

The Challenge of Feeding 10 Billion People Sustainably and Equitably

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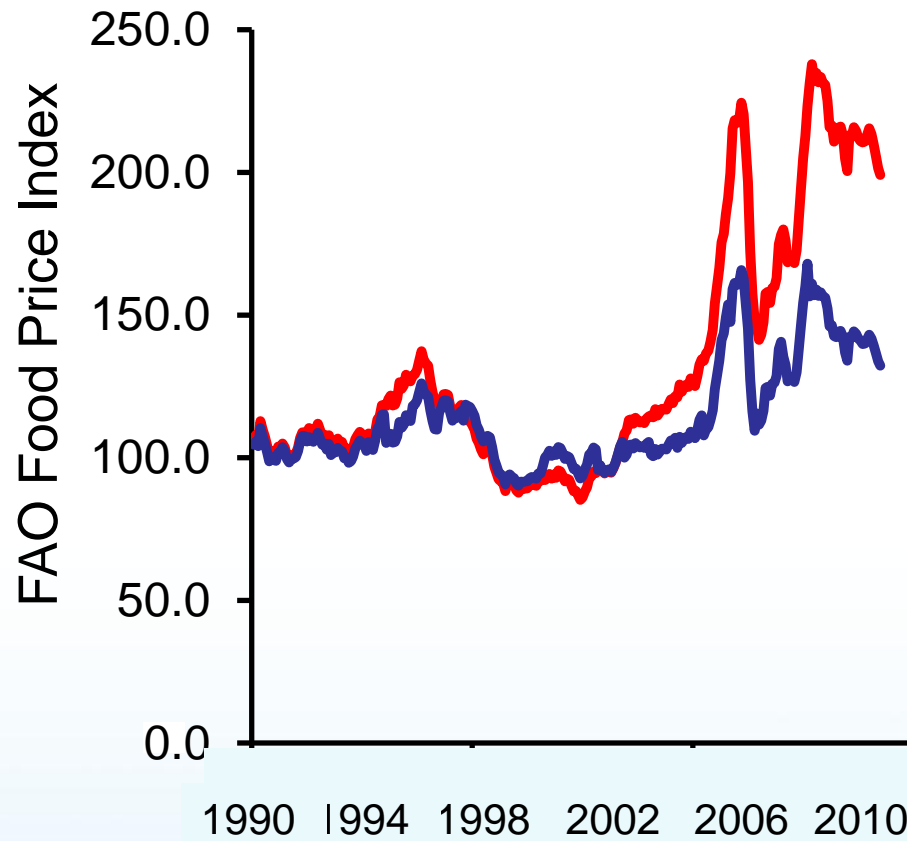


Global food system 1970-2005

- Limits to Growth and the Population Bomb
- Green Revolution
- Overproduction in the Rich World
- Development in the Poor World
 - Washington consensus
 - Progress on hunger (less on malnutrition)



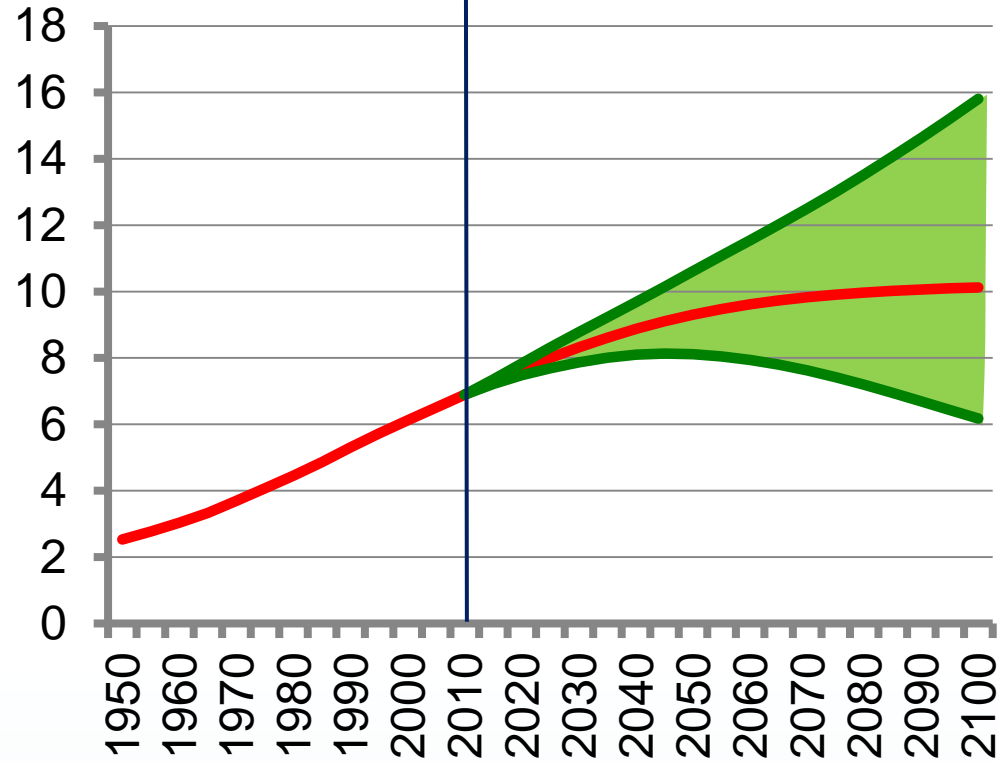
The 2008 shock



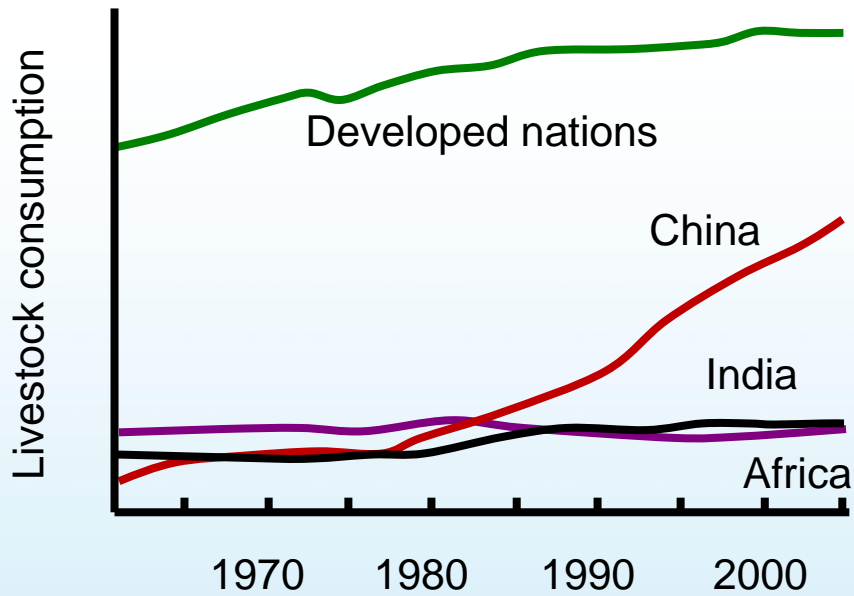
UN Food and Agriculture Organisation 2013

Proximate & ultimate causes

Population (billions)



Livestock consumption (FAO 2009)

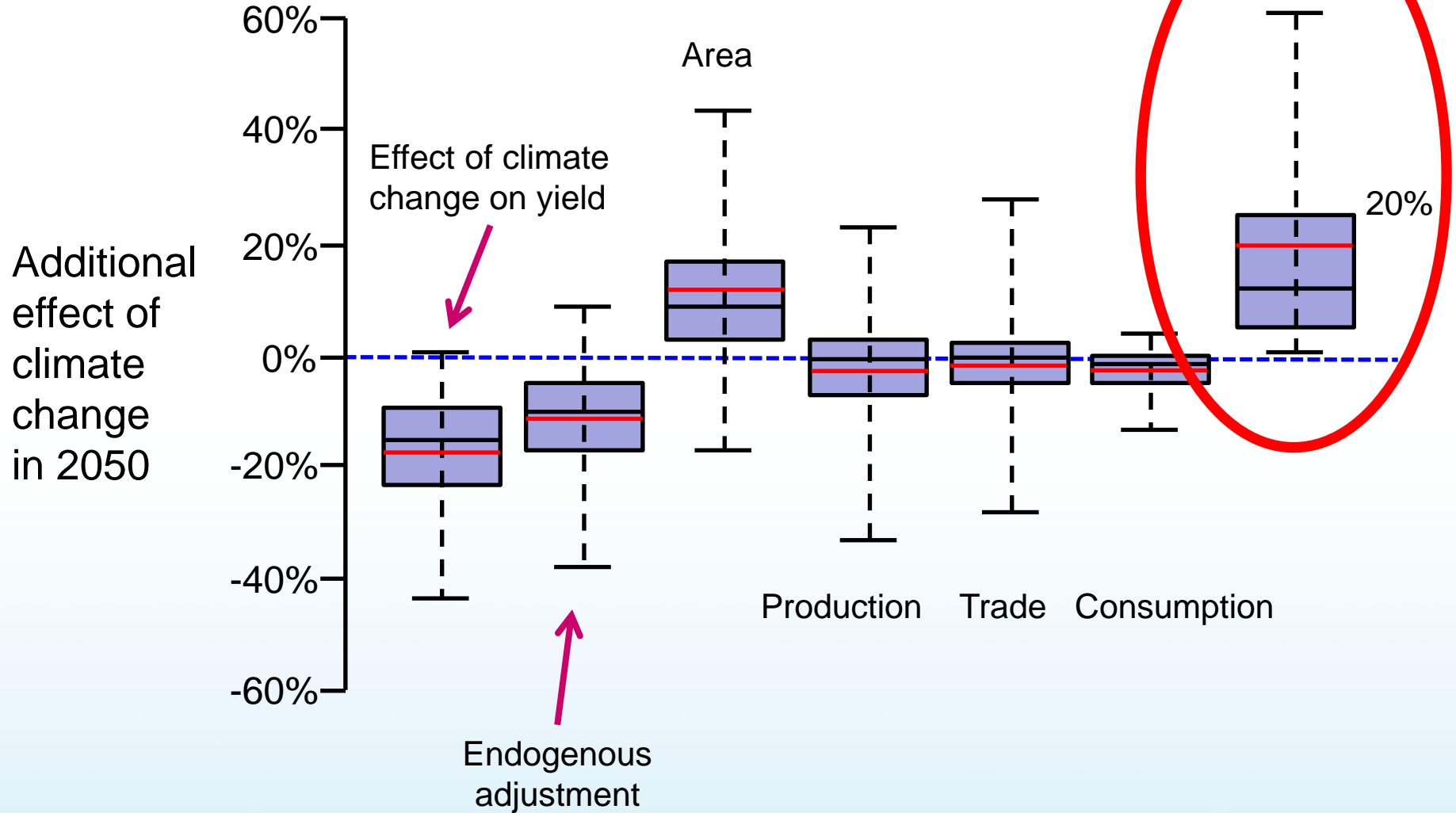


Coming challenge

- Continuing demand growth
- Urbanisation & globalisation
- Obesity & NCDs
- Supply side pressures
 - Inputs, especially water
 - Land: competition and degradation
- Resilience to shocks
- Climate change

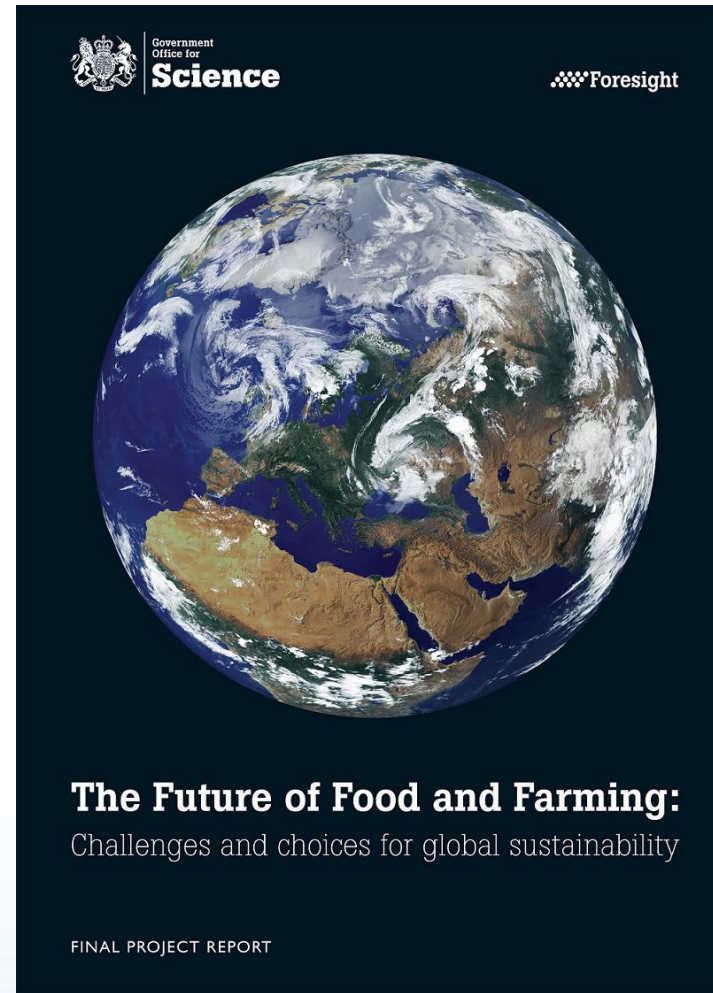


AgMip Project Results Dec 2013



Responses

- The challenge
 - Macro-scale
 - Ending hunger
 - Sustainable food systems
- Endogenous responses
- Market failures and policy interventions



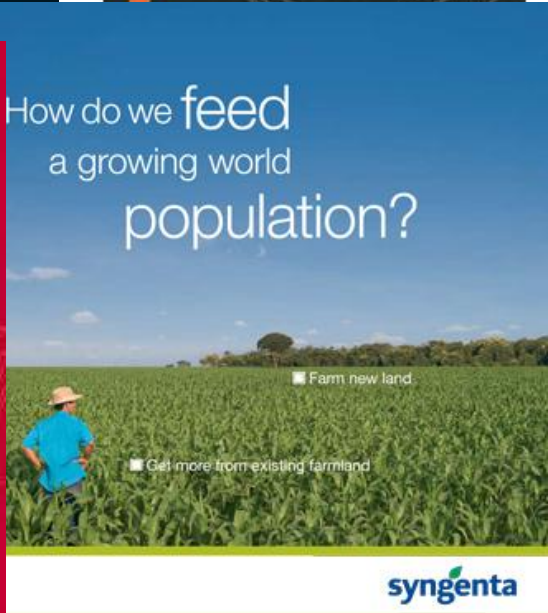
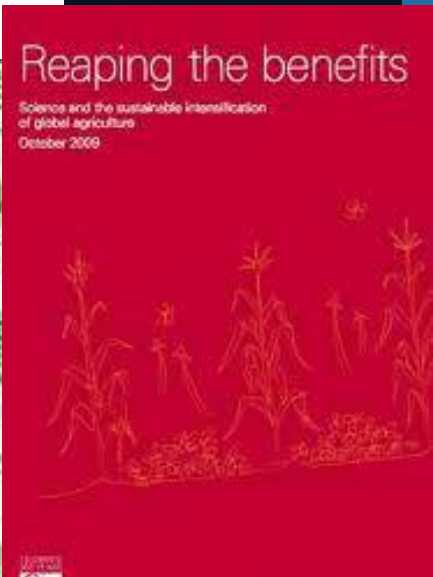
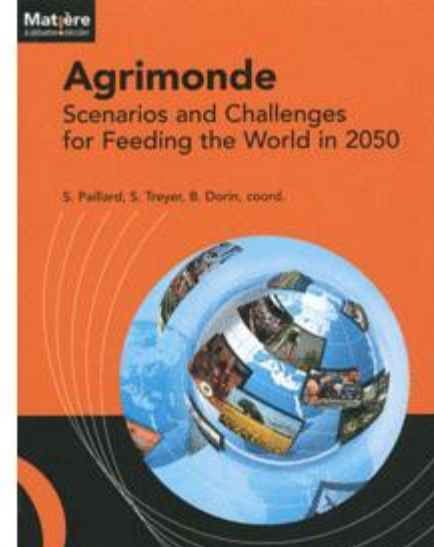
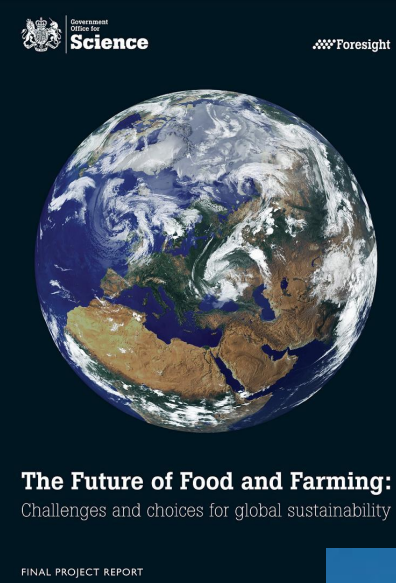
Report available at

<http://www.bis.gov.uk/foresight>

See also, Godfray *et al.* 2010, *Science*
327, 812-8

Supply side response

- Sustainable intensification



A Wolf in Sheep's Clothing?

An analysis of the 'sustainable intensification' of agriculture

October 2012



people on our planet. How do we provide... we believe the answer lies in the... and better ways to protect crops from... farmland and take less new land into... the world to meet the challenge of the... www.growmorefromless.com

Bringing plant-potential to life

Sustainable intensification - an oxymoron

Sustainable Intensification: a new paradigm

1. Action on all fronts
2. Sustainable response to price signals
3. Sustainability as important as yield
4. Agnostic and catholic
5. Co-ordinate agenda:
 - a. Nutrition
 - b. Sustainable development
 - c. Animal welfare
 - d. Biodiversity
 - e. etc.



POLICYFORUM

AGRICULTURE

Sustainable Intensification in Agriculture: Premises and Policies

T. Garnett,¹ M. C. Appleby,² A. Balmford,³ I. J. Bateman,⁴ T. G. Benton,⁵ P. Bloomer,⁶ B. Burlingame,⁷ M. Dawkins,¹ L. Dolan,¹ D. Fraser,⁸ M. Herrero,⁹ I. Hoffmann,⁷ P. Smith,¹⁰ P. K. Thornton,¹¹ C. Toulmin,¹² S. J. Vermeulen,¹¹ H. C. J. Godfray^{1*}

Clearer understanding is needed of the premises underlying SI and how it relates to food-system priorities.

Food security is high on the global policy agenda. However, the way SI interfaces with other major food-system priorities as to raising productivity, SI does not mean

Garnett *et al.* 2013, *Science* **341**, 33-34.

See also report available at

<http://www.futureoffood.ox.ac.uk/sustainable->

Sustainable Intensification: where are the market failures

- Closing the yield gap
 - Human and social capital – revitalising extension
 - Data, knowledge and ICT
 - Facilitating economic environments
 - Incentivising sustainability and resource efficiency (including reducing waste, leap-frogging technology)
- Generating new knowledge
 - Investment in agricultural research (high-tech & low tech; neglected crops, breeds and topics)
 - Not just yields
 - Climate change adaptation and mitigation
 - Better understanding of economics and development
 - Game-changers?

Demand side

- Population
- Consumption & waste
 - Sustainable consumption growth in LDCs
 - Multiple wins: health, food security & environment
 - Levers of diet change in the world
 - The public discourse



Governance challenges



- Multifunctional landscapes
 - Biofuels
 - Climate-smart agriculture
- Common goods and bads
 - E.g. fisheries and carbon
- Interconnected bread baskets: making globalisation work
 - Fair trade
 - Trust in time of crisis
- Agriculture for growth or growth for agriculture
- Supporting rich world rural economies without undermining those in the poor

Conclusions

- Food system entering uncharted waters: the past is a poor guide to the future
- Action needed on all fronts
- Sustainable intensification (even if you call it something else) essential
- Reverse drop of investment in agricultural science – low- as well as high-tech
- New thinking on consumption and governance
- We fail on food we fail on everything

