

Food of animal origin: demand and diversity

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Expert panel: Food of Animal Origin 2030: Solutions to Consumption
Driven Challenges

Global Forum for Food and Agriculture 2018, Berlin, Germany



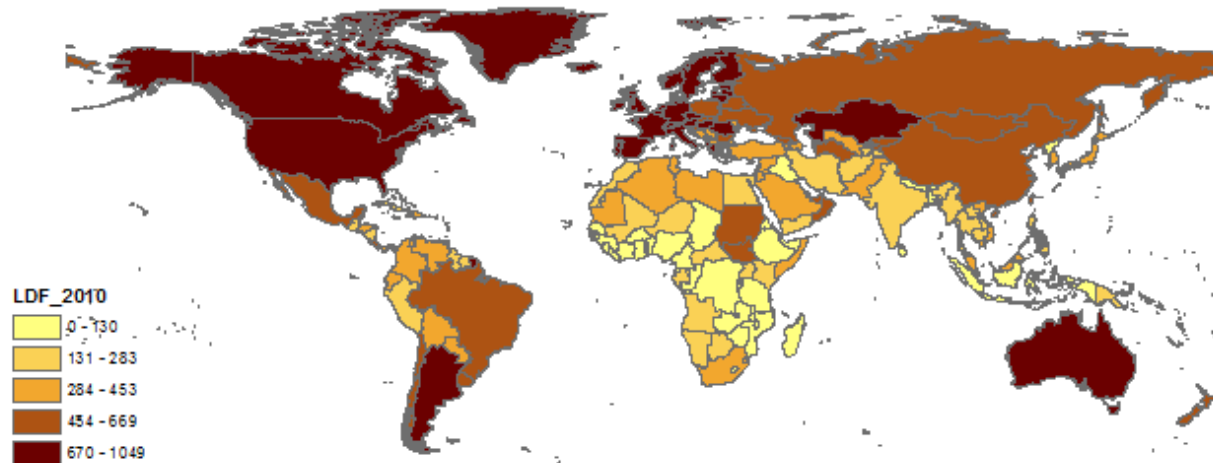
Key messages

- Global demand for livestock derived foods is changing:
 - Quantitative: increase in demand, especially in developing countries
 - Qualitative: variation by region, commodity
- Meeting demand sustainably, responsibly and efficiently means:
 - Moderating demand, wasting less, producing more and improving production efficiency
 - Taking account of the diversity of livestock systems and producers to maximise opportunities to address SDGs

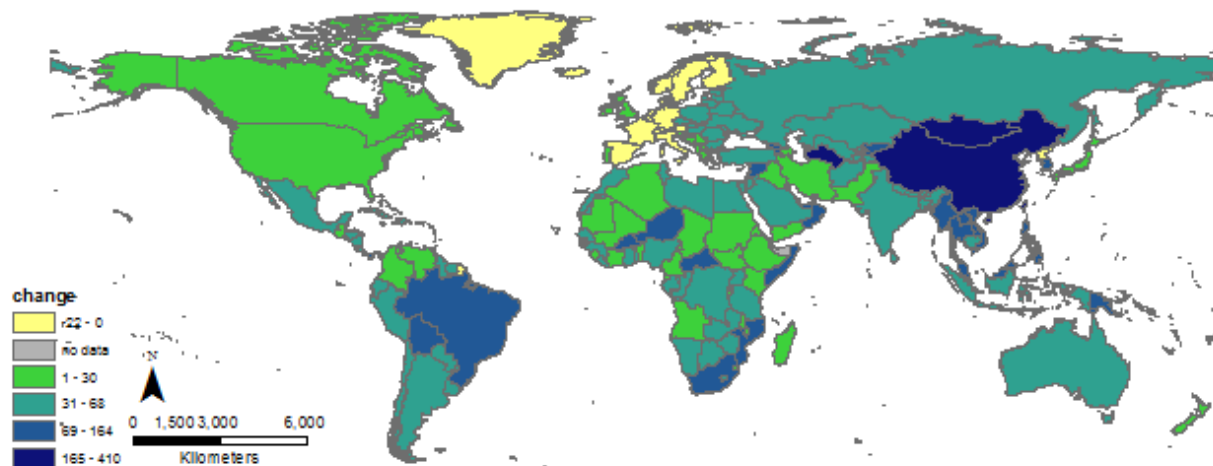
Changing global demand for livestock derived foods

Global demand: total quantity of livestock-derived foods (LDF in Kcal/pp/pd)

2010



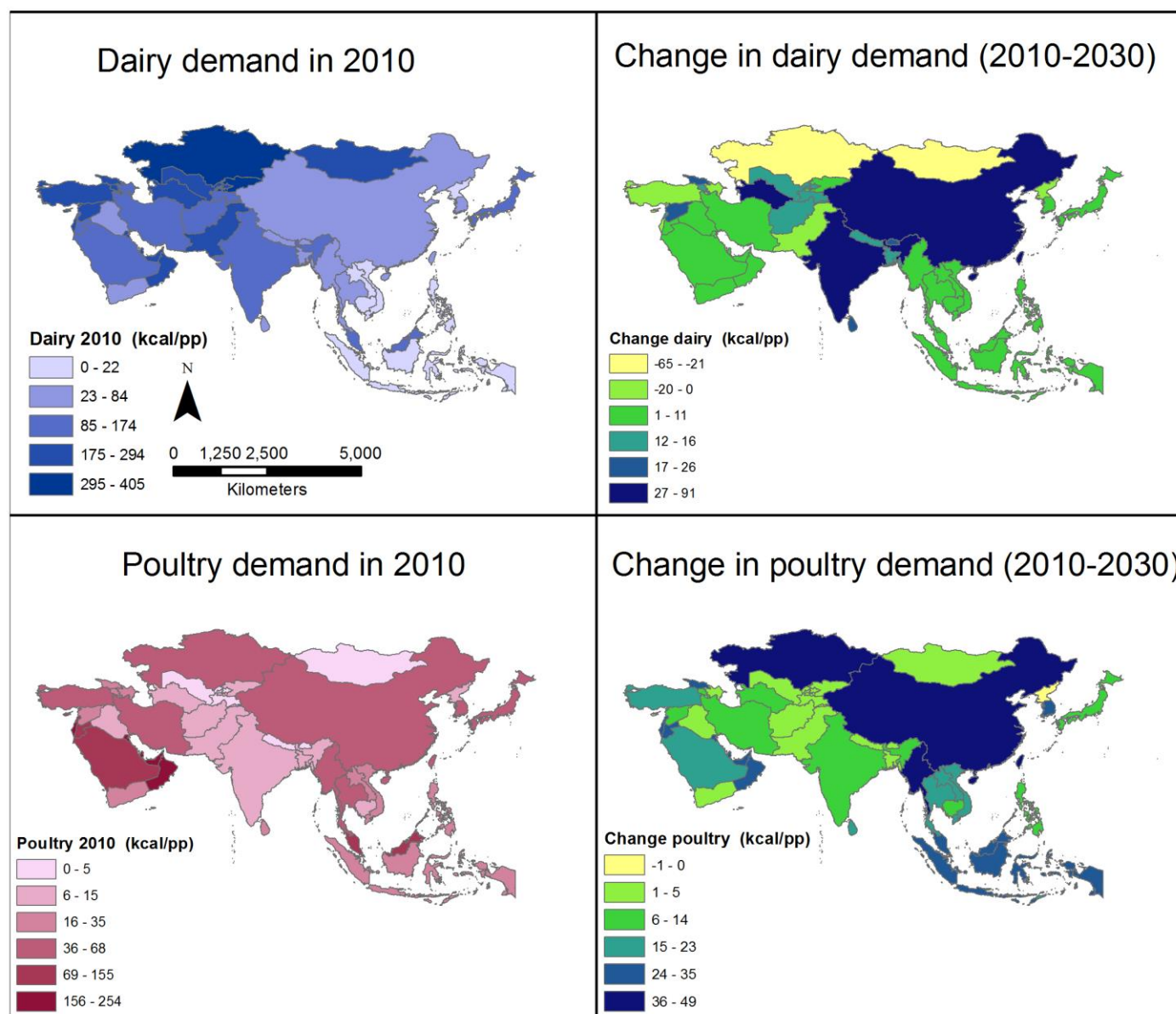
Change (2010 - 2030)



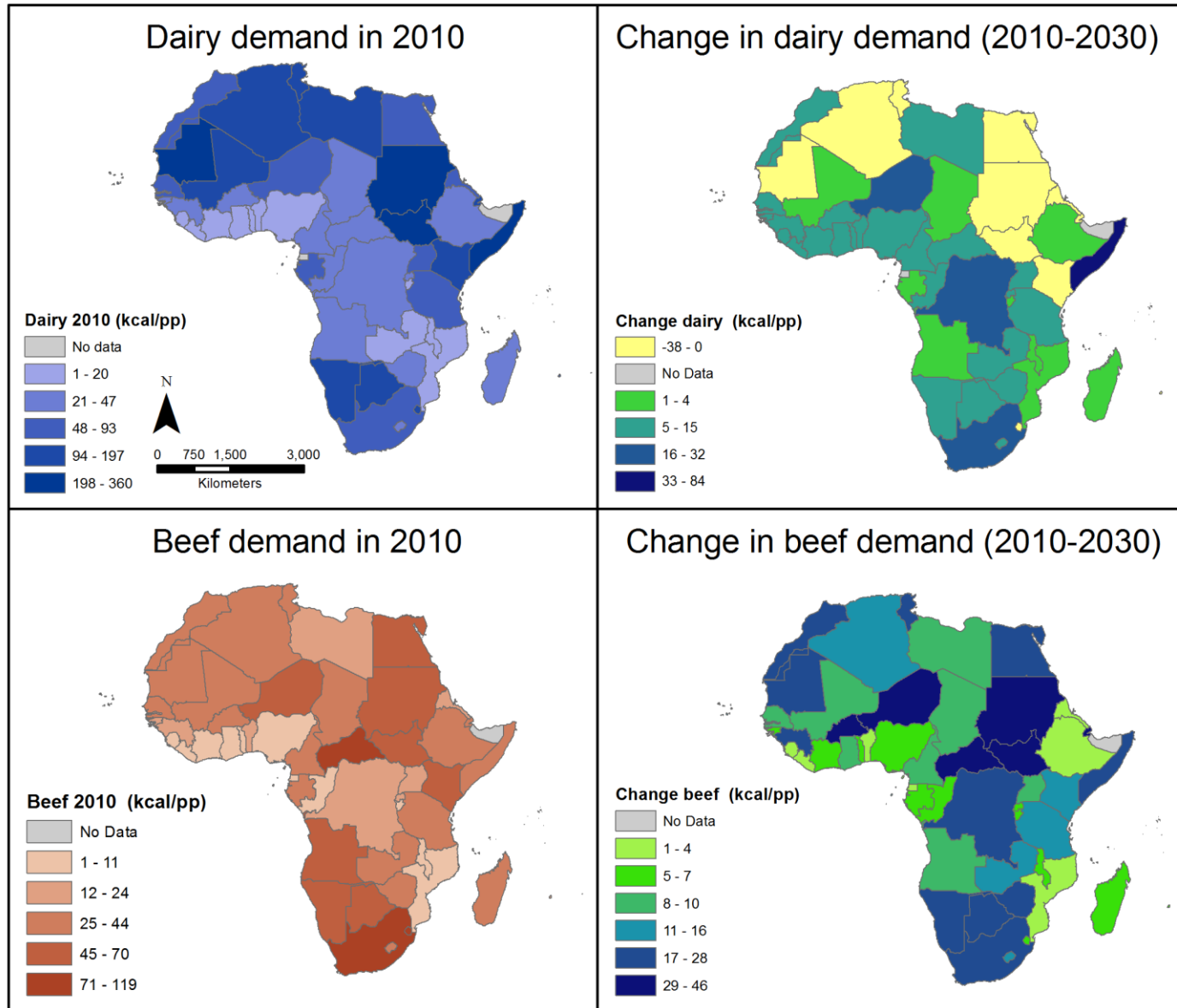
Global demand: regional diversity

- High income countries, Latin America, Caribbean:
 - Dairy, beef and poultry are > 80% volume
- E. Asia, the Pacific:
 - Pork and eggs most significant
- South Asia
 - Dairy largest part (70%) of demand
- Sub-Saharan Africa:
 - Dairy, beef; mutton also key
- All low-middle income countries:
 - Significant growth in demand for poultry

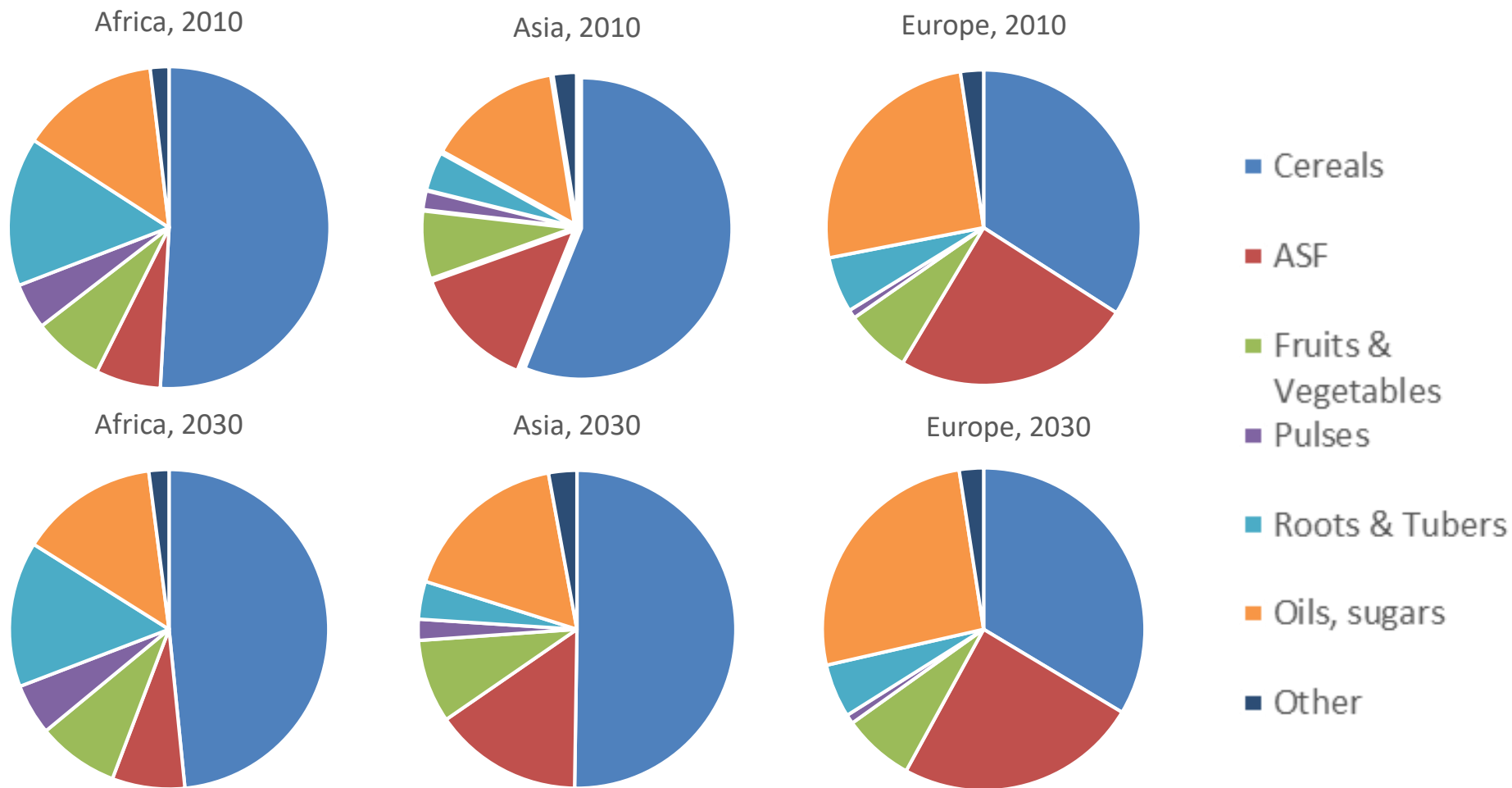
Projections of dairy and poultry demand in Asia (kcal/pp/day)



Projections of dairy and beef demand in Africa (kcal/pp/day)



Proportions of animal source foods in diets change little (kcal/person/day)

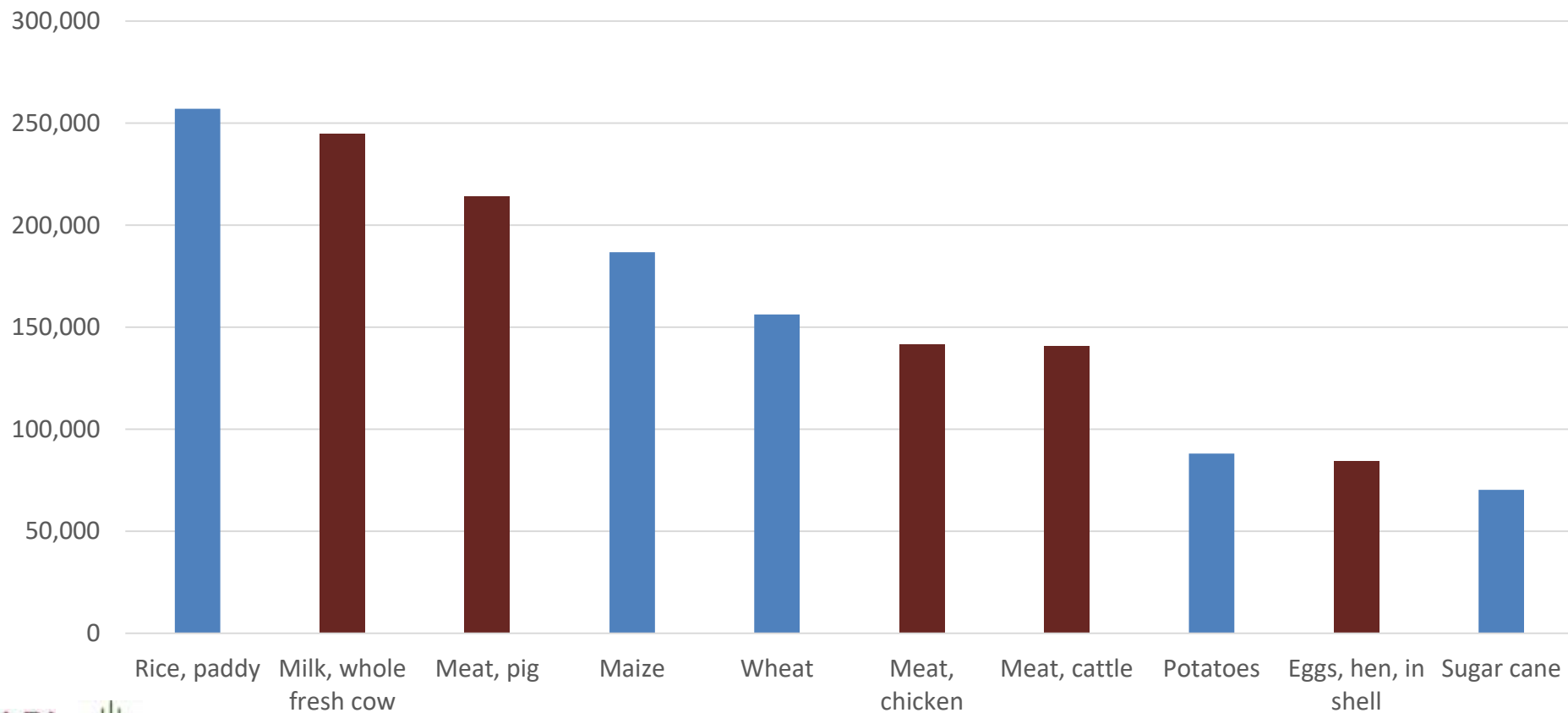


Changing consumer preferences with increased demand

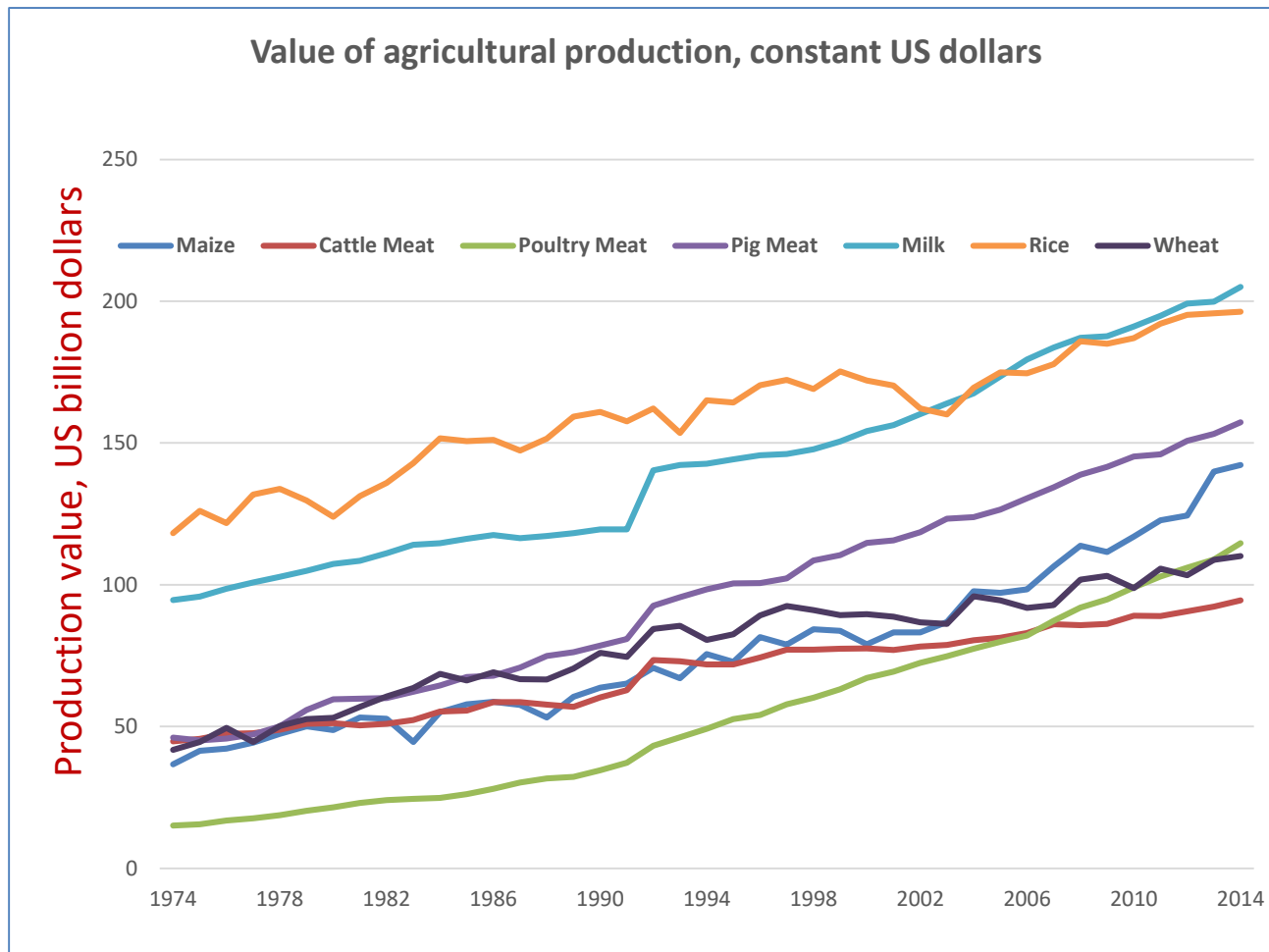
- Food safety
 - Industry standards
 - Consumer choices (everyone is ready to pay for safe food)
 - Managing risks vs. hazards?
- Standard quality (eg cuts of meat, quantity of fat in milk etc)
- Regular supply

Global commodity values: on average livestock derived foods, five of the top ten

Current million USD
(average values 2005-2014; animal source foods: USD 825 billion)



Demand and value: increasing demand results in higher value for livestock commodities



- Milk highest-valued agric. product by 2014

- In last four decades, value of poultry has increased 663%, pork 242% and milk 117%.

- Value of maize up 288%, with growth highly linked to livestock feed uses.

Meeting demand

Meeting demand in developing economies



Importing livestock products



Importing livestock industrial production know-how



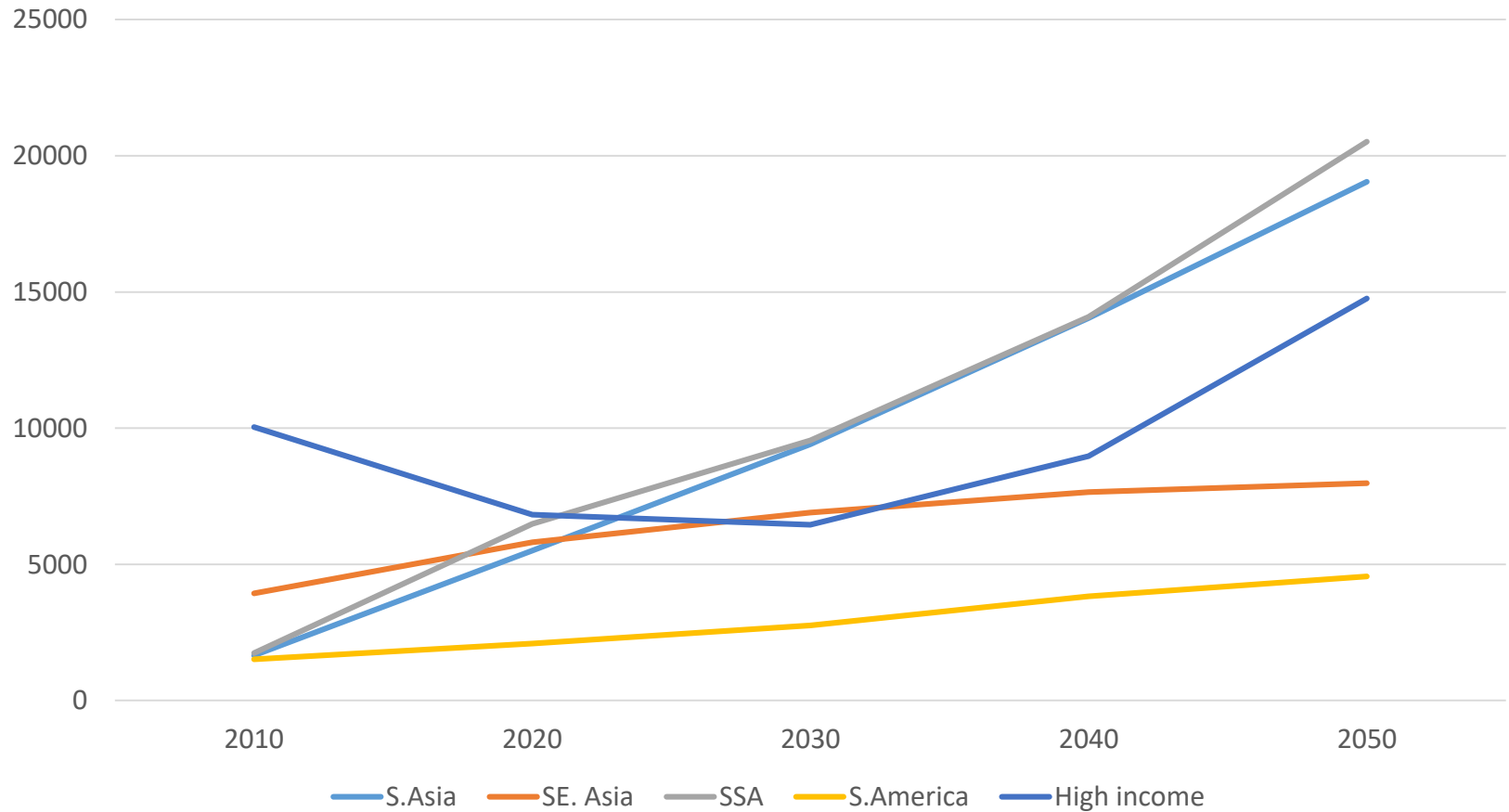
Transforming smallholder livestock systems

Meeting demand through imports: value of agricultural imports in Africa

Item	Value of Imports USD million	% Imports from within Africa	Imports as % Demand
Meat	22,558	1%	12%
Dairy	5,105	9%	17%
Rice	5,085	4%	44%
Maize	4,654	10%	19%
Eggs	218	43%	2%

Demand for milk imports – growing fastest in SSA

USD million

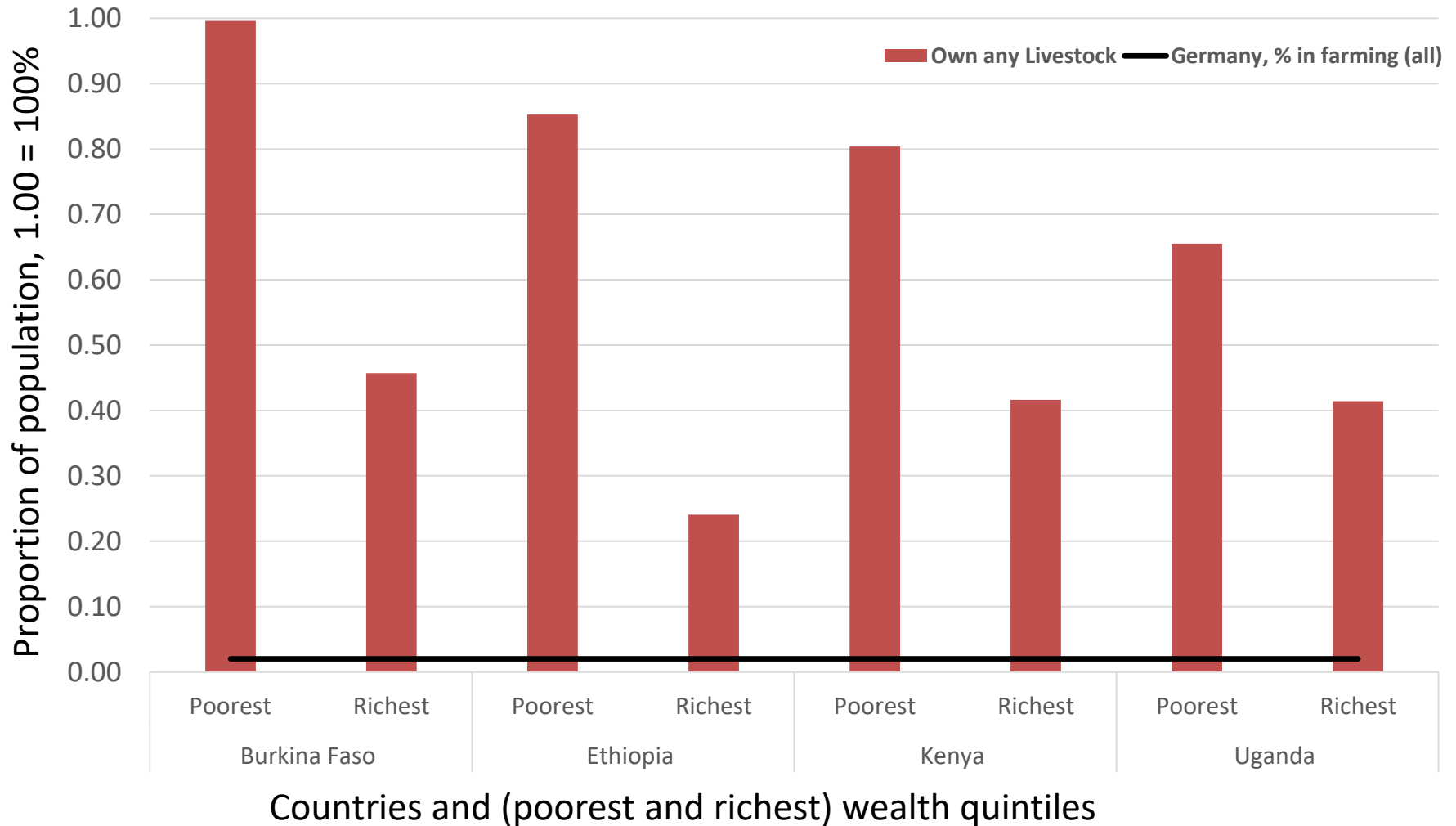


Smallholders still dominate livestock production in many countries

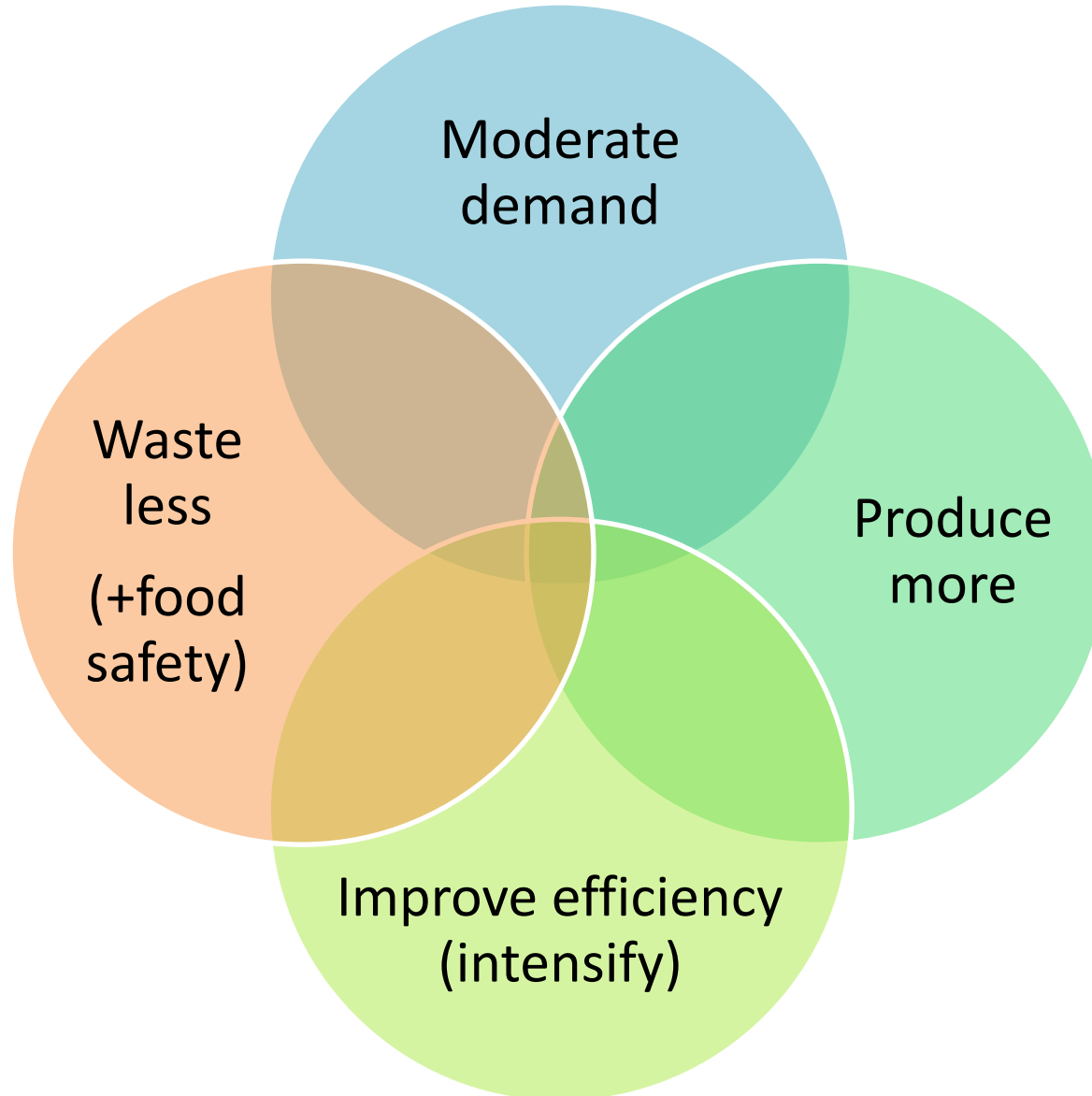
Region (definition of 'smallholder')	% production by smallholder livestock farms					
	Beef	Chicken meat	Sheep/goat meat	Milk	Pork	Eggs
East Africa (≤ 6 milking animals)				60-90		
Bangladesh (< 3ha land)	65	77	78	65		77
India (< 2ha land)	75	92	92	69		71
Vietnam (small scale)					80	
Philippines (backyard)		50			35	

Globally - smallholders: more than 380 million farming households; 30% of the agricultural land producing more than half of the food calories globally

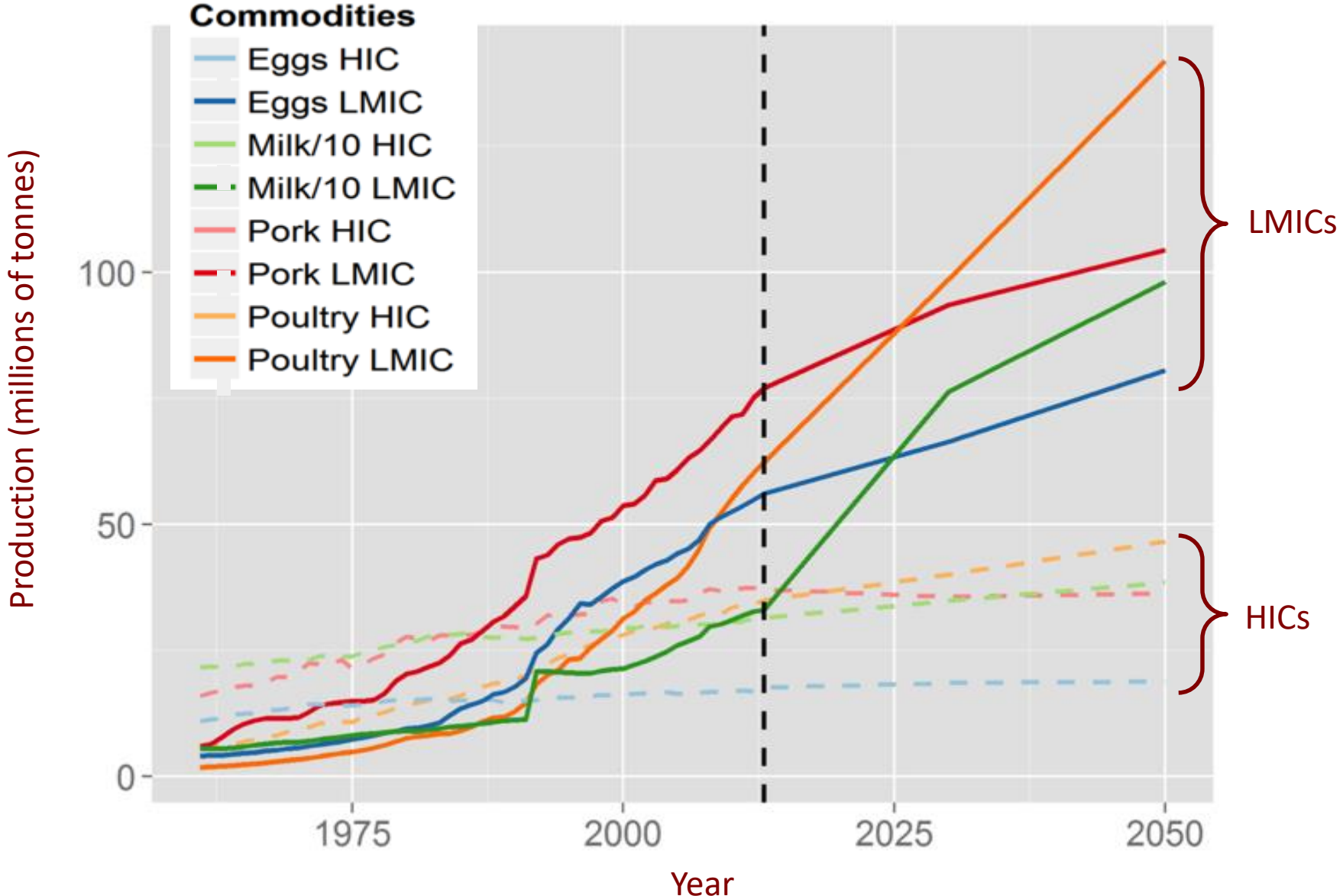
Dependence on livestock for livelihoods decreases with wealth in poorer economies



Meeting demand

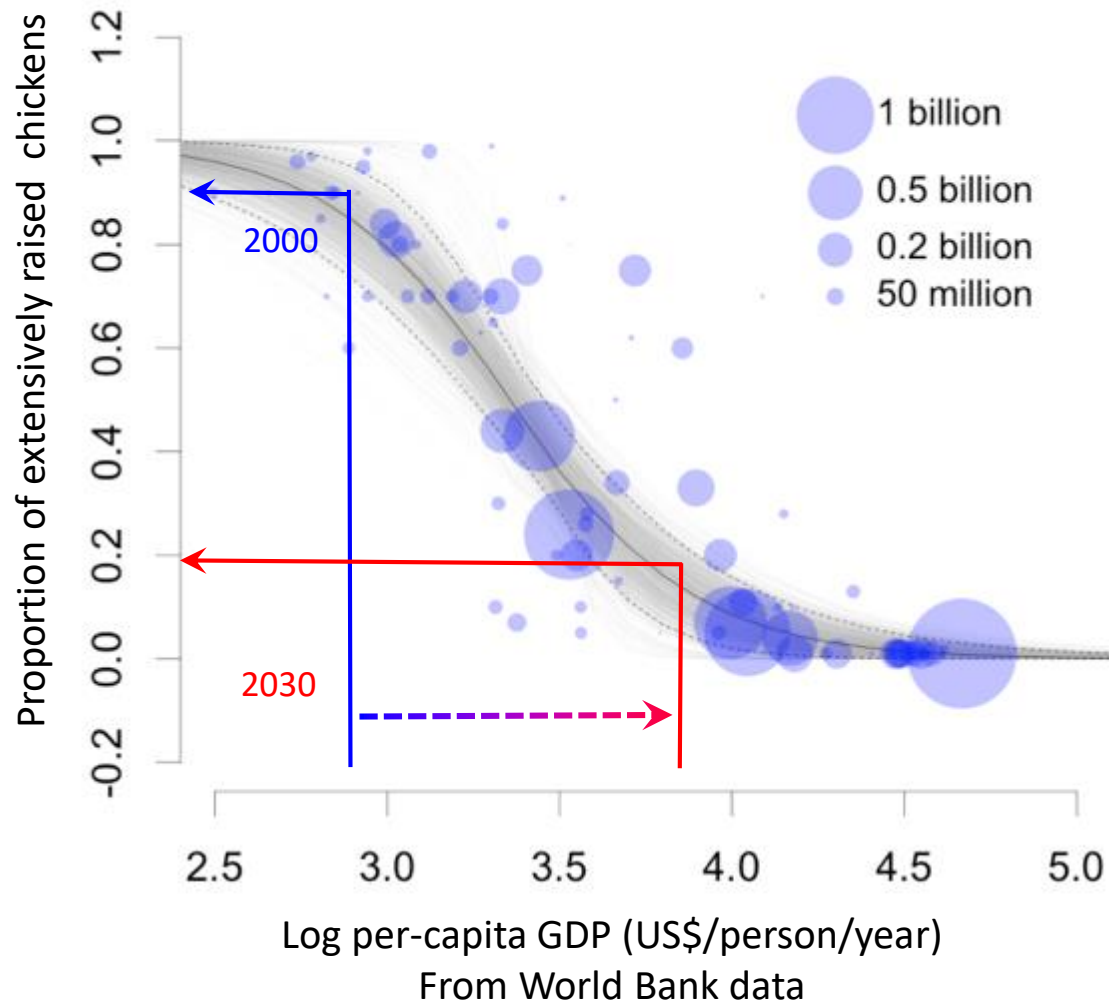


Meeting demand: produce more (and include women!)



Meeting demand: intensify

Projections of the intensification of poultry systems as economies grow

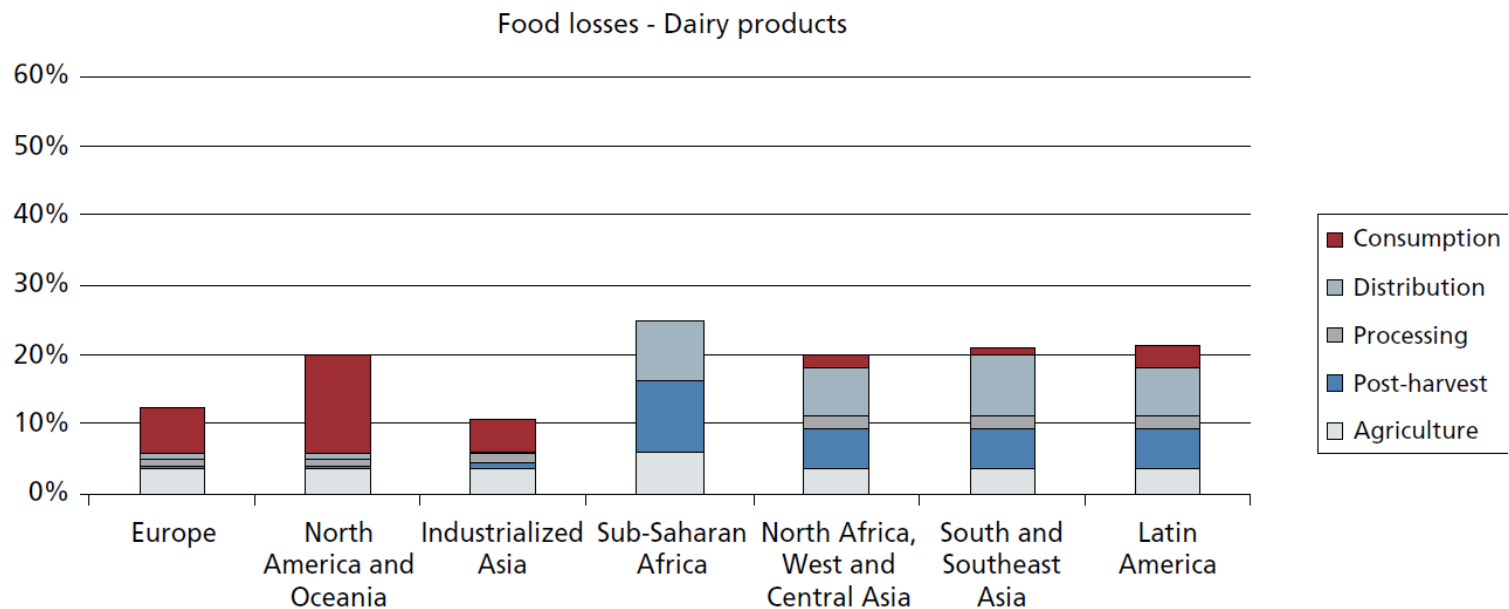


Meeting demand: improving production – efficiency

- Productivity ‘win-win’
 - 63% reduction on carbon footprint per unit of milk in US over 60 years through better productivity
 - Potential for similar solutions in south Asia to reduce GHG emissions in the dairy sector by 38%
- Obtain accurate livestock GHG emission figures
 - Support developing-country-led solutions to climate change as specified in nationally appropriate mitigation actions (NAMAs).
- New science:
 - ‘low carbon’ cows?
 - Rumen manipulation?
- Livestock’s essential role in a robust bio-economy:
 - Optimal and balanced use of biomass.

Meeting demand: waste less

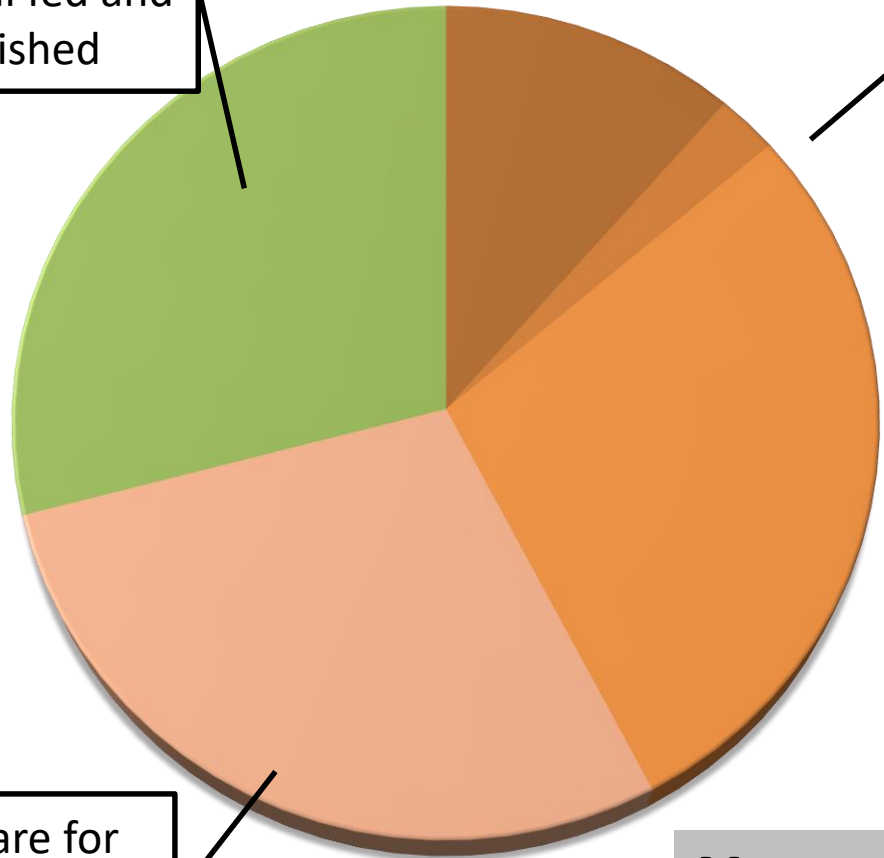
Animal source food losses along the food supply chain



Moderate demand: nutritional divides among 7 billion people today

Less than one third well fed and nourished

11% of GNP lost annually in Africa and Asia from poor nutrition

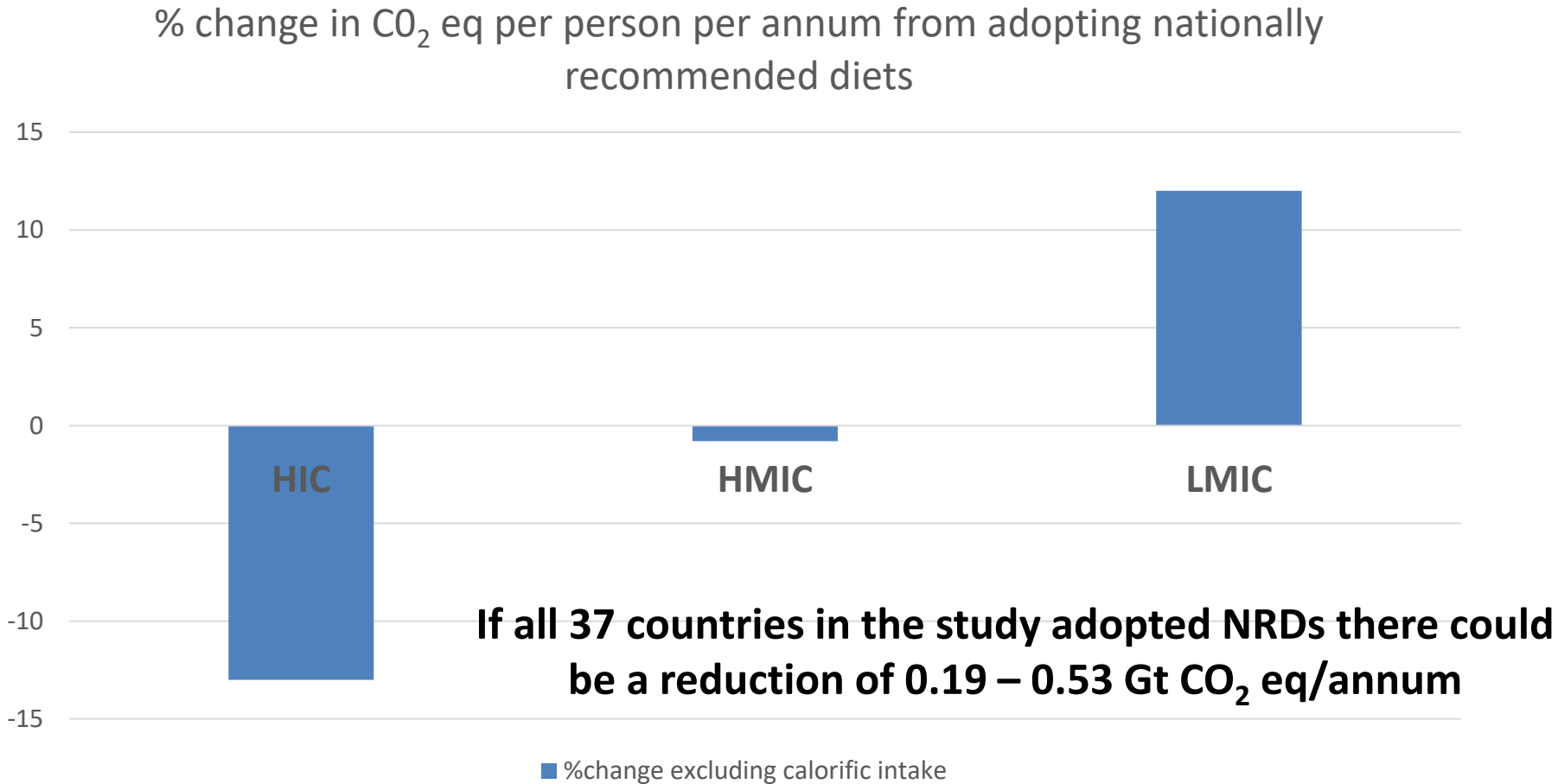


- Hungry people
- stunted children
- insufficient nutrients
- overweight/obese
- balanced diets

Healthcare for obesity economic cost: \$2 trillion

Meat consumption average 2016
EU = 69 kg/capita
SSA = 8 kg/capita

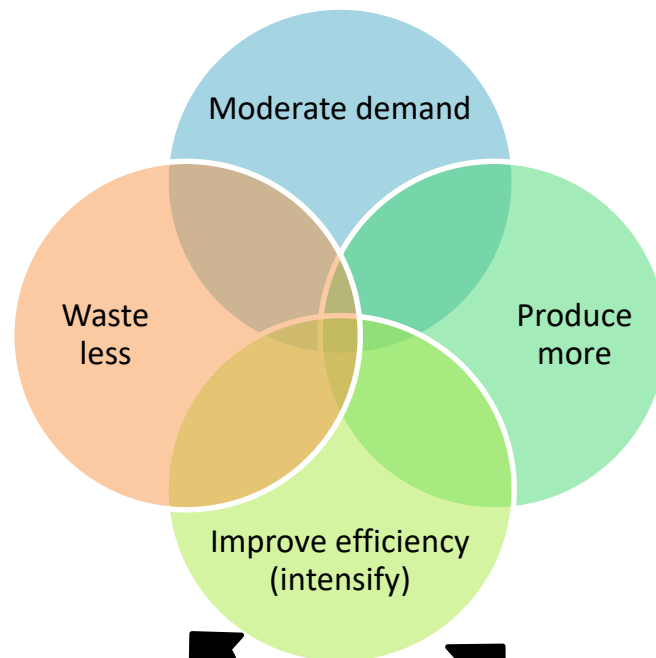
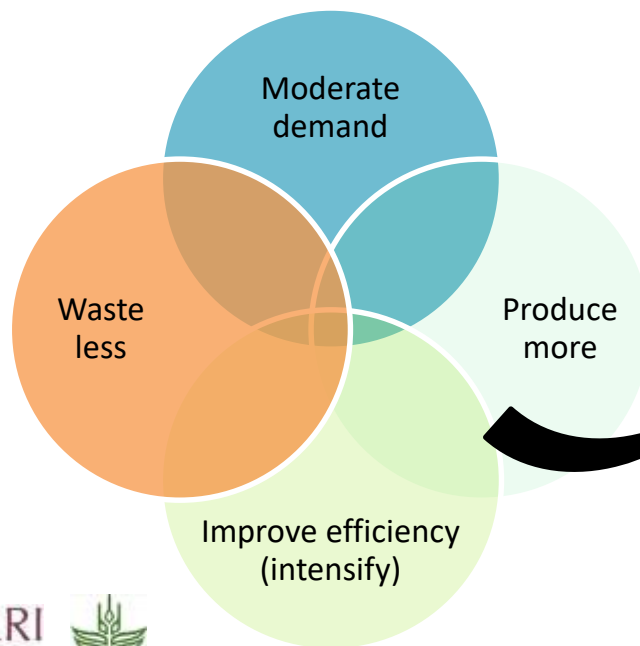
Nationally Recommended Diets (NRDs) and GHG emissions



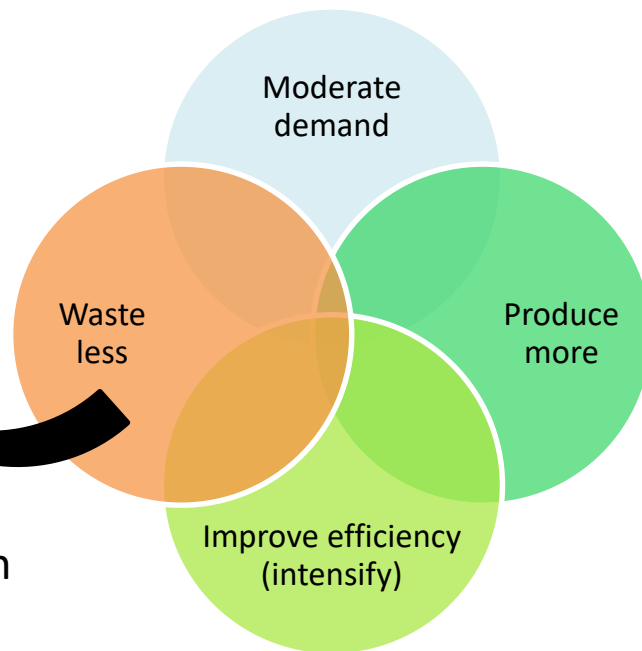
Meeting demand:
Sustainable, responsibly,
efficiently

Meeting demand and accounting for diversity

Developed economies



Developing economies



- ✓ Environment
- ✓ Health
- ✓ Food and nutrition
- ✓ Economic growth

Key messages

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Patron: Professor Peter C Doherty AC, FAA, FRS

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

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Science and scenarios to inform priorities

New results from long-run ex-ante impact analysis showed:

- Investments that improve animal productivity can reduce environmental impacts, by up to 8% in the case of GHG emissions reduction in sub Saharan Africa
- Innovations to improve markets could increase producer incomes by around 13% in South Asia
- Portfolio investments (combining simultaneously, different single-focus strategies, such as improving livestock yields, connecting farmers to markets, addressing institutional constraints, etc.) can help manage trade-offs and complementarities between producer and consumer welfare, food security, environmental benefits and related objectives.

Sources and acknowledgements

Slides 4, 6, 7: IMPACT model ‘business-as-usual’ scenario, courtesy C. Pfeifer and D. Enahoro, 2017

Slides 10, 11: FAO. 2017. “FAOSTAT Statistics Database of the Food and Agricultural Organization of the United Nations (FAO). Rome, Italy.” Rome: FAO. <http://faostat3.fao.org/>

Slide 14: International Trade Centre (ITC) statistics: <http://www.intracen.org/itc/market-info-tools/trade-statistics/>; FAOSTAT, 2017

Slide 15: Numbers based on a high level of data aggregation and should be interpreted to show trends rather than actual figure.

Estimates prepared by Dolapo Enahoro, ILRI using IMPACT model. Values are USD million

Slide 16: Various sources: BMGF, FAO and ILRI; and Samberg L H, Gerber J S, Ramankutty N, Herrero M and West P C 2016 Subnational distribution of average farm size and smallholder contributions to global food production Environ. Res. Lett. 11 124010

Slide 17: Paper in review: Enahoro, D., M. Lannerstad and C. Pfeifer. “The role of livestock in food and nutrition security: trends and projections for selected low and middle-income countries”. Journal article submitted for peer review, July 2017. See trend line for % of Germany’s population that make up its agricultural labor force (1.8%). Note this aggregate value covers livestock, crop and any other type of agricultural activity. 2012 is the latest date for which this figure is available. Next update is 2022. Eurostats:

<http://ec.europa.eu/eurostat>

Slide 18: Partly adapted from: Elin Rööös, Bojana Bajželj, Pete Smith, Mikaela Patel, David Little, Tara Garnett. 2017. Greedy or needy? Land use and climate impacts of food in 2050 under different livestock futures. Global Environmental Change 47 (2017) 1–12

Slide 19: Graph prepared by Tim Robinson (ex ILRI, now FAO) and Catherine Pfeifer (ILRI) using data from FAOSTAT

Slide 20: Slide by Tim Robinson (ex ILRI, now FAO) from data in: Gilbert, M., G. Conchedda, T. P. Van Boeckel, G. Cinardi, C. Linard, G. Nicolas, W. Thanapongtharm, and L. D. Aiatti. 2015. “Income Disparities and the Global Distribution of Intensively Farmed Chicken and Pigs.” PLoS ONE, 1–14. doi:10.1371/journal.pone.0133381. Each dot represents a country, with the size indicative of the stock of animals (chickens).

Slide 22: FAO. 2011. Global food losses and food waste – Extent, causes and prevention. Rome

Slide 23: HEALTHY FOOD FOR A HEALTHY WORLD: LEVERAGING AGRICULTURE AND FOOD TO IMPROVE GLOBAL NUTRITION. A Report Issued by an Independent Advisory Group Douglas Bereuter and Dan Glickman, cochairs. April 2015. Sponsored by the Chicago Council on Global Affairs. Robert F. Townsend, Steven Jaffee, Yurie Tanimichi Hoberg, and Aira Htenas, with inputs from Meera Shekar, Zia Hyder, Madhur Gautam, Holger Kray, Loraine Ronchi, Sarwat Hussain, Leslie Elder, and Gene Moses. Overall guidance was provided by Juergen Voegelé and Ethel Sennhauser (2106) Future of Food: Shaping the Global Food System to Deliver Improved Nutrition and Health. The World Bank Group, USA.

Slide 24 from data in: Paul Behrens, Jessica C. Kieft-de Jong, Thijs Bosker, João F. D. Rodrigues, Arjan de Koning, and Arnold Tukker. 2017. Evaluating the environmental impacts of dietary recommendations. www.pnas.org/cgi/doi/10.1073/pnas.1711889114