The impact of animal disease on human hunger and health

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Contagious Animal Diseases – the science behind trade policies and regulations

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Key messages

1. The global challenge of food security and the role of livestock in meeting it
2. Animal health a key dimension of addressing hunger and its drivers
   - Health in productivity gaps
3. Current emphasis on trade and standards may not be helpful
4. More important problems and solutions
   - Informal markets: Risk not hazard & MCD
   - The third way for the livestock revolution

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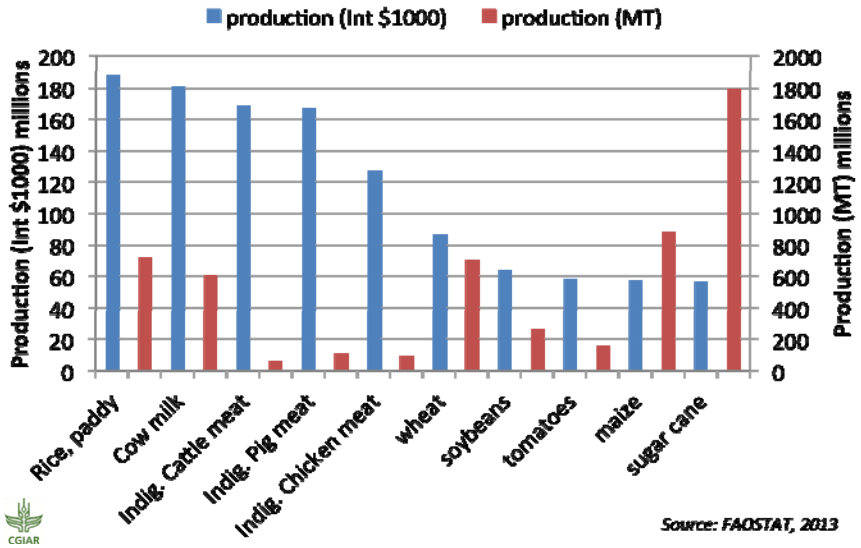
The global challenge of food security and sustainability

How the world would feed itself sustainably by the time population stabilizes?

- At least 60% more food than is produced now
- 75% of this must come from productivity increase
- While also reducing poverty, and balancing environmental, social and health concerns
- Coping with temperature scenarios - -possibly 4 degrees (or an ice age)

4 out of 5 of the highest value global commodities are livestock



Smallholder livestock keepers – who are producing much of the world's food are competitive

- Smallholders benefit in multiple ways from keeping livestock
- They are competitive because they use low-cost labour and integrate crop and livestock production

1. East African dairy

- In Kenya, 1 million smallholders keep the largest dairy herd in Africa (larger than South Africa)
- The lowest-cost milk producers globally are found in Uganda (source: IFCN)
- Small-scale Kenyan dairy producers get above-normal profits of 19-28% in addition to non-market benefits (finance, insurance, manure, traction) of a further 16-21% (source: SDP-ILRI, 2005)
- Small- and large-scale poultry and dairy producers in Kenya have the same levels of efficiency and profits (source: Omiti et al., 2004)

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Smallholder livestock keepers are competitive (cont.)

2. Vietnam pig industry

- 95% of production is by producers with fewer than 100 animals
- Pig producers with 1-2 sows have lower unit costs than those with more than 4 sows (ILRI 2010)
- Models show industrial pig production could grow to meet no more than 12% of national supply in the next 10 years
- Smallholders will continue to provide most of the country's pork for years to come

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Key points related to smallholder competitiveness

- Smallholders will continue to supply most of the livestock products in most developing countries – but productivity needs to increase
- There will be different trajectories of livestock growth, with strongest dynamics in Asia
- Increasingly in many regions, smallholders will commercialize their operations and produce for markets
- Demand for animal health inputs will increase

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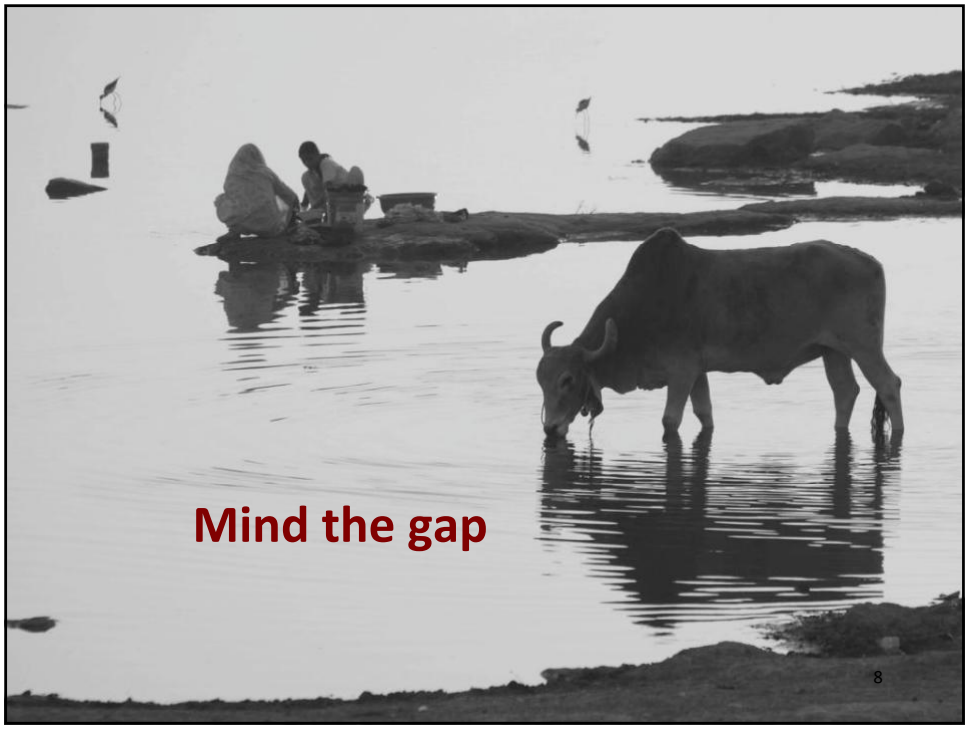
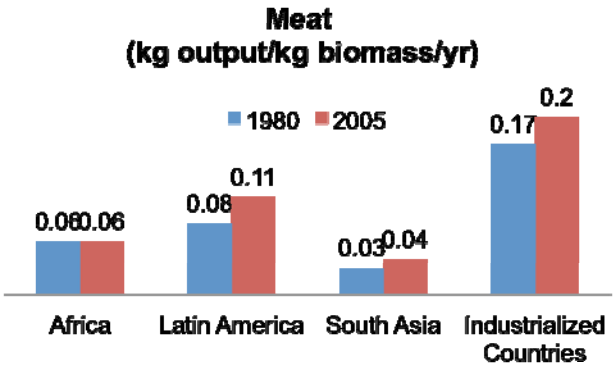


Productivity gap



Biomass is calculated as inventory x average liveweight.
Output is given as carcass weight.
Source: (Steinfeld et al 2006)

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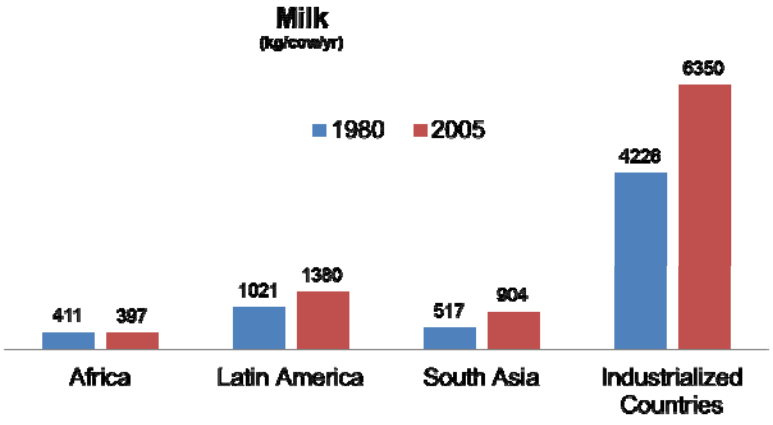
Some developing country regions have gaps of up to 430% in milk



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Source: (Steinfeld et al. 2006)

The death gap

- Animal disease can be the bottleneck
  - ND Africa and Asia
  - ECF east Africa

Annual mortality of African livestock
(Around half due to preventable or curable disease)

	Young	Adult
Cattle	22%	6%
Shoat	28%	11%
Poultry	70%	30%

Source: Otte & Chilonda; IAEA

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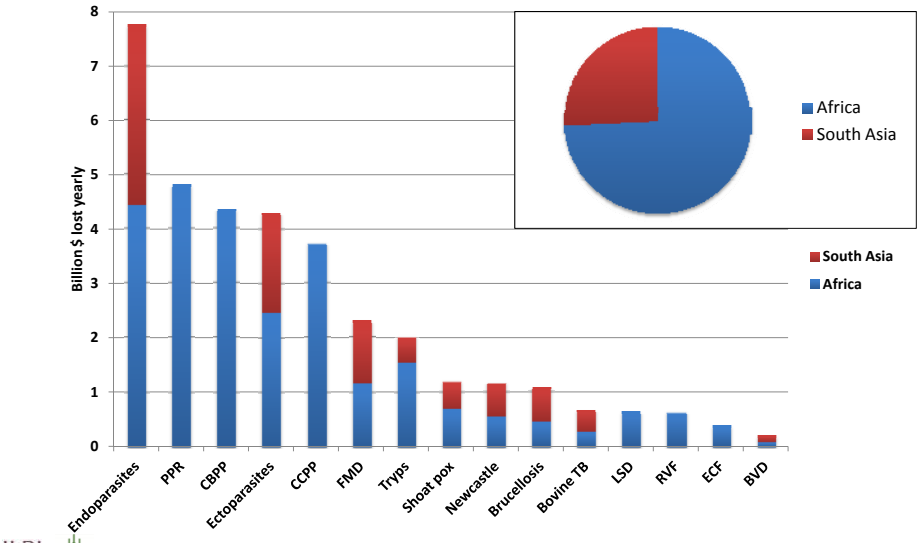
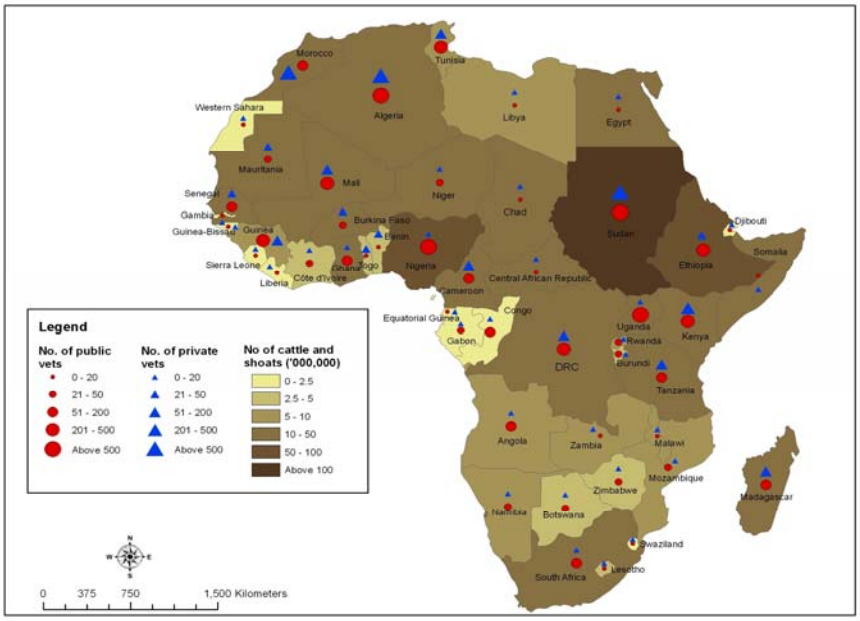
The disease gap



Estimates from BMGF

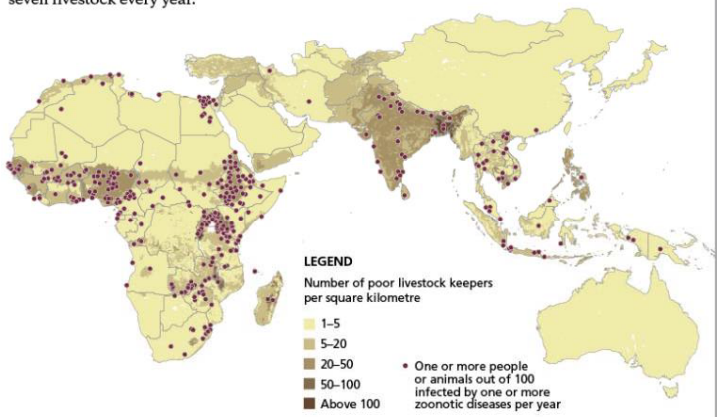
The vet gap



The zoonoses gap

Greatest Burden of Zoonoses Falls on One Billion Poor Livestock Keepers

An ILRI study shows that zoonotic diseases are major obstacles in pathways out of poverty for one billion poor livestock keepers. The diseases mapped cause 2.3 billion human illnesses and 1.7 million human deaths a year. In poor countries, the diseases also infect more than one in seven livestock every year.



Map by ILRI, from original published in an ILRI report to DFID: *Mapping of Poverty and Likely Zoonoses Hotspots*, 2012.

The reporting gap

Reporting system	Zoonoses	Scope
WAHID	33	Animal
TAD Info	2	Animal
Pro Med	All	All
GLEWS	19	All
Health Map	All	All

Source: HealthMap

Africa

- 253 million SLU
- 25 million lost annually
- 12-13 million from notifiable disease
- 80,000 reported == 99.8% un-reported

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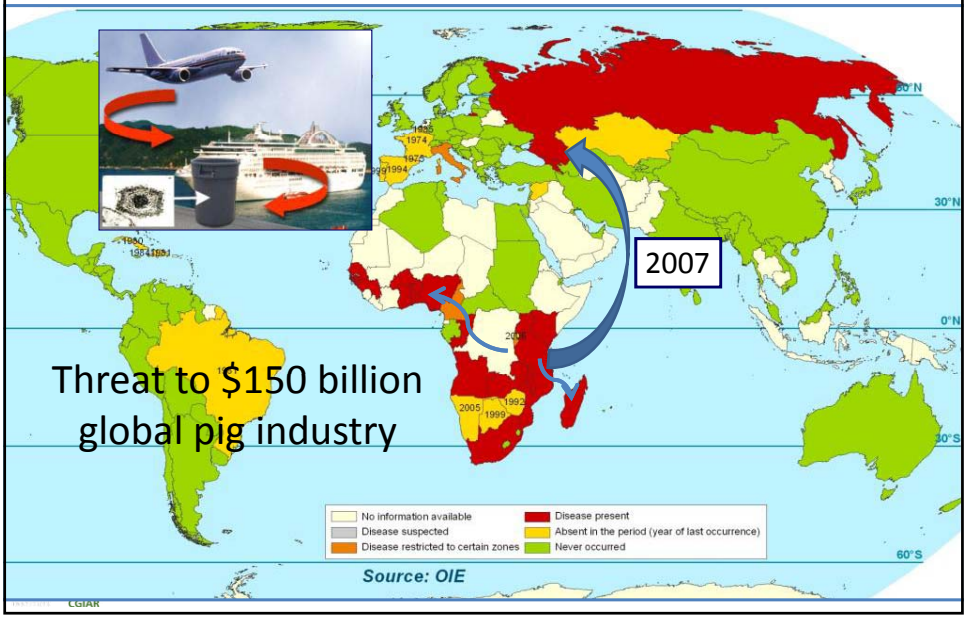
The readiness gap: Example African swine fever



The costly gap

	Period	Costs (conservative estimates)	Annual average
6 outbreaks other than SARS -Nipah virus (Malaysia), -West Nile fever (USA), -HPAI (Asia, Europe), -BSE (US), -Rift Valley Fever (Tanzania, Kenya, Somalia) - BSE (UK) costs in 1997-09 only	1998-2009	38.7	
SARS	2002-2004	41.5	
Total in 12 year period (1998-2009)		**80.2**	**6.7 b**

Source World Bank 2012

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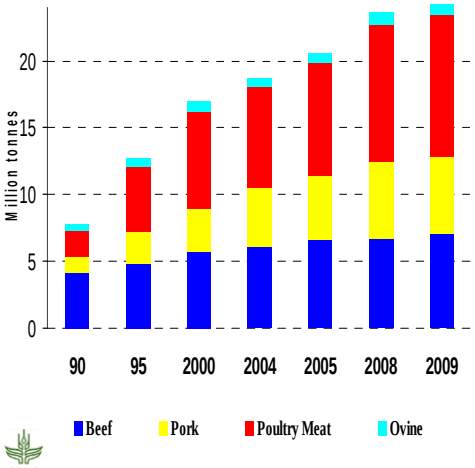
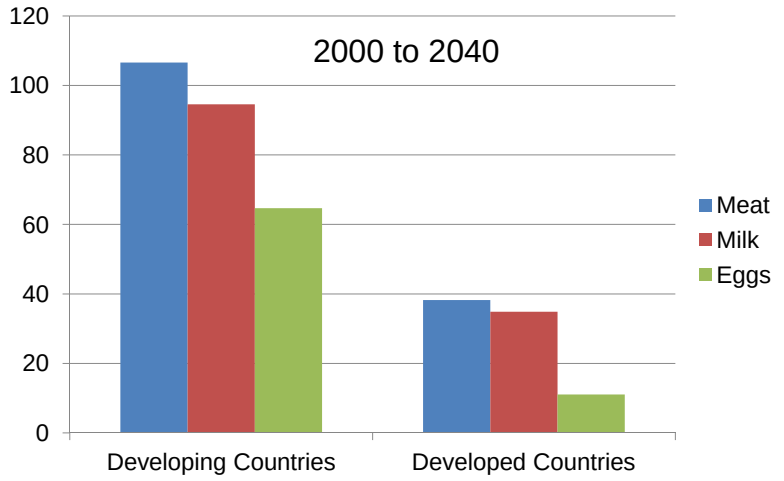
Trade matters --but local markets matter more



- **The value of meat trade is estimated over $100 billion in 2011, approximately 10 percent of agricultural trade.**
- **However, trade of meat account for only 10 percent of total livestock consumption**

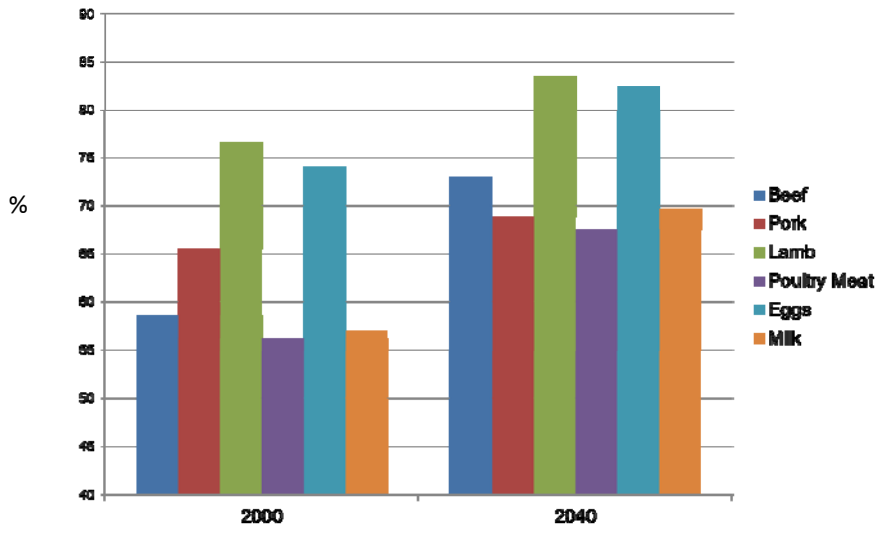
Percentage increase in demand for livestock products



Far higher growth in demand will occur in developing countries

IFPRI-ILRI IMPACT model results

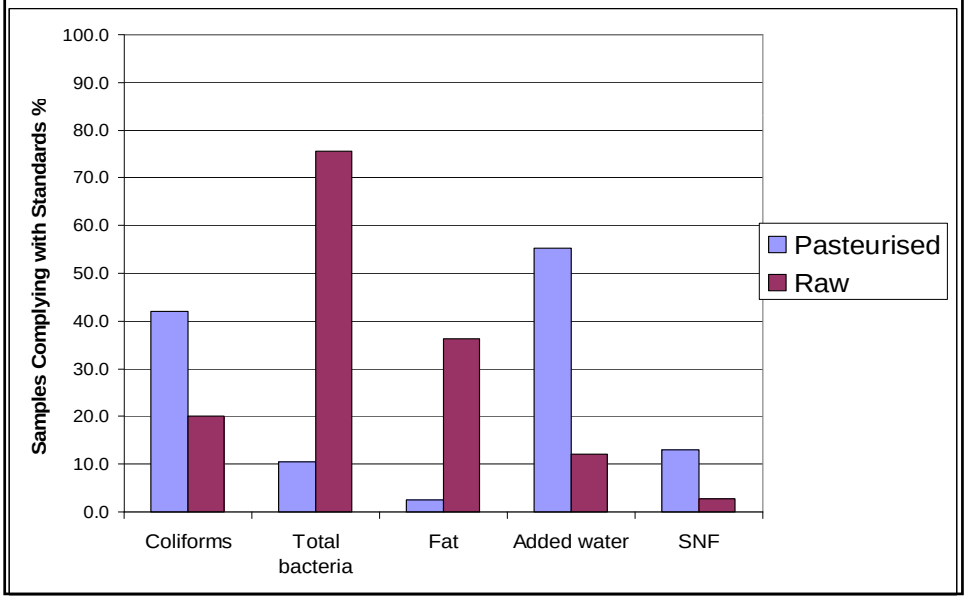
By 2040, 70% of global beef and milk will be produced in developing countries by smallholders in transition



IFPRI-ILRI IMPACT model results

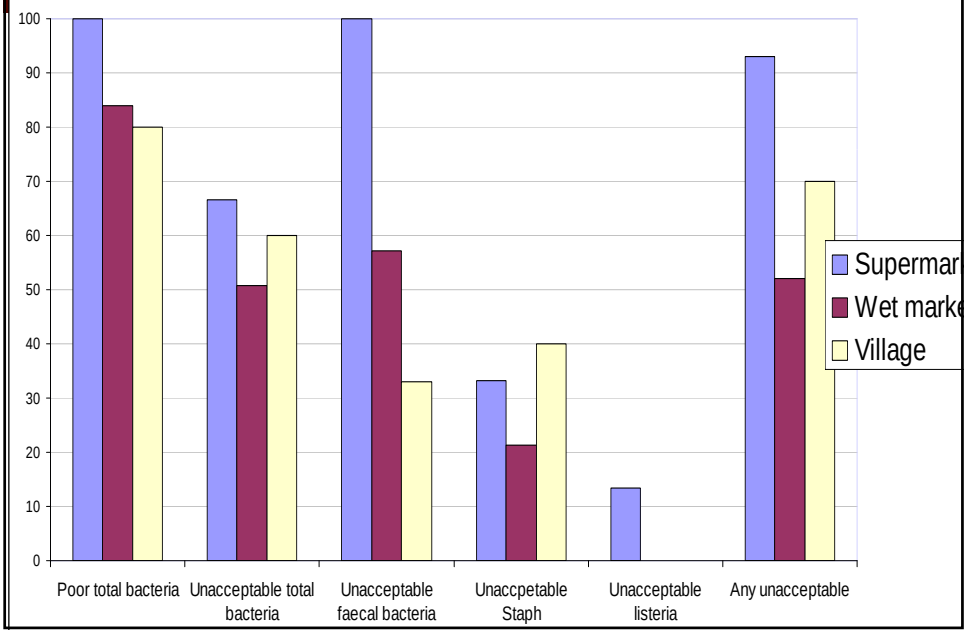
Dairy India

Compliance with standards : Formal no better than informal



Vietnam pork

Compliance : Formal worse than informal



More regulation==worse practices

Average of 17.25 risk mitigation strategies used

Farmers who believed UA was legal used more strategies

Hazard Transmission	Risk mitigation strategies currently practiced (%)				
Ecosystem to cow	Keep only one species	29%	Treat cattle often	31%
	Zero-graze	38	Don't keep calves	39
	Use own land only for feed	41	Use Artificial insemination	44
	Avoid common grazing	56	Vaccinate against brucellosis	1
	Keep local breeds	27		
Milk shed to cow	Use feed/water trough	94	Stack manure	11
	Have concrete/stone floor	96	Have a waste disposal strategy	96
	Use bedding	41		
Milk shed / dairy to milk	Have washable shed wall	100	Use just metal/ glass vessels	19
	Have metal/tin roof	96	Use piped water	75
	Store containers off floor	29	Keep premises clean	51
	Keep milk bar dry	45	Depose waste >5m away	38
Milk handler to milk	Use hot water to clean	18	Have no discharges/ wounds	97
	Use soap to clean	81	Have clean hands	79
	Wear protective clothing	1	Have clean/short nails	81
	Wash hands with soap before handling milk	59	Access to latrine	98
			Good personal hygiene	49
Transport to milk	Don't drink unsold milk	10	Don't sell/store unsold milk	90
Milk to consumer	Treat milk	50	Sell milk quickly (=6 hrs)	82
	Avoid drinking raw milk	93	Don't consume milk until withdrawal period passed	64
	Check milk quality by smell/taste	48		

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Informal dominates perishables

Country	Super-markets
Angola	1
Botswana	42
DRC	0
Lesotho	4
Mauritius	12
Malawi	2
Mozambique	3
Namibia	35
Tanzania	5
Seychelles	0
Swaziland	18
Zambia	20
Zimbabwe	124

Percent milk marketed via informal markets in selected countries in the region

Country	Percent
Kenya	86
Tanzania	95
Uganda	90
Rwanda	90
Ethiopia	95
Malawi	95
Zambia	90
Source, A. Omore, 2006	

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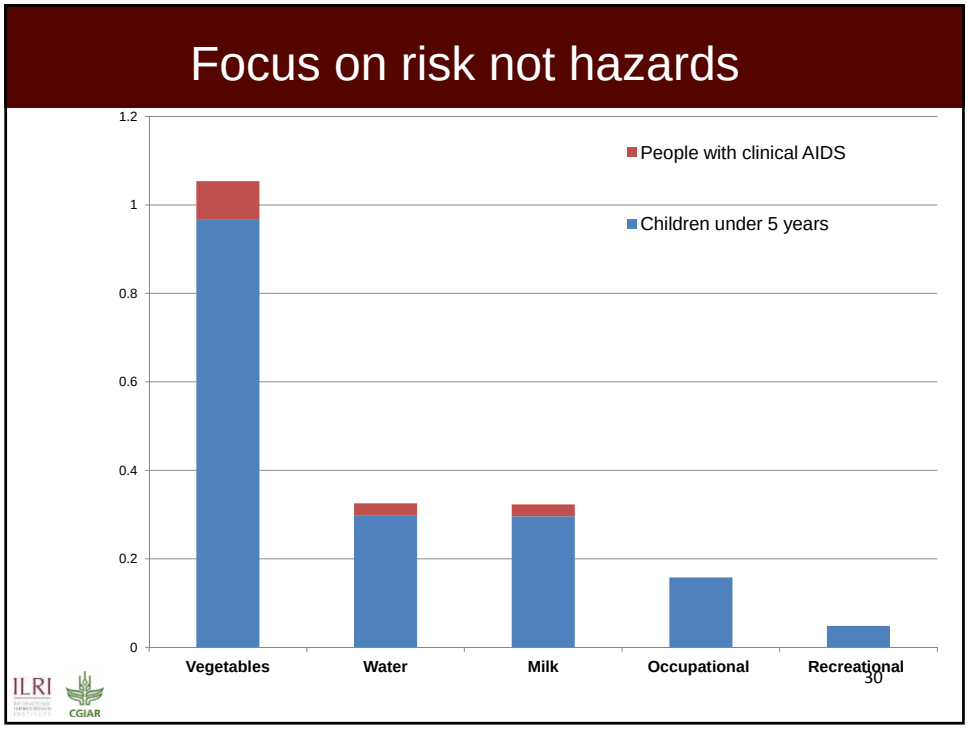
Milk (cow) Production: men (x Nairobi) Processing: women Marketing: women (x Abidjan) Consumed: both	**Milk (goat)** Production: men (w milk) Processing: women Marketing: women Consumed: both
Beef/goat Production: men (w assist) Processing: m Marketing: m (butcher, pub) Consumed: both	**Poultry** Production: women Processing: women Marketing: women Consumed: both
Pigs Production: women Processing: men Marketing: men Consumed: both	**Fish, crabs** Fishing: men Processing: women Marketing: women) Consumed: both

Focus on risk not hazards



Focus on livelihoods not risk

Close the gap with One Health

Around 80% of farmers rely on other health service providers

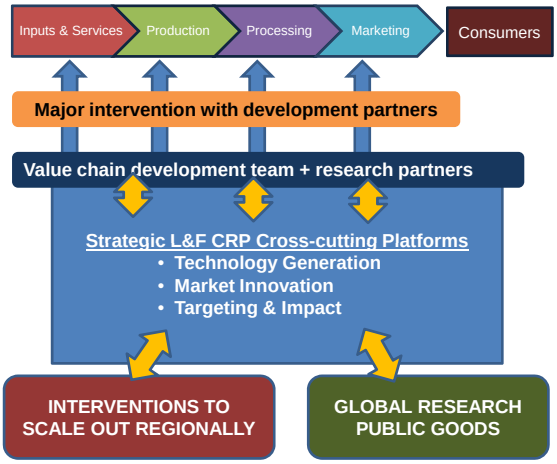
Source: Grace, 2004

A district in west Africa	
Cattle	70,000
Farmers	25,000
Hawkers selling drugs	50
Market stall selling drugs	15
Public vet	1
Private vet	0

Leverage the livestock revolution for the poor

ILRI and partners are working to transform selected value chains in targeted commodities and countries.

What is ILRI doing?



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Key messages

- Livestock have important impacts on hunger, health, poverty and environmental sustainability
- Smallholders producing for informal markets will have important roles for decades to come
- Large gaps in livestock productivity keep people poor, hungry and at risk
- Trade matters little and standards are often unhelpful
- Holistic, One health and risk-based approaches are more promising to leverage livestock for the poor

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