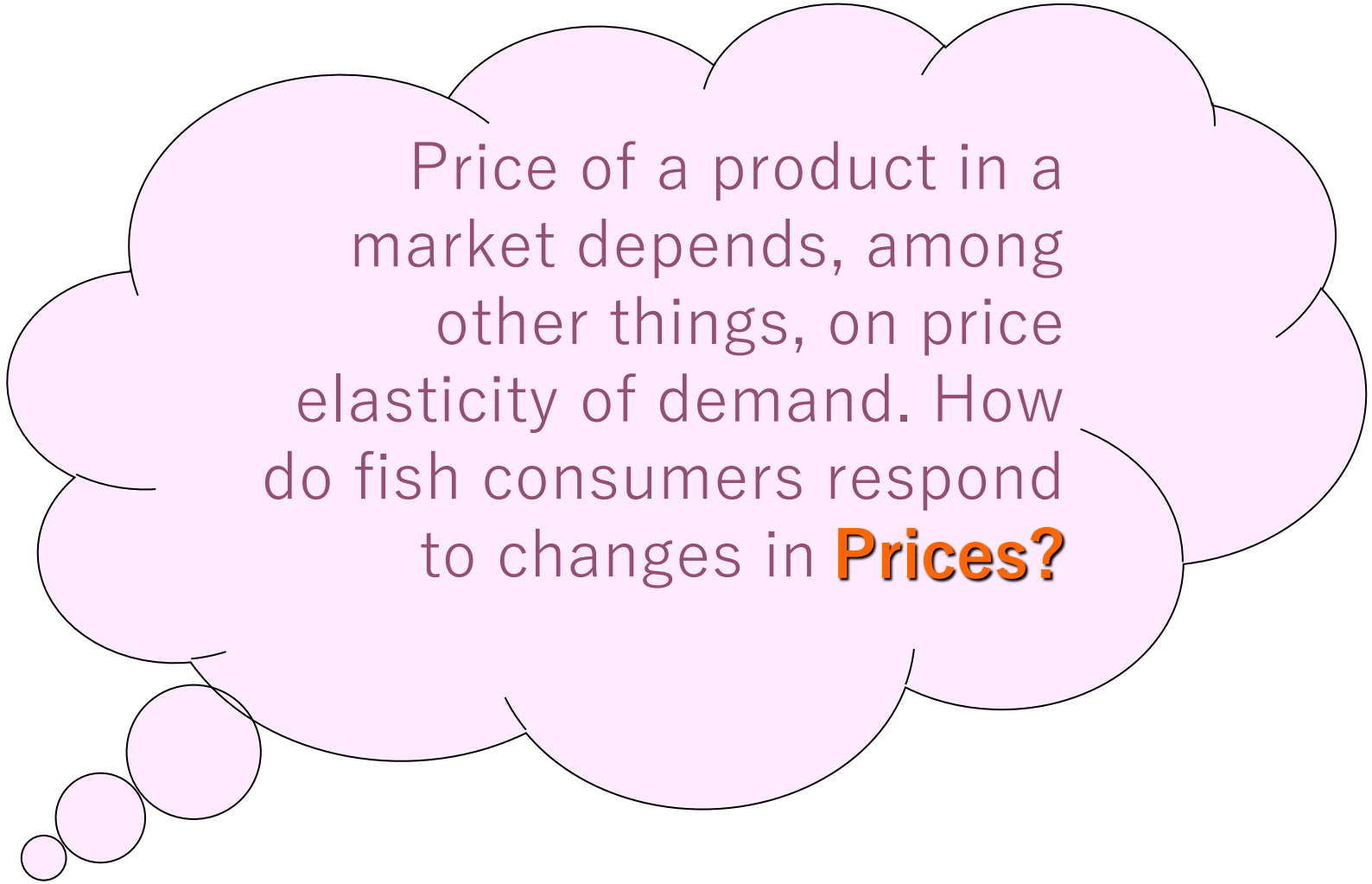
Projected Fish Consumption in Bangladesh, 2030 and 2050 (Chen and Dey)



Bangladesh: Actual and projected per capita consumption (kg)

Projected Fish Consumption in Bangladesh, 2030 and 2050 (Chen and Dey)





Engle, Quagrainie and Dey (2016): Chapter 11

Food Safety Behavior of Processing Plant Operators

TABLE 6 Per Unit Cost of Fish Processing with and without HACCP Compliance in India (US$/kg)

Plant capacity	Without HACCP compliance (US$/kg)	With HACCP compliance (US$/kg)
Small (<10 t/day)	0.142	0.331
Medium (10–15 t/day)	0.095	0.226
Large (>15 t/day)	0.072	0.167
Average	0.093	0.216

Source: Field survey, 2002.

Dey et al., 2005

Food Safety Behavior of Consumers

- Empirical studies have shown that product characteristics, consumer characteristics, and the market environment determine prices of fish/seafood products—in different levels of the seafood value chain
- WTP=f (product characteristics, information about the products, consumer characteristics)
- Consumer characteristics include:
  - age
  - gender
  - race
  - education level
  - grocery shopping involvement
  - frequency of eating fish
  - family size
  - annual household income

Do consumers pay premium price for U.S. farm-raised catfish compared to other farmed white fish species?

(Wald test with an error rate of 5 percent or less) (Chen, 2016; based on Nielsen Scanner data)

	Premium	Indifferent
U.S. catfish vs. other catfish		All markets
U.S. catfish vs. tilapia	Atlanta (+13%)	All markets except Atlanta
U.S. catfish vs. pangasius	Detroit, Pittsburgh, Washington, D.C.: +20% (average)	Other 7 markets

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Seafood Safety in Bangladesh: A new USAID/FSIL Funded Project

A new project with steps to enhance food safety in Bangladesh.

Title: Enhancing Food Safety in Fish and Chicken Value Chains of Bangladesh

Objectives:

- Identify nodes along the value chain that need improvements in terms of food safety issues
  - Mapping the knowledge, attitude, and practices (KAPs) towards food safety
  - Microbiological, chemical analyses of fish products along value chain for safety hazard levels
  - Socioeconomic analyses of value chain actors
- Analyze consumer demand for improved safety in fish products, welfare implications
- Calibrate food safety training programs

Partners:

Texas State University (Dr. Madan M. Dey, Dr. Pratheesh Sudhakaran; Mr. Prasanna Surathkal)

Bangladesh Agricultural University (Dr. Mohammad Saidur Rahman, Dr. Md. Akhtaruzzaman Khan, and Dr. KHM Nazmul Hussain Nazir)

University of Dhaka (Dr. Samina Luthfa)

Bangladesh Food Safety Authority (Dr. Md. Abdul Alim)

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Take Home Messages

- Value chain analysis is based on consumer's perspective and flows from consumers to the producers
- One Size fits for All does not work
- Need to assess costs and benefits of various food safety measures by commodity, country, scale of operations, socio-economic condition of consumer
- Fish/seafood is a heterogeneous product
- Differential price response
- Role of information

Acknowledgements

My current and former team members for their substantial contributions to the materials presented today

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Behavioral Drivers of Effective Food Safety Policy

Panel Discussion

Meera Chandra
USAID Perspective on Behavioral Drivers of Food Safety

Lone Jespersen
Food Safety Culture

Vivian Hoffmann
Food Safety in Poorly Regulated Markets

Madan Dey
Seafood Value Chain

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THANK YOU

A link to the recording and presentations will be emailed to attendees next week

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Next webinar:

Funding Opportunity: MSI-Led Partnerships for Global Food Safety Research

April 29, 1-1:30 PM EDT

Register through link in the chat.

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