

Food security and animal production – what does the future hold?

Jimmy Smith, Director General, ILRI, Kenya

With: Dieter Schillinger, Delia Grace, Tim Robinson, Shirley Tarawali

IFAH Europe sustainability conference, Brussels, 11 June 2015



Key messages

- Demand for animal source foods is increasing rapidly - almost all the increase is in developing countries
- Despite this, food and nutritional challenges remain
- Small producers dominate the food economy in the developing world and can respond to the demand pull and do so in environmentally sustainable and healthy ways
- New markets for European agriculture and agri-food industry are emerging

The challenge: Is attaining global food security and sustainable food production possible?

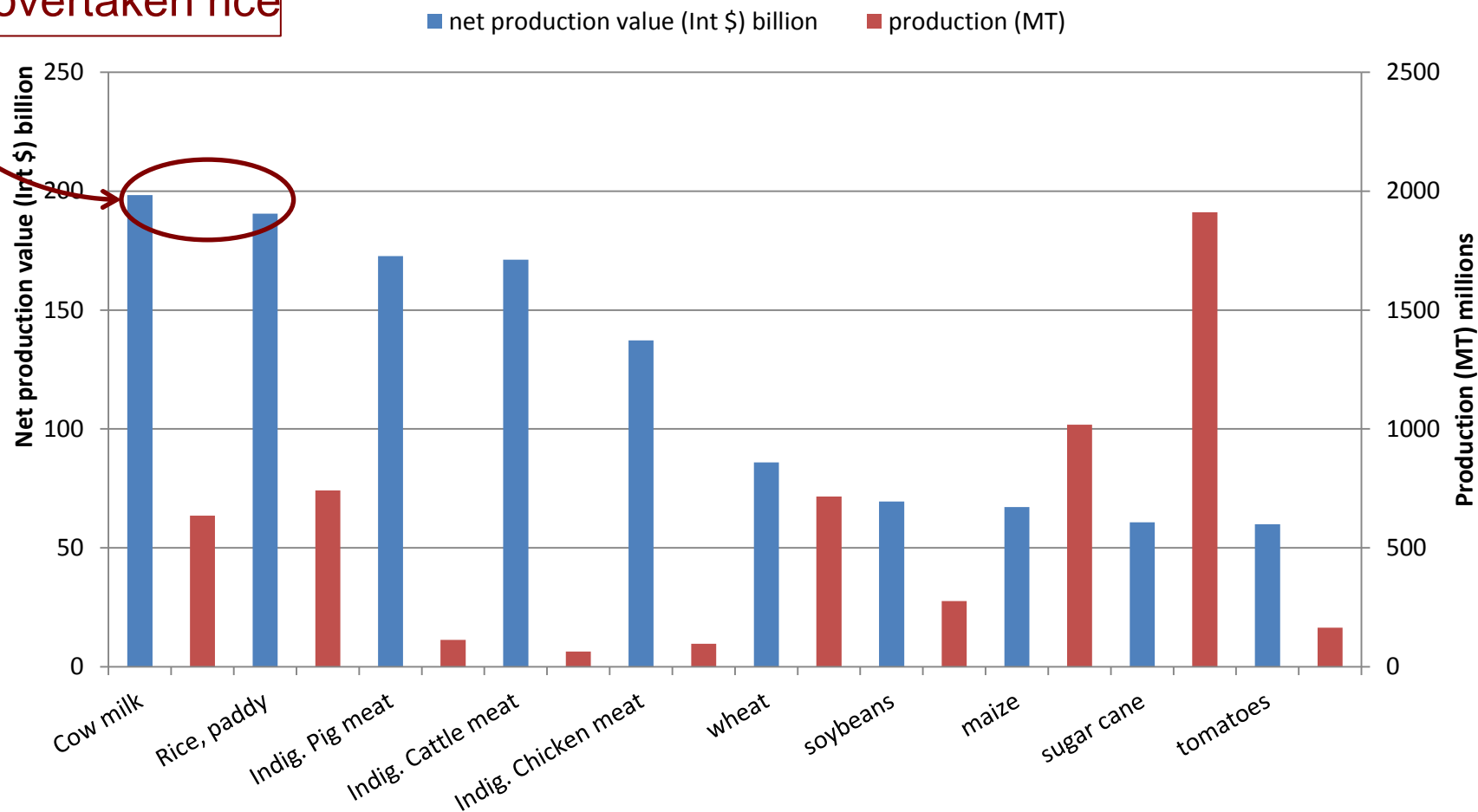
How will the world feed itself sustainably by the time the population stabilizes about 2050?

- 60% more food than is produced now will be needed
- 75% of this must come from producing more food from the same amount of land
- The higher production must be achieved while reducing poverty and addressing environmental, social and health concerns
- This greater production will have to be achieved with temperatures that may be 2–4 degrees warmer than today's

Demand for animal source foods rising fastest

Animal source foods: 4 of 5 highest value global commodities

Cow milk has overtaken rice



Drivers of change: population

Anticipated change 2013 – 2050

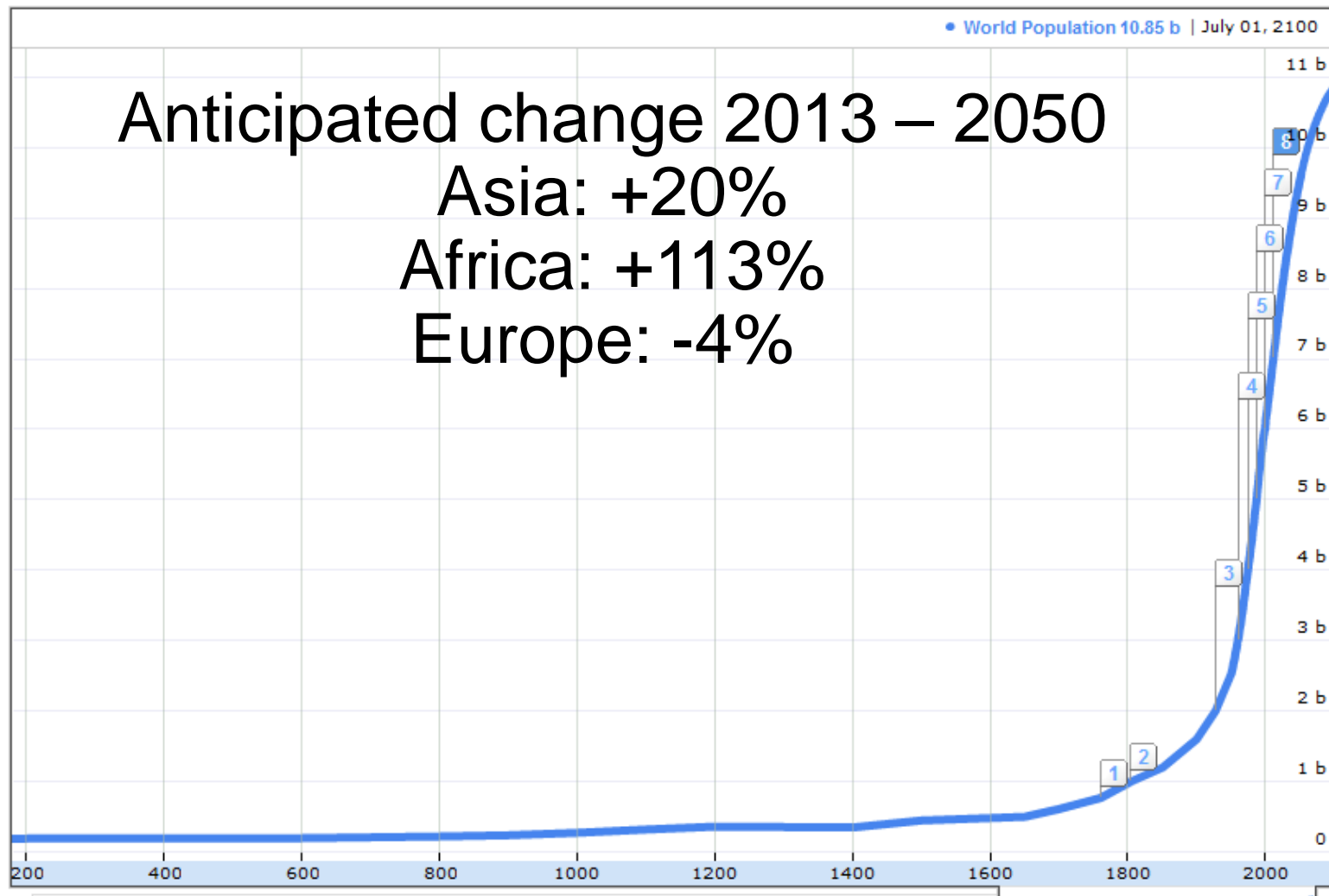
Asia: +20%

Africa: +113%

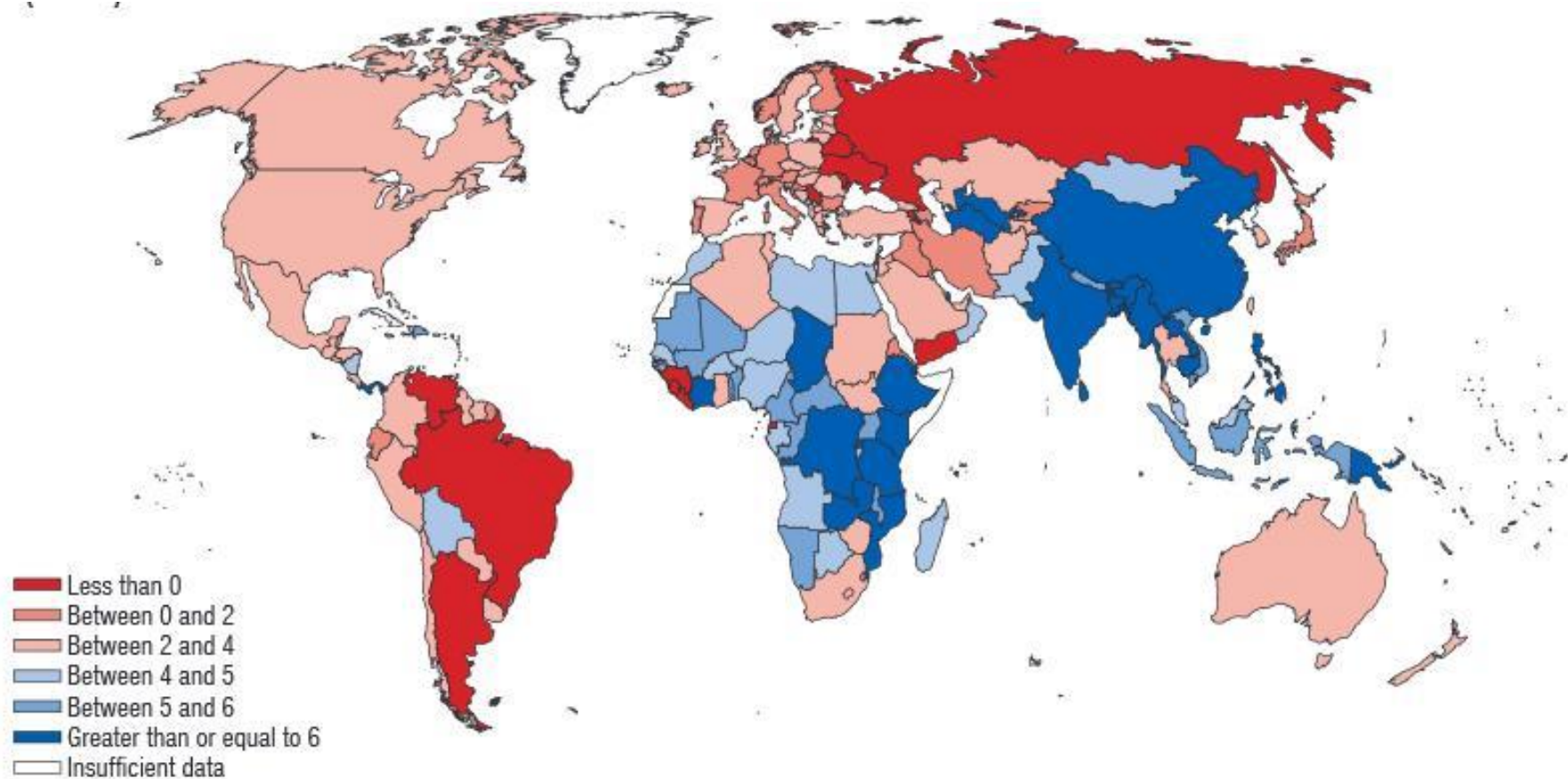
Europe: -4%

• World Population 10.85 b | July 01, 2100

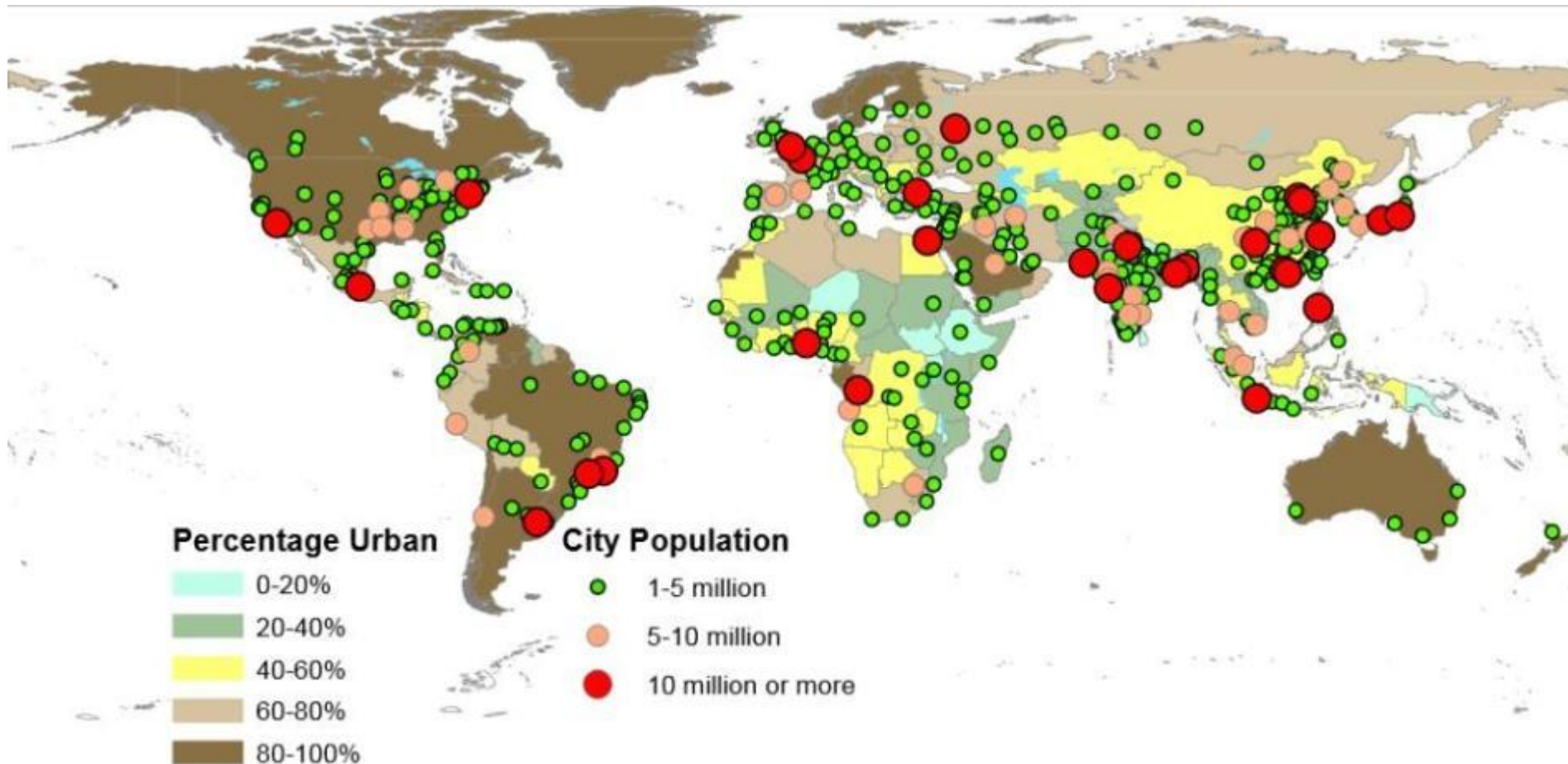
- 8. 7 Billion
2011-10-31
- 7. 6 Billion
1999-10-12
- 6. 5 Billion
1987-7-11
- 5. 4 Billion
1974-7-20
- 4. 3 Billion
1960-1-1
- 3. 2 Billion
1927-7-1
- 2. 1 Billion
1804-8-1
- 1. Industrial Revolution



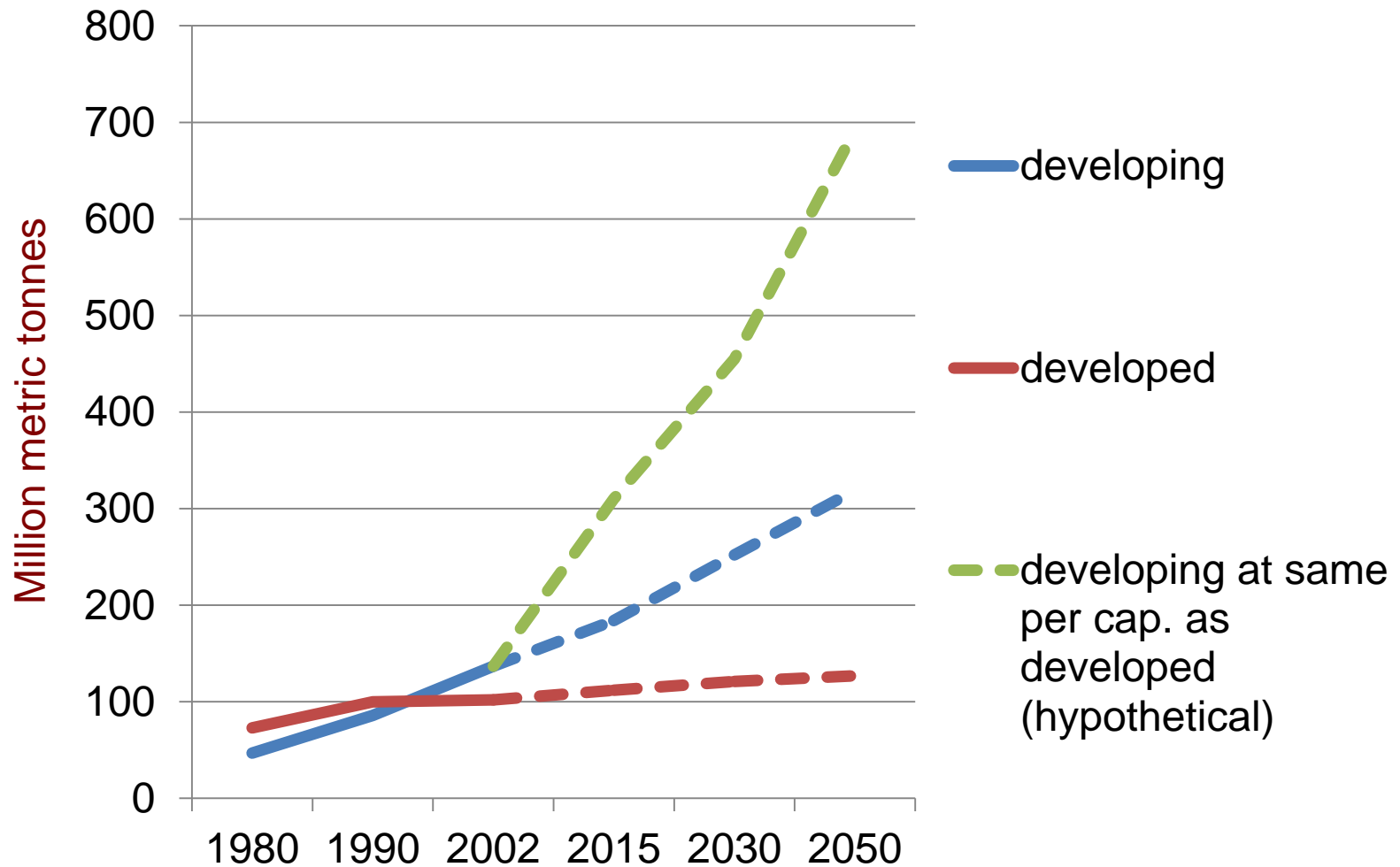
2015 GDP growth forecast



Percentage urban, 2014

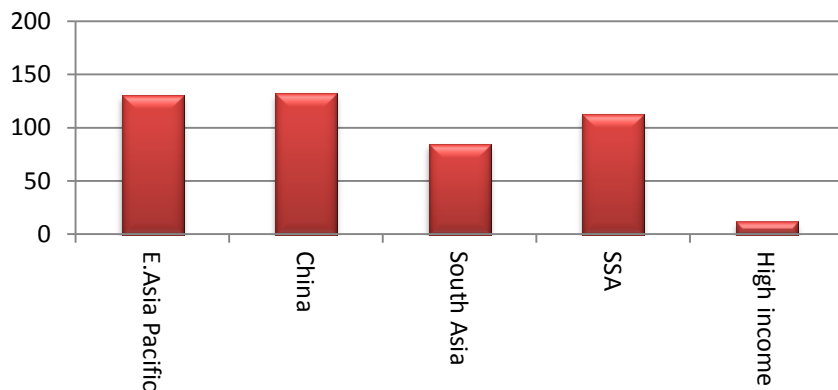


Gains in meat consumption in developing countries are outpacing those of developed

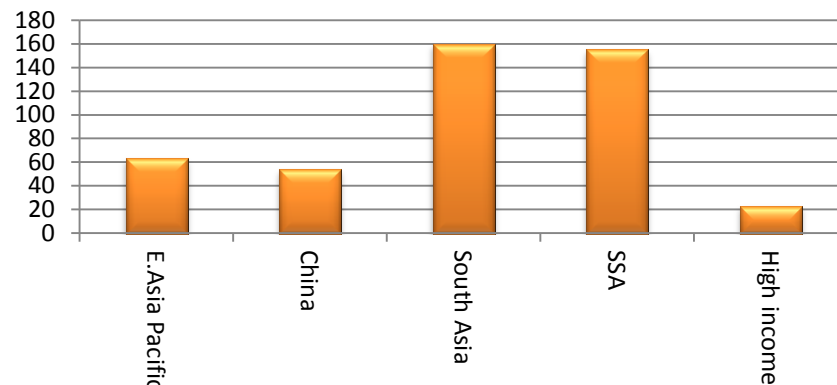


% growth in demand for livestock products

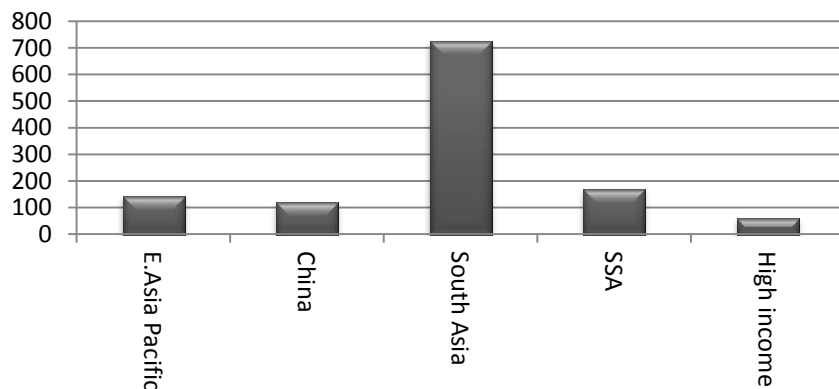
Beef



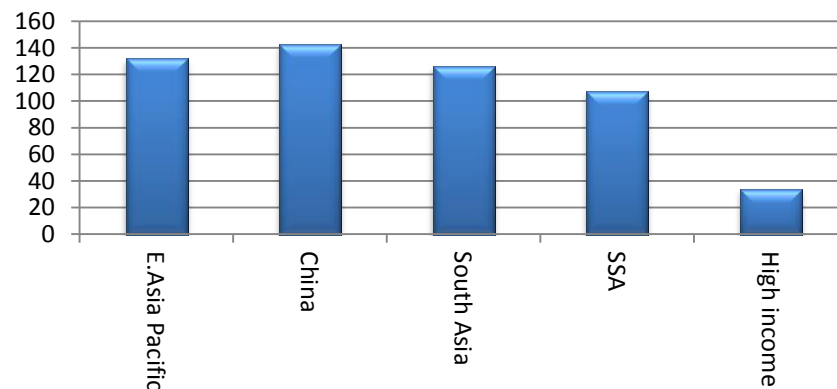
Pork



Poultry

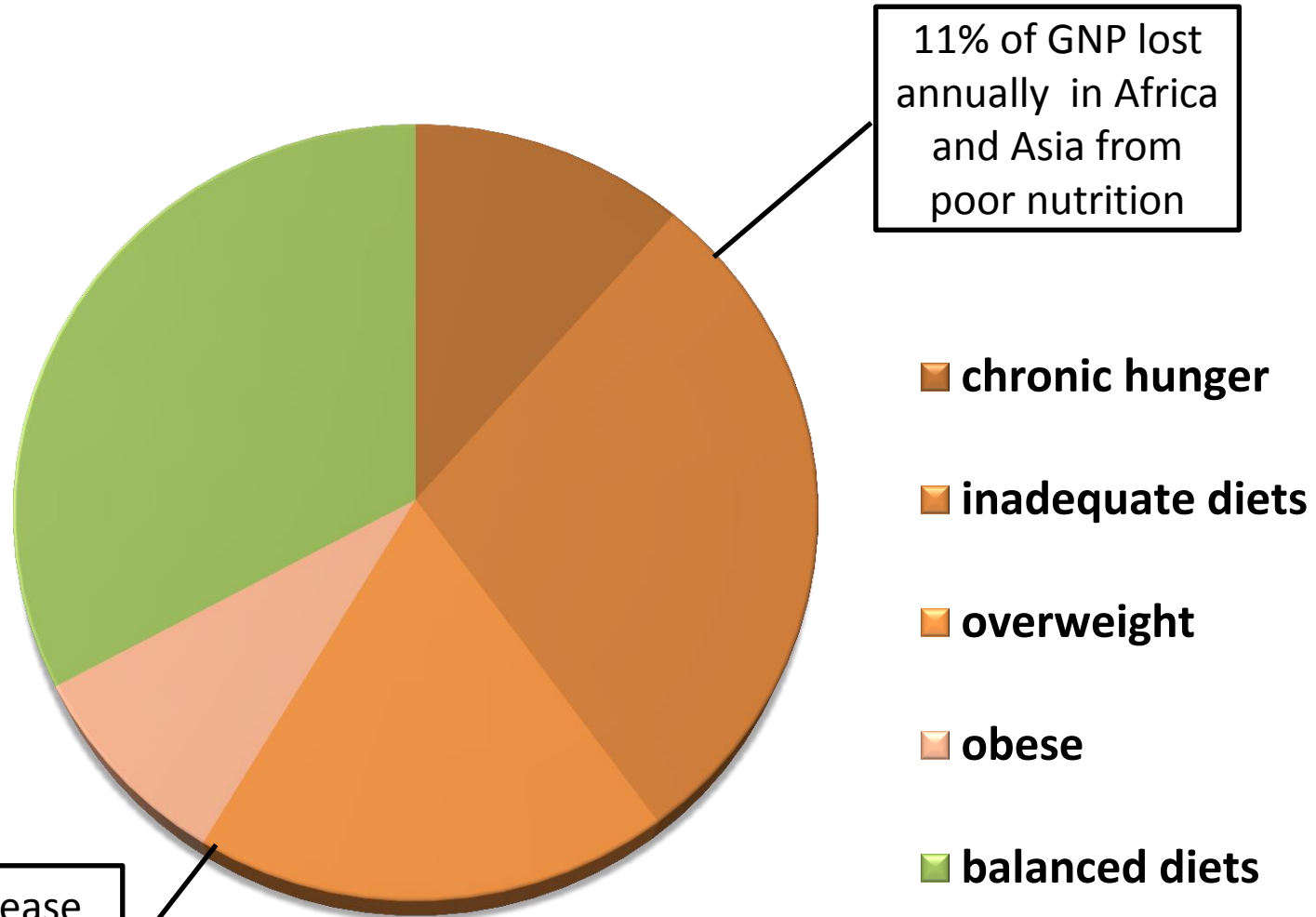


Milk



Based on anticipated change in absolute tonnes of product comparing 2000 and 2030⁹

Nutritional divides among 7 billion people today



Chronic disease likely to cost \$35 trillion by 2030

Food insecurity and under nutrition remain persistent

72 developing countries have reached the 2015 MDG 1 target of halving the proportion of hungry people

Hunger remains an everyday challenge for almost 795 million people worldwide, including 780 million in developing regions



What's special about animal/smallholder food?

- 90% of animal products are produced and consumed in the same country or region
- Most are produced by smallholders
- Over 70% of livestock products are sold 'informally'
- 500 million smallholders produce 80% of the developing world's food
- 43% of the agricultural workforce is female



Demand for livestock commodities in developing economies will be met – the only question is *how*

Scenario #1

Meeting livestock demand by
importing livestock products



Demand for livestock commodities in developing economies will be met – the only question is *how*

Scenario #1

Meeting livestock demand by
importing livestock products

Scenario #2

Meeting livestock demand by
importing livestock industrial production know-how



Demand for livestock commodities in developing economies will be met – the only question is *how*

Scenario #1

Meeting livestock demand by
importing livestock products

Scenario #2

Meeting livestock demand by
importing livestock industrial production know-how

Scenario #3

Meeting livestock demand by
transforming smallholder livestock systems



Sustainable animal food systems are a must

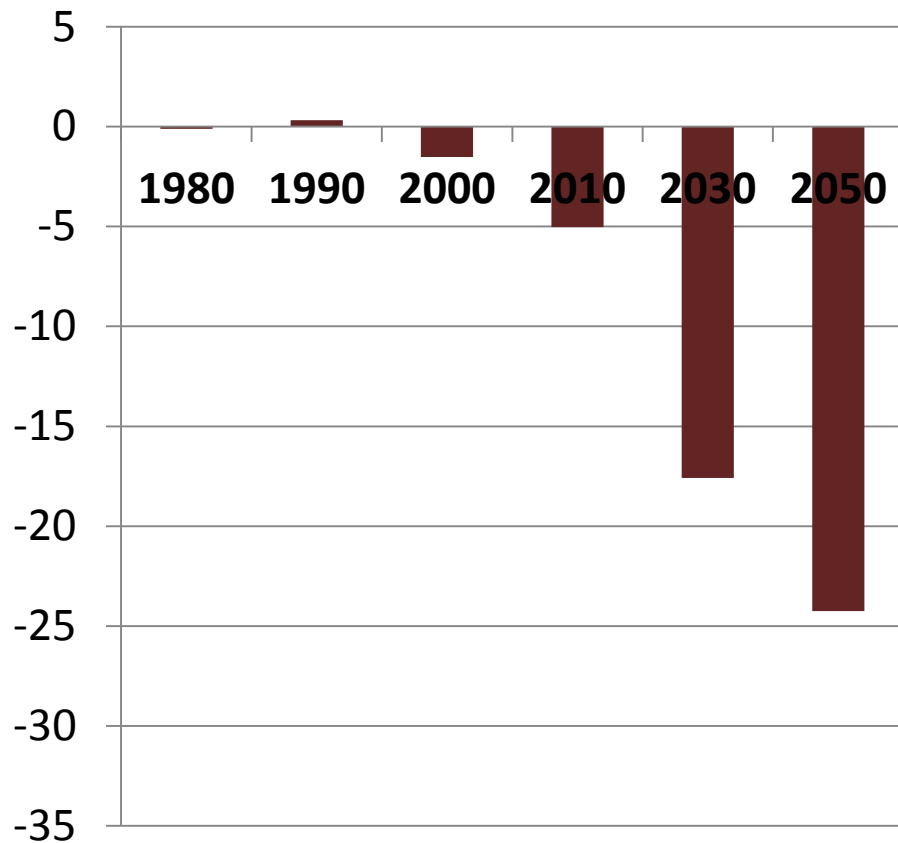
- **Productivity and efficiency:**
 - Sufficient food with lower environmental foot print: Animal health, genetics, feeding
- **Animal source foods:**
 - Safe, not wasted and consumed in appropriate quantities
- **Emerging challenges:**
 - Zoonotic diseases
 - Anti-Microbial Resistance



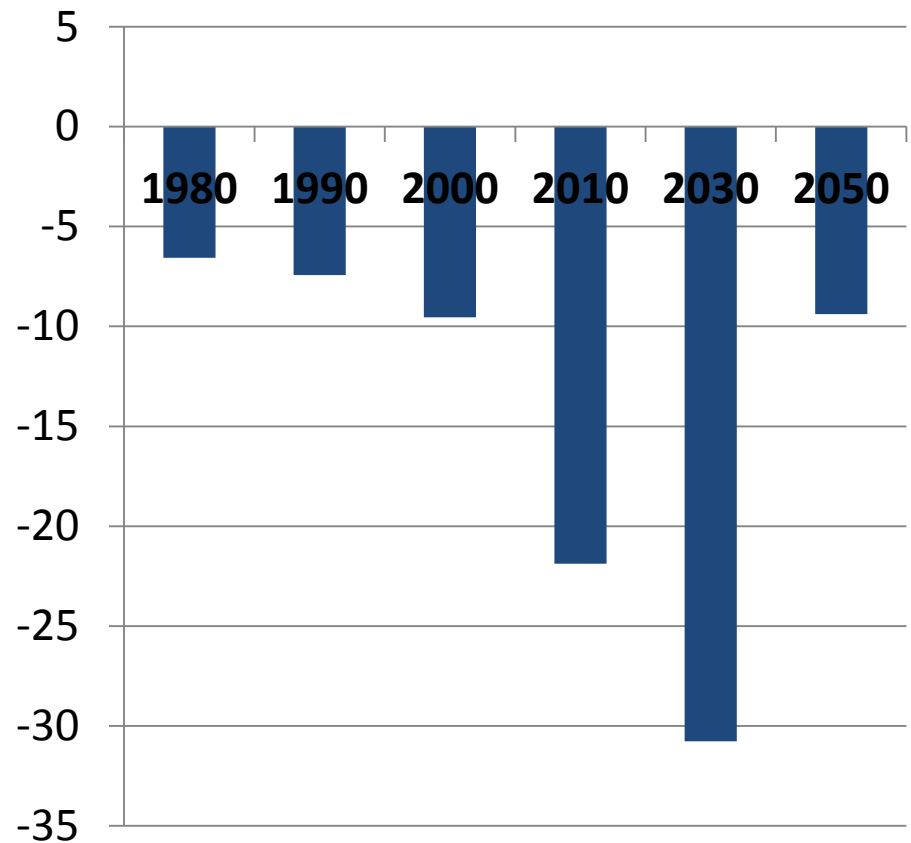
Net trade of meat and milk in developing countries (million metric tonnes)

Historical trends and baseline projections with climate change

Meat



Milk



Growth of intensive systems

How to intensify without concentration?



Replacing the 90% of locally produced animal commodities is not feasible

Economically

Africa's food import bill (2013): US \$ 44 billion

About one fifth is livestock (highest after cereals):

Meat: US \$ 5 billion; Milk: US \$ 4 billion

Business as usual: the import bill doubles

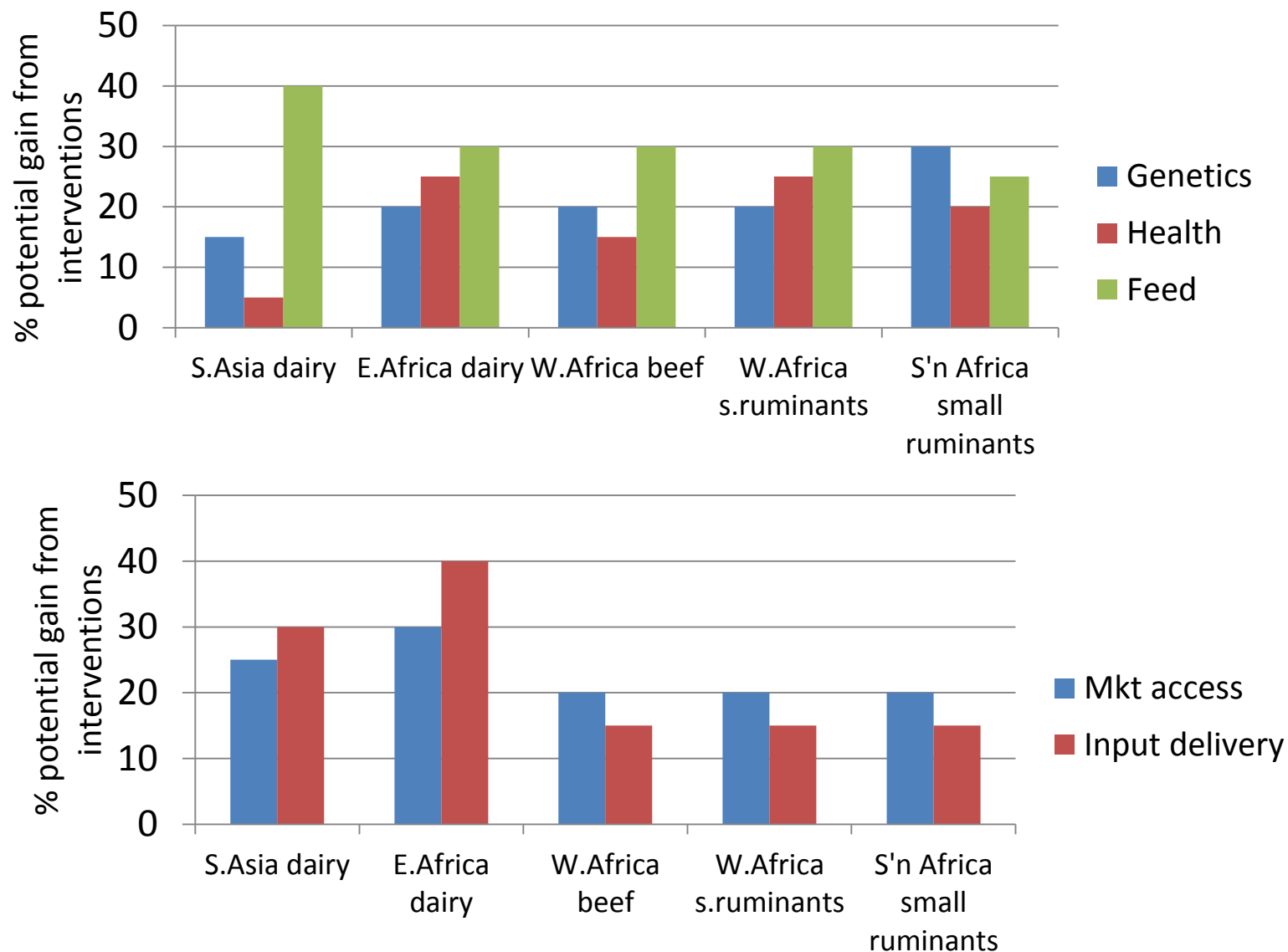
Or for livelihoods

Almost 1 billion rely on livestock for livelihoods

43% of the agricultural workforce is female

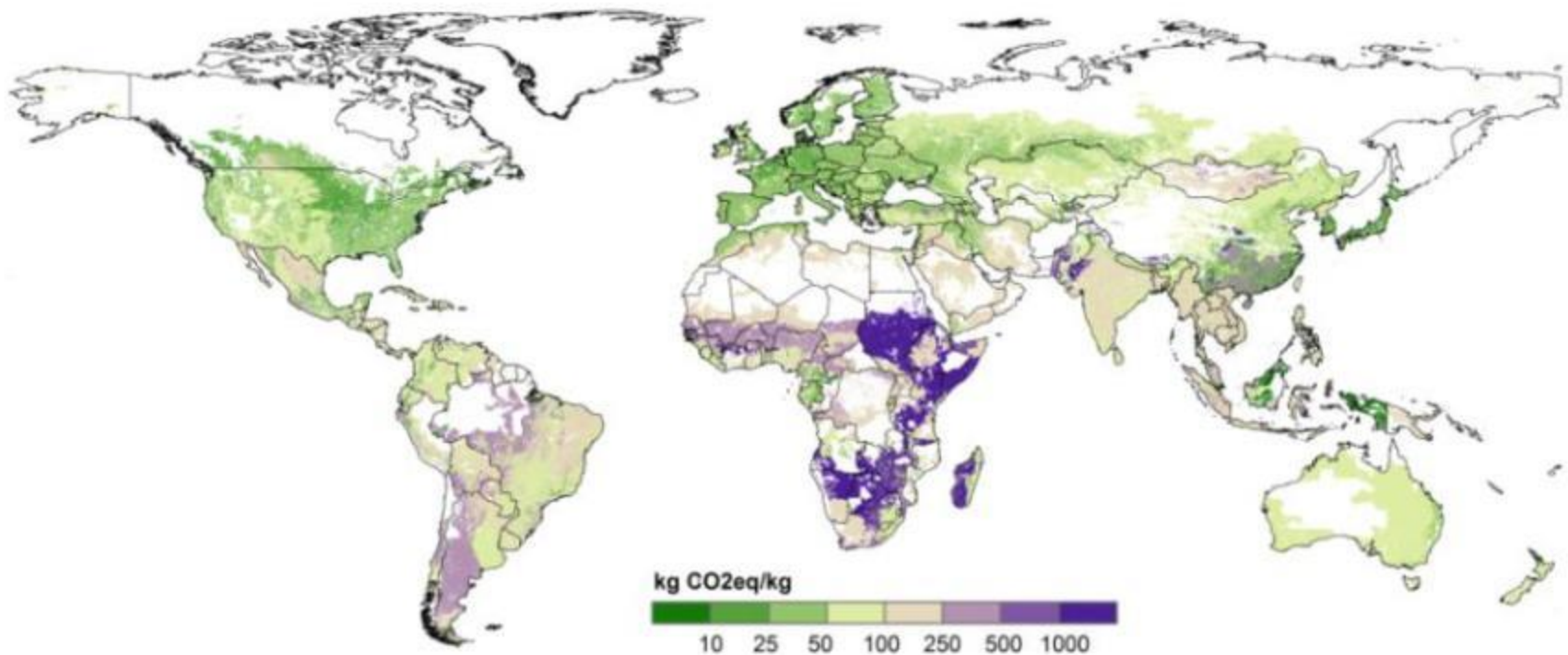


Using technical, market and institutional interventions to assess yield gaps

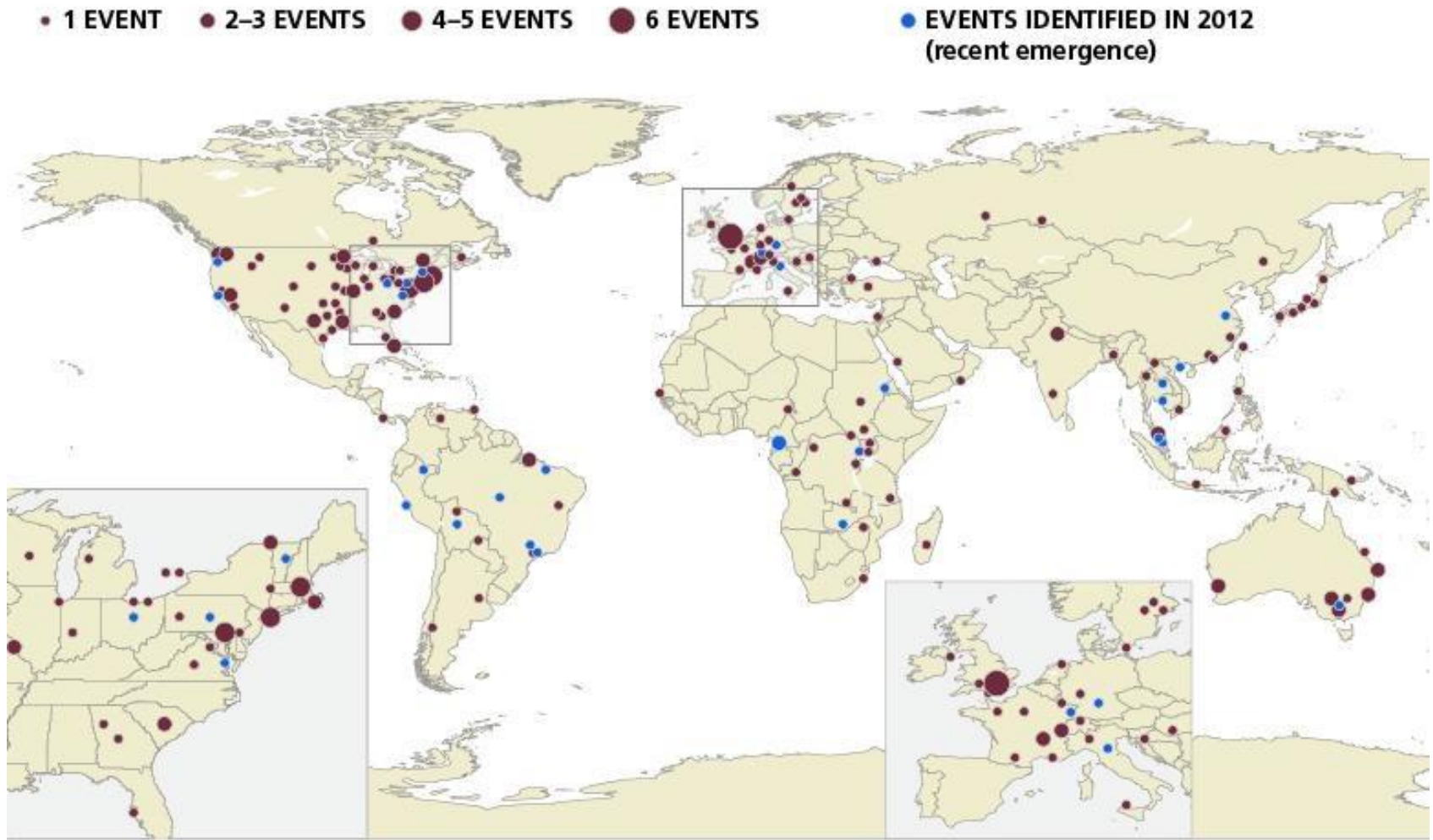


As much as half of the agricultural GHG emissions come from animals

GHG per kg of animal protein produced varies hugely: Big opportunities to mitigate



Most (75%) emerging diseases come from animals and cost up to US \$ 6 billion annually



ILRI report to DFID: Mapping of Poverty and Likely Zoonoses Hotspots, 2012

Emerging zoonotic disease events, 1940–2012

Costs of emerging zoonotic disease outbreaks (US\$ billion)

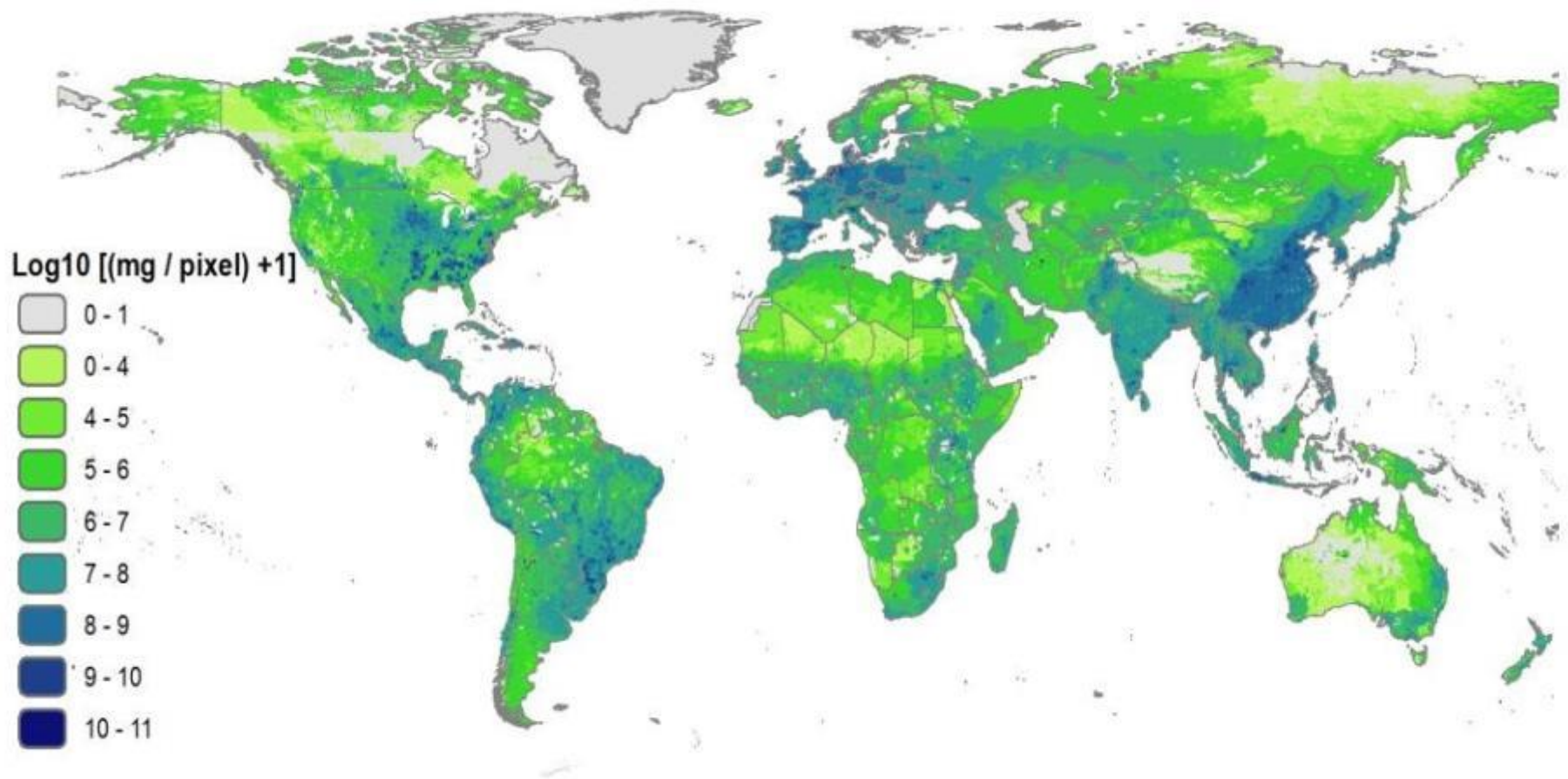
	Period	Cost (conservative estimates)
6 outbreaks excluding SARS <ul style="list-style-type: none"> – Nipah virus (Malaysia) – West Nile fever (USA) – HPAI (Asia, Europe) – BSE (US) – Rift Valley fever (Tanzania, Kenya, Somalia) – BSE (UK) costs 1997–09 only 	1998–2009	38.7
SARS	2002–2004	41.5
Total over 12 years	1998–2009	80.2

Giving an annual average of US\$6.7 billion

World Bank 2012

Antimicrobial resistance

Global antimicrobial use in food animals
(mg per 10km pixel)



Source: Van Boeckel et al. 2015

Global antimicrobial consumption will rise by 67% by 2030

Antibiotic use in Africa: 418 tonnes annually
Average OECD country: 864 tonnes annually

AMR information lacking: CVOs in Africa
66% had no information on AMR in animals
21% considered it was occasional
4% common
9% not present in their country

AMR in developing countries – varied causes:

- resistance the result of the animal being treated with antimicrobials,
- the result of antimicrobials in the environment originally used to treat people
- other pathways



A valuable market: examples

- Market value of animal source foods in Africa in 2050 estimated as US \$ 151 billion
- Globally disease reduces livestock productivity by 25% - valued at US \$300 billion per year
- Livestock diseases cost Africa between US \$ 9 – 35 billion per year
- Annual global investment of US \$ 25 billion in one health approaches could save as much as US \$100 billion annually



Developing world - New market opportunities

- Animal source food products –cold dressed and processed
- Pharma industries
- Genetics
- Feeds



- Be on the ground
- Combine proprietary and open access approaches
- Public-Private Partnerships

better lives through livestock

ilri.org
better lives through livestock
ILRI is a member of the CGIAR Consortium

Box 30709, Nairobi 00100 Kenya
Phone +254 20 422 3000
Fax +254 20 4223001
Email ilri-kenya@cgiar.org

ILRI has offices in:
Central America • East Africa
• South Asia • Southeast and East Asia
• Southern Africa • West Africa



The presentation has a Creative Commons licence. You are free to re-use or distribute this work, provided credit is given to ILRI.