

Global Public Goods: Food Safety

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Increasing Global Food Supplies*

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The views expressed in this talk are those of the speaker alone and are not intended to represent the views of the U.S.D.A.

Overview

- Food Safety Challenges
- Food Safety as a Global Public Good
- Food Safety Institutions
- Gaps and Needs

FOOD SAFETY CHALLENGES

Why does this matter?

- Microbial illness remains the primary concern but uncertainty about incidence:
 - 2.2 million deaths in developing countries each year from food and waterborne disease (WHO 2002)
 - 1,351 deaths in U.S. from foodborne disease (Scallan et al., 2010): (90% CrI 712–2,268)
- Other concerns: Mycotoxins, POP, Metals, Unconventional agents

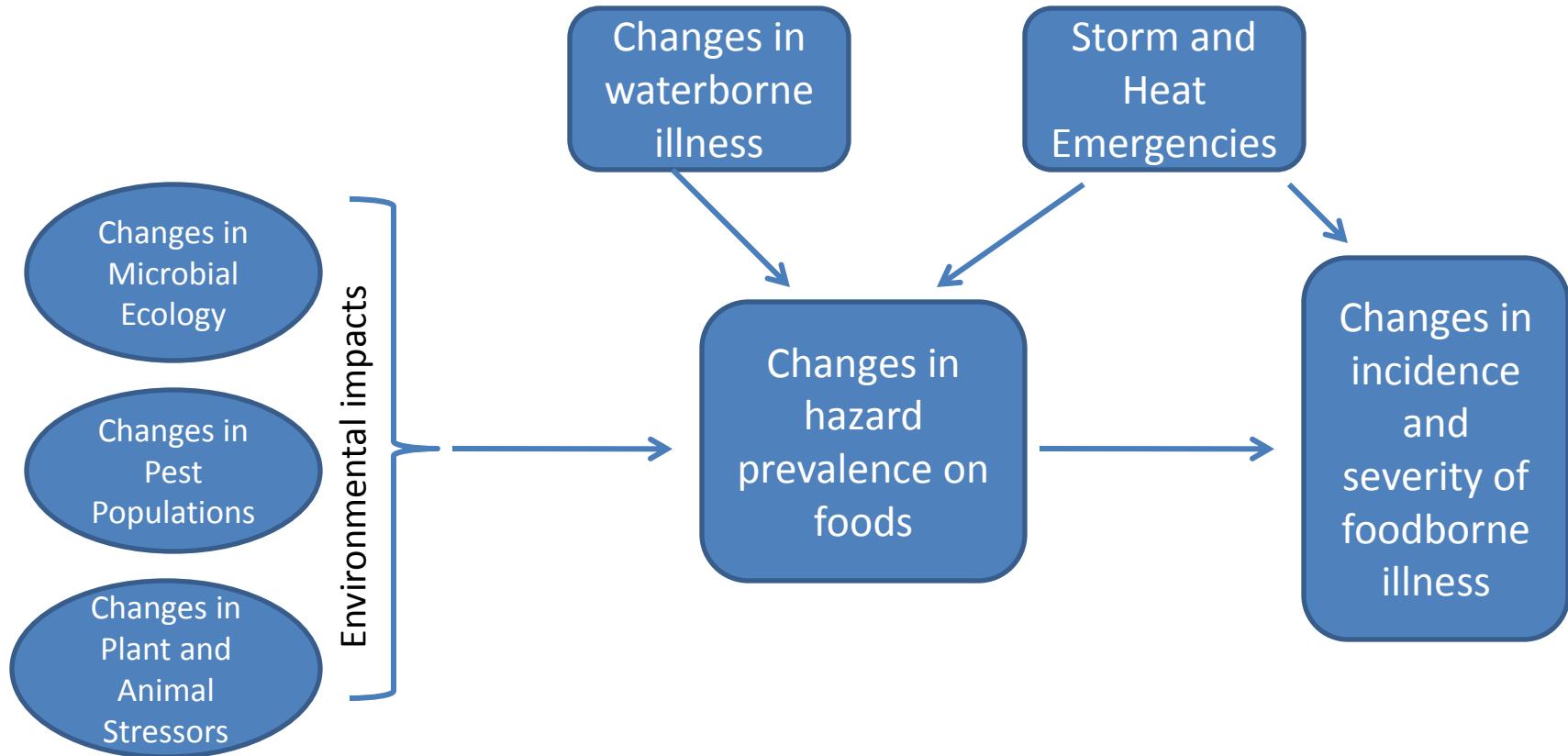
Animal and Human Health

- “One Health”
 - Managing animal and human health linked
- Zoonoses
 - Swine flu
 - HPAI
- Sub-therapeutic antibiotics use
- Water quality

Science of Food Safety

- Identification of how pathogens evolve and pose new risks
- New testing methods that “fingerprint” pathogens allow better tracing of contamination sources
- More rapid, sensitive test results for use by producers
- New information technologies allow products to be tracked and traced

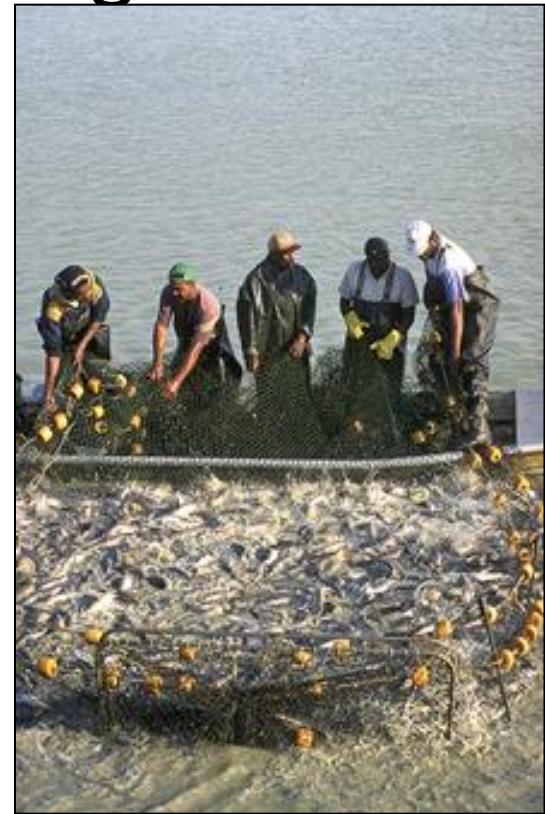
Ways Climate Change Might Change Food Safety



Food Safety Risks are Shared Globally

- Increased consumption of meat, fresh fruits and vegetables, seafood
- Increased trade in perishable products, much of it from developing to developed countries
- Spread of multinational food service, retailing leads to more uniform safety standards

Changes in Animal and Fish Production Towards Larger Units



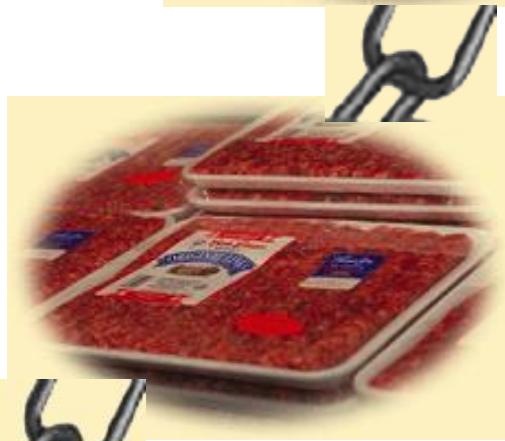
Increased scale of production can introduce new hazards or speed the spread of existing ones.

Food Safety Is an Issue from Farm to Table

Some foodborne hazards can enter the food supply chain at many points and can multiply once present.



Mixing animals or products from different sources increases the potential to spread microbial contamination.



Controls must address the entire system from farm to table.

Exports from Poor Countries Must Meet Standards of High Income Consumers



Fish in U.S. Supermarket

Fish Market in India

Are there spillover benefits for poor consumers?

As More Food is Prepared Away from Home...

- Consumers have less control over food preparation
- Industry takes greater responsibility for final safety of food when consumed



Deli Salads in a Supermarket

One Example: China's Rapidly Modernizing Food System



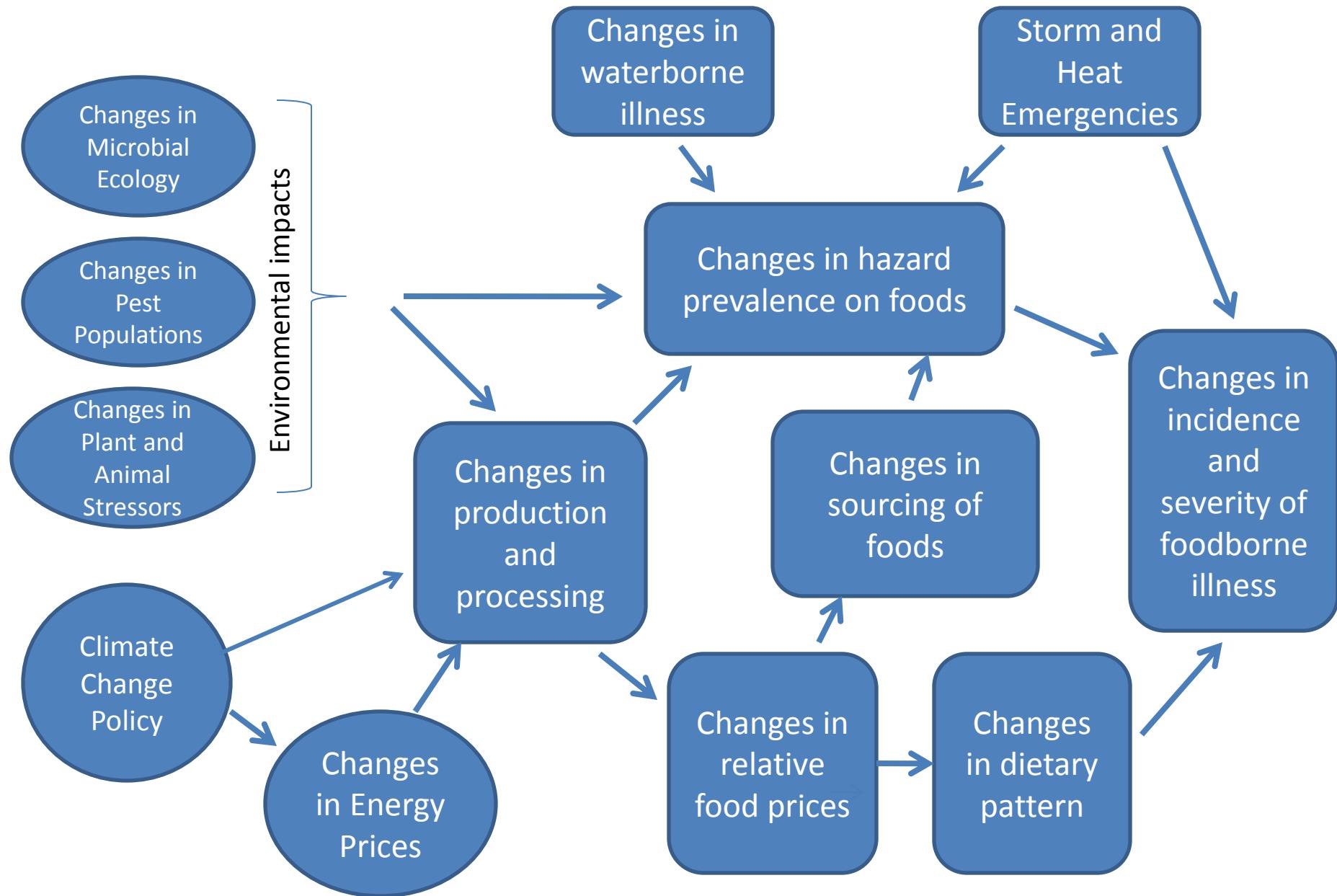
Local Markets



Supermarkets

Public Health





Ways Climate Change Might Change Food Safety

FOOD SAFETY AS A GLOBAL PUBLIC GOOD

Global Public Goods in the Economics Literature

- Important social and economic problems transcend national boundaries
- Mutual benefits are motivation for finding new international institutions and incentives
- GPG = “a benefit providing utility that is available on an international scale ” (Ferroni and Mody)
 - Property rights or standards may facilitate provision of final public good, eg. food safety

Food Safety is a (Global) Public Good

- Consumers can't verify
 - information asymmetry
- Producers can't control hazard without cooperation
 - externality
- Third party enforcement and certification needed
 - non-excludability
- Incentives gap
 - No reward in intl mkt
- Jurisdictional gap
 - Natl border irrelevant to control
- Participation gap
 - New exporters don't set standards

Kaul, Grunberg, Stern (1999)

Three kinds of questions from GPG perspective

- Would global coordination improve food safety?
 - Eg., coordinated animal disease control
- How to share risks, costs, and benefits from control?
 - Eg., foreign aid for trade capacity building
- Are there spillovers from control to be captured?
 - No current international framework to address

FOOD SAFETY INSTITUTIONS

Institutional Capacity Evolution

- 1950s to 1960s -- changing food market in U.S.
 - More processed foods
 - More complex production, processing and marketing systems
- 1961 Codex Alimentarius formed (FAO/WHO)
- 1970s-1980s Staging period
 - Development and exploration of HACCP
 - Emergence of risk analysis paradigm in U.S. environmental and health and safety policy
- 1980s
 - 1985 NAS report, An Evaluation of the Role of Microbiological Criteria for Foods
 - GAO, NACMCF, industry, consumer groups – supporting HACCP in U.S.
- 1980s-present – increasing role of international trade in consumer food products not just commodities
- 1990s Crises: pathogen-related food safety incidents in multiple countries result in increased national concern
 - 1993 Jack-in-the-Box E. coli incident in U.S.
 - Early to mid-1990s BSE in Britain
 - 1996 British government admits a link between BSE and vCJD
- 1990s Developments
 - 1994 WTO/ Sanitary and Phytosanitary Agreement
 - 1993 Codex HACCP guidelines
 - 1995 Codex International Code of Practice incorporates HACCP
 - 1996 USDA – HACCP rule
 - 1994-2000 reform of food Australian/New Zealand food law (1994 proposed use of HACCP)
 - 1997 Codex General Principles, reorganization of Canadian food safety administration; Treaty of Amsterdam
- 2000 - UK Food Standards Agency formed,
 - 2002 European Food Safety Authority formed
 - 2010 U.S. Food Safety Modernization Act

Codex General Principles of Food Hygiene

- Public health as the primary goal
- Food safety control throughout the food chain
- Science/risk-based regulation and management
- Transparent policy decision making
- HACCP-based approaches to safety management
- Emphasis throughout on role of adequate supplies of potable water

Food Safety Regulatory Trends in Developed Countries

- (1) Forming one agency to focus on food safety.**
- (2) Using risk analysis to design regulation.**
- (3) Recognizing that a farm-to-table approach is often desirable for addressing food safety hazards.**
- (4) Adopting the HACCP system as a basis for new regulation of microbial pathogens in food.**
- (5) Adopting more stringent standards for many food safety hazards.**
- (6) Adding new regulation to handle newly identified hazards.**
- (7) Mandatory traceability.**

Private incentives

- Private incentives exist, but are incomplete
- Loss of sales, reputation, and equity for industries and firms implicated in outbreaks and recalls
- Buyer specifications mean that many processors and farmers go beyond regulatory requirements
- Third party certification of buyer specifications plays an important and growing role in international trade as well
- Public / private partnerships facilitate implementation of standards

These Trends Extend to Developing Countries

| Type of Intervention | Examples |
|---|--|
| Risk Prioritization at National Level | Use of risk assessment in Brazil, Mexico, to prioritize activities (FAO/WHO, 2006) |
| Setting and Enforcing Standards | Standards and testing for bottled water in India (Umali and Sur, 2007) |
| Promoting Market Incentives Through Certification or Private Monitoring | “Green” labels in China (Calvin et al., 2005) Street vendor certification in Thailand (FAO/WHO, 2006) |
| Improvements at Key Points in Supply Chain | Efforts in China to centralize meat slaughter in to reduce contamination from “backyard” slaughter practices (IFPRI, 2003) |
| Reduce Contaminants in Supply Chain | Risk assessments of wastewater in Ghana’s peri-urban vegetable production (Amoah et al., 2006) |

Managing Food Safety as a GPG: SPS Agreement

- Sanitary and Phytosanitary (SPS) agreement under the WTO sets these principles for standards
 - Transparency
 - Science-based
 - Equivalence
 - National sovereignty
 - Harmonization
- Equivalence and Harmonization need strengthening for aiding market access by developing countries

Other Examples of GPG's efforts

- WHO
 - Assessing global burden of foodborne disease (2007)
- OIE (WAHO)
 - Prioritization of food pathogens for farm level control in developing countries (2010)
- FAO/Codex
 - Adaptation of HACCP for small food firms in developing countries (2006)
- CGIAR
 - Reducing aflatoxins in Africa (2009)
- GSFI
 - Benchmarking private standards (2007)

Institutional and Private Capacity for Food Safety Management



GAPS AND NEEDS

Investment Gaps

- Research to improve management options
- Maintaining and improving disease surveillance
- Strengthening use of equivalency, third party certification, in managing food safety in international trade
- Strengthening capacity in developing countries
 - water and sanitation infrastructure
 - emergency response capacity

Institutional Gaps

- Prioritizing risks and investments
 - No global approach
- Capturing shared benefits from improvement (and rewarding losers)
 - No public framework
- Information disclosure to reinforce incentives
 - Underutilized by public agencies

Conclusions

- Institutional foundation for managing food safety as a global public good exists but needs to be strengthened
- Challenges from changing food systems, climate change, makes ability to respond even more important