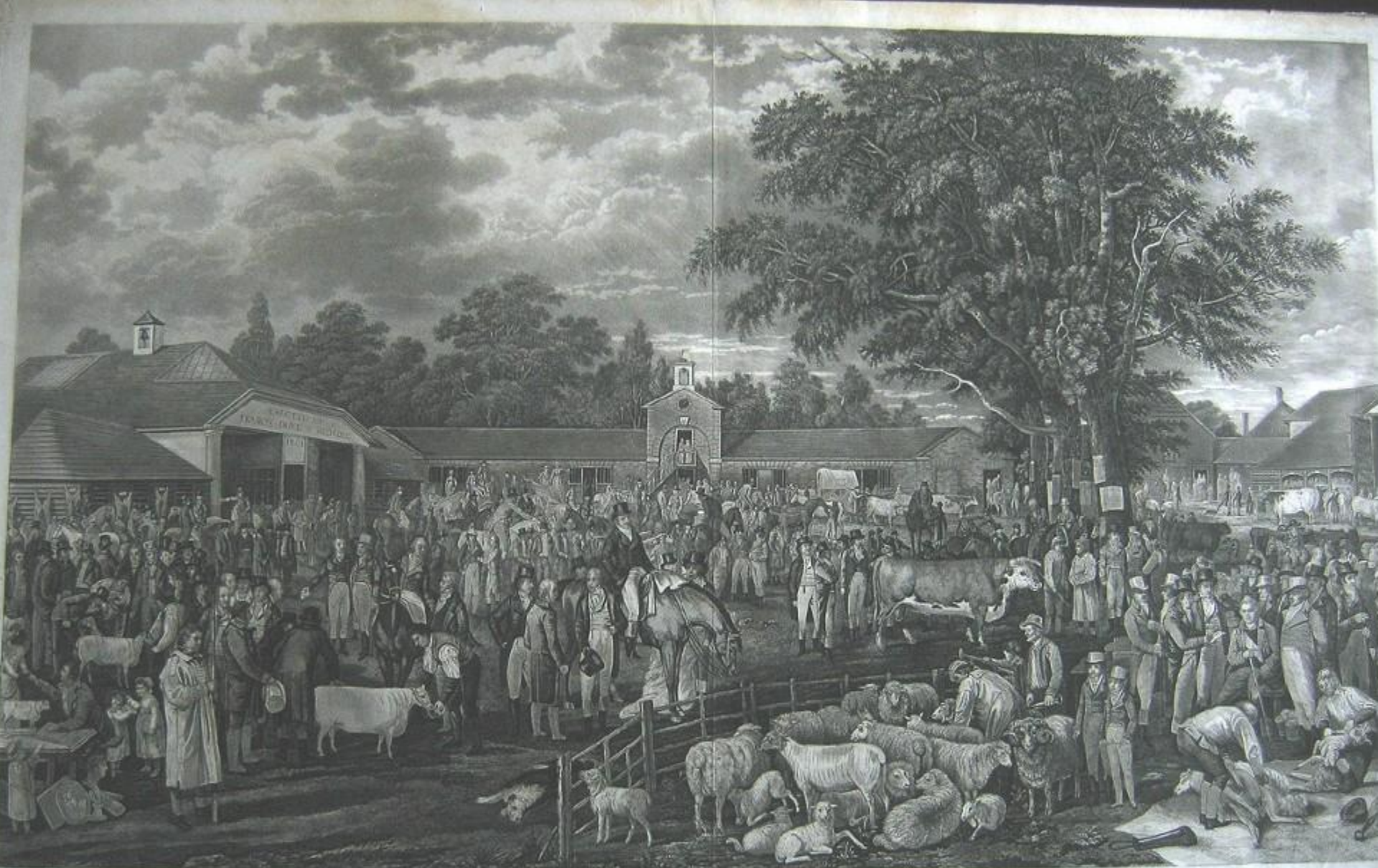




Challenges and Opportunities for the
Next Generation of Farmers against
the backdrop of Climate Change

Henry Cator OBE, FRICS, ARAgS, DL
Chairman



WOBURN SHEEPSHEARING.
Adapted by *Amos*
 His Grace the Duke of Bedford.
By the *Genl. and* *Admt. and* *very* *honble* *Genl.*
 GEORGE GARRARD.

The present scene is a very interesting one, and is a very good example of the art of engraving. The scene is a very busy one, and is a very good example of the art of engraving. The scene is a very busy one, and is a very good example of the art of engraving. The scene is a very busy one, and is a very good example of the art of engraving.

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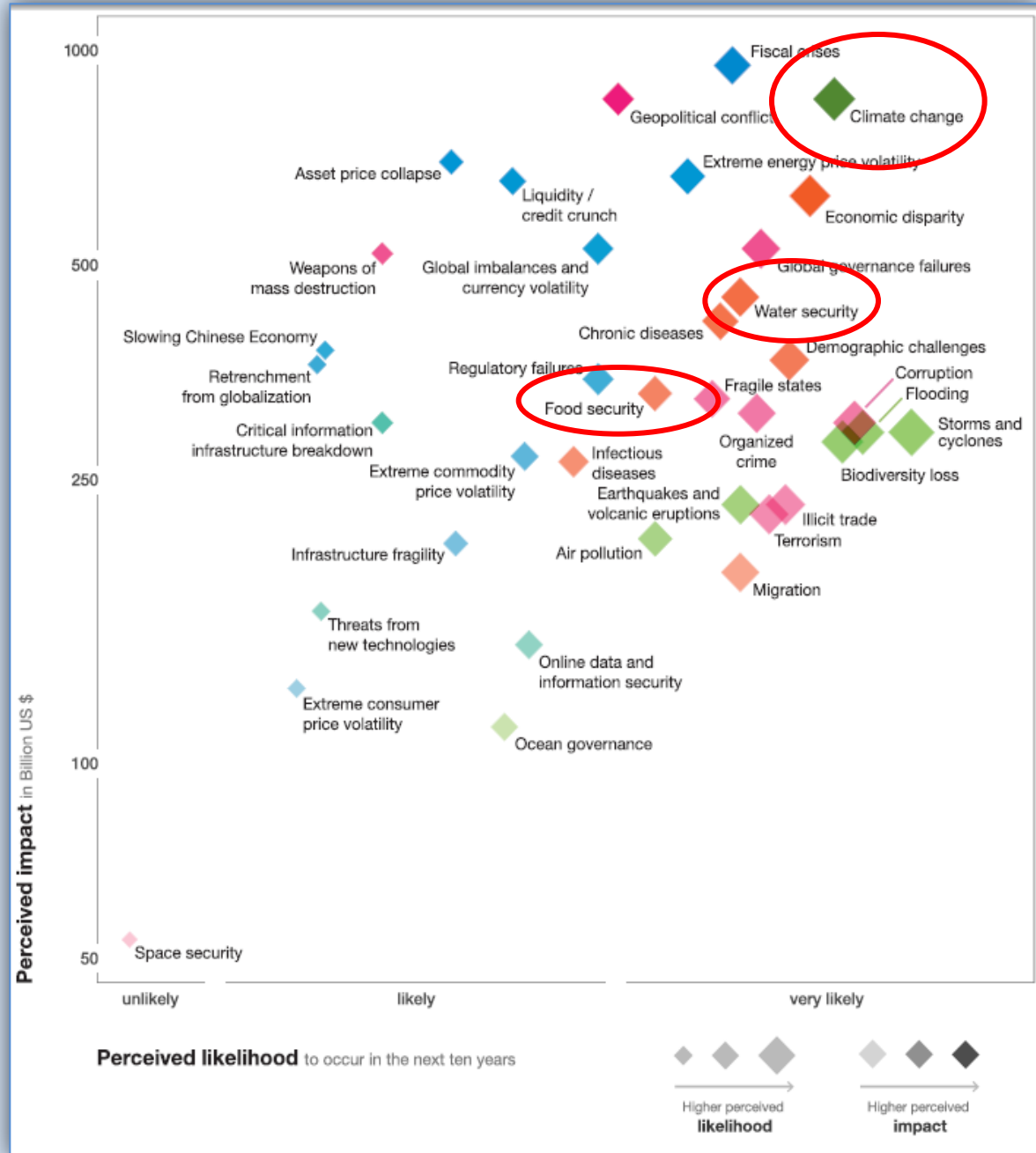
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Perceived Risks

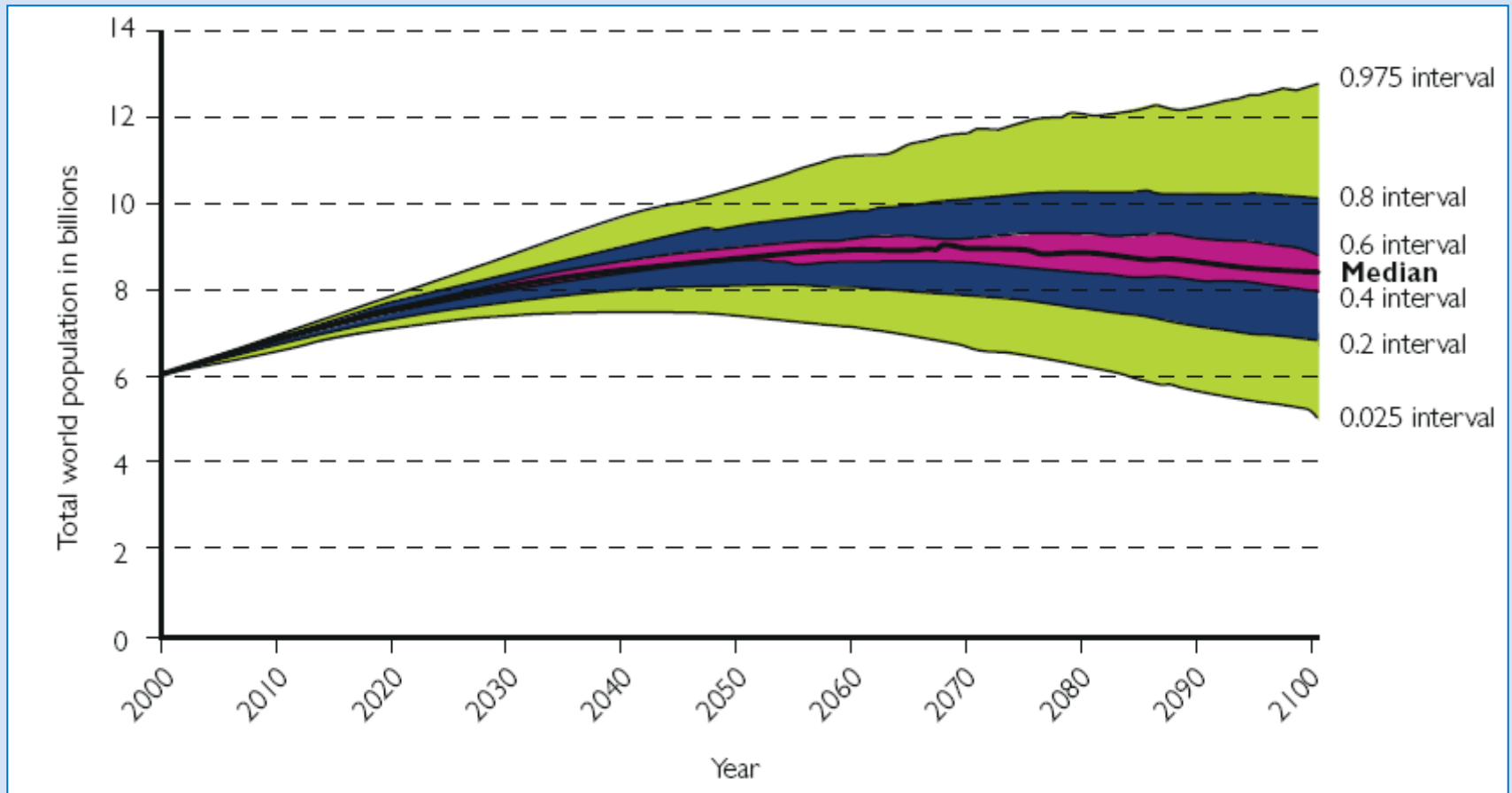
Perception data from the World Economic Forum's Global Risk survey.

Global Risks Landscapes 2011



Total world population in billions

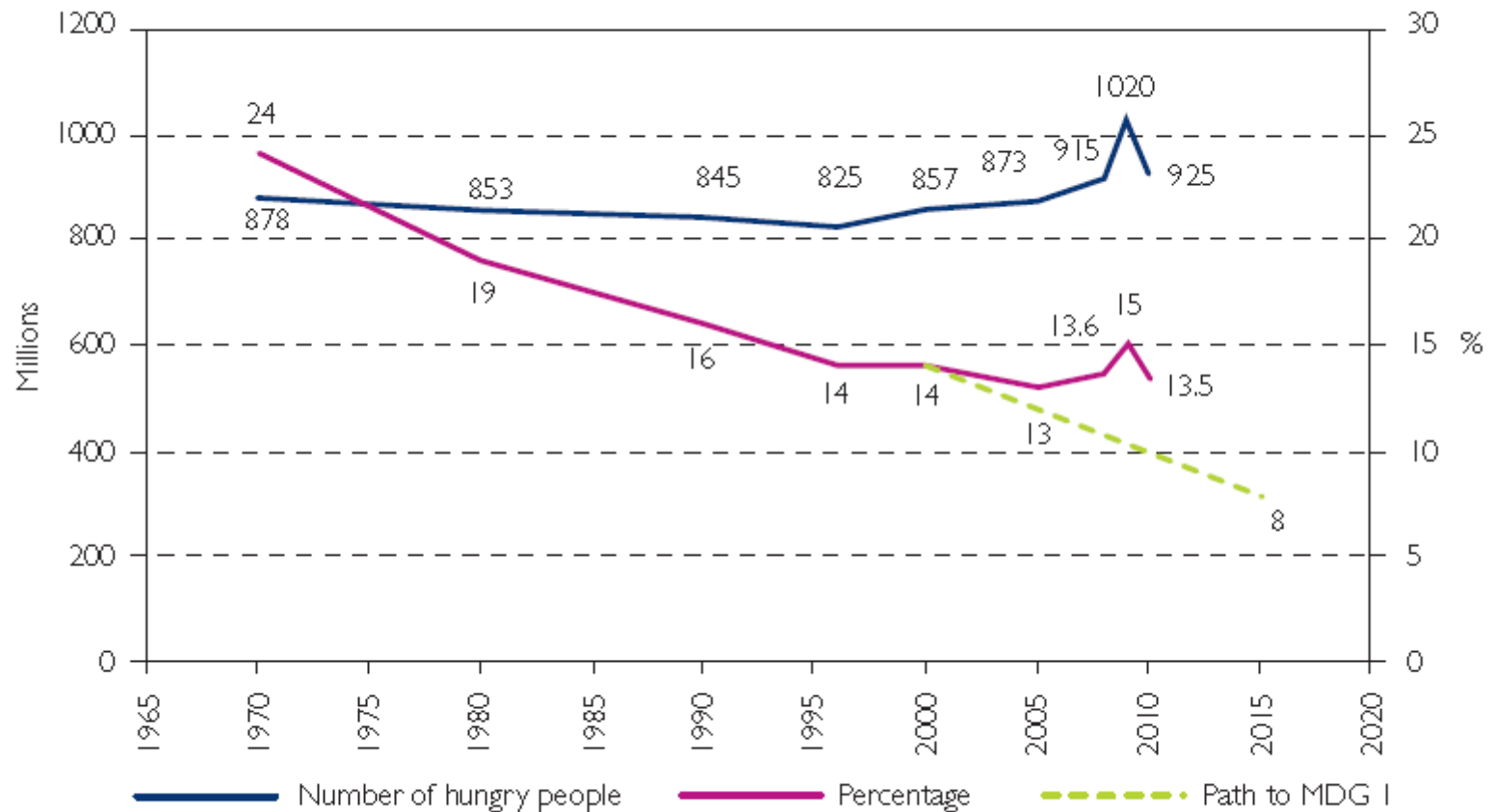
Pink: 20%; Blue: 60%; Green: 95%



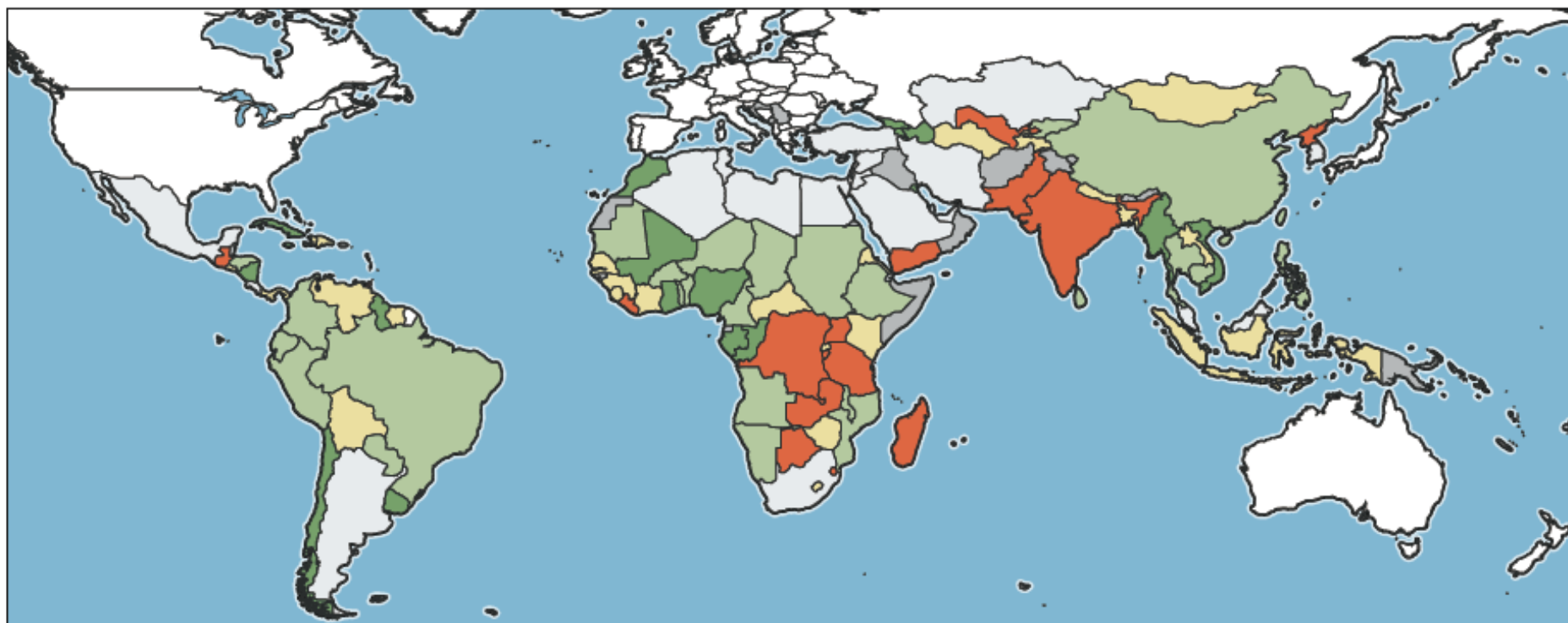
LUTZ, W. & SCHERBOV, S. 2008. Exploratory Extension of IIASA's World Population Projections: Scenarios to 2300. International Institute for Applied Systems Analysis.

Millennium Development Goal 1

Figure C1 1.3: Undernourishment data versus the MDG target



Source: Oxfam (2010). Data cited from FAO Hunger Statistics (from 1969 to 2006); UN (2009)



Source: FAOSTAT 2010 (www.fao.org/hunger)

Note: Target 1C of the first Millennium Development Goal seeks to halve, between 1990 and 2015, the proportion of people who suffer from hunger. The calculation of progress compares the latest available country-level information on the prevalence of undernourishment (2005-07) with the rates that existed in 1990-92 (the base period for the hunger target). The projection for 2015 assumes that the trends between both periods continue in the future. Developed countries are not considered.

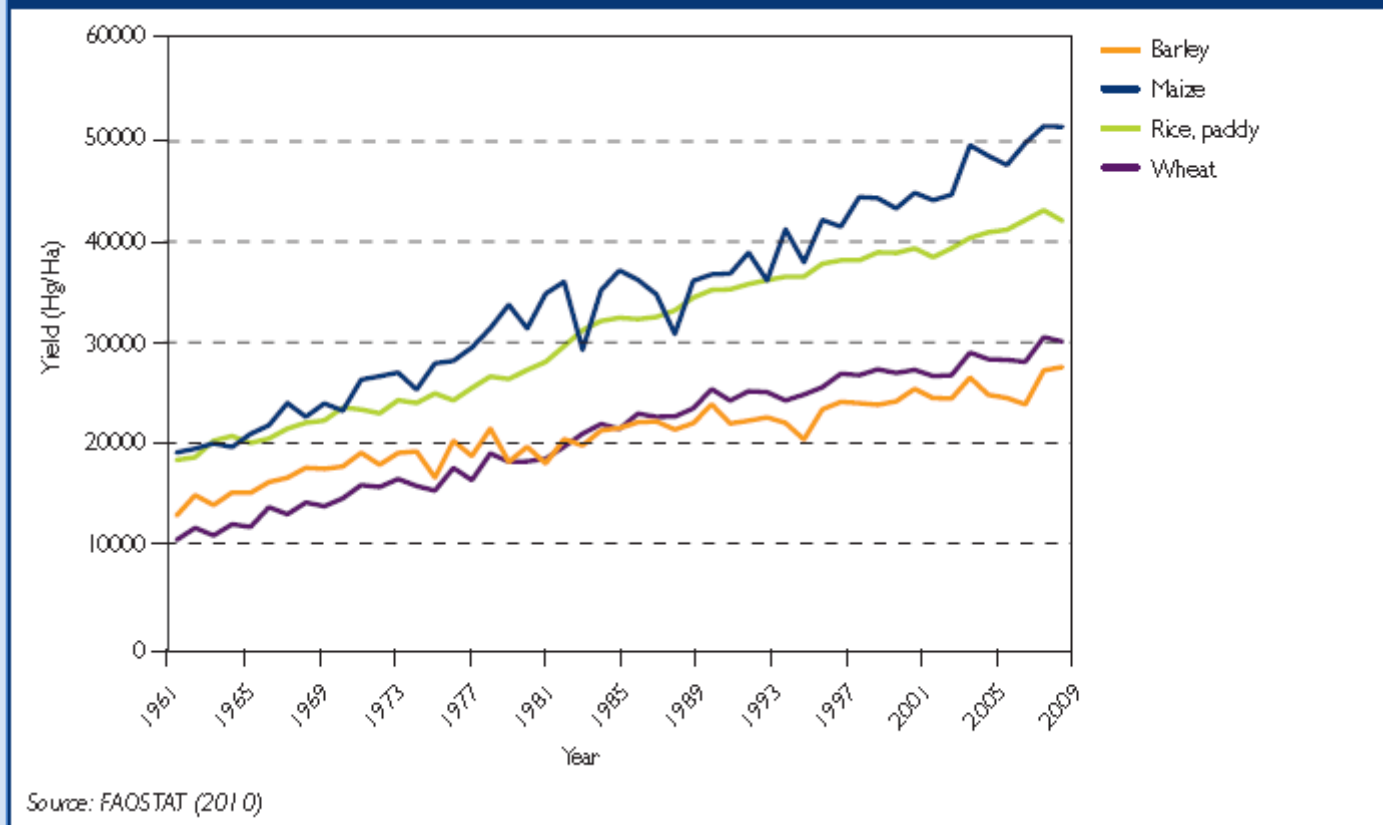
Progress achieved (1990-92 to 2005-07)

- Already met MDG 1 or very close to meeting the target
- Progress sufficient to reach MDG 1 if prevailing trends persist
- Progress insufficient to reach MDG 1 if prevailing trends persist
- No progress or deterioration
- Not relevant - prevalence of hunger was below 5% in 1990
- Missing or insufficient data

The designations employed and the presentation of material in the map do not



Figure 4.1: Global changes in yield (Hg/ha)¹⁵⁶ for major cereals, 1961–2009



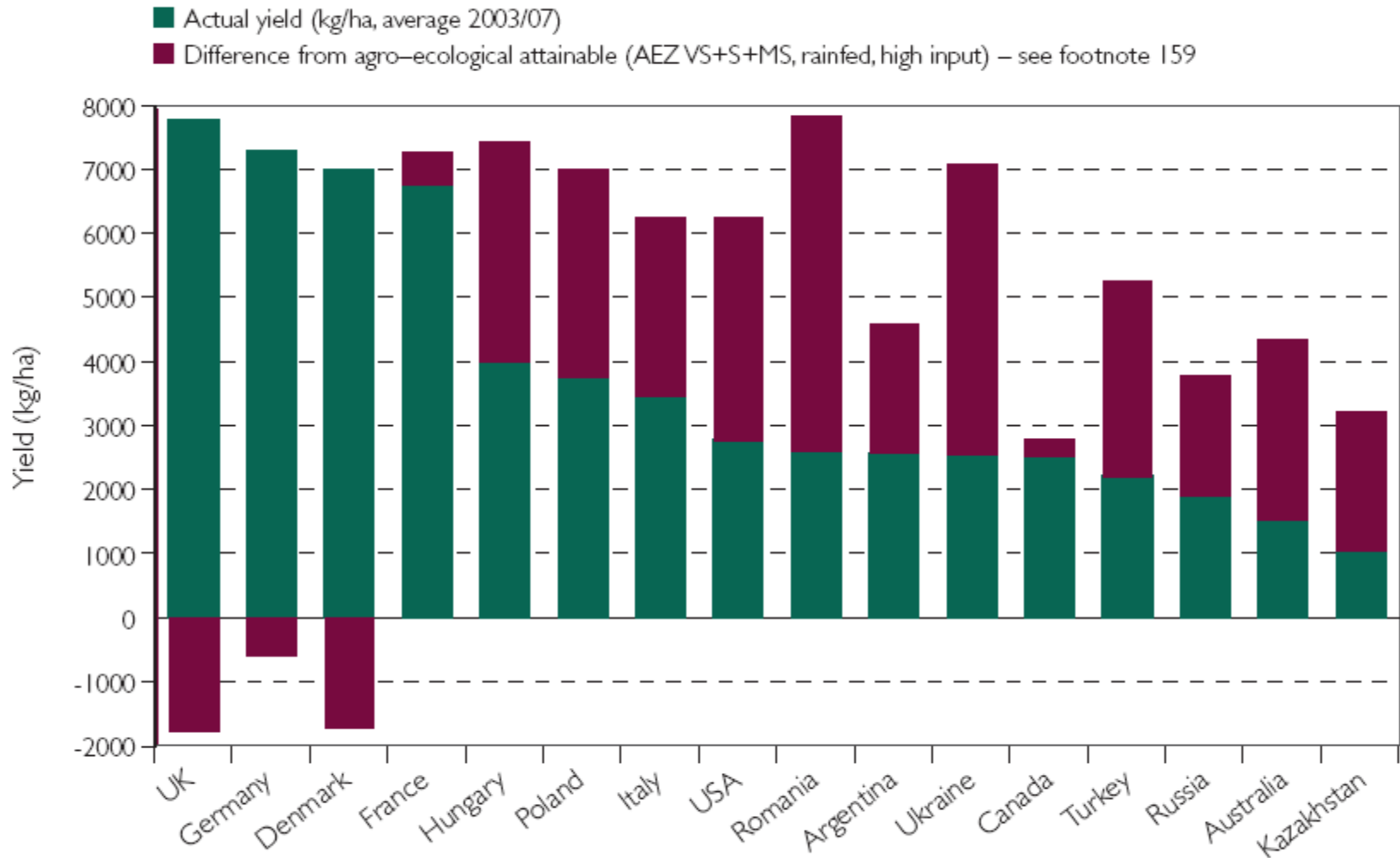
While maize yields continue to rise, wheat yields are beginning to decline as yield ceilings are reached on an increasing proportion of agricultural land. The rates of yield gains for major rice-producing countries in South East Asia have also been variable. For example, much of the increase in China and Indonesia occurred during 1960–90, while in Bangladesh and Vietnam yields have shown greater improvement between 1990–2007.

The last 50 years and the next 50 ?

	1950	2000	2050
World population	3.0bn	6.5bn = 117%	9.5bn = 46%
Area of cereals	650m ha	725m ha = 12%	? [1 bn ha?]
Yield per hectare	1.4 tonne	3.1 tonne = 121%	? [4.6 tonne?]
Kg grain per capita	300kg	350kg = 17%	350kg = 0%

Productivity can be improved sustainably using existing knowledge

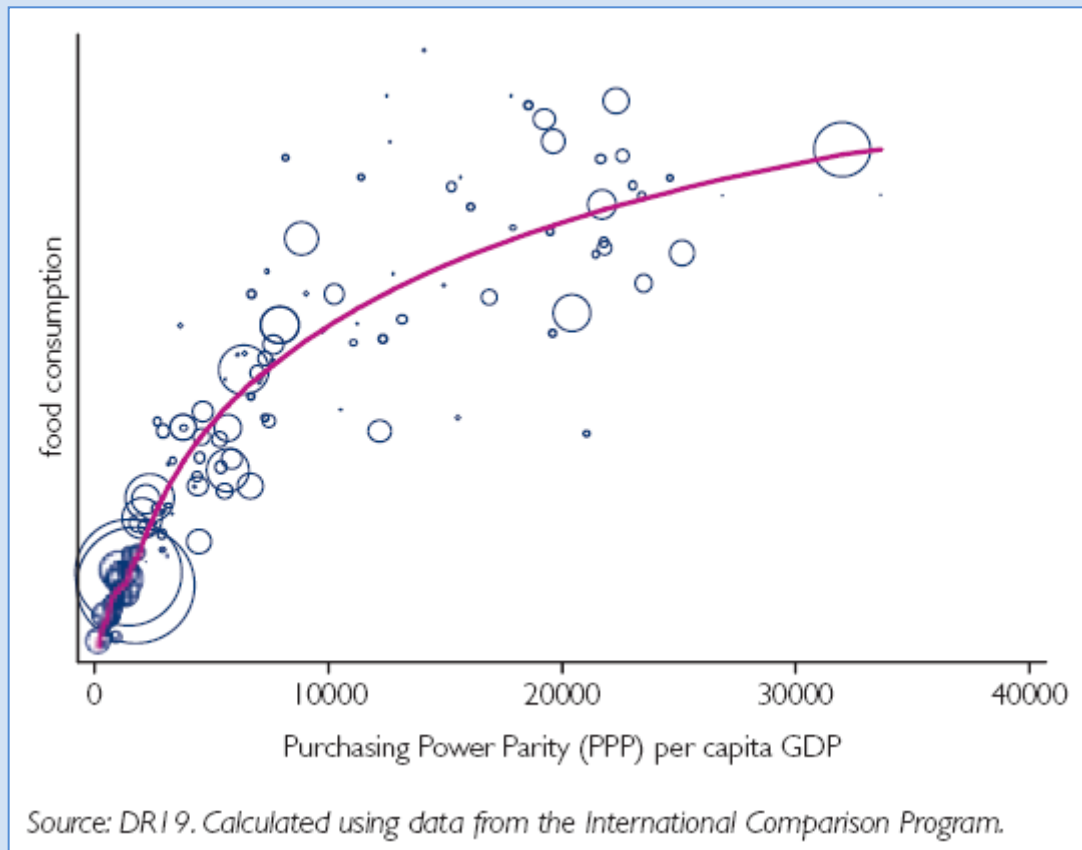
Figure 4.3: Actual and agro-ecologically attainable yields for wheat in selected countries

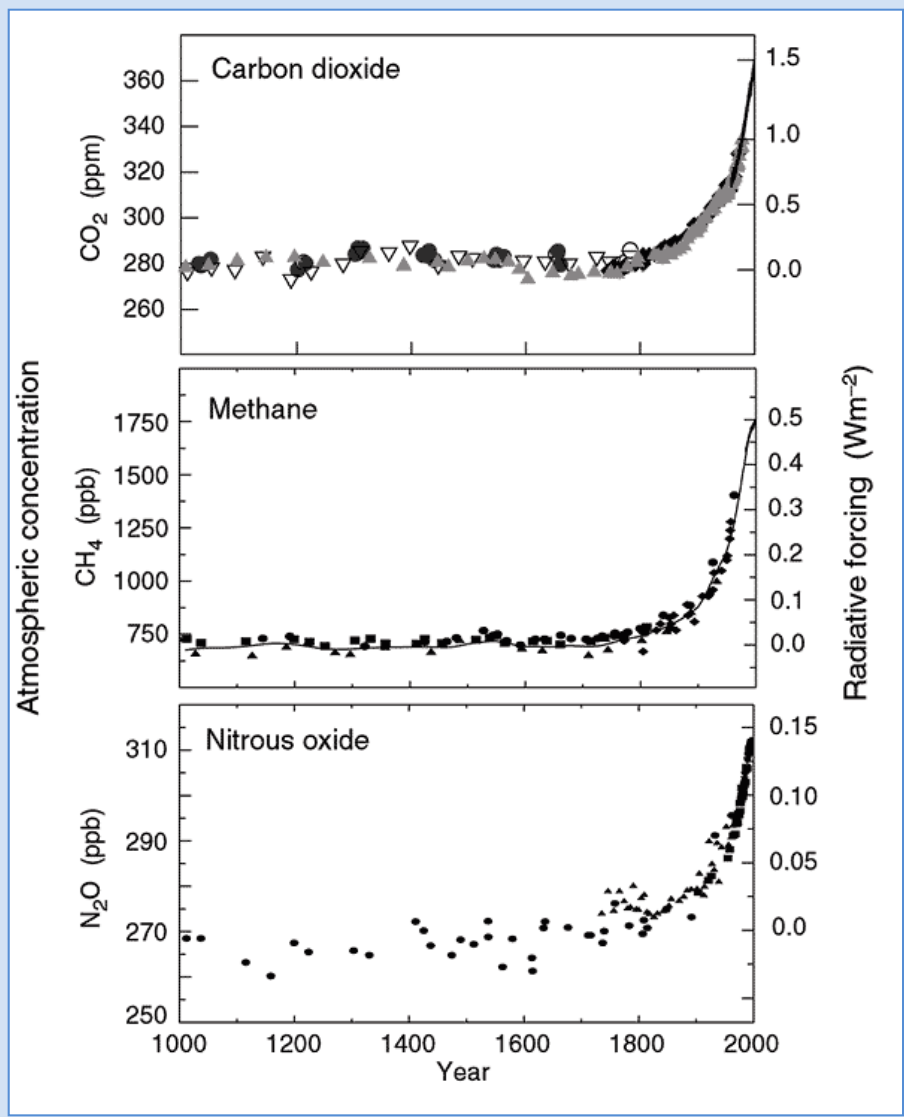


Source: Bruinsma (2009)

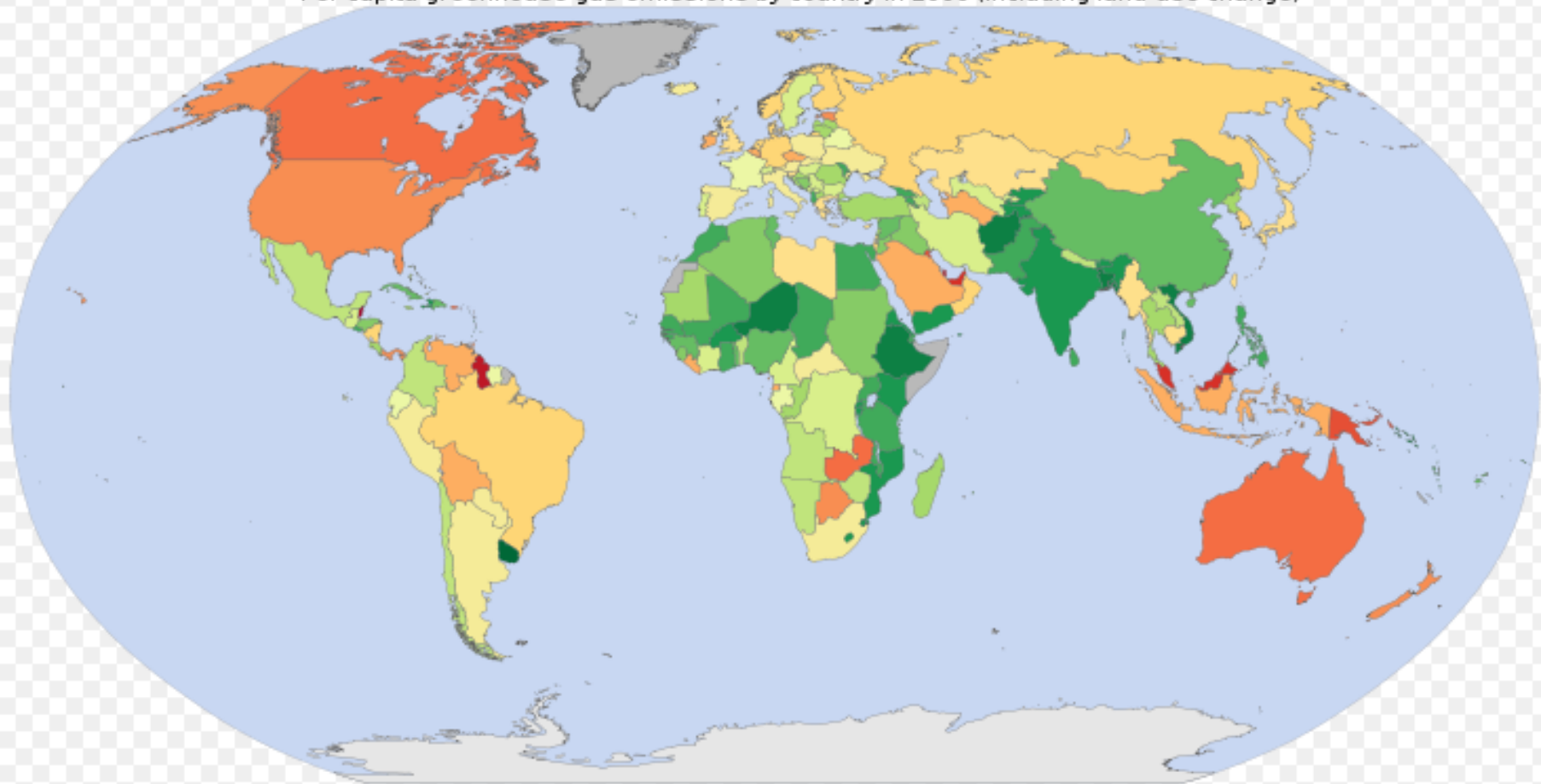
Examples of drivers of change

Relation between per capita food consumption, and per capita purchasing power





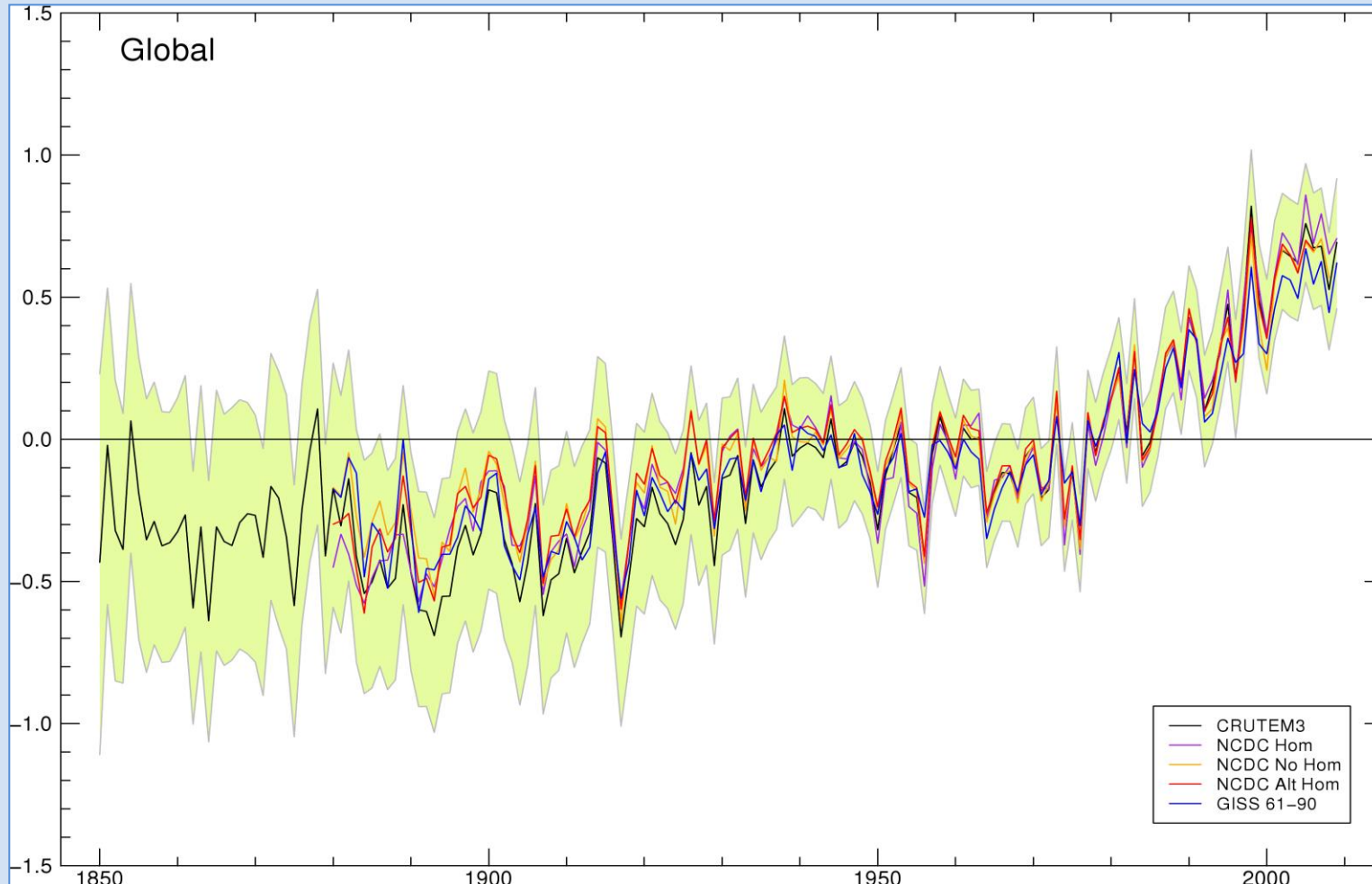
Per capita greenhouse gas emissions by country in 2000 (including land-use change)



Data: World Resources Institute/CAT
Blank map: Cartology & others

no data 0 93.9 tonnes CO₂e per capita

Climatic Research Unit (CRU) results and those from US climate centres

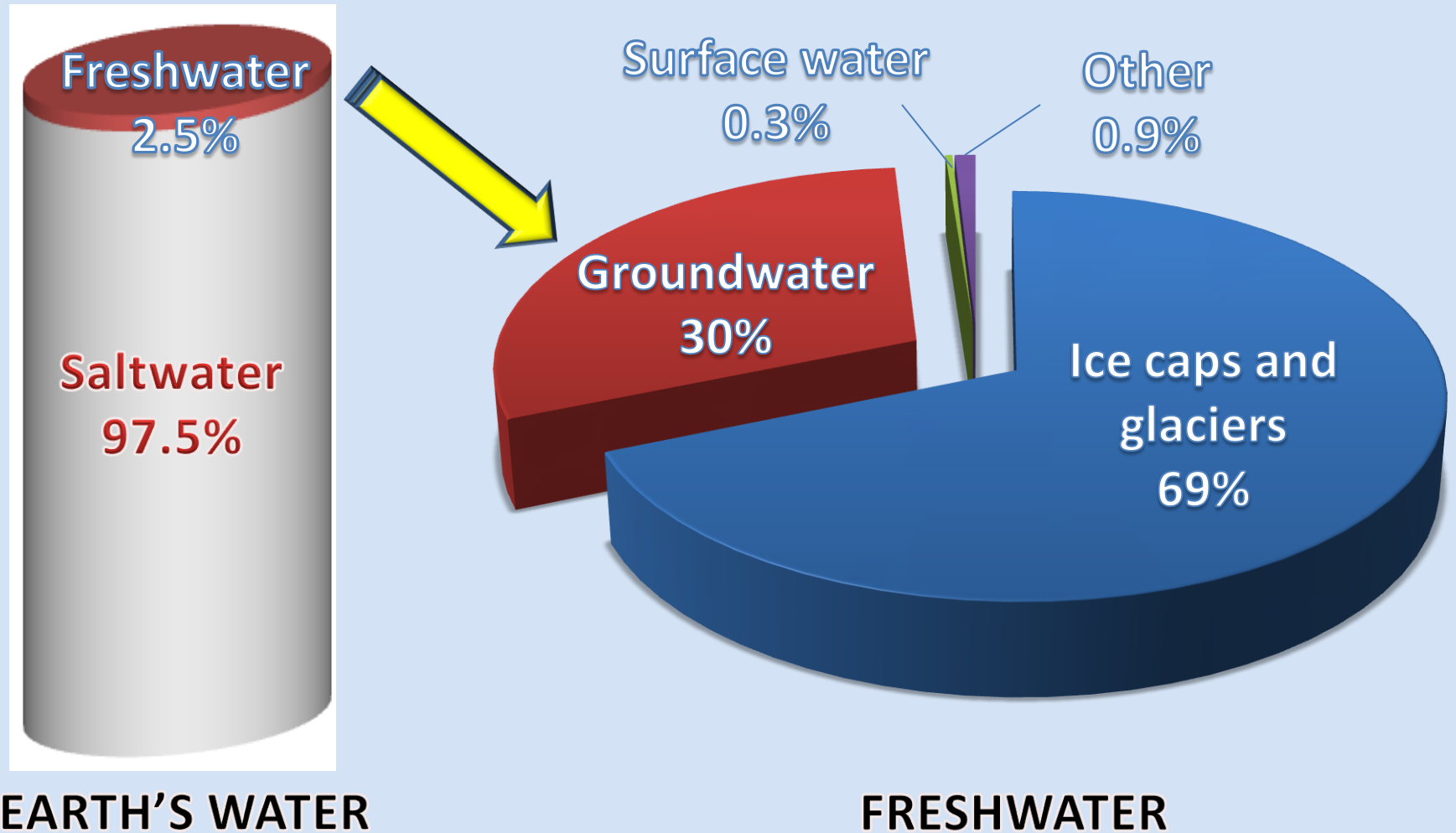


WATER

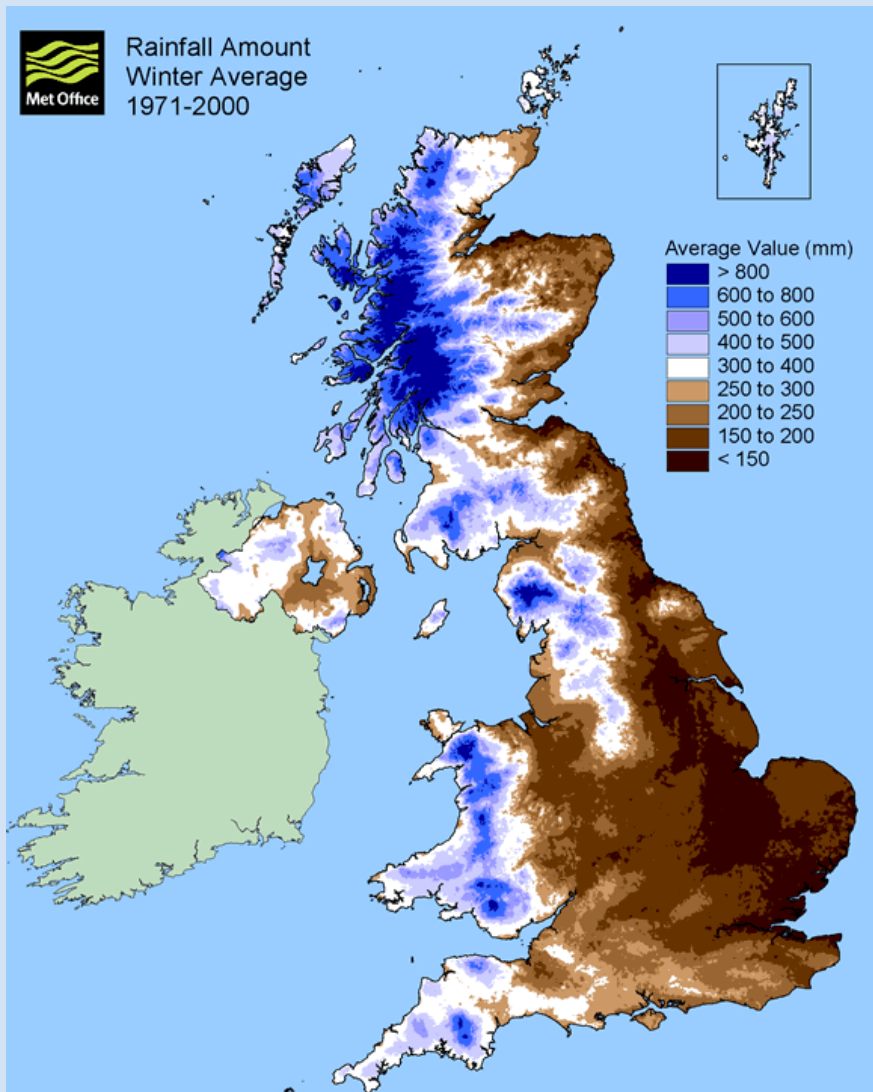


Picture from rst.gsfc.nasa.gov

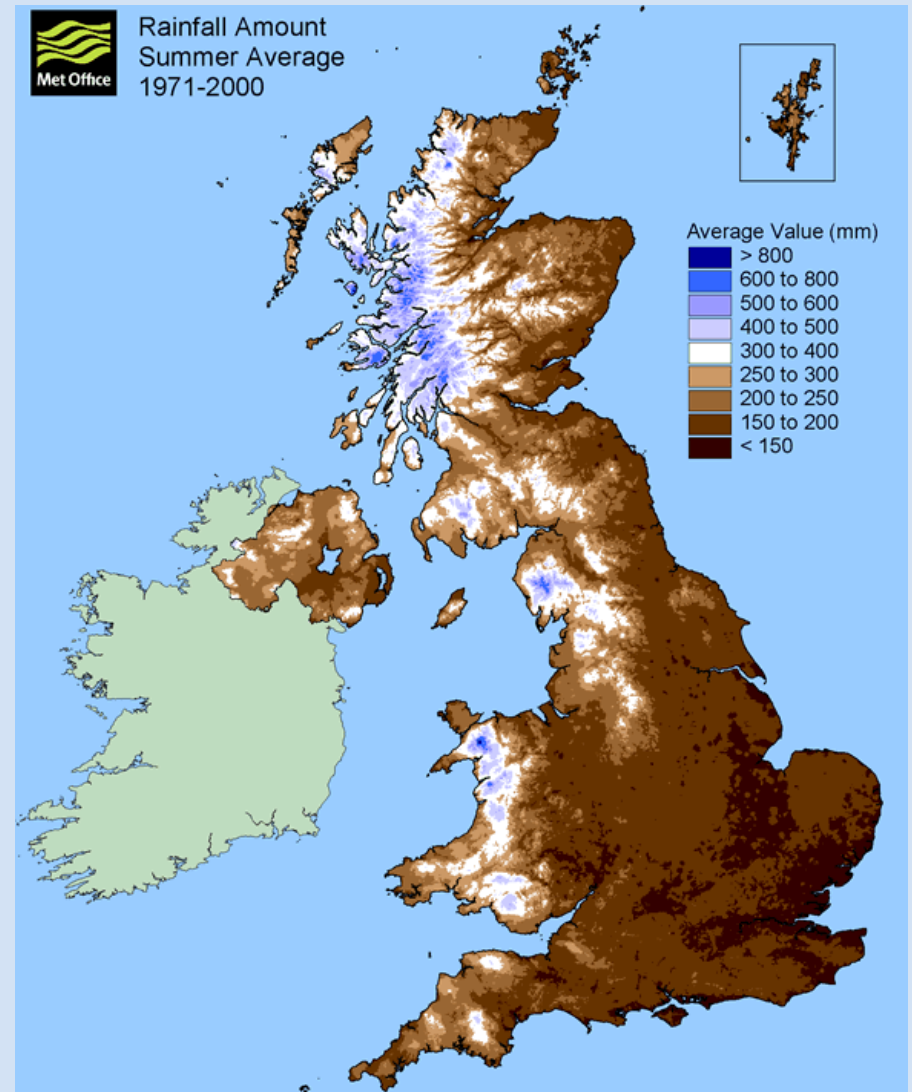
Global water abundance



UK Rainfall

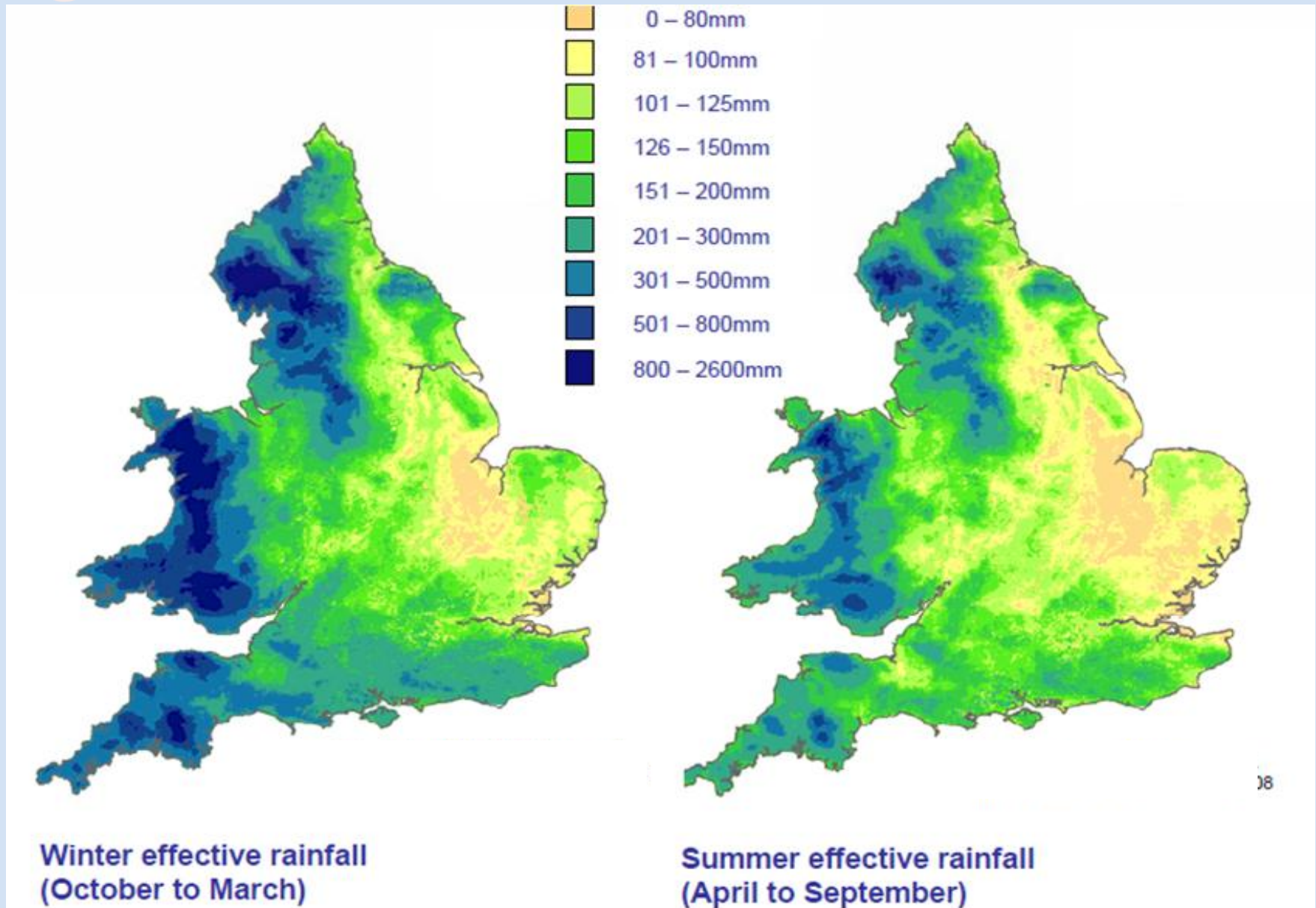


Average winter rainfall



Average summer rainfall

England and Wales freshwater resources

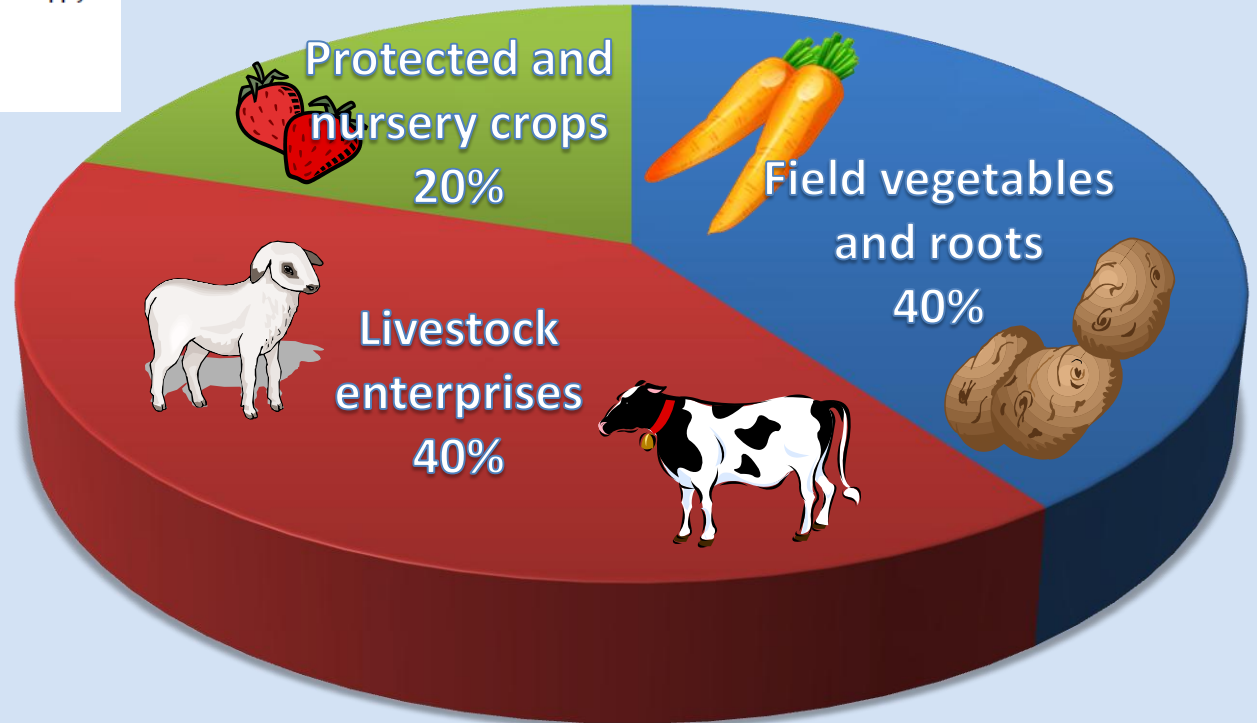
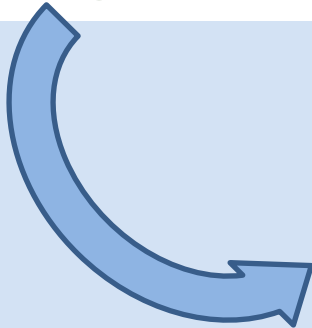
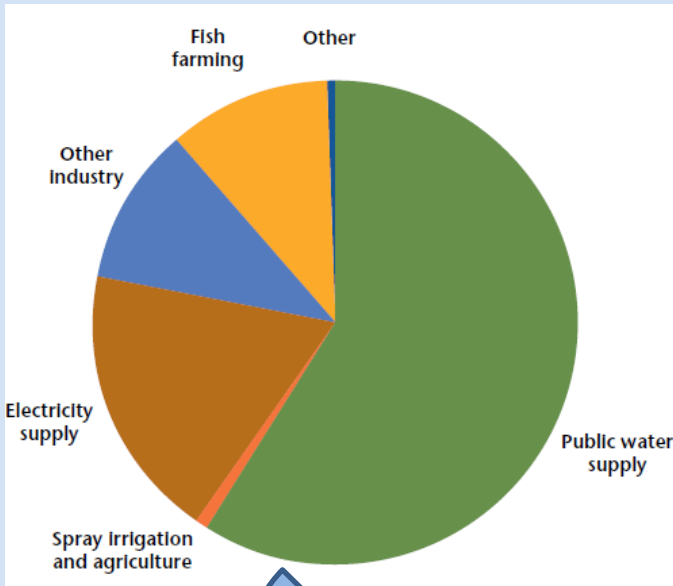


Water and agriculture in England

Where

does the water

go?



General impacts on agriculture

Phenomenon	Agriculture
Heavy precipitation events	<ul style="list-style-type: none">•Damage to crops•Soil erosion•Inability to cultivate land due to waterlogging of soils
Higher variability of precipitation events, including increased droughts	<ul style="list-style-type: none">•Land degradation•Lower yields/crop damage and failure•Increased livestock deaths•Increased risk of wildlife
Increased temperatures	<ul style="list-style-type: none">•Less water available for agriculture, more irrigation needed•Changes in growing season•Changes in species composition, organism abundance, productivity and phenological shifts

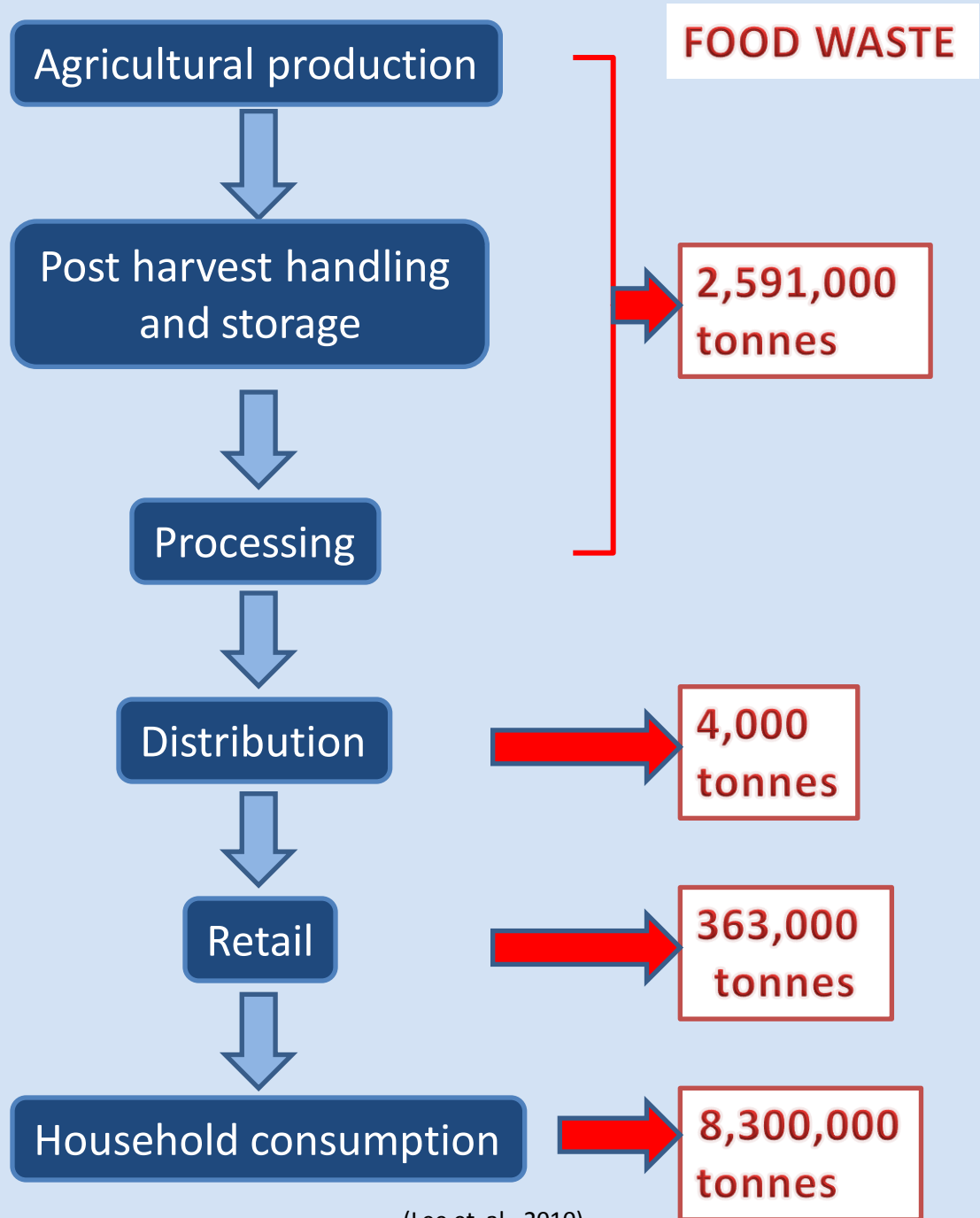
FOOD PRODUCTION

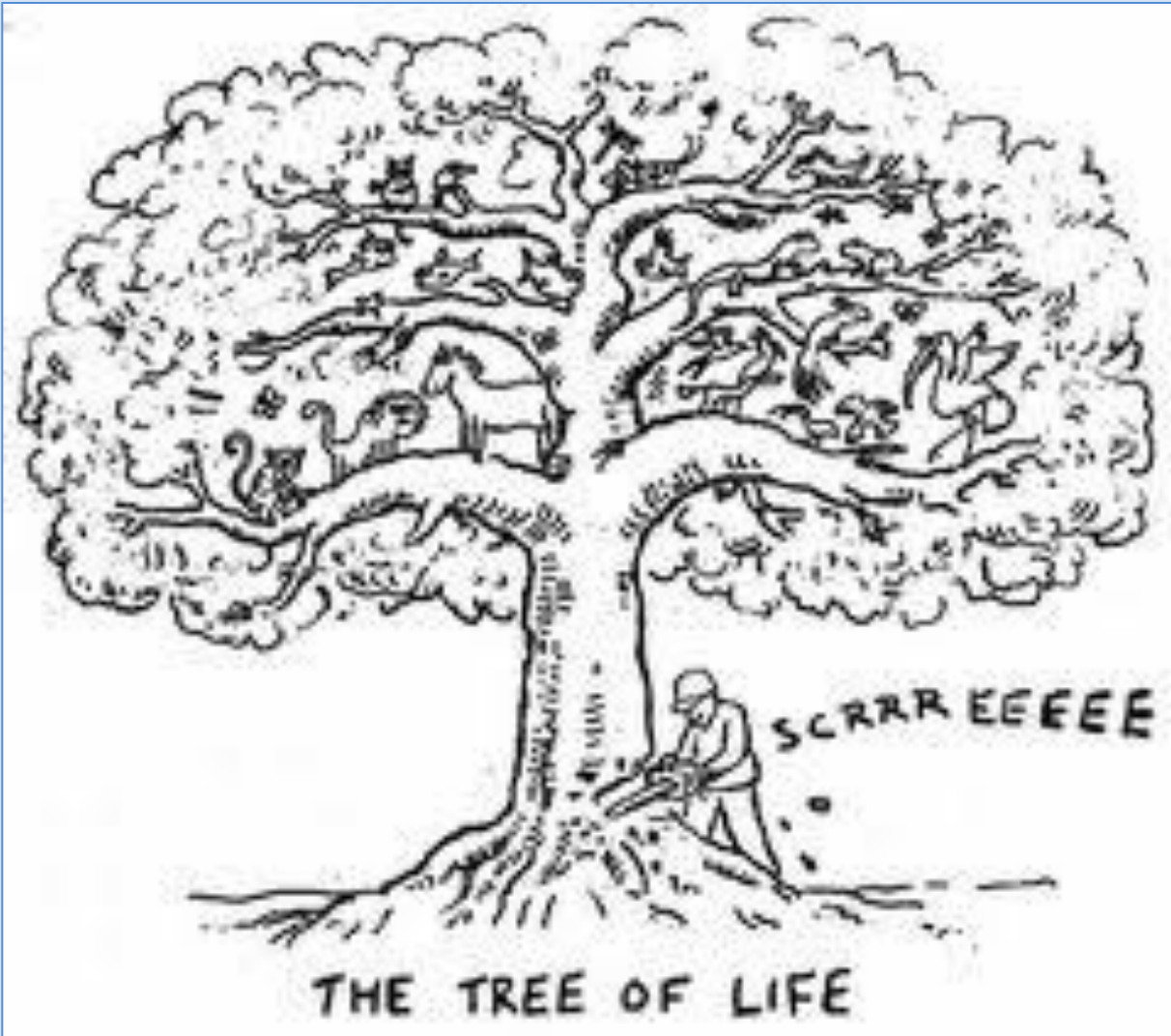


“The food system must become sustainable, whilst adapting to climate change and substantially contributing to climate change mitigation”

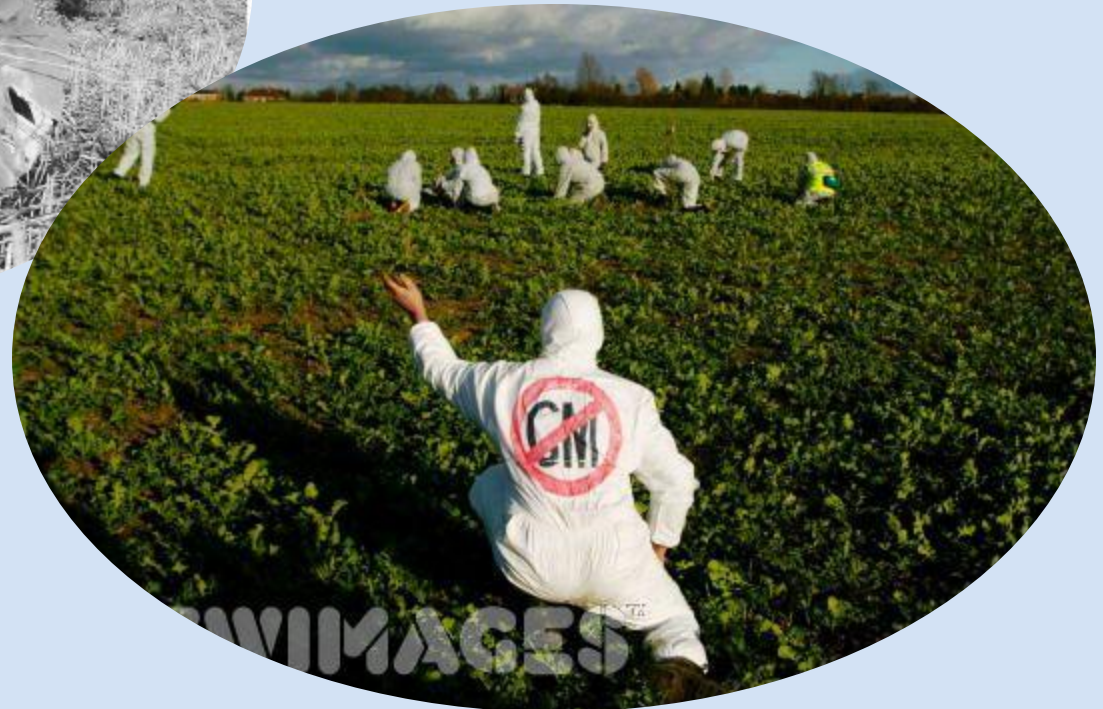
Sir John Beddington CMG, FRS.

Food waste





Genetically modified crops

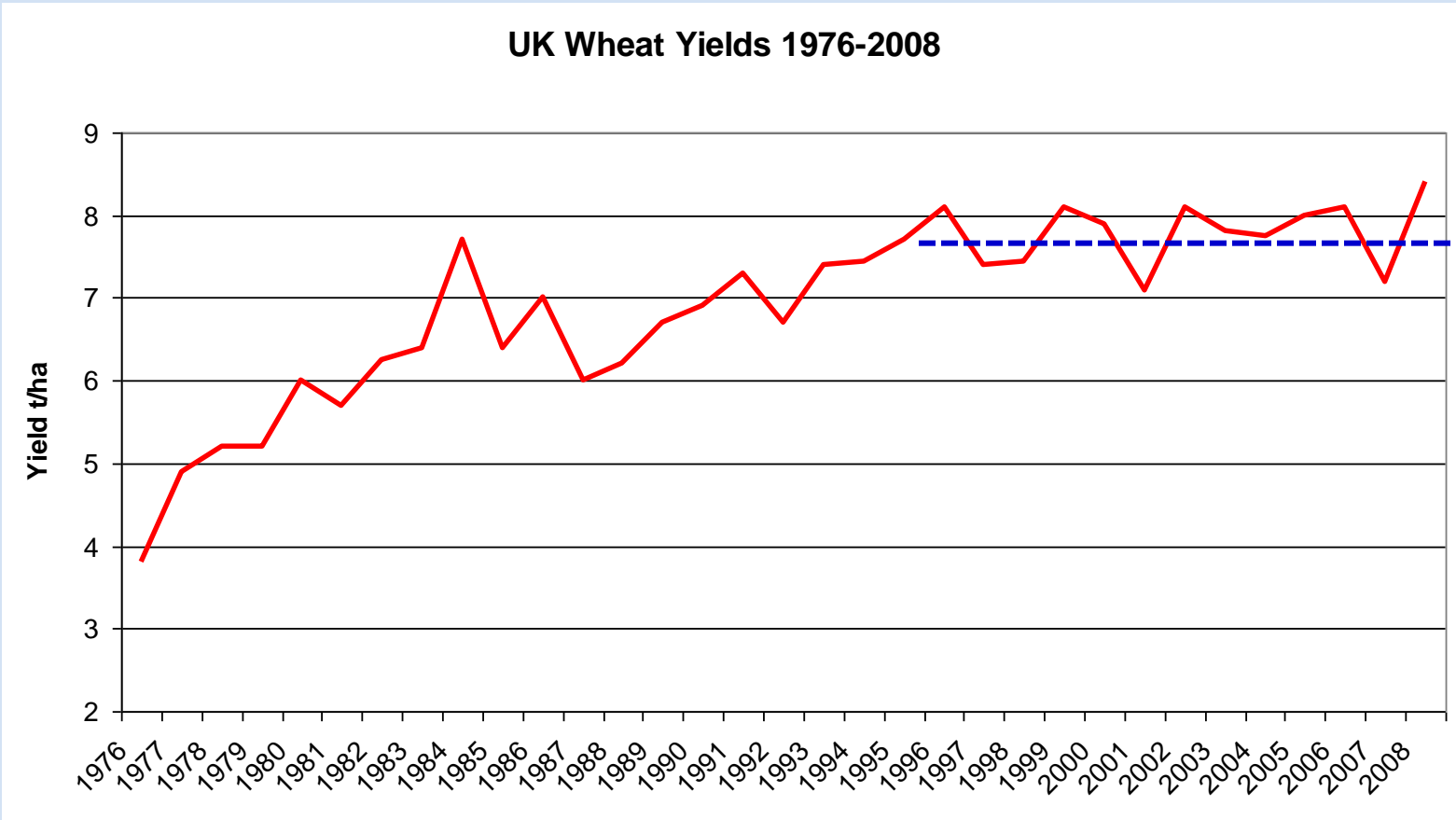


Genetically modified crops



- Potential to react to climate change
- Salt, drought, heat resistant cultivars
- Energy and bio-mass crops
- Ability to use fields to provide essential product ingredients
- A route to sustainability

UK WHEAT YIELDS 1976-2008



Influences on the wheat crop

- Soil
- Climate
- Varietal Choice
- Management
- Advisers/Consultants
- Grain Markets
- Workforce



Extending the net



- Ensure message is taken to potential entrants in urban and suburban areas
- Encourage late and senior entrants – career switchers
- Constantly survey young people to ascertain their attitude to farming and the countryside as a career destination

Conclusion



- Success comes through conviction and a feeling of self worth
- Farming is a great industry and we must be able to compete for the best entrants
- Failure to do so jeopardises technical progress and safety
- We need to be more professional from owner to manager to advisor to worker



“People make history and not the other way around. In periods where there is no leadership, society stands still. Progress occurs when courageous, skilful leaders seize the opportunity to change things for the better”

Harry S Truman

A final thought

