


# Agribenchmark Conference

## June 2014

## Turin

# Bad policies & unhelpful consumer trends: how not to sustainably feed 9 billion people

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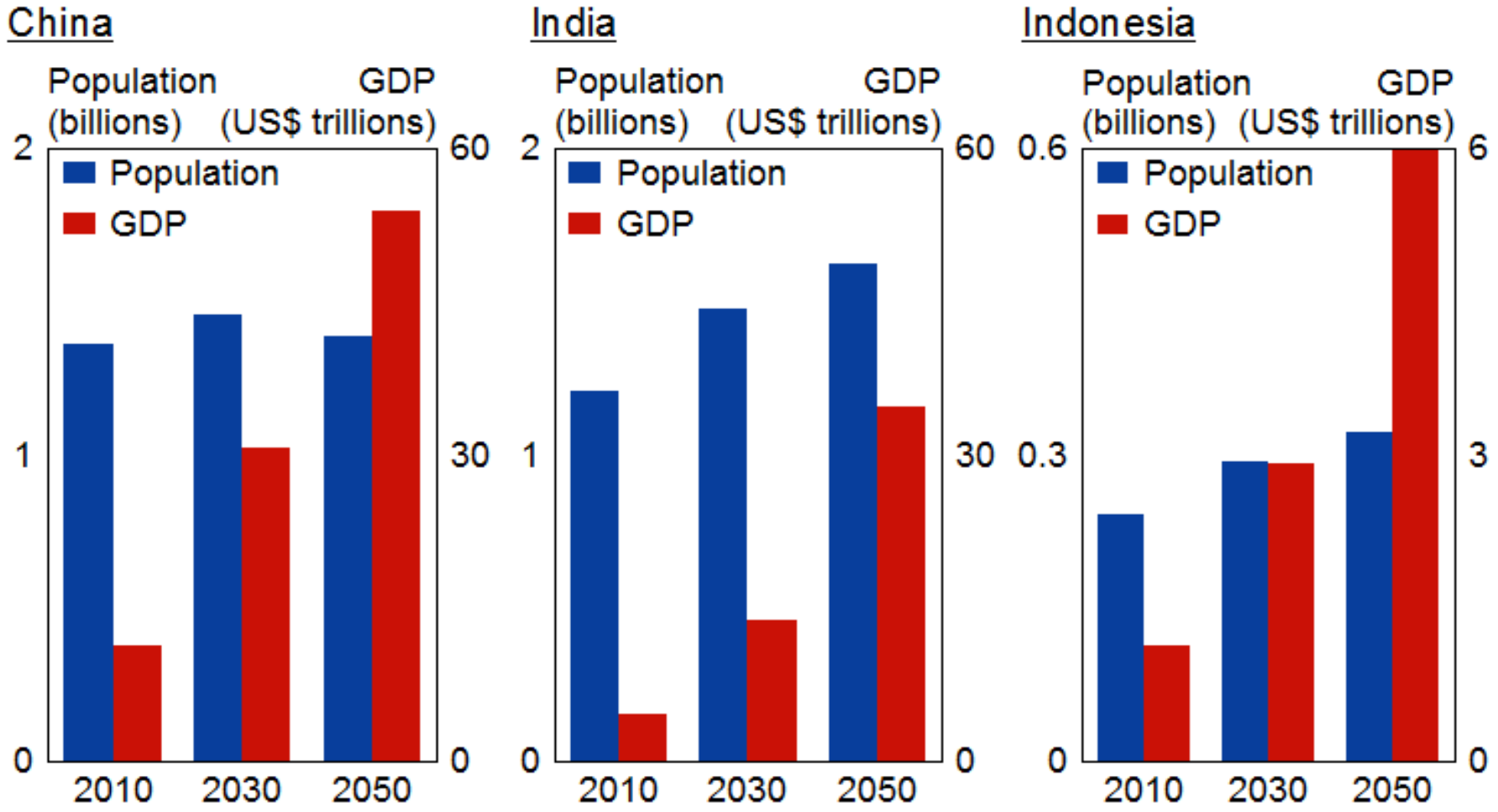
**“More food will have to be produced worldwide over the next 50 years than has been produced during the past 10,000 years combined.”**

***The Guardian, 31 August 2007, reporting on a UN backed forum on sustainable development.***

# In developing countries incomes will rise much faster than populations

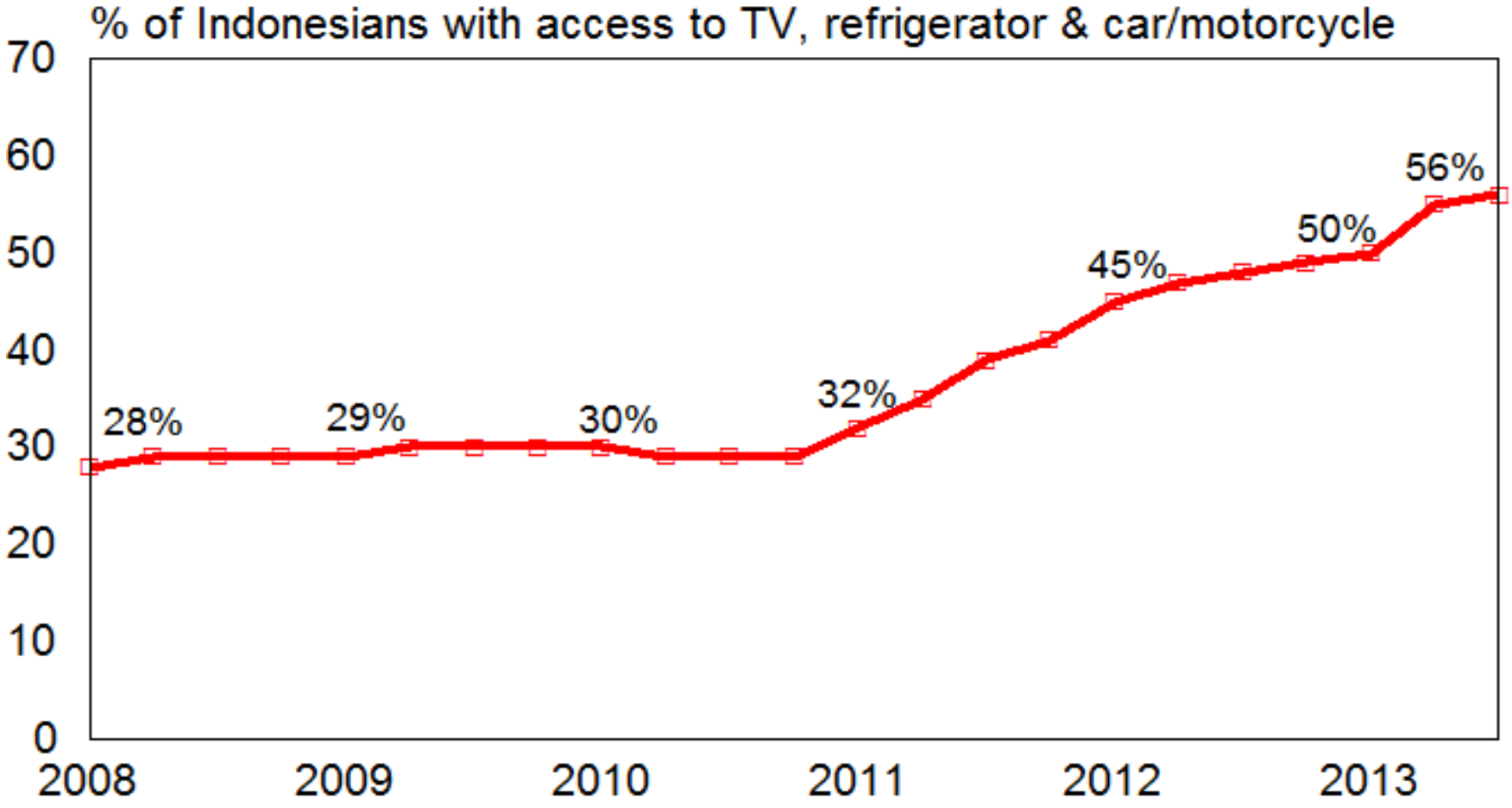



Sources: United Nations Population forecasts, GDP forecasts by PWC and measured at PPP

# The industrialization now occurring in India, China & in developing SE Asian nations mirrors the earlier industrialization of Japan, South Korea & Taiwan

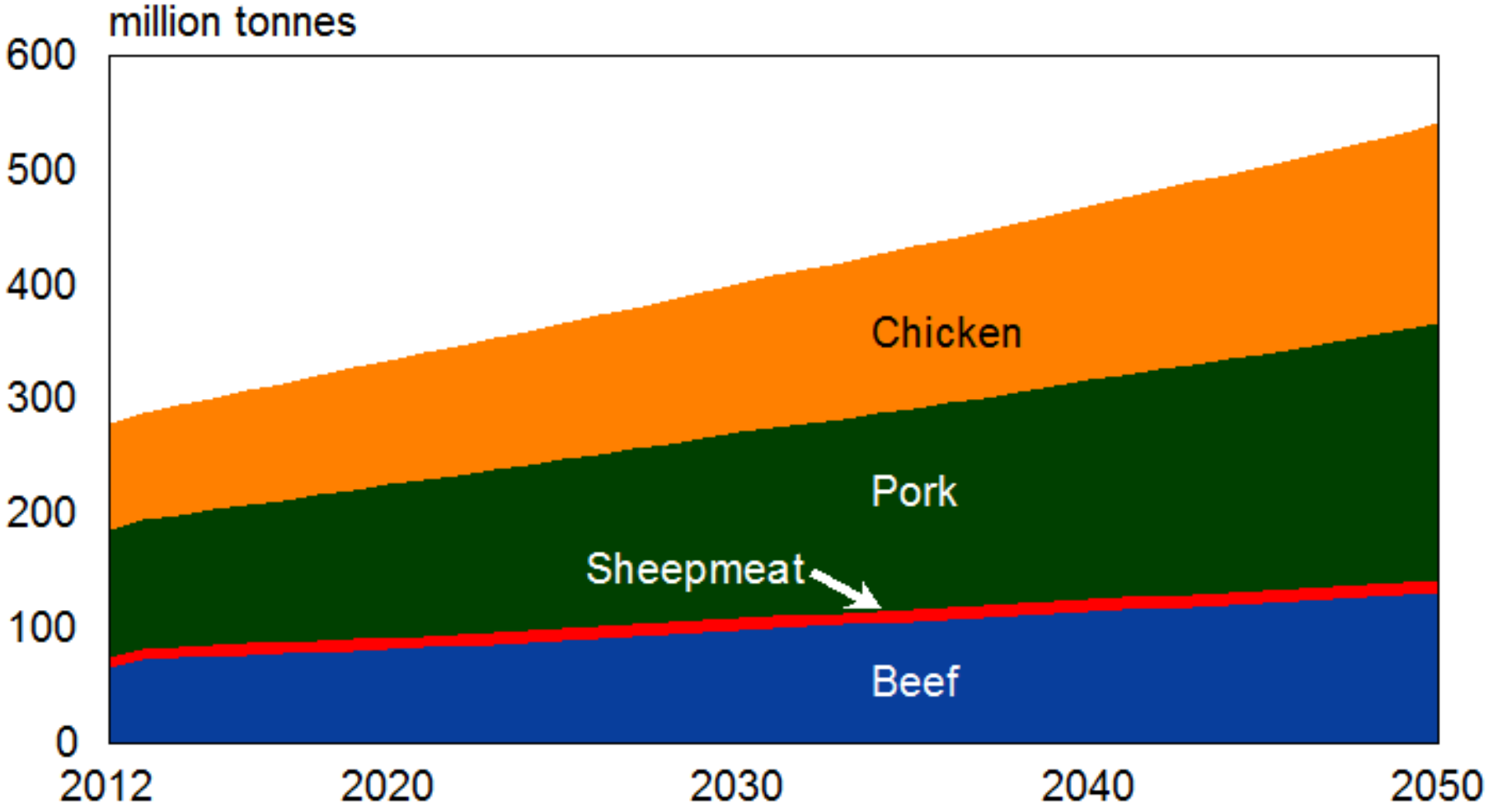
- But these nations only represented 4% of the world's population
- Those currently industrializing represent almost 50% of the world's population
- This has tremendous implications for world resource use and food demand

# The Middle Classes are already on the rise in these countries – the case of Indonesia




Source: Roy Morgan Single Source Indonesia September 2013 (National)
Base: Indonesian Population 14+ n=29,048

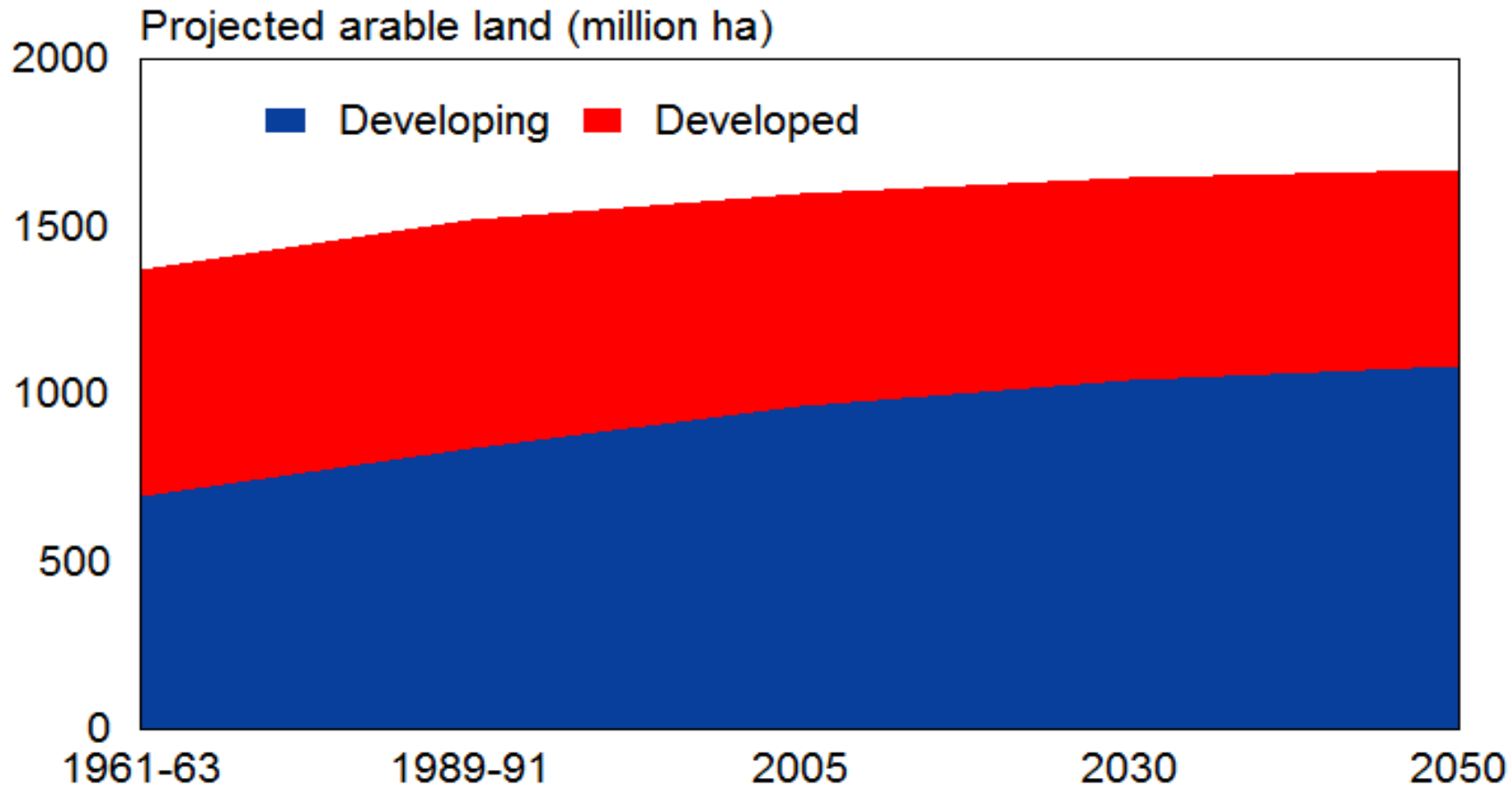
# World meat consumption to double by 2050




Source: Centre for International Economics

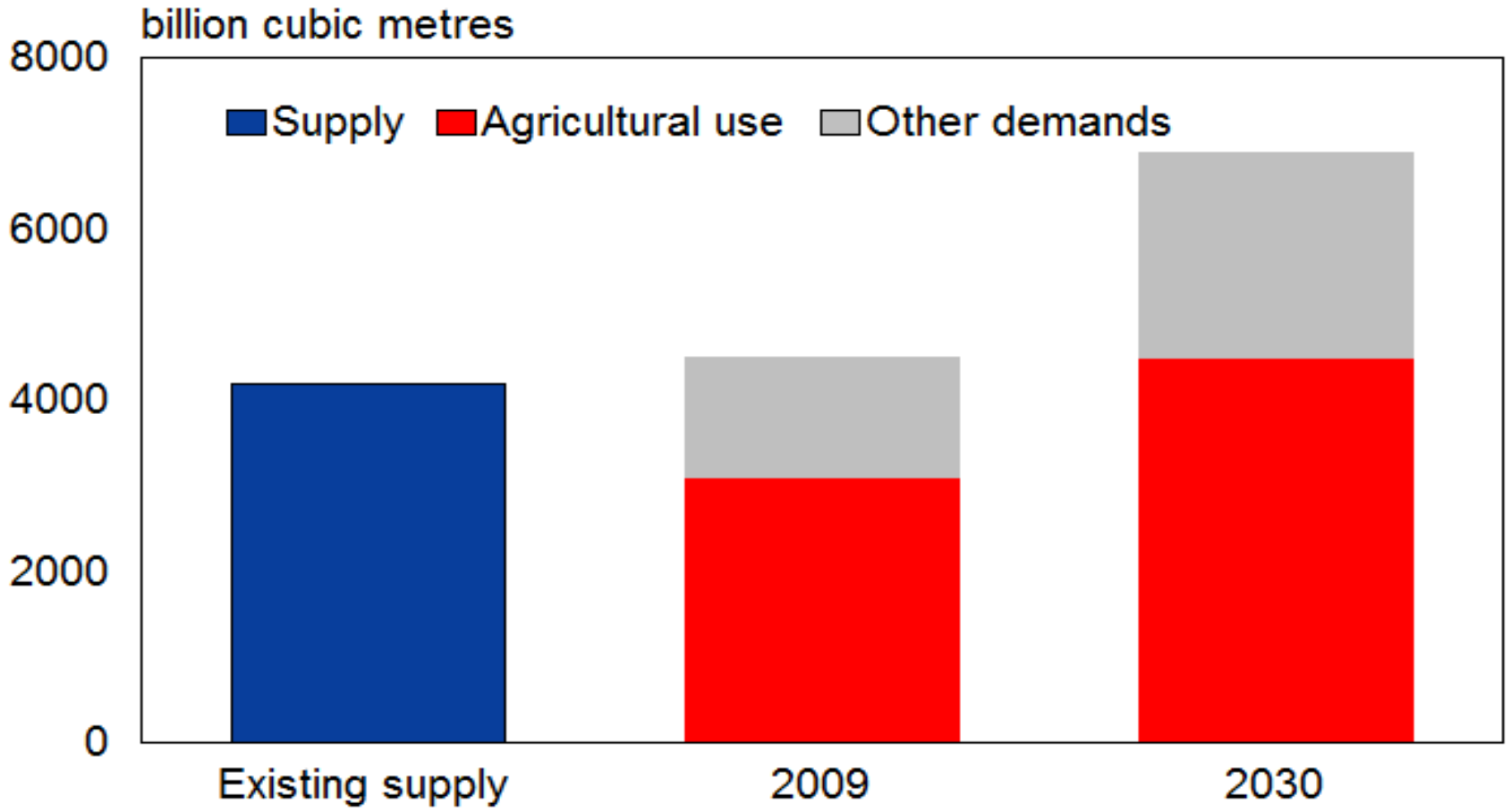
# Signs exist that agriculture is now supply constrained

# We are running out of land to devote to agricultural production




Source: Bruinsma (2009)

# Water to devote to agricultural production is becoming more limited




Source: 2030 Water Resources Group

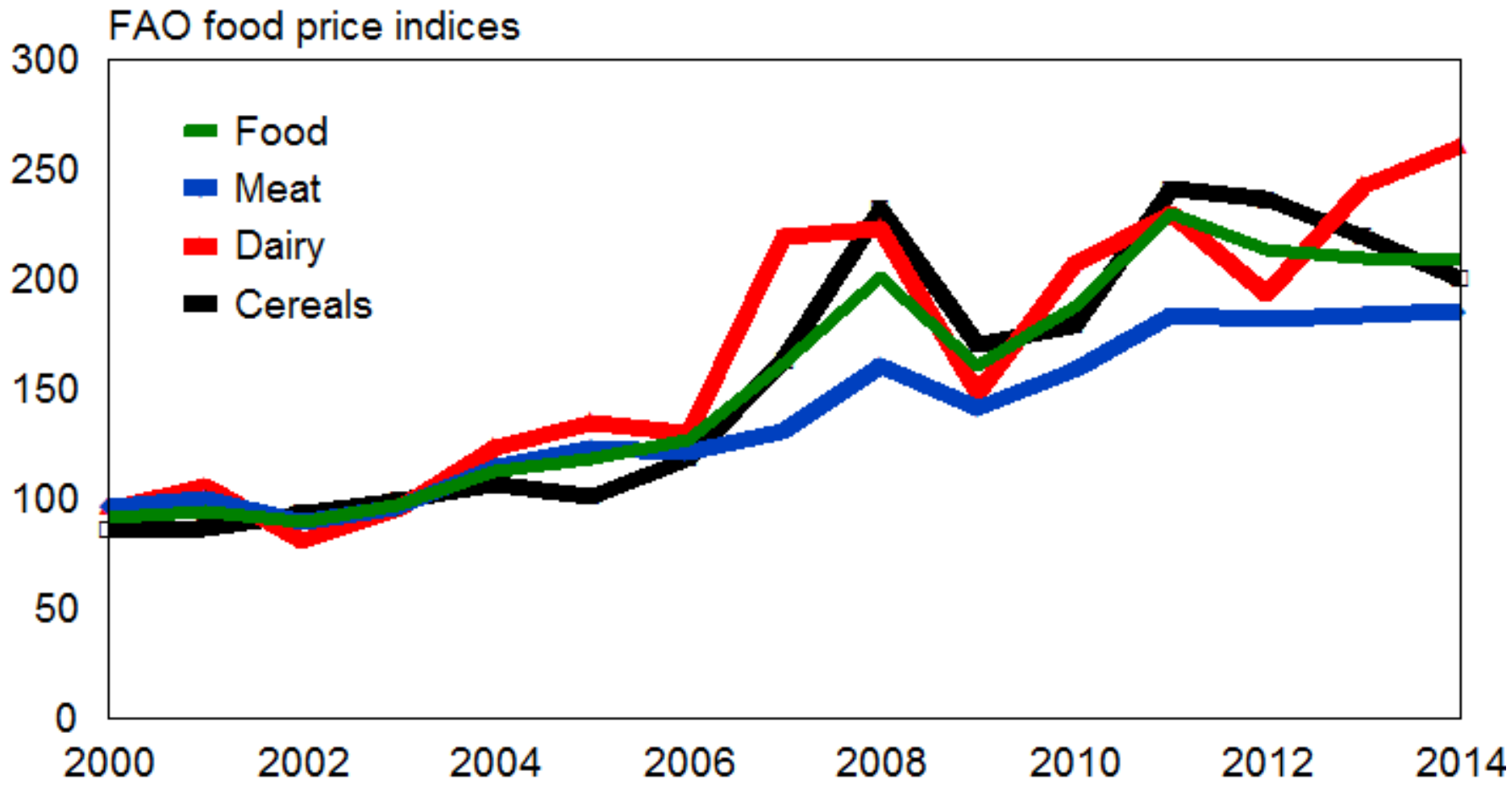
# Agricultural productivity growth rates are falling

- The measured growth rate of crop yields has been slowing since 1990
- Slowdown is widespread – across most geographical regions and across countries with high, medium and low capita incomes

| Annual global yield growth rates | | |
|---|---|---|
| | 1961-1990 | 1990-2011 |
| Maize | 2.33% → | 1.77% |
| Wheat | 2.72% → | 1.09% |
| Rice | 2.14% → | 1.06% |
| Soybean | 1.72% → | 1.21% |
| Cereals | 2.35% → | 1.48% |

Source: Alston & Pardey (2014)

# Declining productivity growth rates, combined with higher demand, are driving prices higher



# Faced with supply constrained food resources, what shouldn't we being doing?

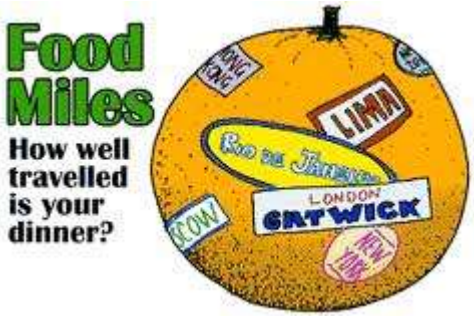
# Self-sufficiency

- A number of Governments are reacting to potential future food shortages by pursuing self sufficiency objectives
- Self sufficiency ≠ Food security
- A narrow focus on self sufficiency has high economic and social costs

# Agricultural production is inherently variable

# In terms of attempting to support local production, the consumer led ‘buy local’ movement is analogous to the self sufficiency objectives of many governments

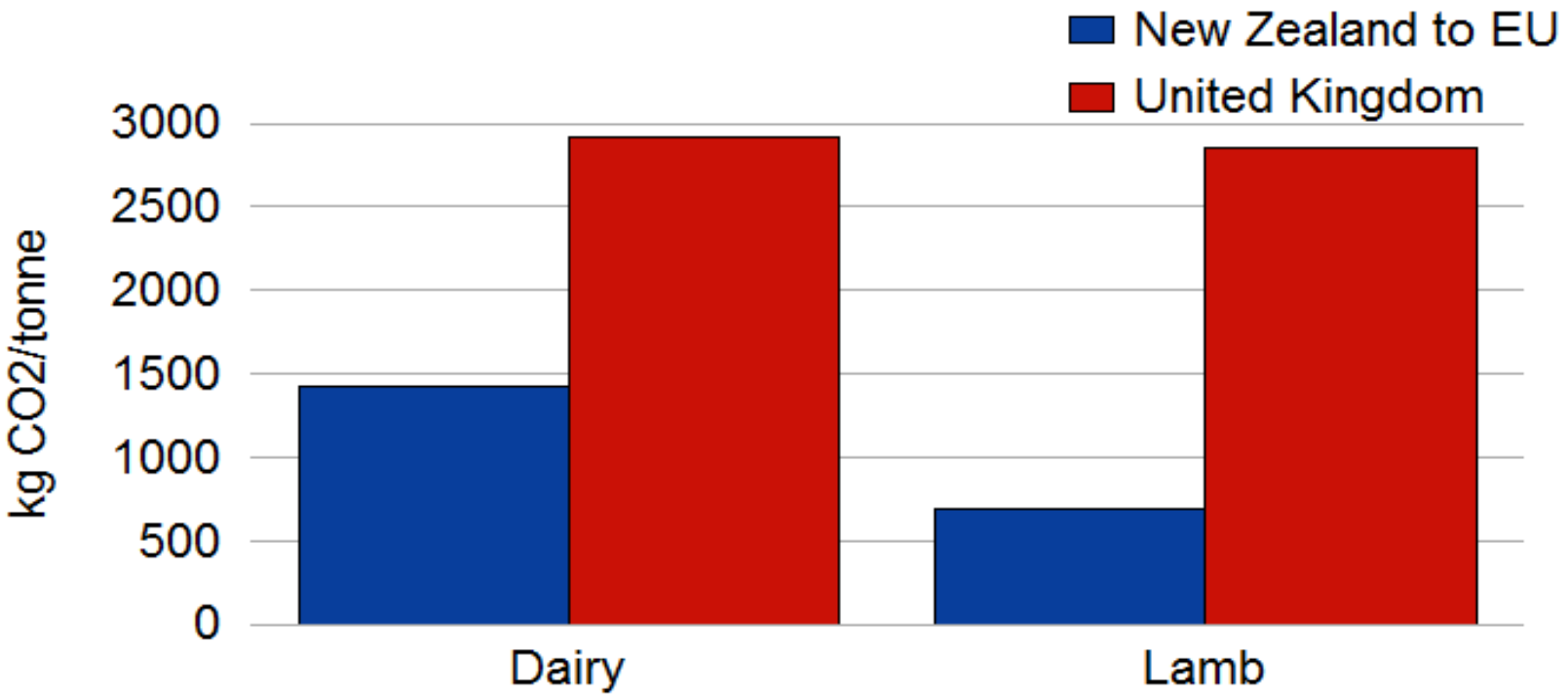



# To the extent that the ‘buy local’ movement is driven by environmental considerations, it is misguided

# The ‘food miles’ fallacy – the resource cost of self sufficiency/ buying local can be high

- $CO_2$ footprint is substantially less if product is produced in NZ & shipped to EU, rather than being produced in UK




Source: Sanders 2011

NB: $CO_2$ emissions is per tonne of milk solids for dairy, and per tonne carcass weight for lamb

# Use of food for non-food purposes through artificial policy incentives

# Studies conclude that ethanol production is resulting in significantly higher corn prices

- Food price index was 20% higher in 2007 that it would have been without any ethanol production - Roberts and Schlenker (2010)
- Corn prices were around 30% higher between 2006 and 2011 then they would have been without the mandated increase in corn-based ethanol production - Carter et al (2012)
- Because of mandated US ethanol production the the US corn price in 2012 was between 26% and 29% higher than it otherwise would have been - Condon et al (2013)

# Consumer trends towards natural and organic produce in developed countries will also place constraints on feeding 9 billion



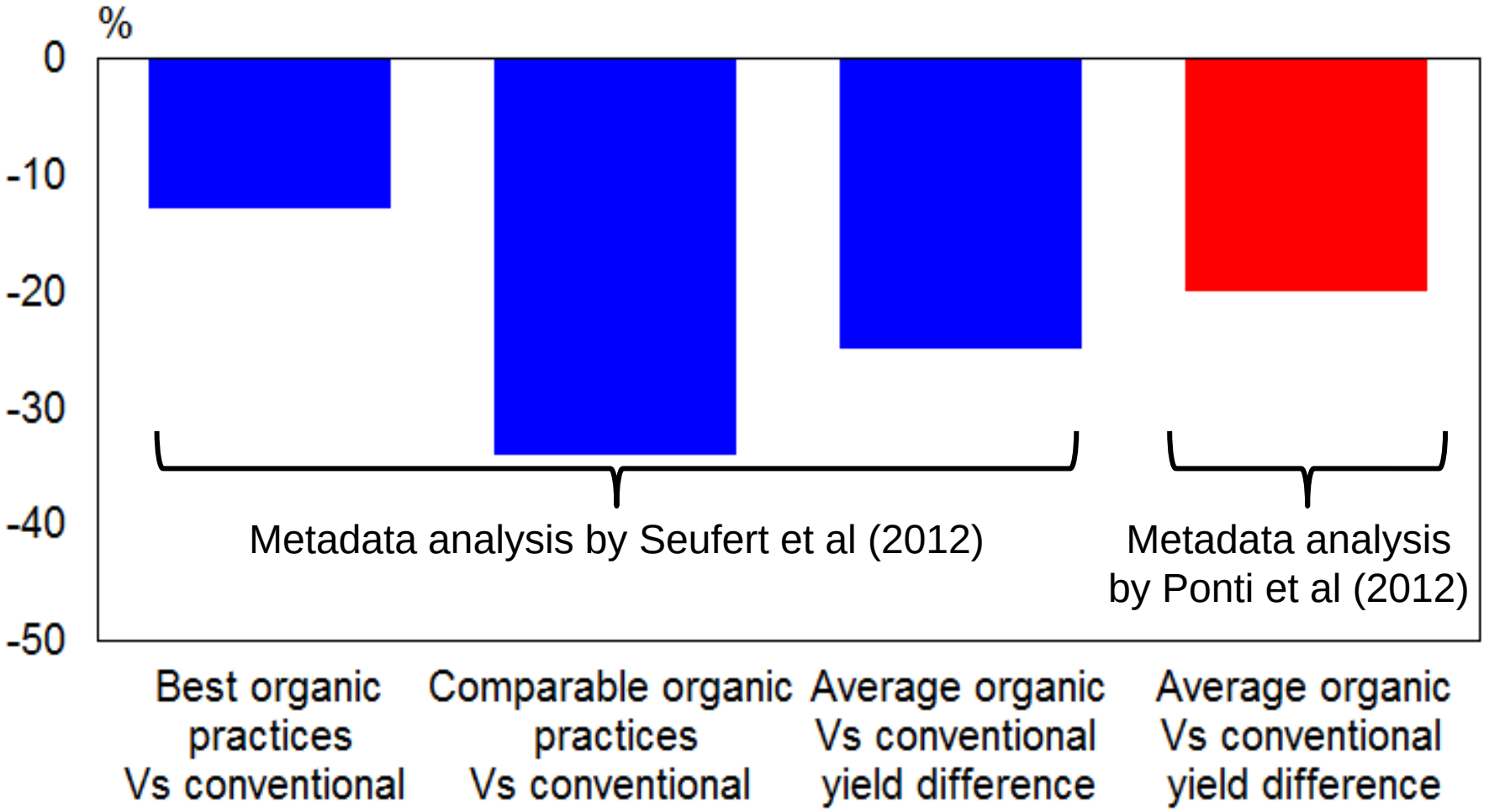


# These trends seem to be based on a belief that organic / natural products are safer, healthier, more nutritious & good for the planet

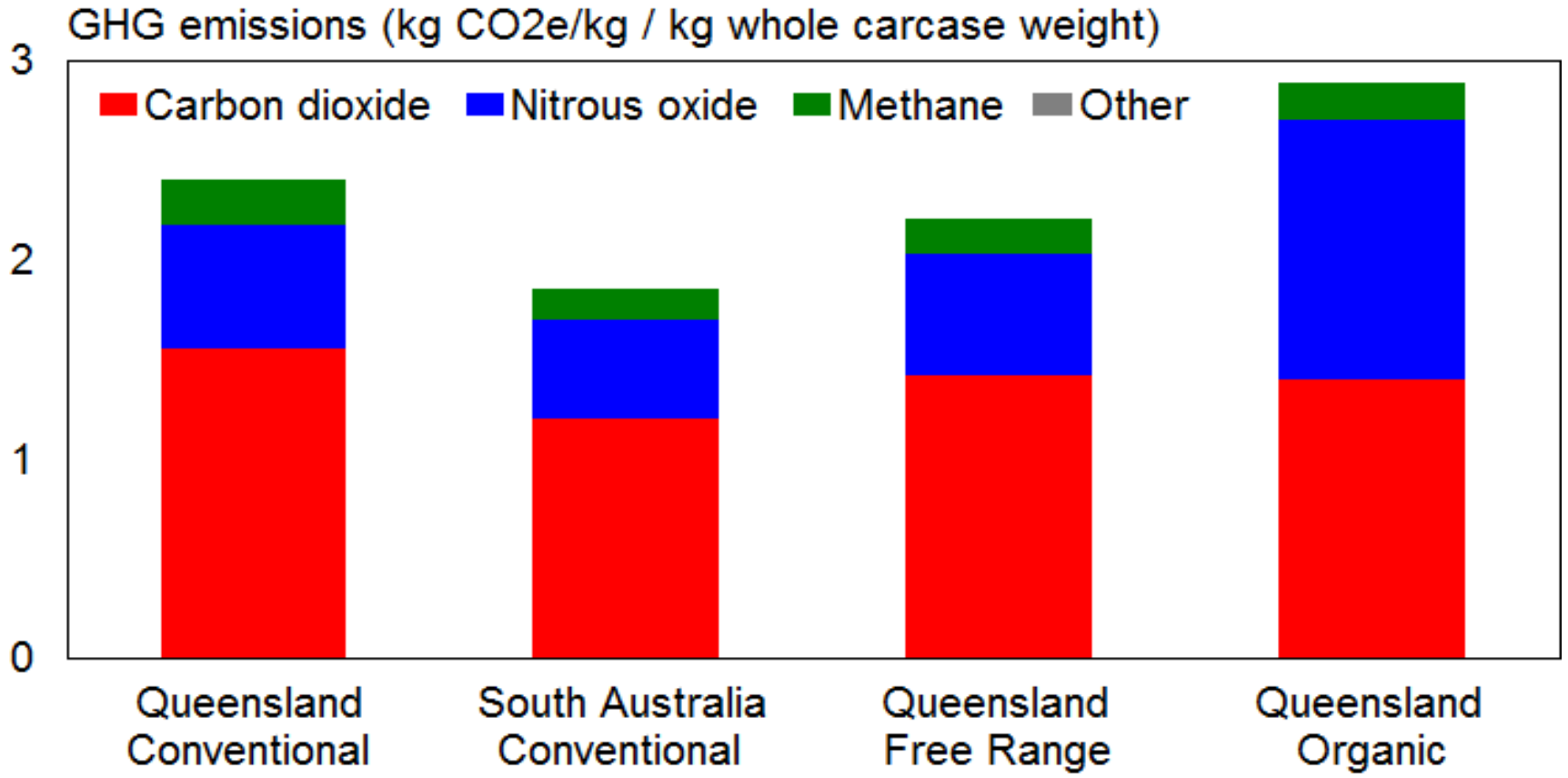
But in terms of health / nutrition objective studies show:

- No evidence of a difference in nutrient quality between organically and conventionally produced foodstuffs (e.g. Dangour et al 2009)
- While pesticides are more likely to be present in samples of conventionally grown foods, they are present in both types of foods, but not at levels considered to create any risk (many studies)
- Generally no difference in the presence of other food hazards, such as natural chemicals, microbial pathogens and mycotoxins, between the two types of foods (e.g. Magkos et al 2003)

# Yield differences between organic and conventional farming systems



# Many organic production systems emit more GHGs than conventional systems – the case of chicken in Australia

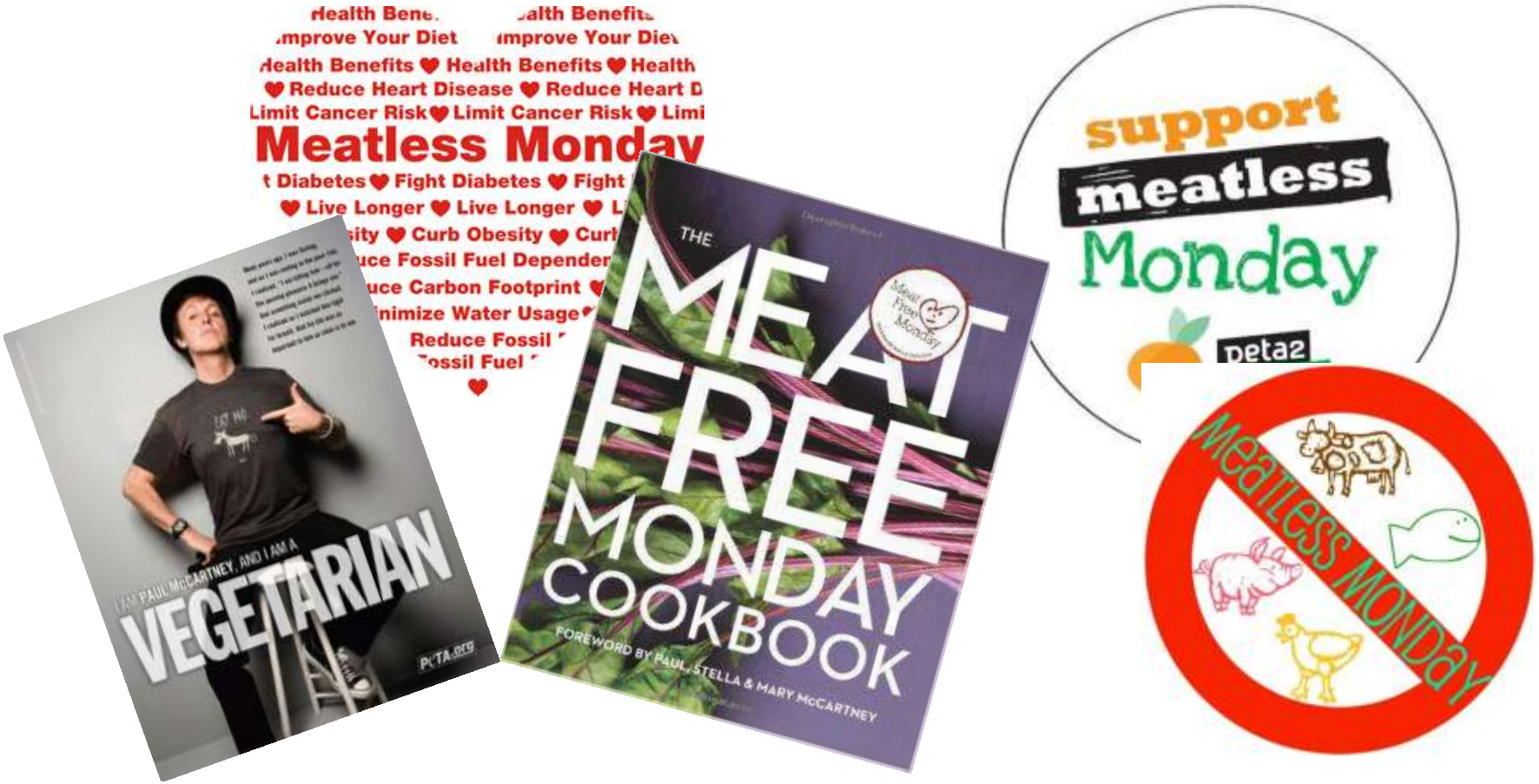



Source: RIRDC (2012)

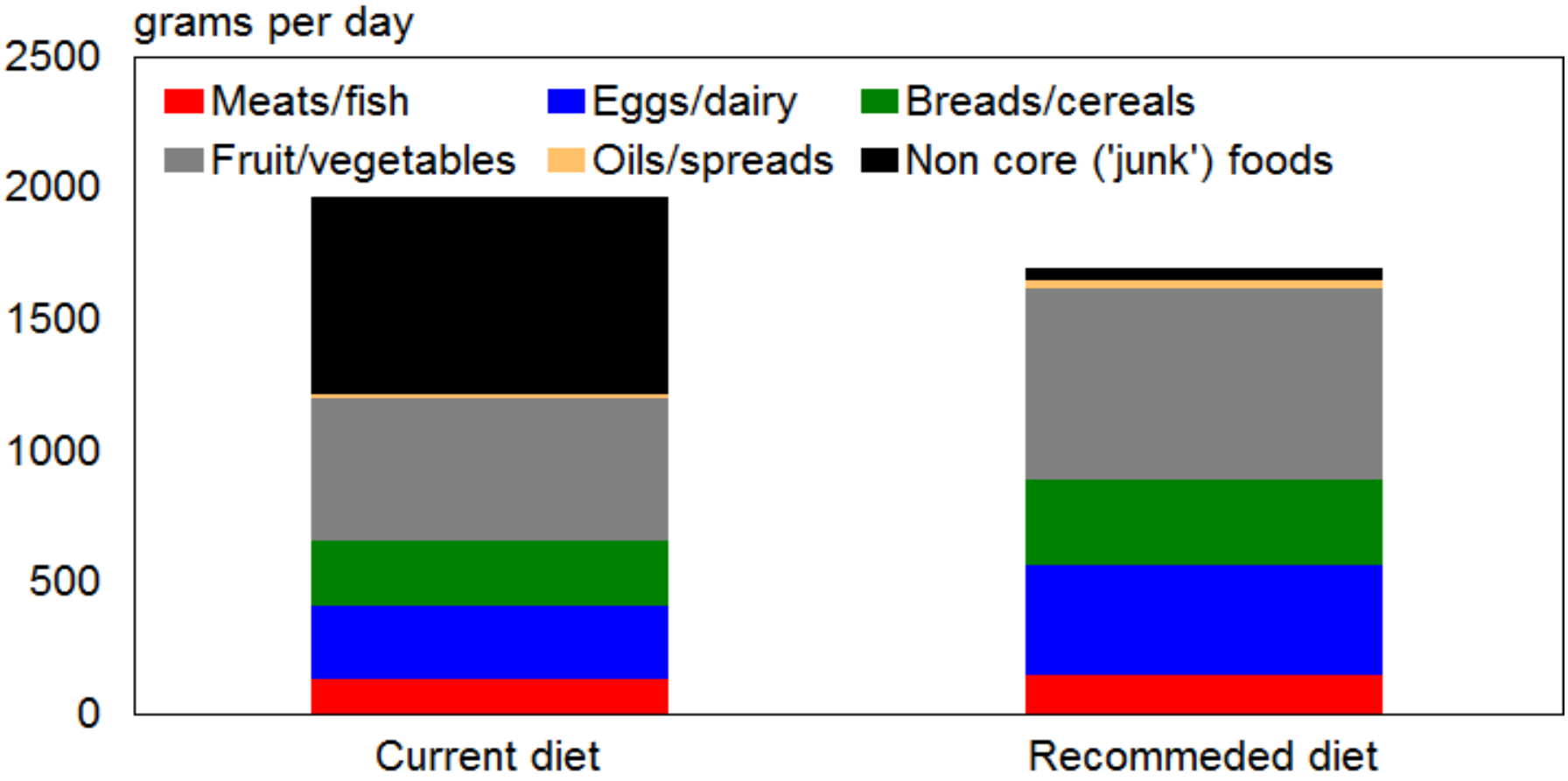
# What should we be doing?


# It would be helpful to change western diets to diets more in keeping with high nutritional levels, low rates of obesity and low environmental impact

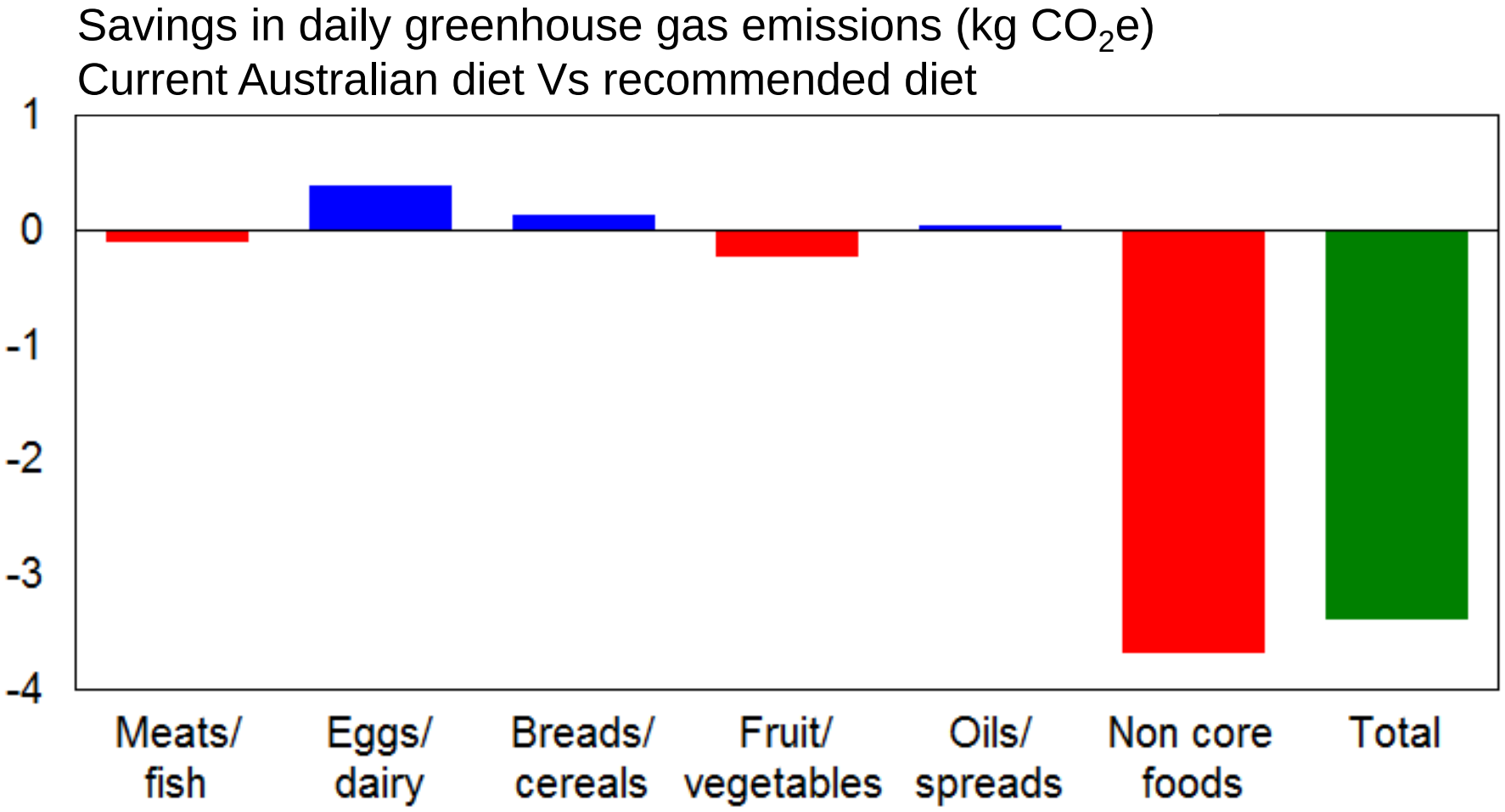
# The Meatless Monday crowd have got it wrong in terms of focus



# The Australian diet, like most western diets, is high in non-core ('junk') food groups - these foods are nutrient poor, contribute to obesity & are resource & emissions intensive

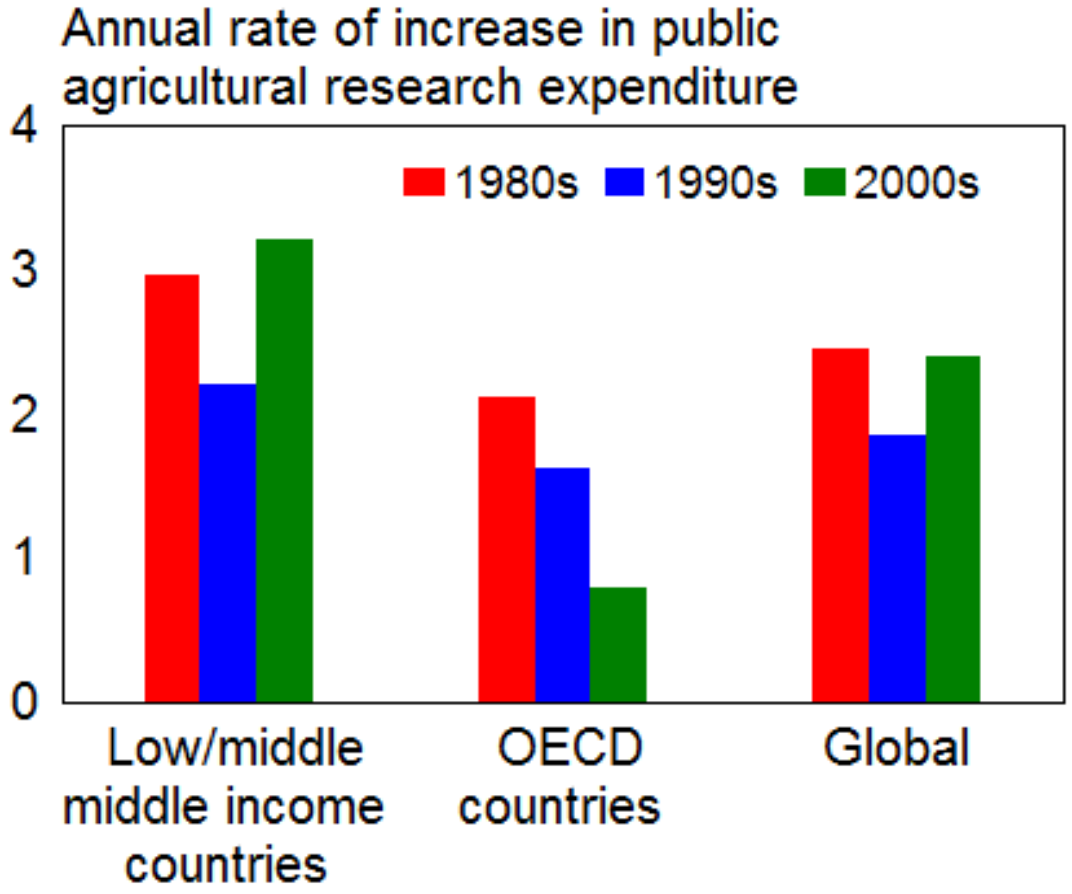


# Through western dietary changes, major savings could be made in GHG emissions & resource use



# Funding for research

# Rate of increase in global agricultural research slowing in OECD countries, but increasing amongst middle income countries

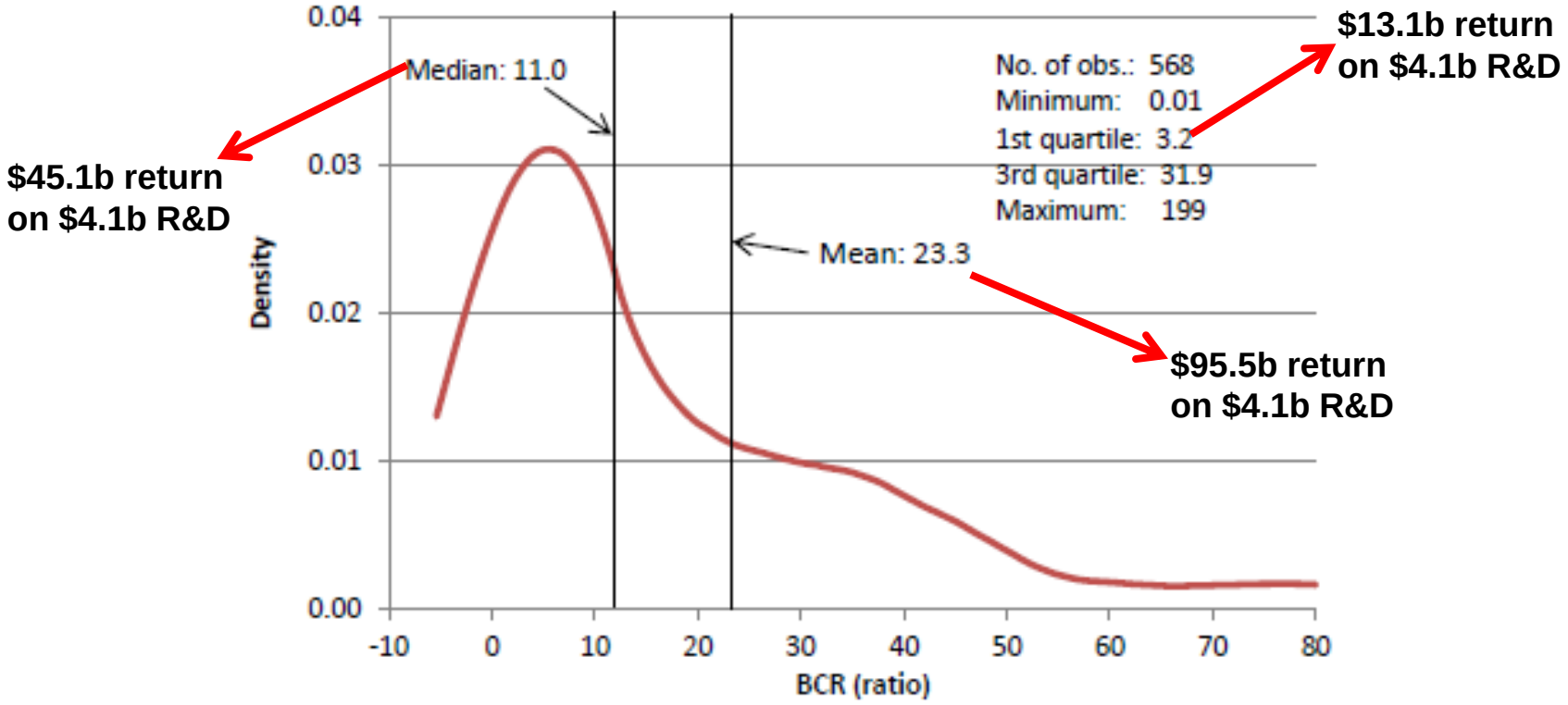



In major developed countries, such as the US, agricultural R&D expenditure is now declining in real terms.

Pardey, Alston and Chan-Kang (2013), Asti (2012)

# Benefits from ag research

Distribution of reported benefit-cost ratio estimates
to food and agricultural R&D

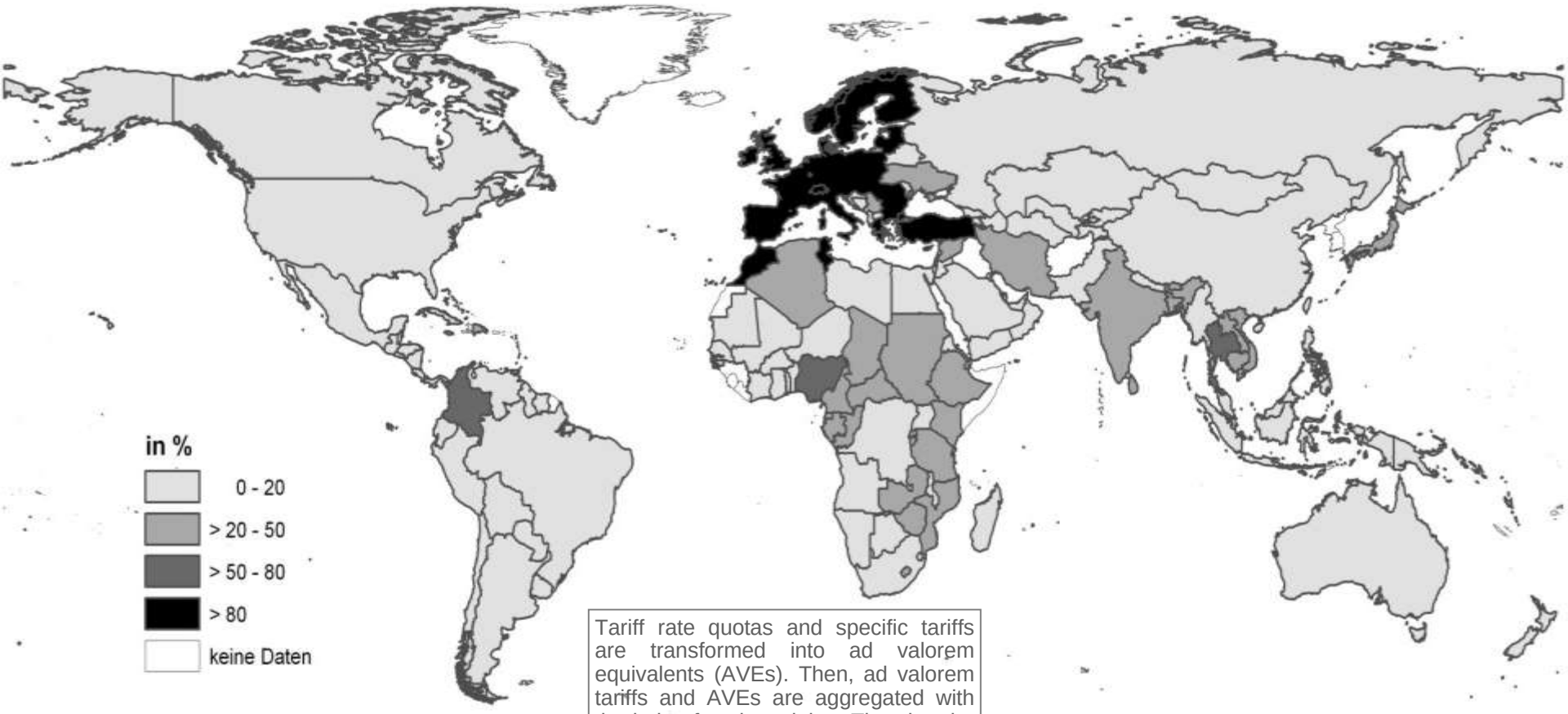



Source: Pardey et al 2012

# The case for more research

The efficiencies and increased productivity necessary to meet the agricultural challenge of providing more food than ever to the world's population, and to do this sustainably, cannot be achieved without a renewed focus on research.

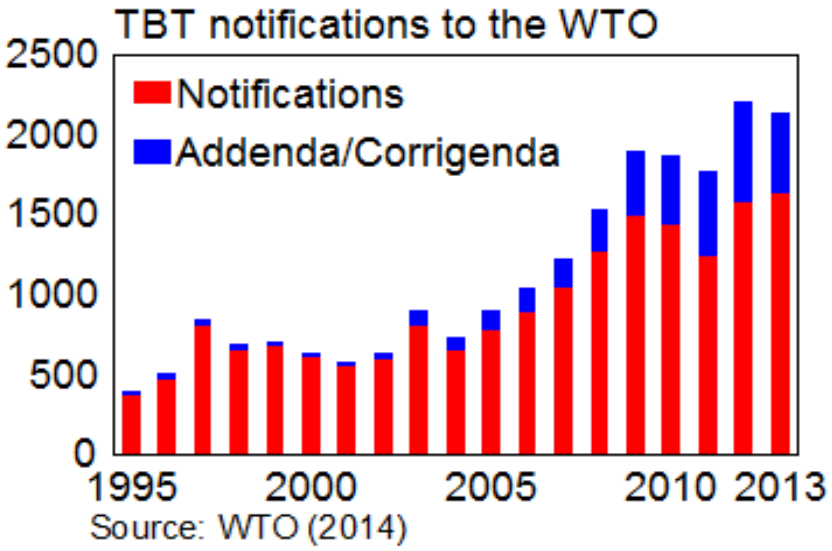
# Despite progress in dismantling economic barriers to trade, for beef high tariffs remain

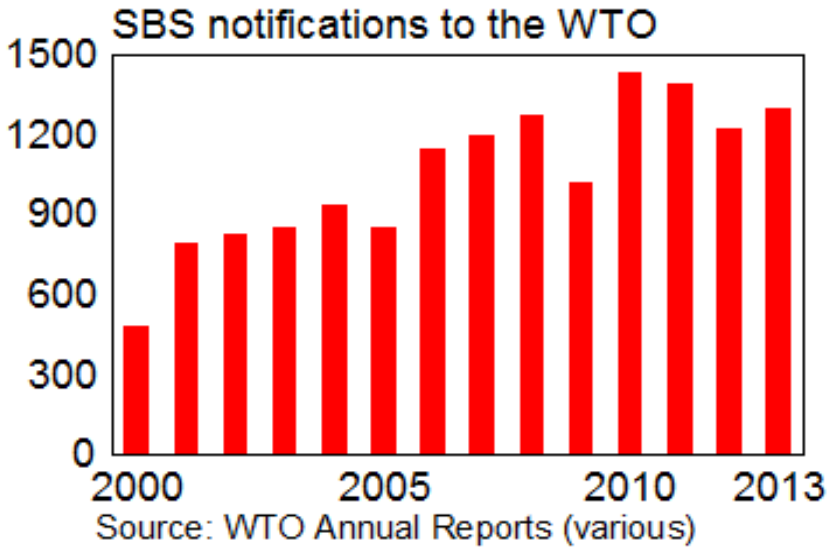



Source:: MAcMaps

Tariff rate quotas and specific tariffs are transformed into ad valorem equivalents (AVEs). Then, ad valorem tariffs and AVEs are aggregated with the help of trade weights. Thereby, the EU intra trade is excluded from the trade weights.

# Use of TBT and SPS measures are rising - there is a growing need to address unnecessary, burdensome, regulatory impositions



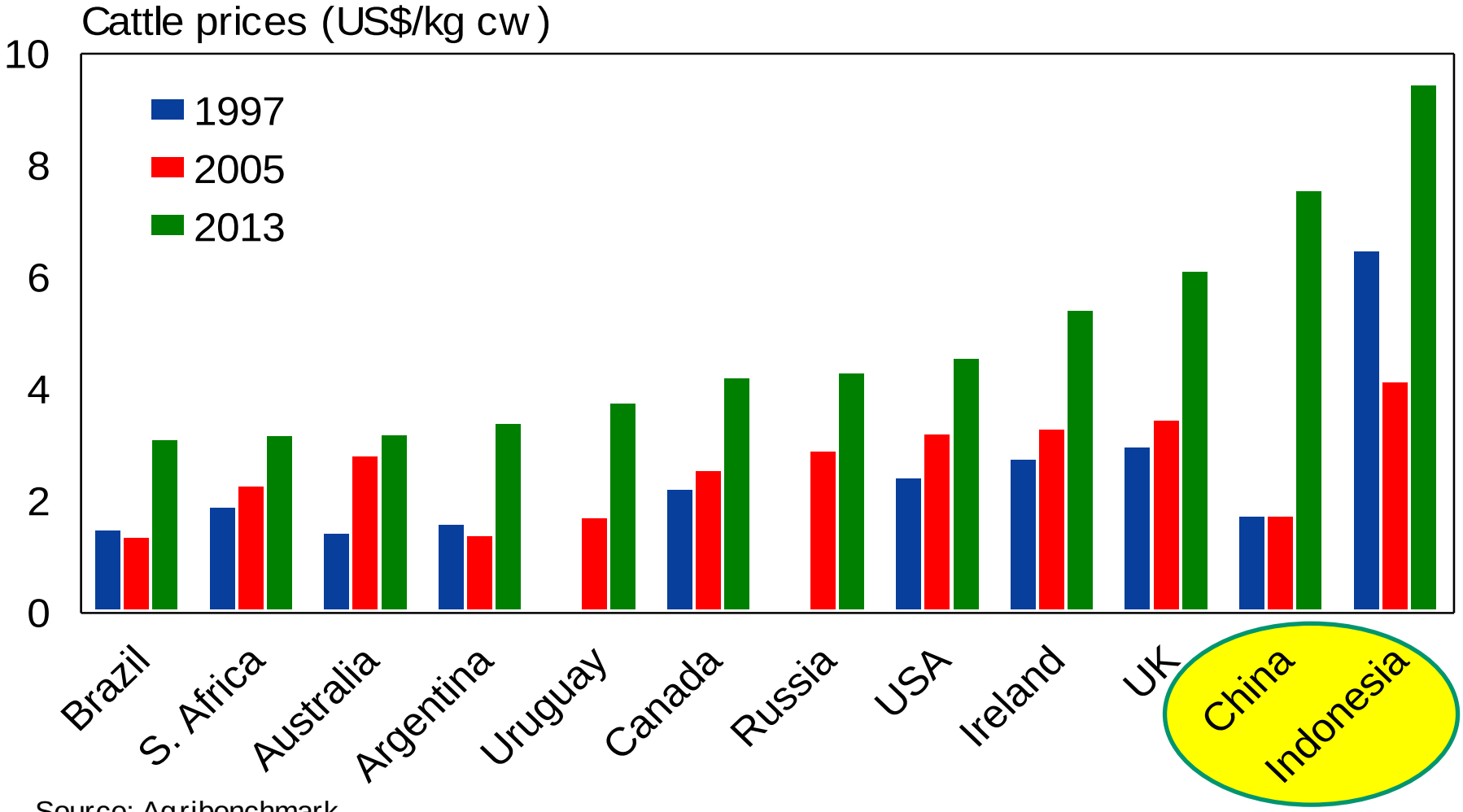

- TBT & SPS measures are mostly introduced by government authorities with legitimate policy objectives in mind e.g. protecting human health and safety
- Nevertheless, some measures appear discriminatory or unnecessary
- A recently completed study estimates costs on the Australian industry of these measures of over $1 billion p.a.

We must abandon self sufficiency objectives and free up trade to mitigate risk and to maximise use of the earth’s resources.

# Thank you!


FARMERSFEEDINGTHEWORLD

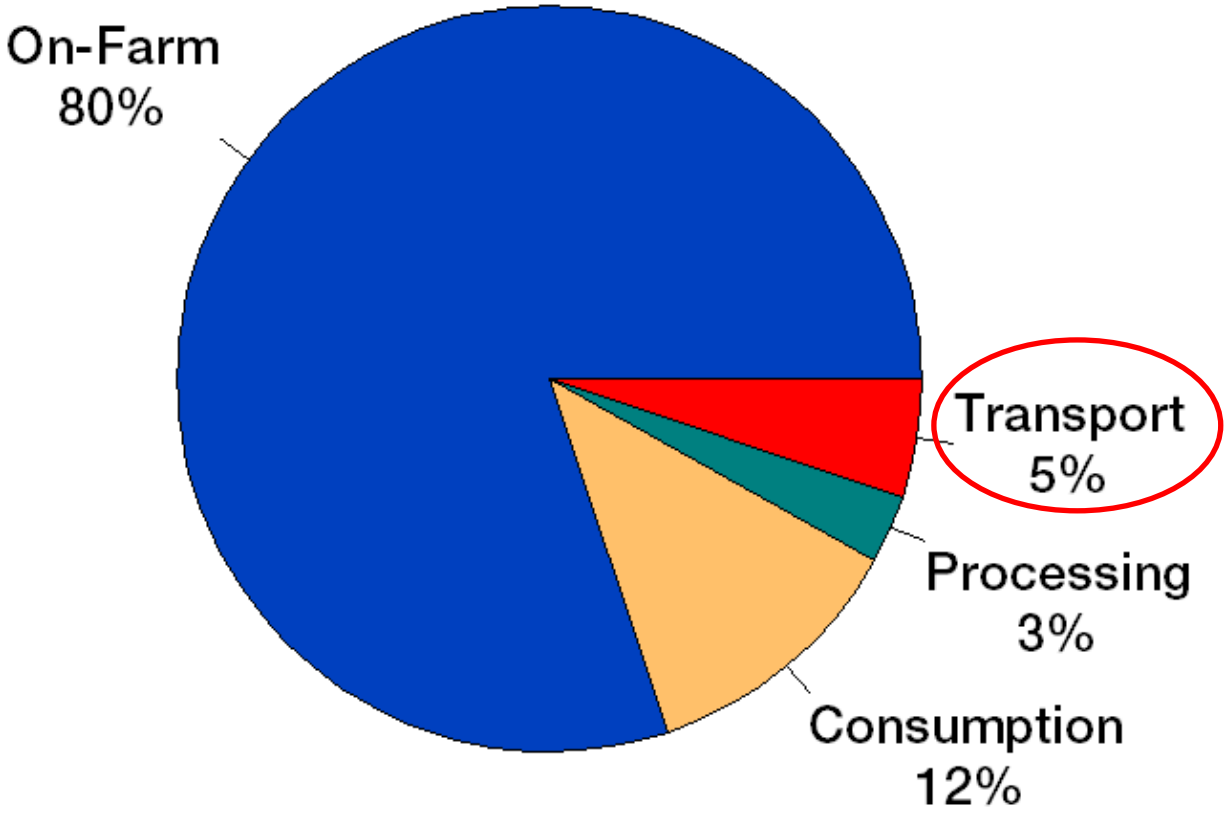
# Cattle prices are especially increasing in developing countries where demand is increasing




Source: Agribenchmark

# Examining the full life cycle carbon footprint of New Zealand lamb

- Oceanic shipping meat from NZ to EU only accounts for 5% of total GHG emissions → NOT a key determinant of the overall footprint

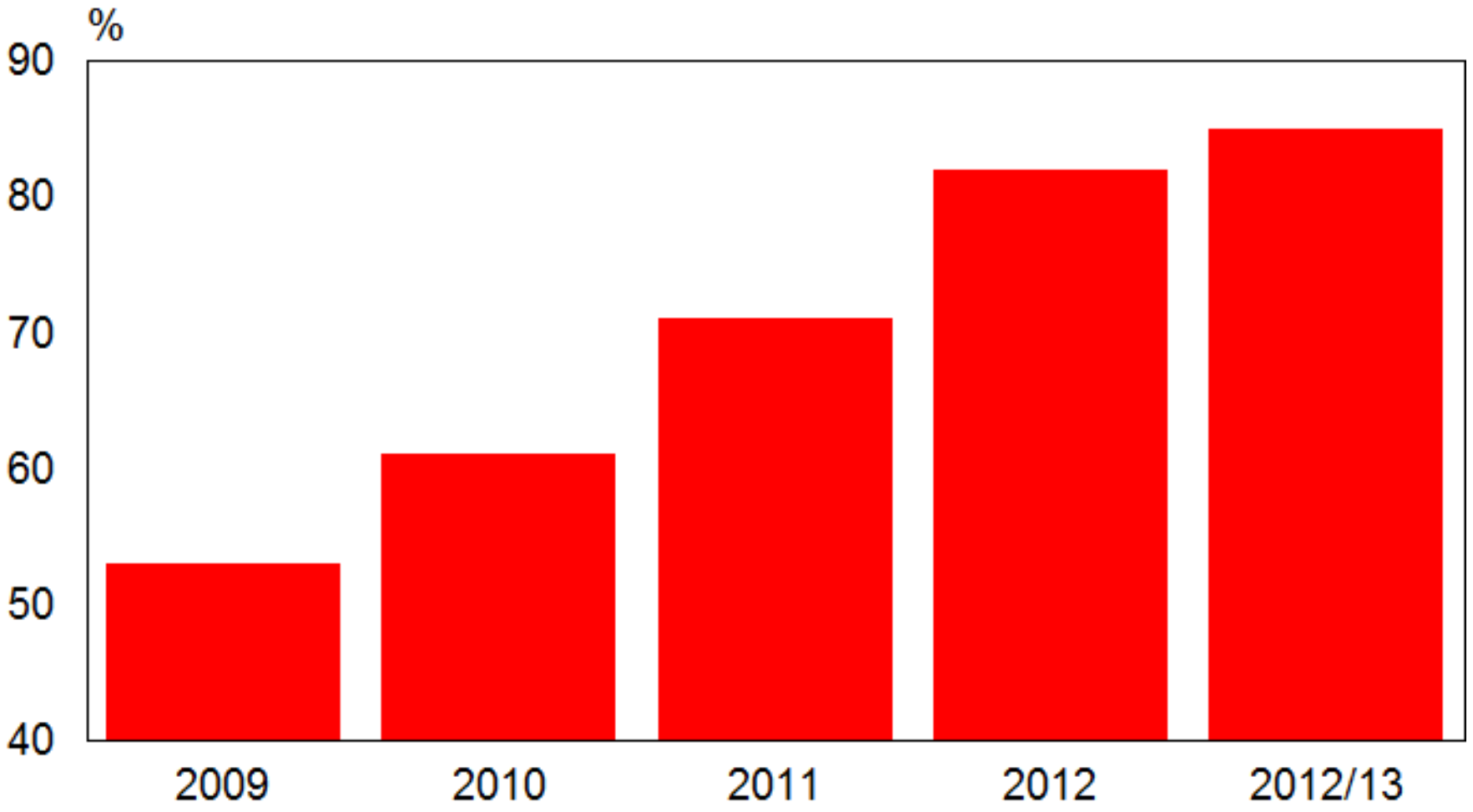


# Indonesia's goal to be 90% self sufficient in beef – achieved through progressively restricting imports of live cattle & boxed beef

| Year | Live cattle | Boxed beef |
|---|---|---|
| 2009 shipments | 773,000 head | 111,000 tonnes |
| 2011 quota | 413,000 head | 103,000 tonnes |
| 2012 quota | 283,000 head | 34,000 tonnes |
| 2013 quota | 267,000 head | 32,000 tonnes |

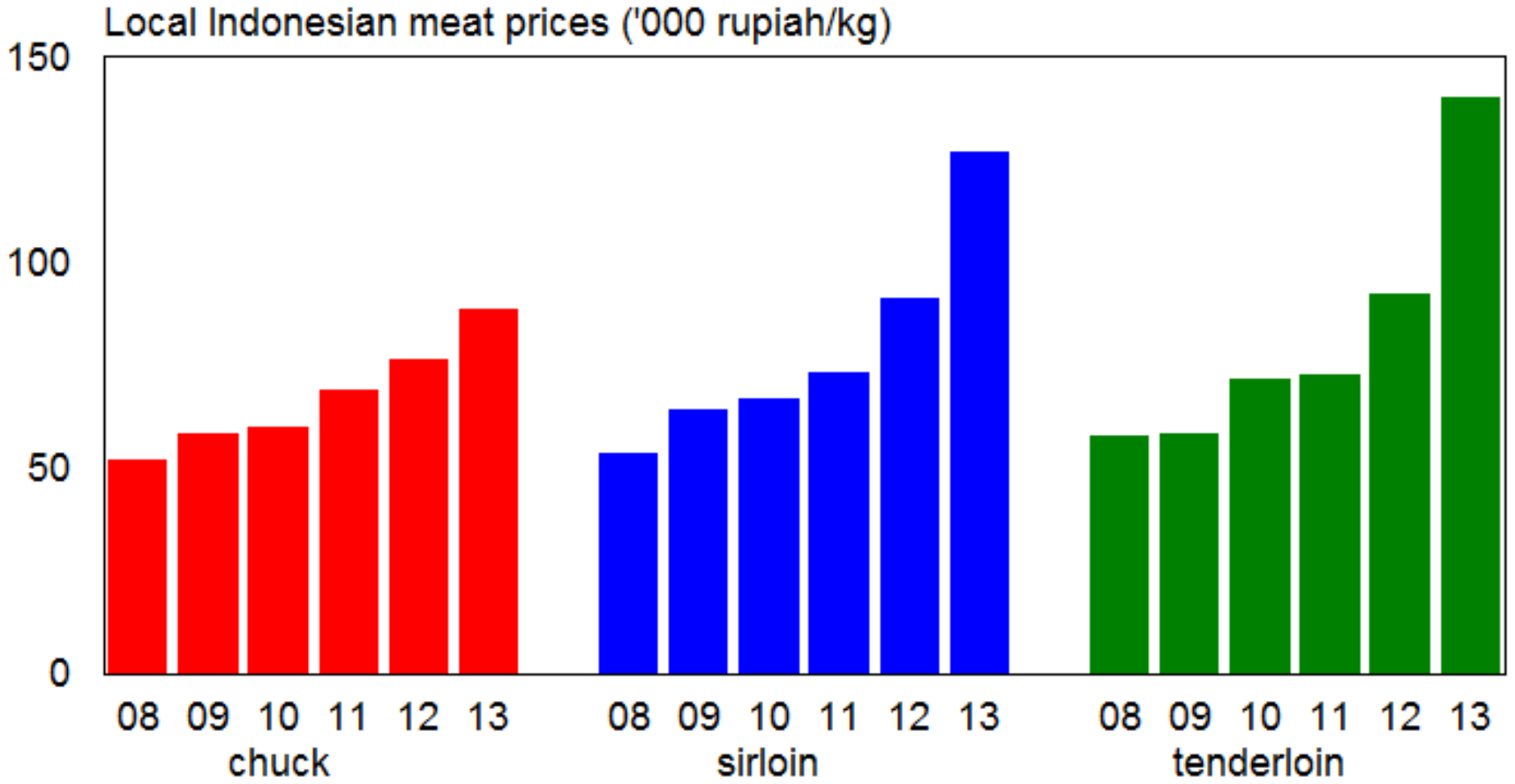
# The drive for self-sufficiency can actually reduce food security and have perverse consequences

# Indonesian self sufficiency rates in beef did increase under the quota restrictions



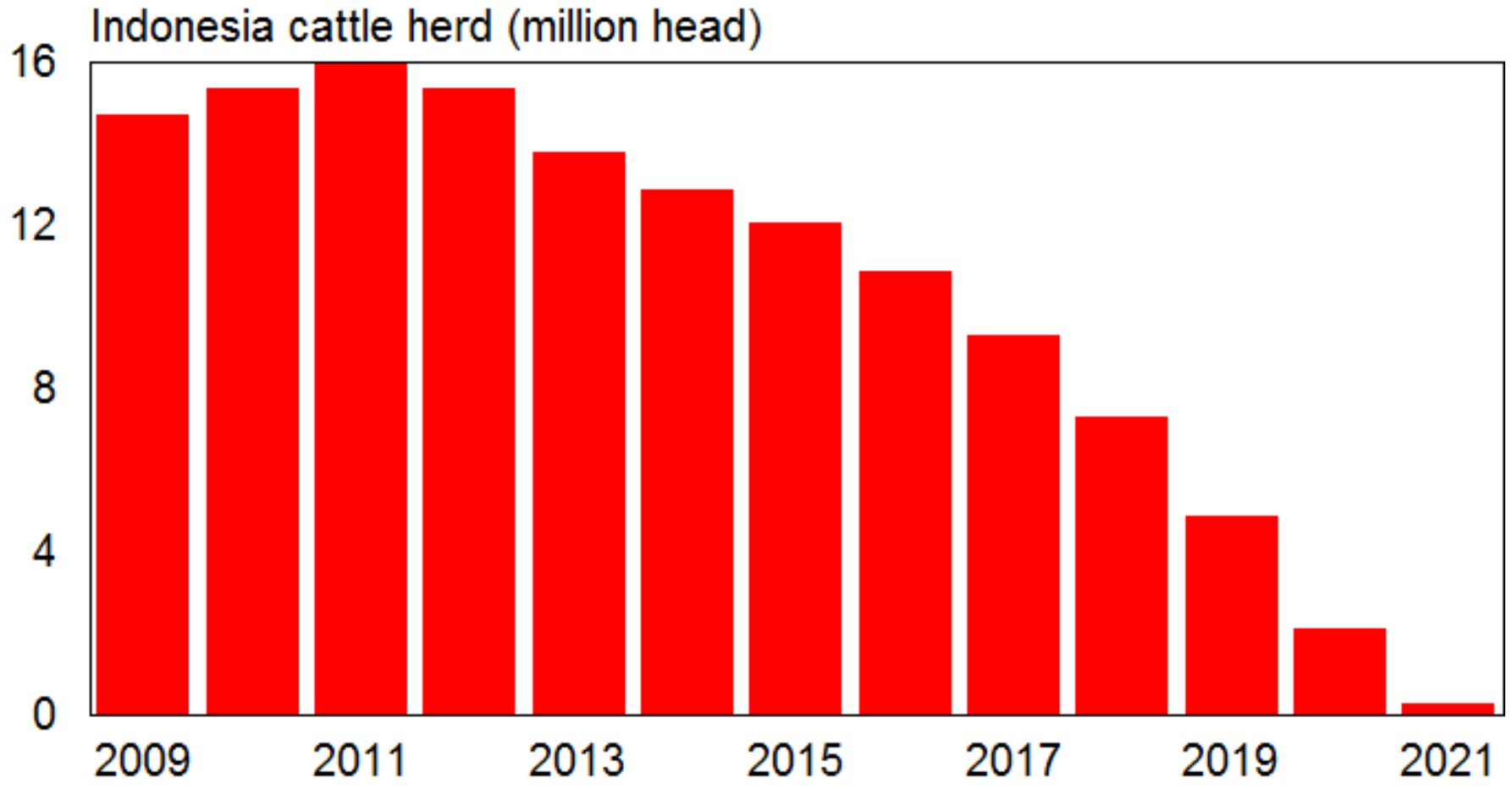
# But self sufficiency reduced food security

- Growing demand + Government import restrictions = rapid rise in beef prices (up to 180% rise since 2008)




Source: Phil Morey Monthly reports

# Cattle herd in Indonesia to disappear under a self sufficiency policy

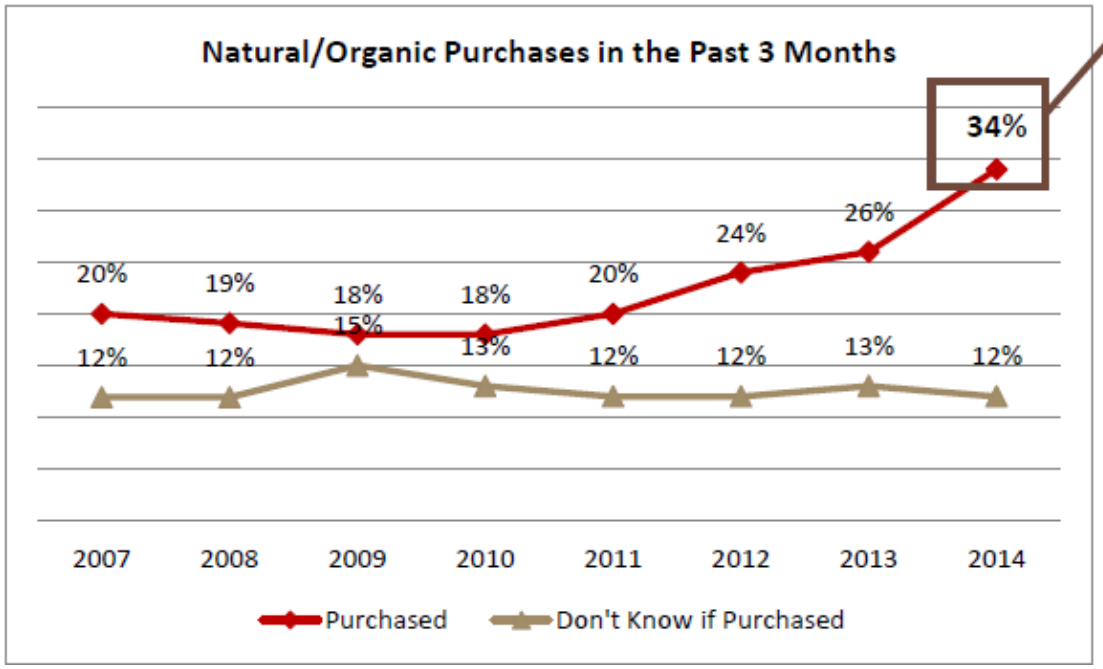



Source:Indonesia beef self sufficiency - ANZ Bank Research Report, September 2013

# Consumer trends on organics

*34% of US shoppers have bought natural and organic meat/poultry in the past three months*

*Source: The Power of Meat 2014, American Meat Institute, Food Marketing Institute*




Above-average purchasing by:

- Higher-income of $100K and above
- Shoppers ages 39 or younger
- Shoppers who spend and shop more than average
- Families with children living at home
- Often college educated and working full time
- Supermarket and/or specialty store shoppers

| Natural/organic purchasing | Total population | Lower-Income HHs ($35,000 or less) | Higher-Income HHs ($100,000 or more) |
|---|---|---|---|
| - Share of shoppers | 34% | 22% | 48% |