

Food safety in the era of COVID-19 ensuring consumers' trust

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Risk based prioritisation of food hazards



ILRI

International Livestock Research Institute

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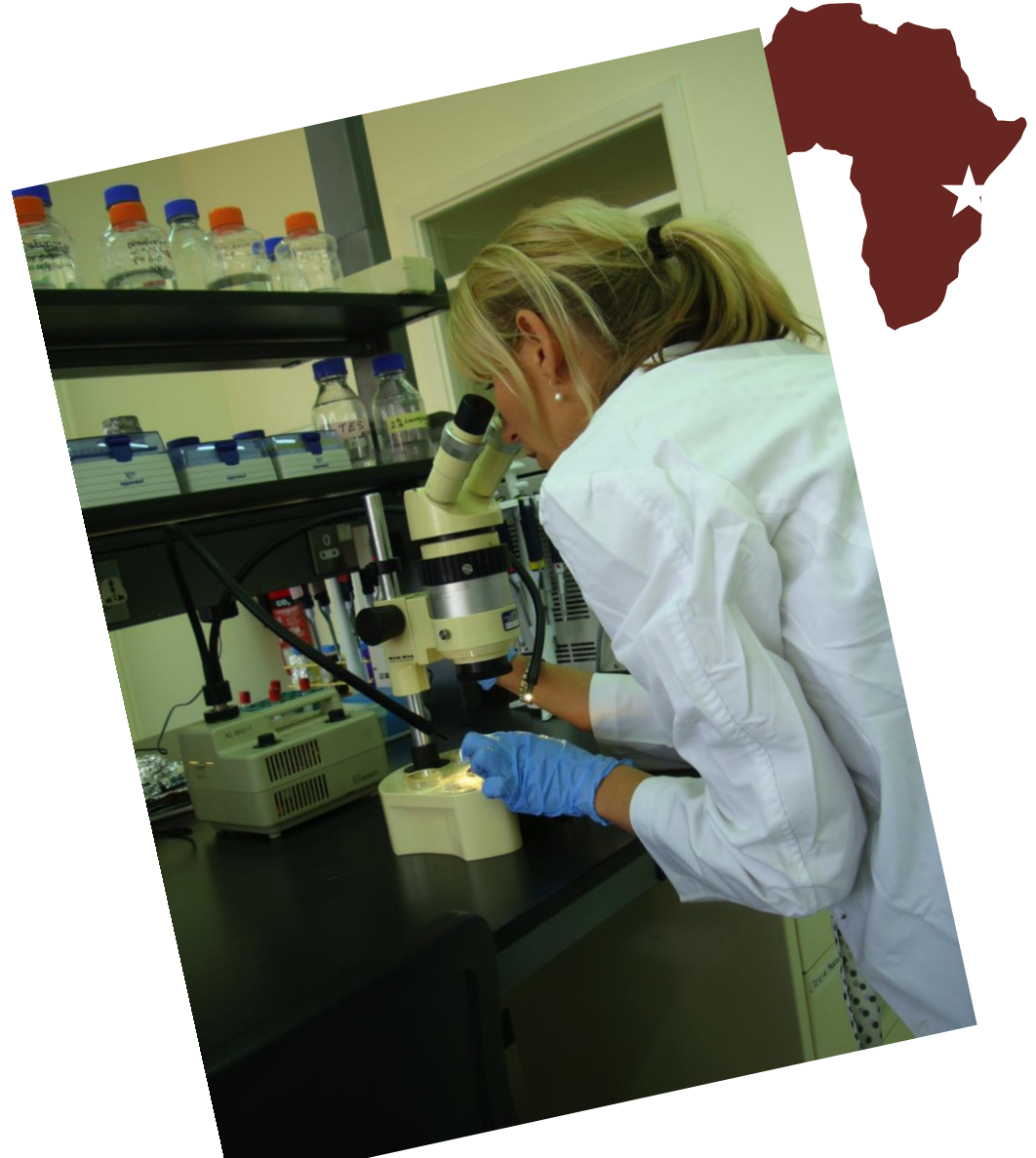
• a member of the **CGIAR Consortium**, ILRI conducts livestock, food and environmental research

- ❖ to help alleviate poverty
- ❖ and improve food security, health & nutrition,
- ❖ while protecting the natural resource base.

- 700 full time staff-1000 total
- 130 scientists & researchers
- 54% from 22 developing countries
- more than 30 scientific disciplines
- 2015 budget USD 88 million
- Leads major program on livestock
- Leads CG work on disease



ILRI Nairobi campus





Informal sector

Here defined as:
“absence of
structured sanitary
inspection”

Overlaps with

- Traditional sector
- Street foods
- Raw milk
- Dukas/kiosks



Why the informal sector matters

Kenya	80%
Tanzania	98%
W. Africa	90%
India	83%
Assam	97%
Nicaragua	86%

	Small & medium scale	Large scale
Self-employment	245,000	11,000
Long-time hired labour	454,000	93,000
Casual labour	36,000	2,000
Total (numbers)	735,000	105,000
% of total	87%	13%

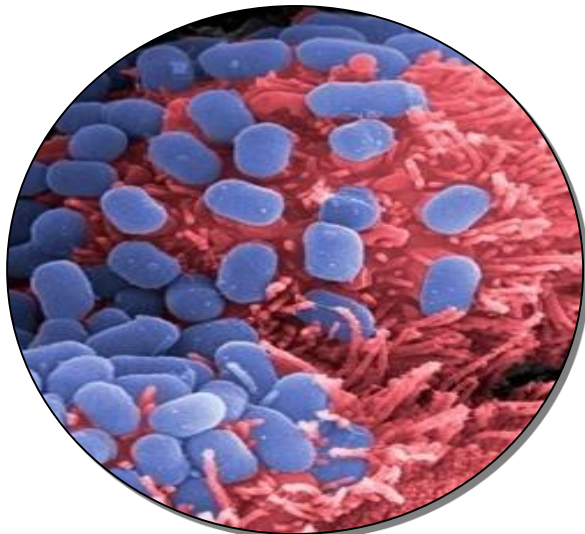
High levels of hazards

- *Trichinella* in pork in Uganda; *Listeria* in milk and fish in Ghana; reported for first time
- Unacceptable *B. cereus* in 24% of **boiled** milk in Abidjan
- **98% of meat** in Ibadan unacceptable by one or more of 3 standards (TAC, EB, col)
- Commercial broilers: **30%** of chicken sold in South Africa unacceptable for *S. aureus*
- Farmed fish: **77%** unacceptable TAC; 69% unacceptable for *S. aureus* in Egypt
- Nairobi milk: 46% of samples had aflatoxins over the legal limit of 50 ppt

What you worry about and what kills you are not the same



FRANKENCOW



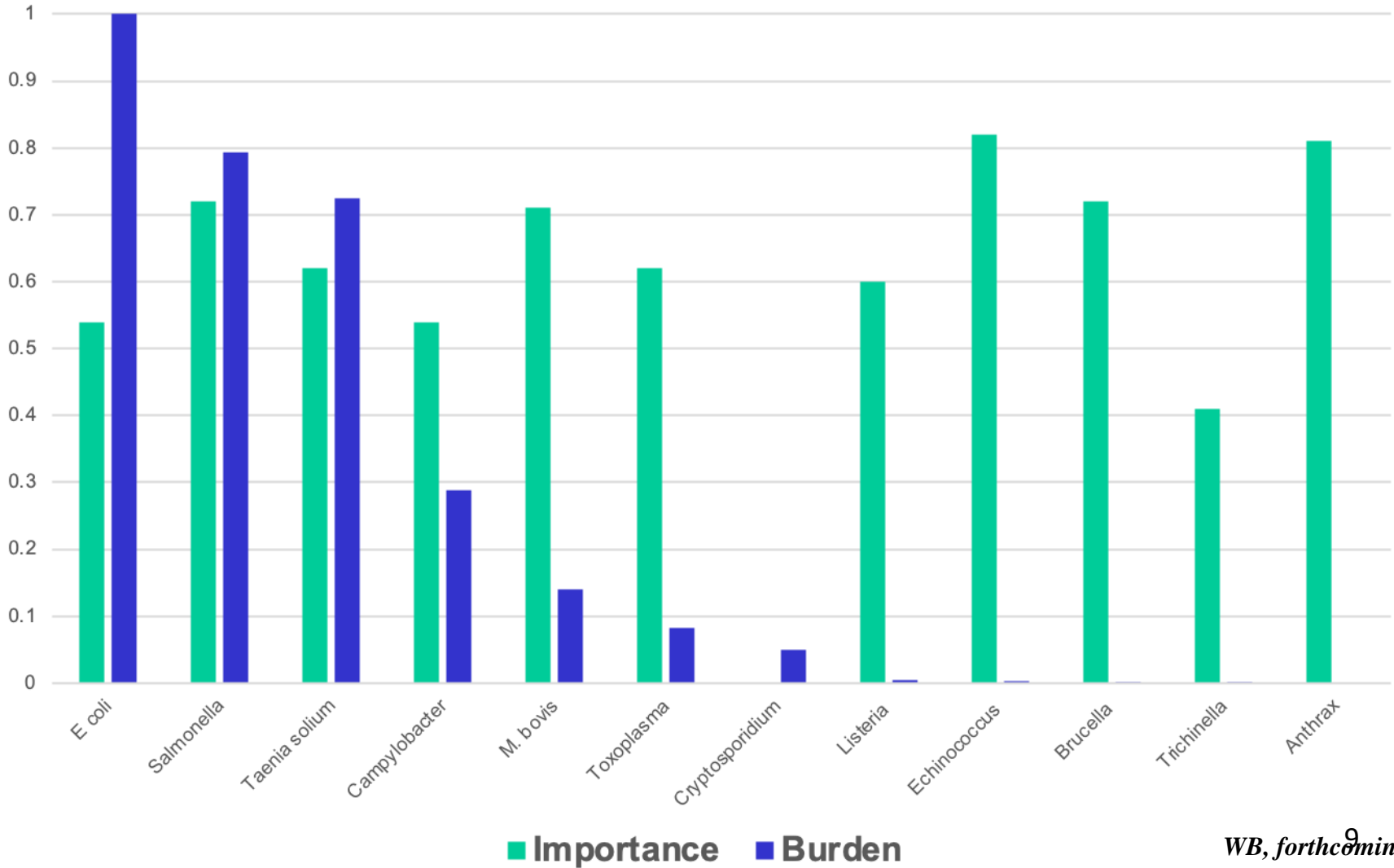
Vietnam chemical risk assessment

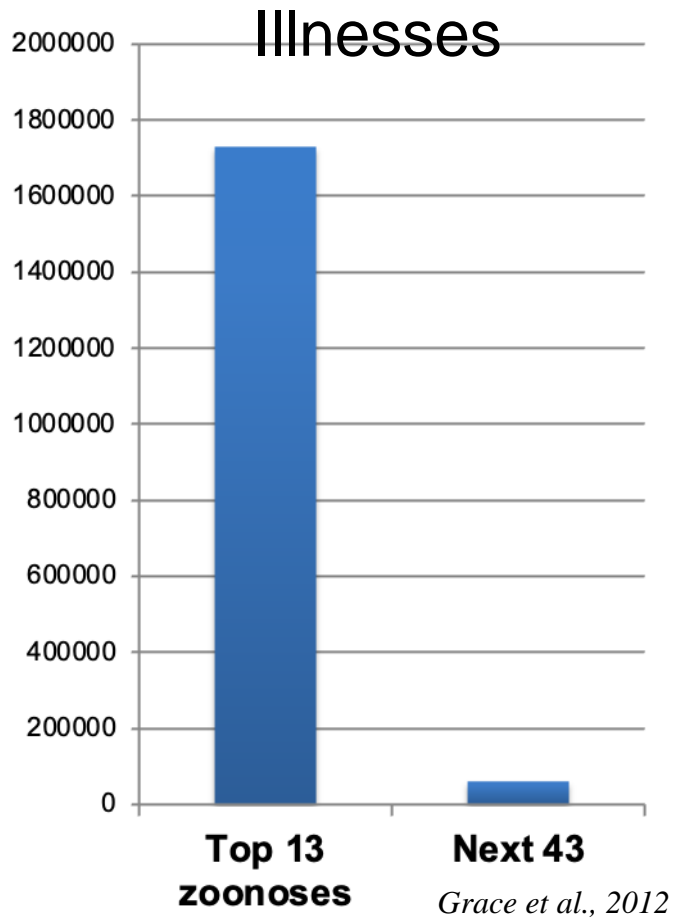
- 366 kidney, liver and pork samples analysed for antibiotic residues, β -agonists, and heavy metals
- ~1% over MRL with minor implications for human health

Quantitative microbial risk assessment

- QMRA for salmonellosis acquired from pork
- Annual incidence rate estimated to be 12.6%

Experts are also wrong

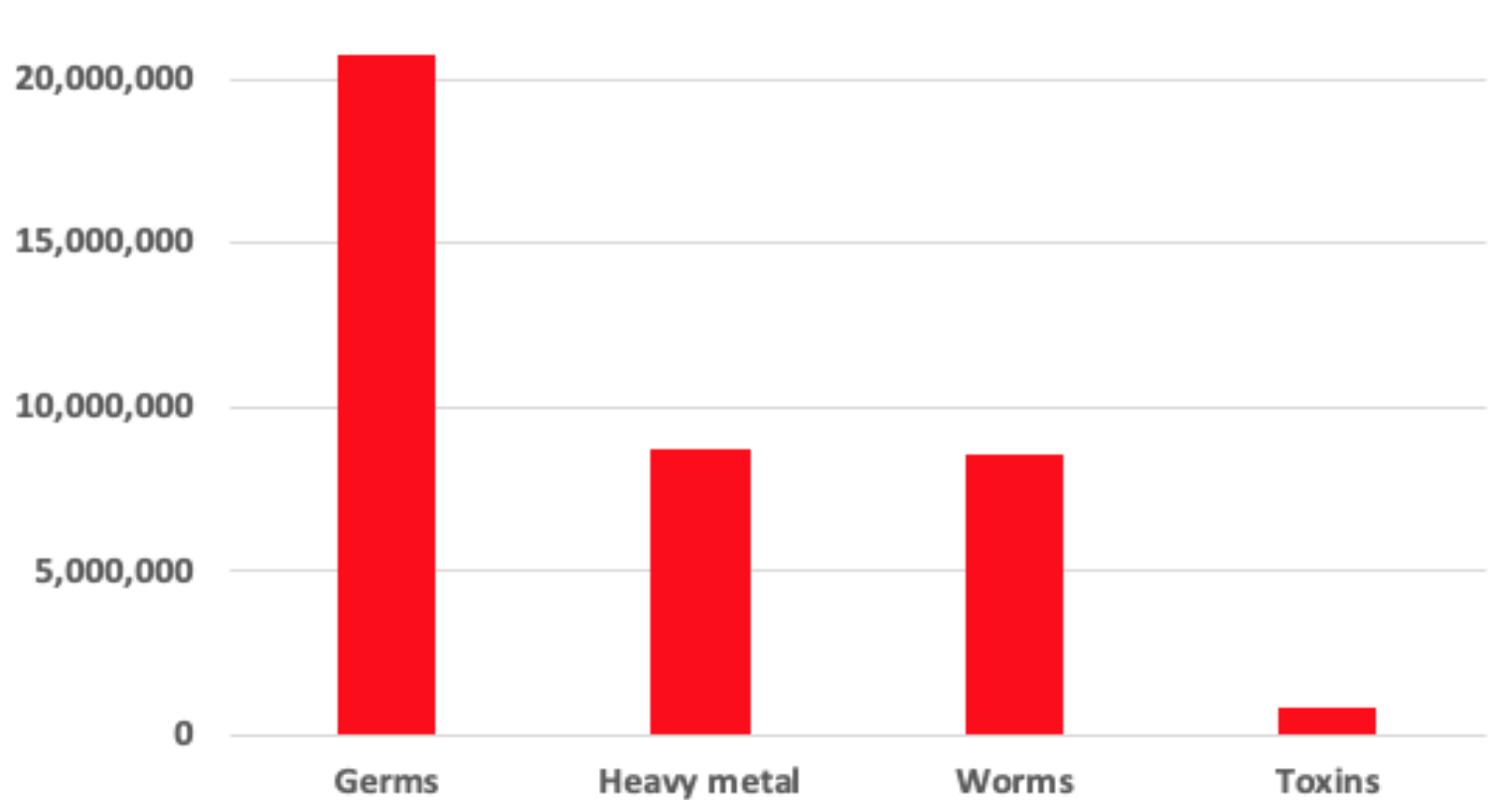




Pareto principle: the vital few and the trivial many

The top 10 human disease cause 90% burden WHO, 2014

Years of life lost annually for FBD



FERG: Havelaar et al., 2015; Gibb et al., 2019

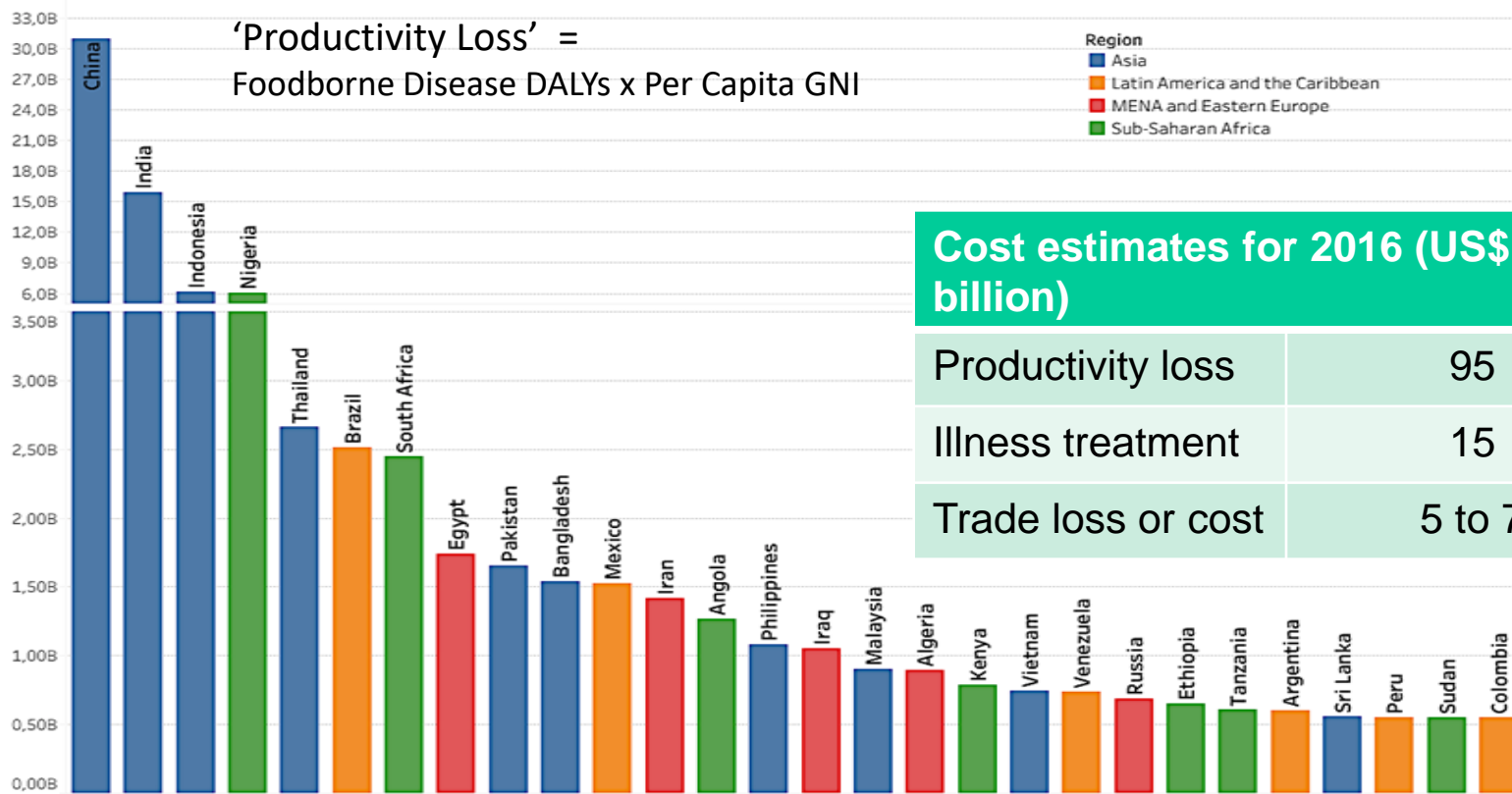
The Safe Food Imperative

Accelerating Progress in Low- and Middle-Income Countries



Steven Jaffee, Spencer Pearson, Lorian Utteridge, David Green, and Emile Cerco

Domestic costs may be 20 times trade costs



Cost estimates for 2016 (US\$ billion)

Productivity loss	95
Illness treatment	15
Trade loss or cost	5 to 7

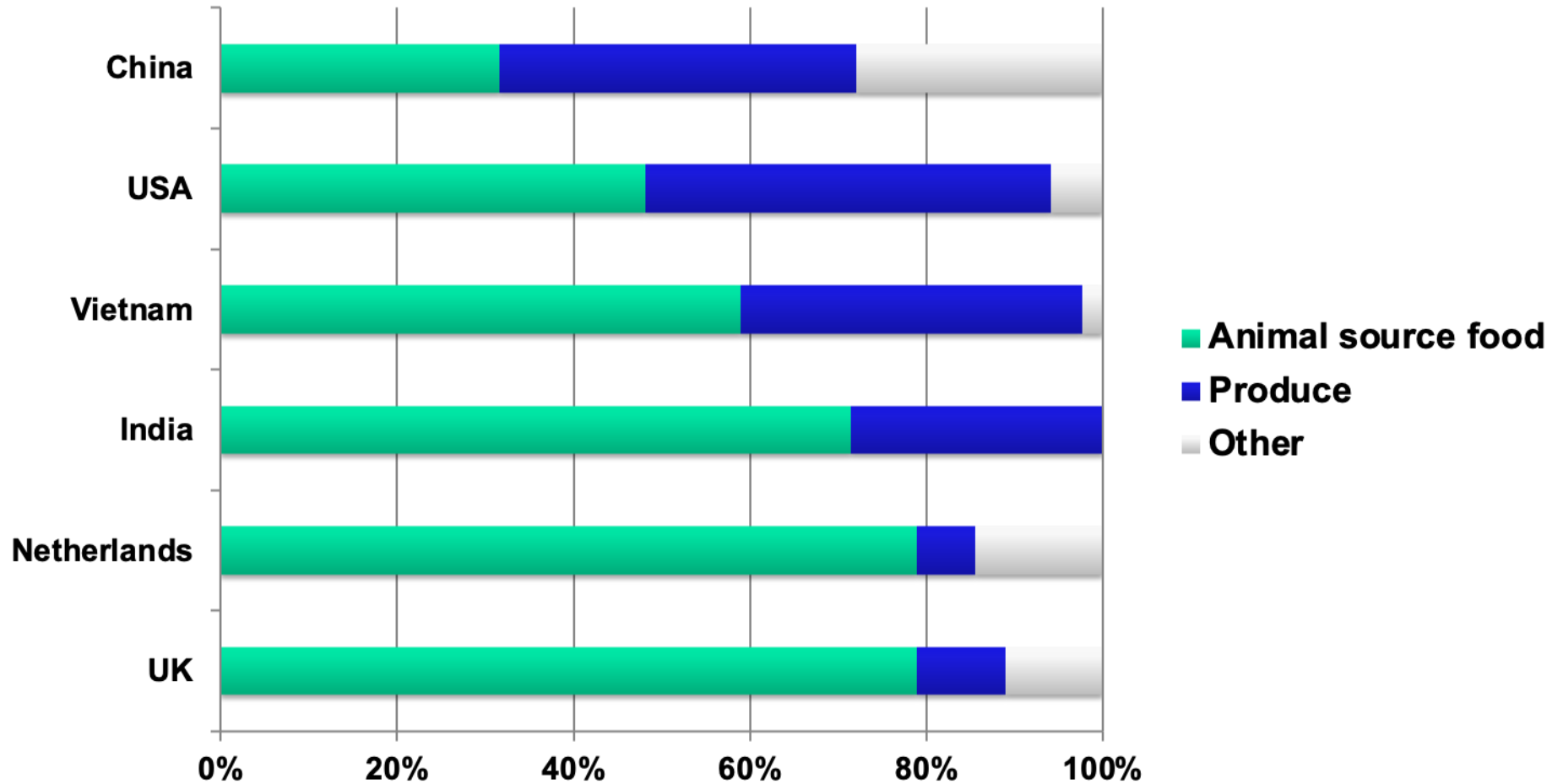
Illness treatment = US\$27 x # of Estimated foodborne illnesses

Trade loss or costs = 2% of developing country **high value** food exports

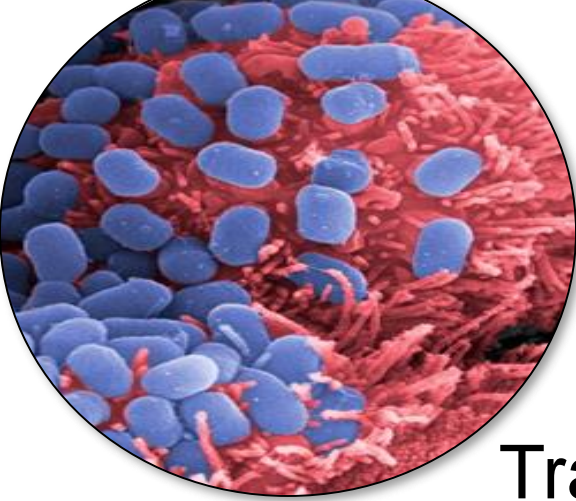
Importance of social, economic & environmental factors

- The meat of women butchers in Nigeria had less microbial contamination than meat of men butchers in the same market
- As value chains modernise women often forced out
- Urban dairies in Uganda that experienced harassment from authorities had fewer good practices than those who didn't
- Increasing interest in the potential of nutritious and safe foods to prevent childhood stunting
- Food in informal markets is affordable: in china: super-market meat costs 10% more, in Kenya pasteurised milk 25-40% more

Foods implicated in FBD



Painter et al., 2013, Sudershan et al., 2014, Mangan et al., 2014; Tam et al., 2014;
Sang et al., 2014 ; ILRI, 2016



Traditional hazard identification

- Top-down and technocratic
- Problem-oriented not solution-oriented
- Unsystematic hazard selection
- Unsystematic hazard investigation
- Benefits and harms not integrated



Risk analysis

a tool for decision-making under uncertainty



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Variable levels of risks and risk factors

Consumers suffering diarrhoea in last 2 weeks

- 0.02% consumers in Canada
- 4% consumers in Hanoi
- 9% consumers in Nigeria (strong relation meat consumption)
- 23% consumers in Nagaland (no relation pork, meat or vegetable consumption, strong relation hygiene)
- 43% Nigerian butchers (strong relation group, gender, hygienic practice, eating own products)



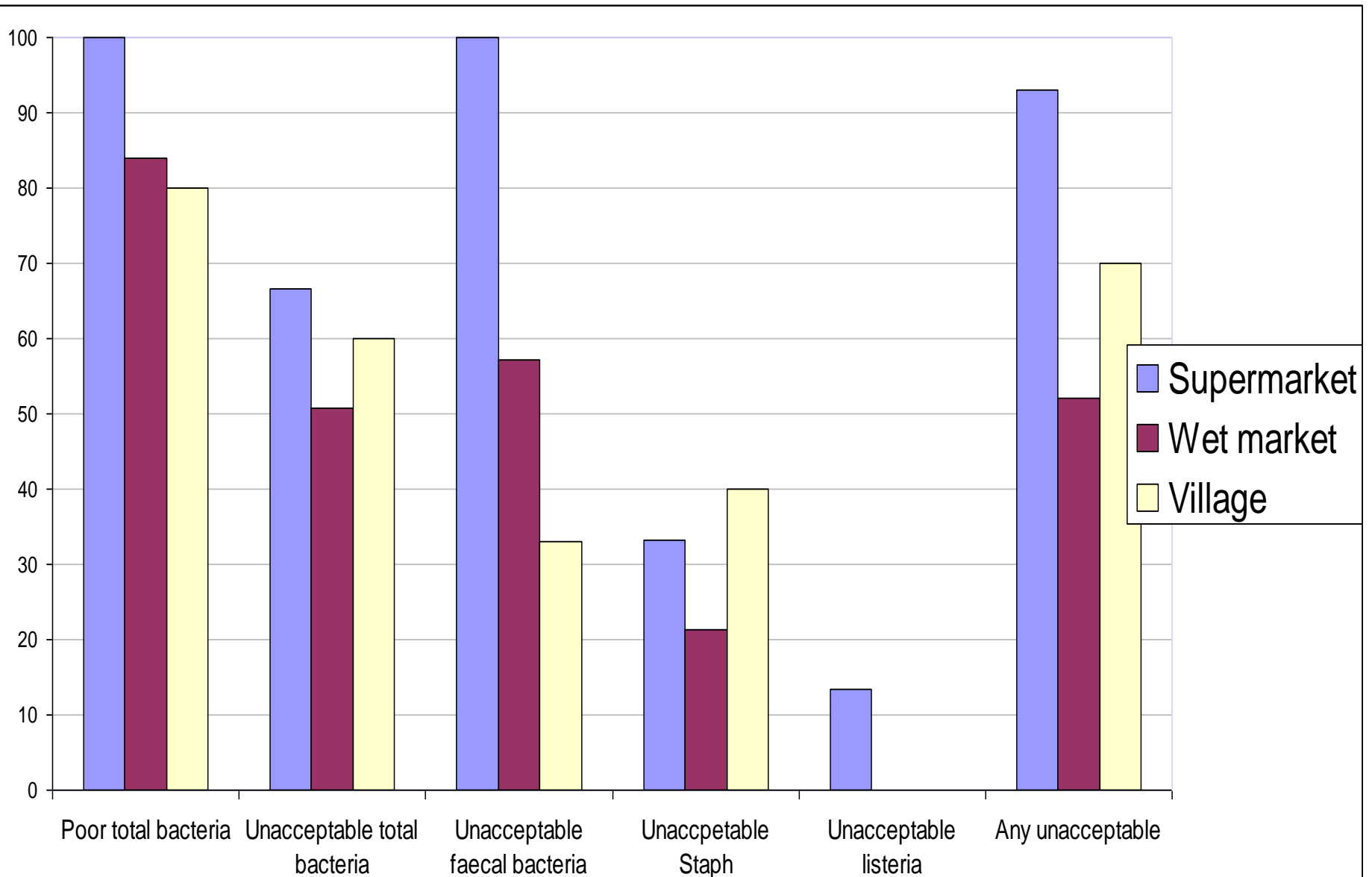








Formal worse than informal





Thank you for your attention

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ILRI thanks all donors and organizations which globally support its work through their contributions to the [CGIAR Trust Fund](#)

Patron: Professor Peter C Doherty AC, FAA, FRS

Animal scientist, Nobel Prize Laureate for Physiology or Medicine–1996

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