



The future of livestock and the role of protein plants

From single impact assessments to
multidimensional links to the SDGs

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FAO Production and Health division

Hunger is on the rise



Source: SOFI, 2018

The triple burden of malnutrition

Source: SOFI, 2018



Hunger

821 million



Anaemia
(women of reproductive age)

672 million



Stunting
(children < 5 years)

150 million



Wasting
(children < 5 years)

50 million



Overweight
(children < 5 years)

38 million

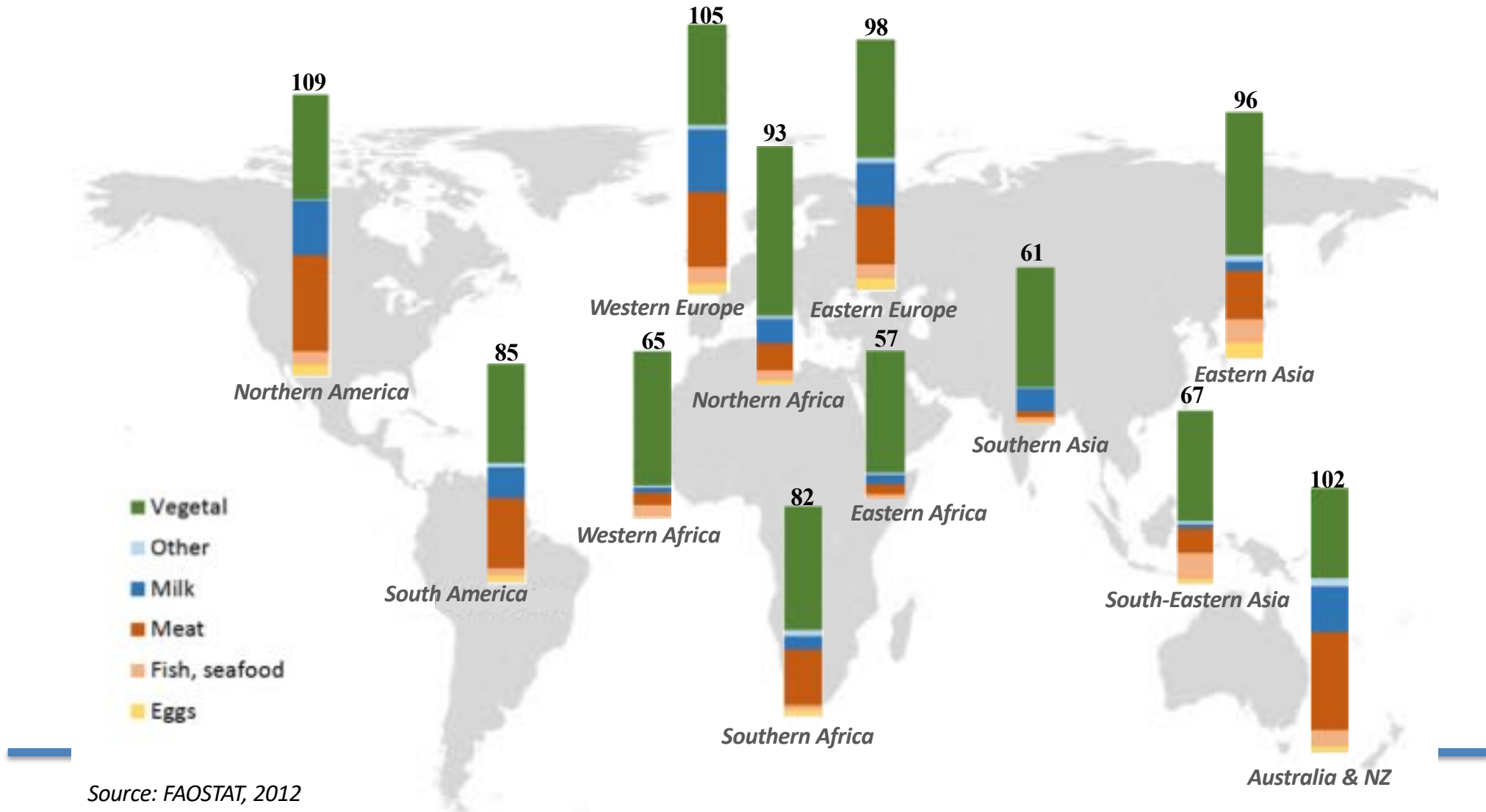


Obesity
(adults)

672 million



Protein consumption (g/cap/day)

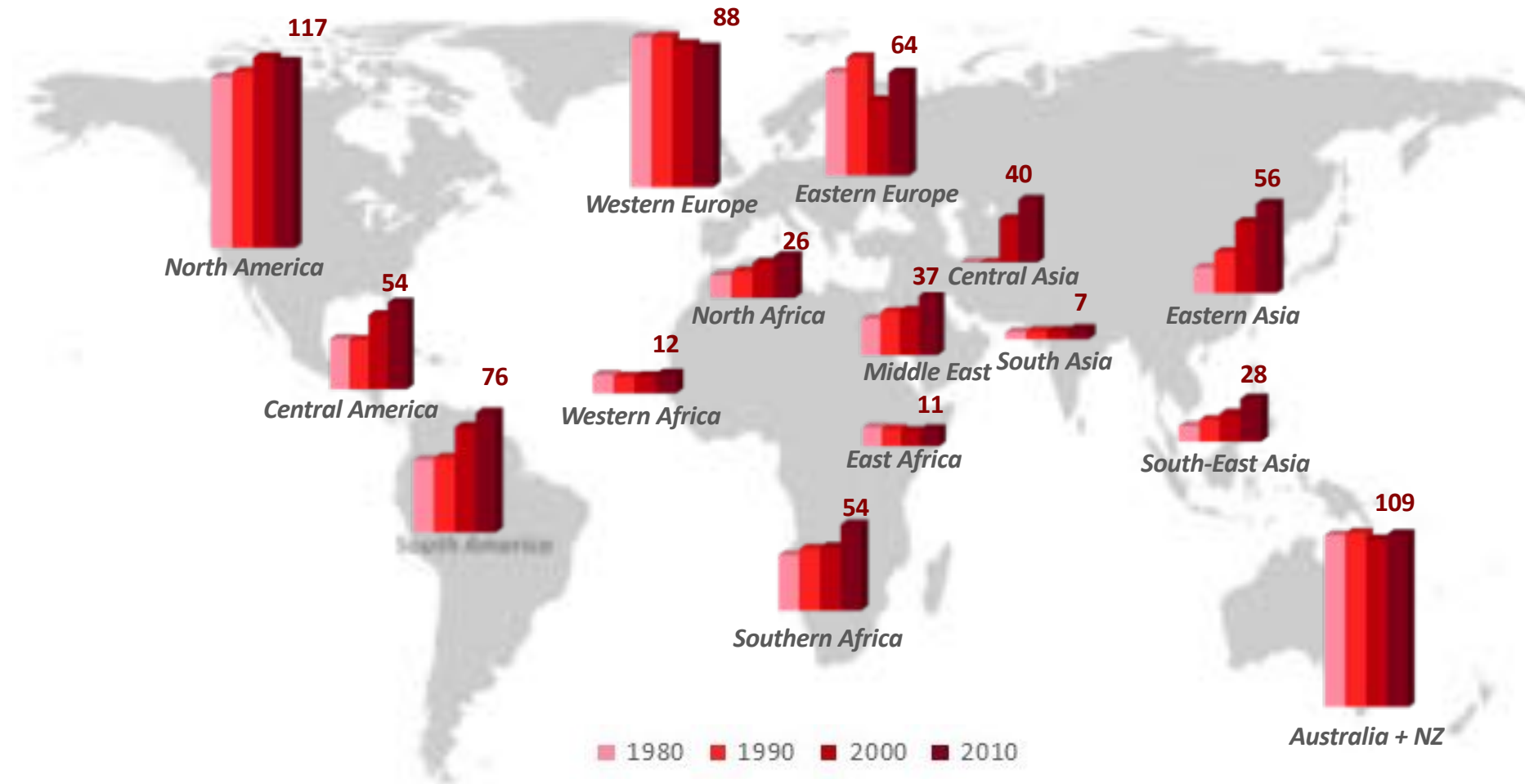


Source: FAOSTAT, 2012



Meat consumption

(kg per capita/year)

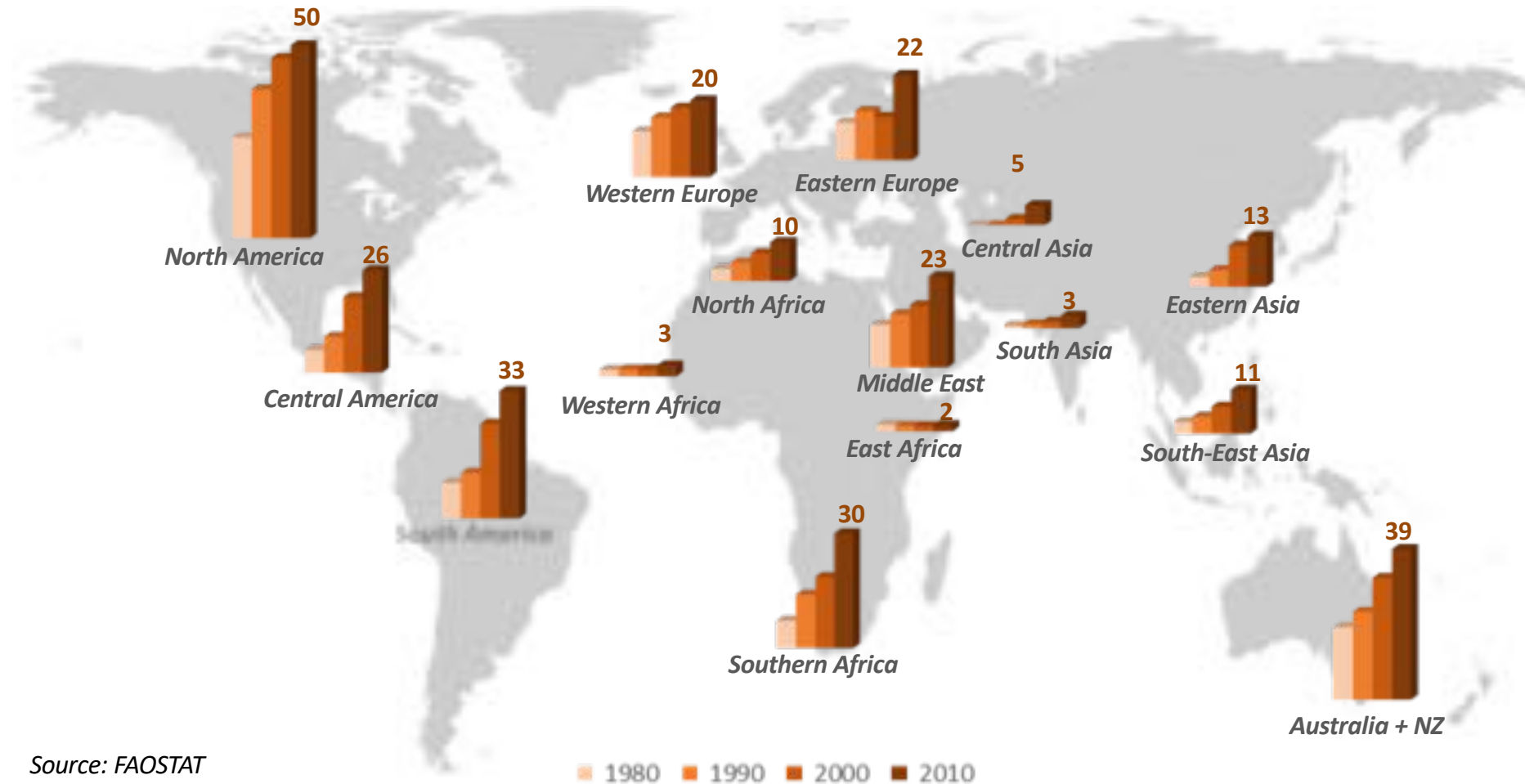


Source: FAOSTAT



Poultry meat consumption

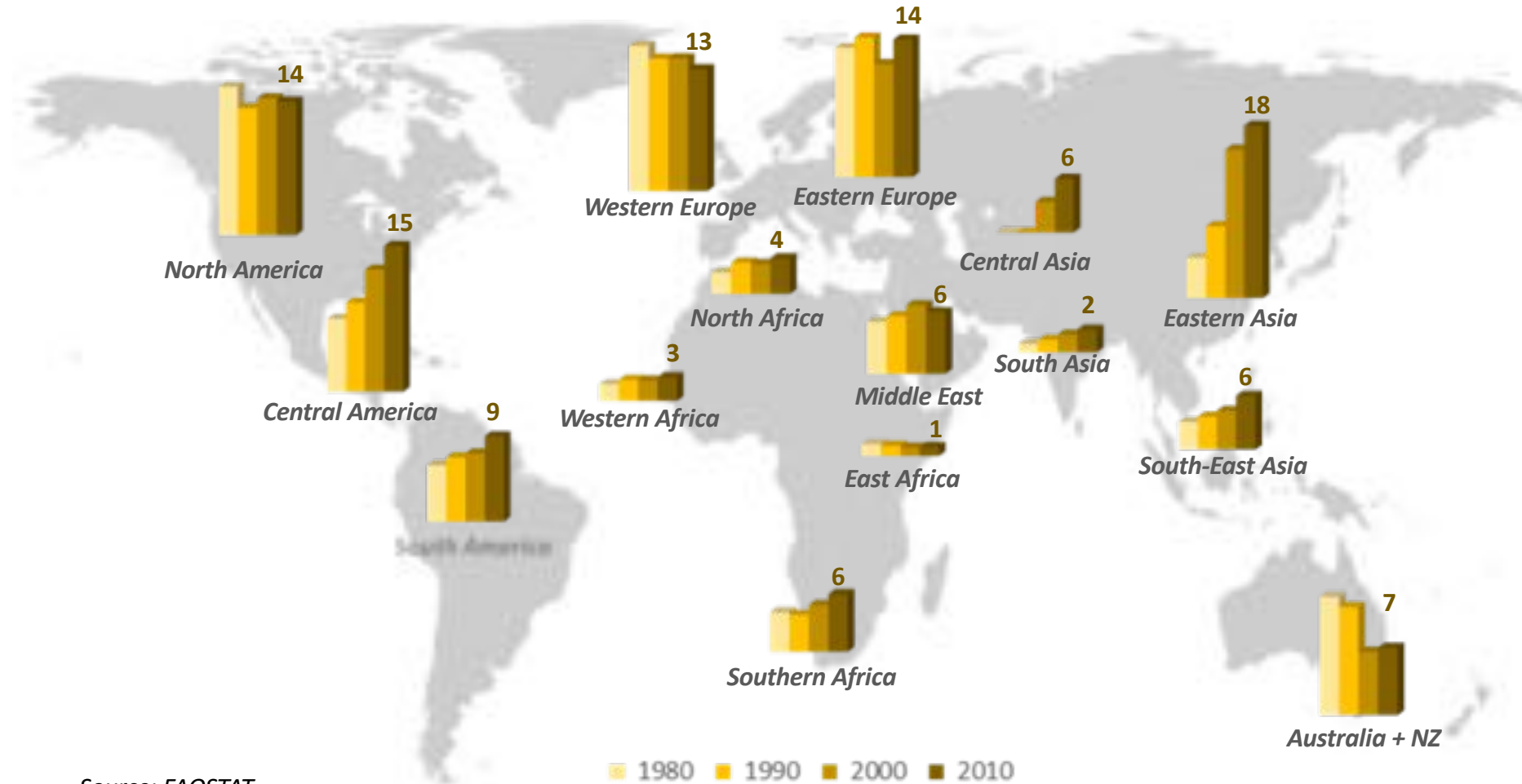
(kg per capita/year)





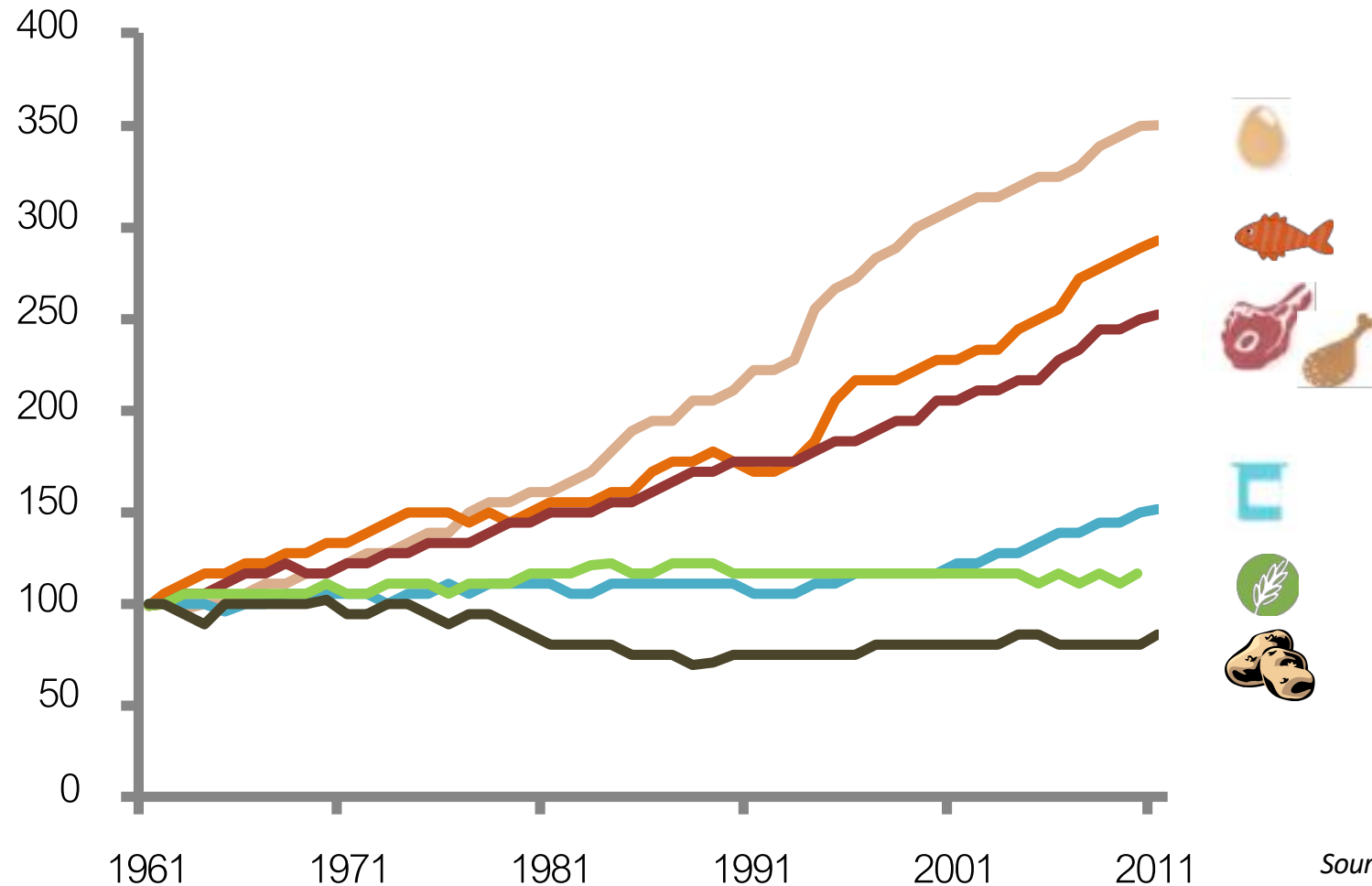
Eggs consumption

(kg per capita/year)



Source: FAOSTAT

Demand is growing faster in developing countries

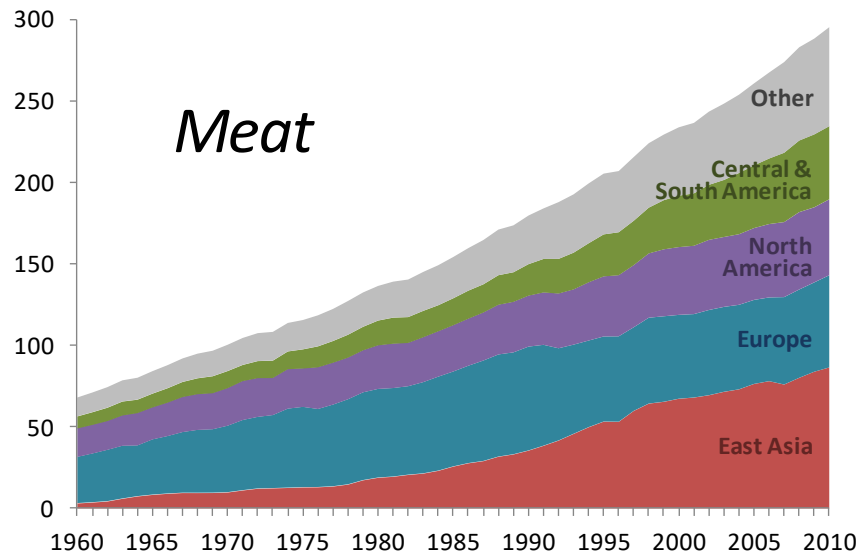


Source: FAOSTAT

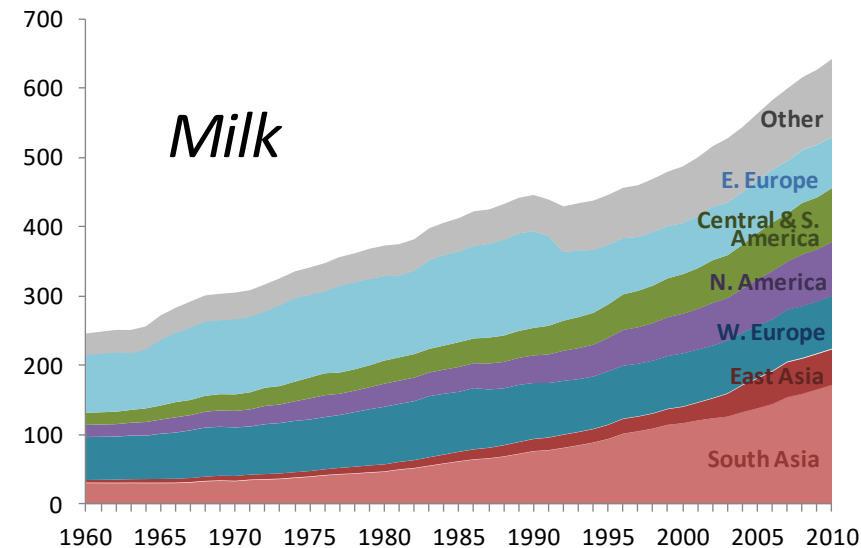


Livestock sector trends: world production

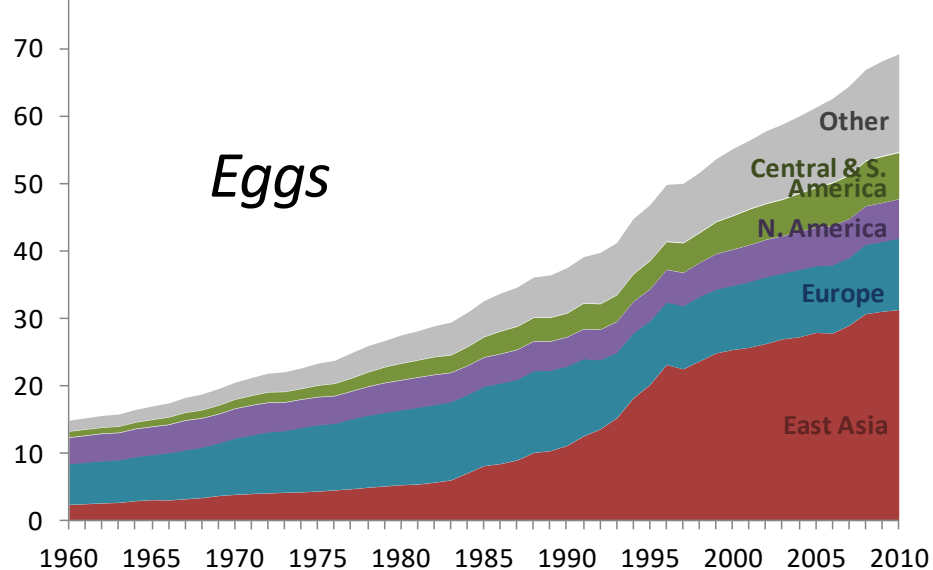
Million tonnes



Million tonnes



Million tonnes



Source: FAOSTAT



Global animal production 2005-2050



+121%

+151%



+65%

+85%



+92%

+25%



+62%

+85%



+66%

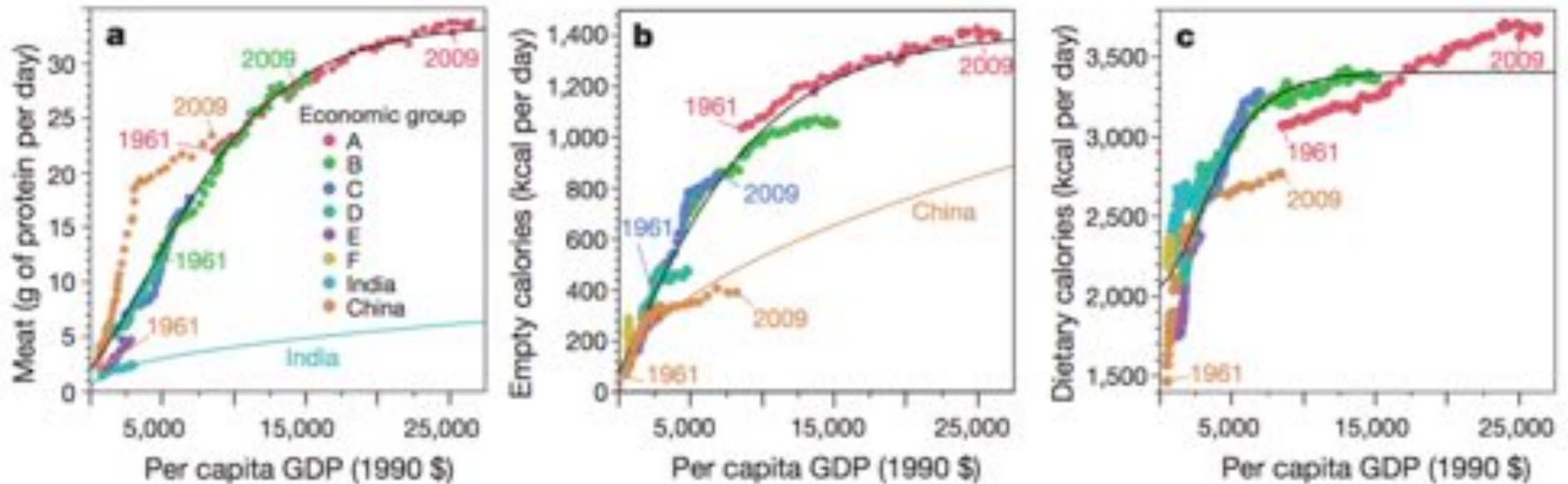
+85%



+43%

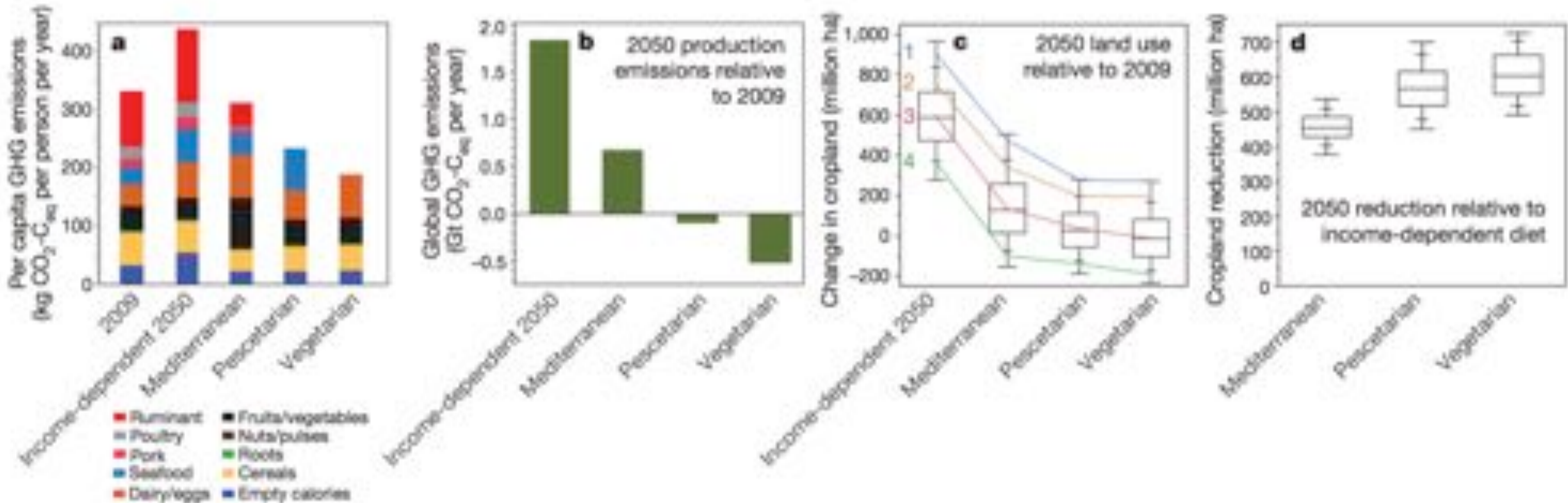
+72%

Trends in dietary patterns



From Tilman & Clark, 2014. Nature. Global diets link environmental sustainability and human health

Impacts of dietary patterns



From Tilman & Clark, 2014. Nature. Global diets link environmental sustainability and human health



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Beef environment cost 10 times that of other livestock

By Matt McGrath
Environment correspondent, BBC News

theguardian

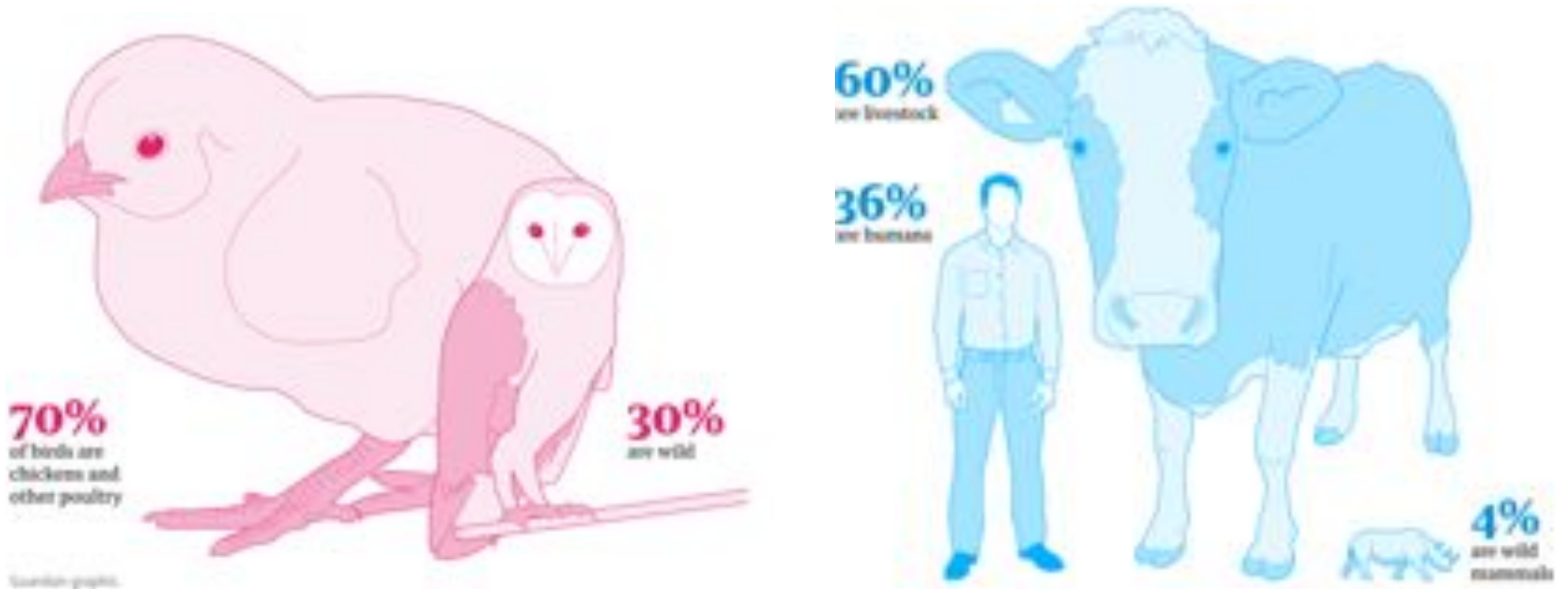
Eat less meat for greater food security, British population urged

MPs' report says eating less meat would help ease food crises in the developing world and mitigate price inflation

THEGUARDIAN.COM

The biomass distribution on Earth

Bar-on et al., PNAS, 2018

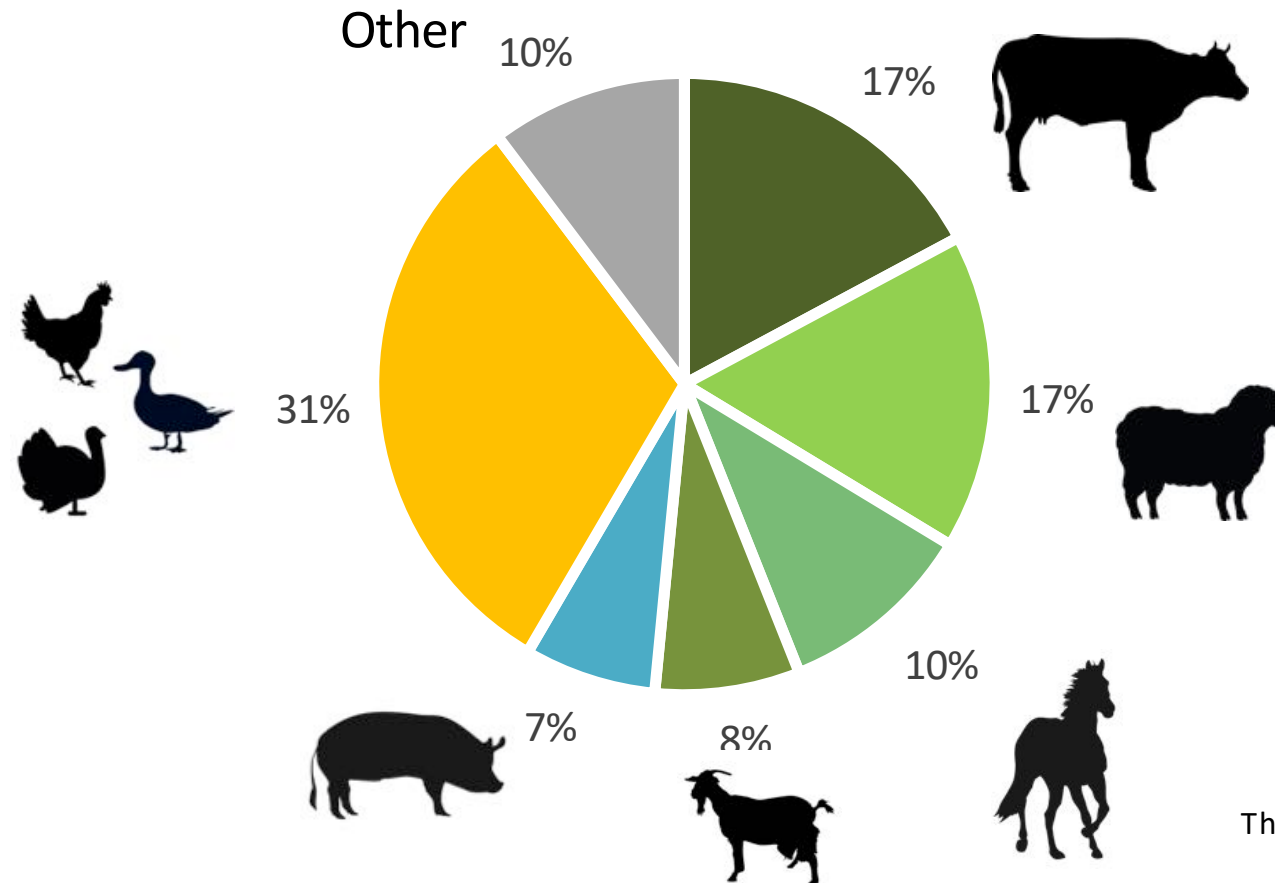


Livestock are large users of natural resources and contributors to climate change





Animal genetic diversity



8,127 reported livestock breeds
The Second Report on the State of the
World's Animal Genetic Diversity

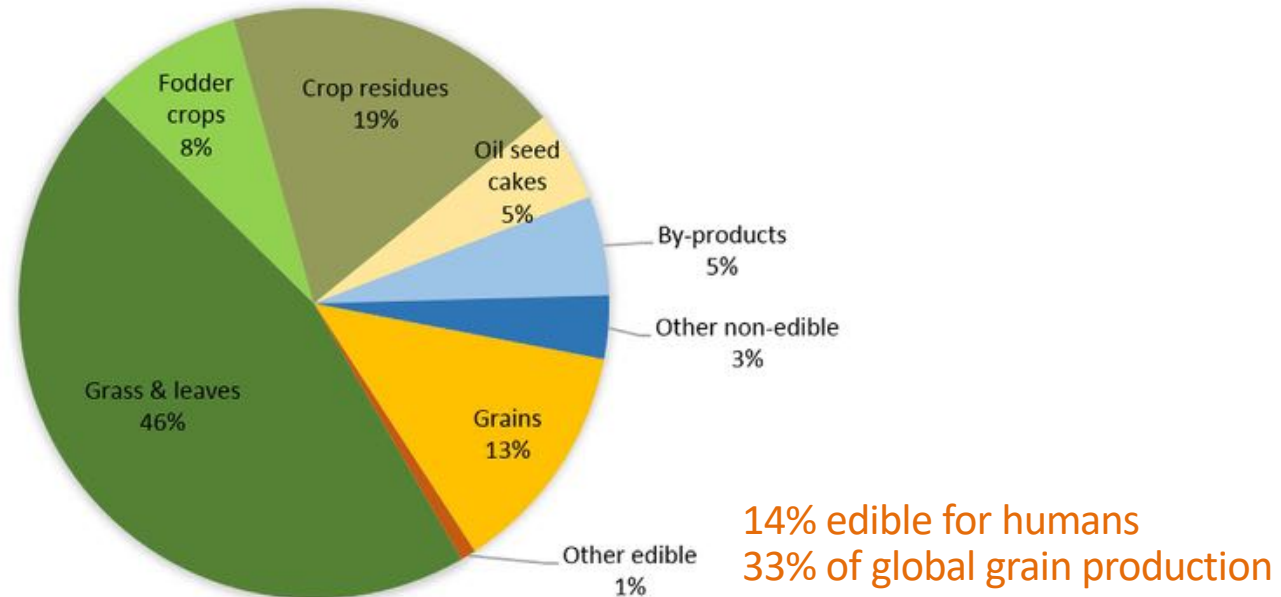
Contributions to food security and nutrition

- 34% of global protein, 17% of global kcal. Essential micronutrients.
- Manure and draught power
- Source of income at household and national level
- Women empowerment



Feed/food competition

6.0 BILLION TONES DRY MATTER



Fodder crops: grain and legume silage, fodder beets

Crop residues: straws and stover, sugar cane tops, banana stems

By-products: brans, corn gluten meal and feed, molasses, beetroot pulp and spent breweries, distilleries, biofuel grains

Other non-edible: second grade cereals, swill, fish meal, synthetic amino acids, lime

Other edible: cassava pellets, beans and soy beans, rapeseed and soy oil

Mottet et al., 2017. Livestock: On our plates or eating at our table? Global Food Security

Global feed conversion ratios

	Protein	FCR 1	FCR 2	Meat FCR 2	FCR 3	Protein FCR 2
	Mt/year	Kg DM /kg protein	Kg edible DM /kg protein	Kg edible DM /kg meat	Kg complete DM /kg protein	Kg edible protein /kg protein
Ruminants	36,355	133	6	2.8	6.7	0.6
Monogastrics	38,246	30	16	3.2	20.3	2.0
All	74,601	80	12	3.1	13.7	1.3

Mottet et al., 2017. Livestock: On our plates or eating at our table? Global Food Security

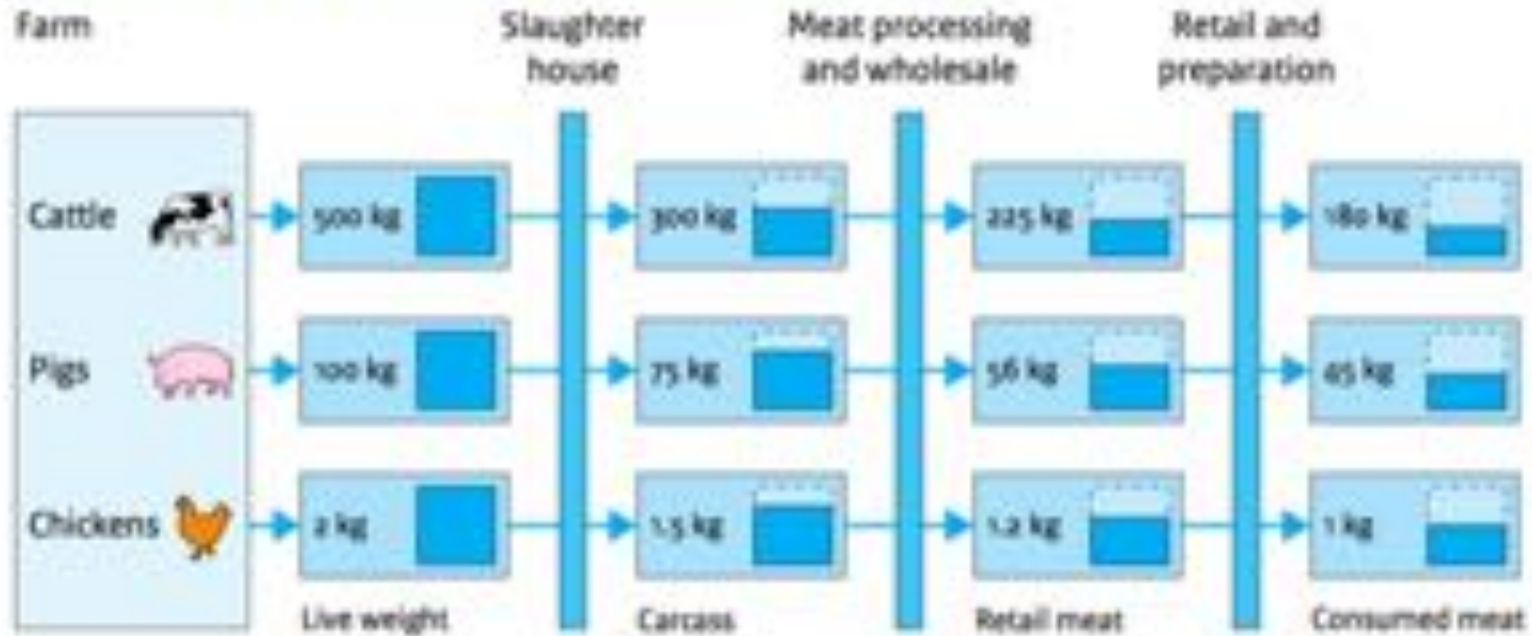
Feed conversion ratios by production systems

	Protein	FCR 1	FCR 2	Meat FCR 2	FCR 3	Protein FCR 2
	% global livestock	Kg DM /kg protein	Kg edible DM /kg protein	Kg edible DM /kg meat	Kg compete DM /kg protein	Kg edible protein /kg protein
Grazing cattle non OECD	8%	195	1.6	0.9	1.9	0.2
Mixed cattle non OECD	18%	171	4.8	3.1	5.6	0.5
Beef feedlots OECD	2%	62	44	9.4	45.4	4.1
Industrial pigs non OECD	7%	29	20	4	24.1	4.4
Industrial broilers OECD	11%	26	18.6	3.5	24.7	5.2

Mottet et al., 2017. Livestock: On our plates or eating at our table? Global Food Security



From farm to fork, overview of losses in the meat chain



Source: PBL, based on Blonk (2008); Luske & Blonk (2009)



THE PROTEIN PUZZLE

The consumption and
production of meat,
dairy and fish in
the European Union



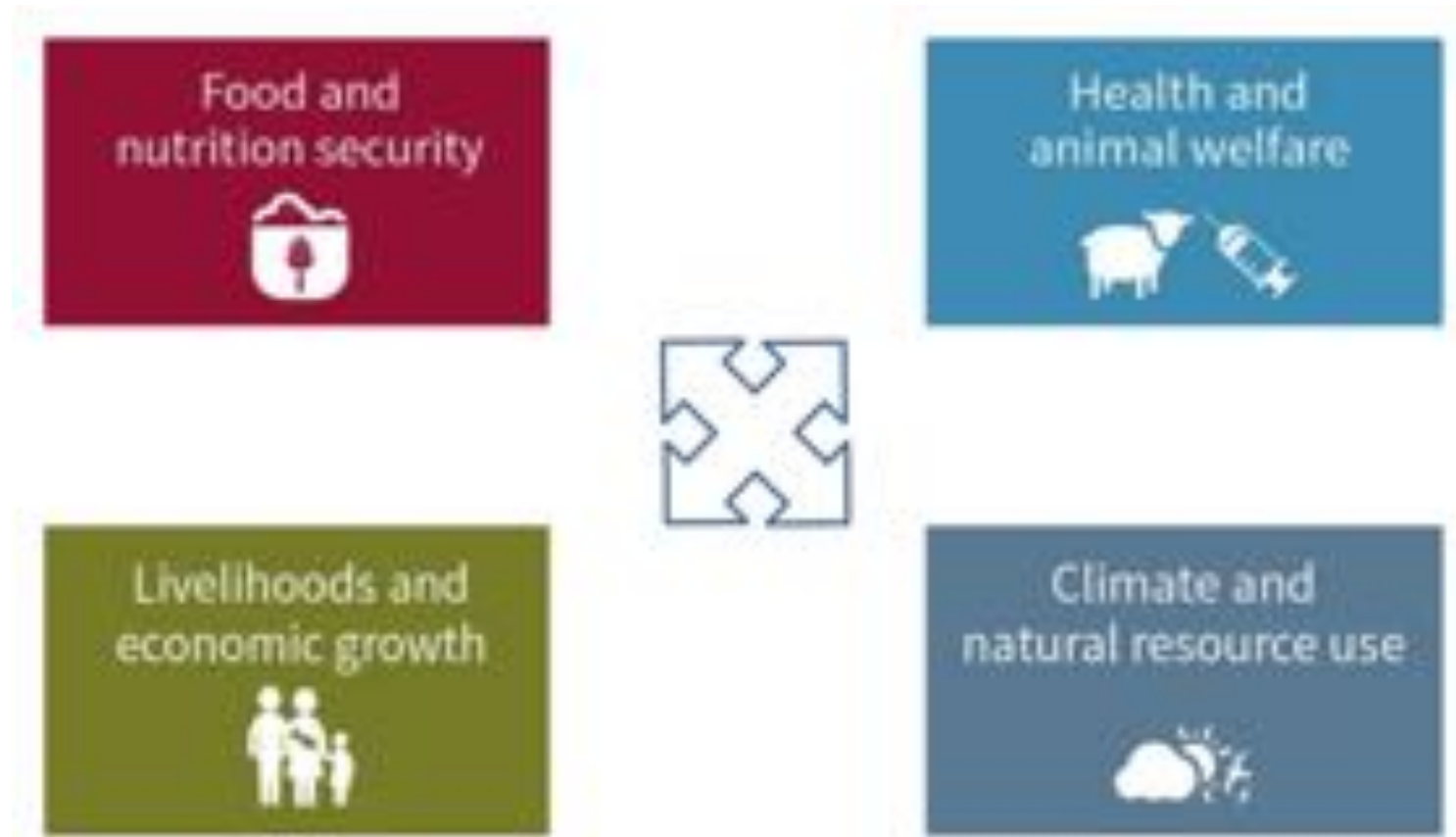
«The options for the EU to reduce the impacts of livestock production can be grouped into three broad, partially complementary strategies: shifts in consumption, resource efficiency and producing with fewer local impacts»



Livestock and the SDGs: review of main linkages



4 priority policy areas





Thank you
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