

*Knowledge for sustainable
development: the future*

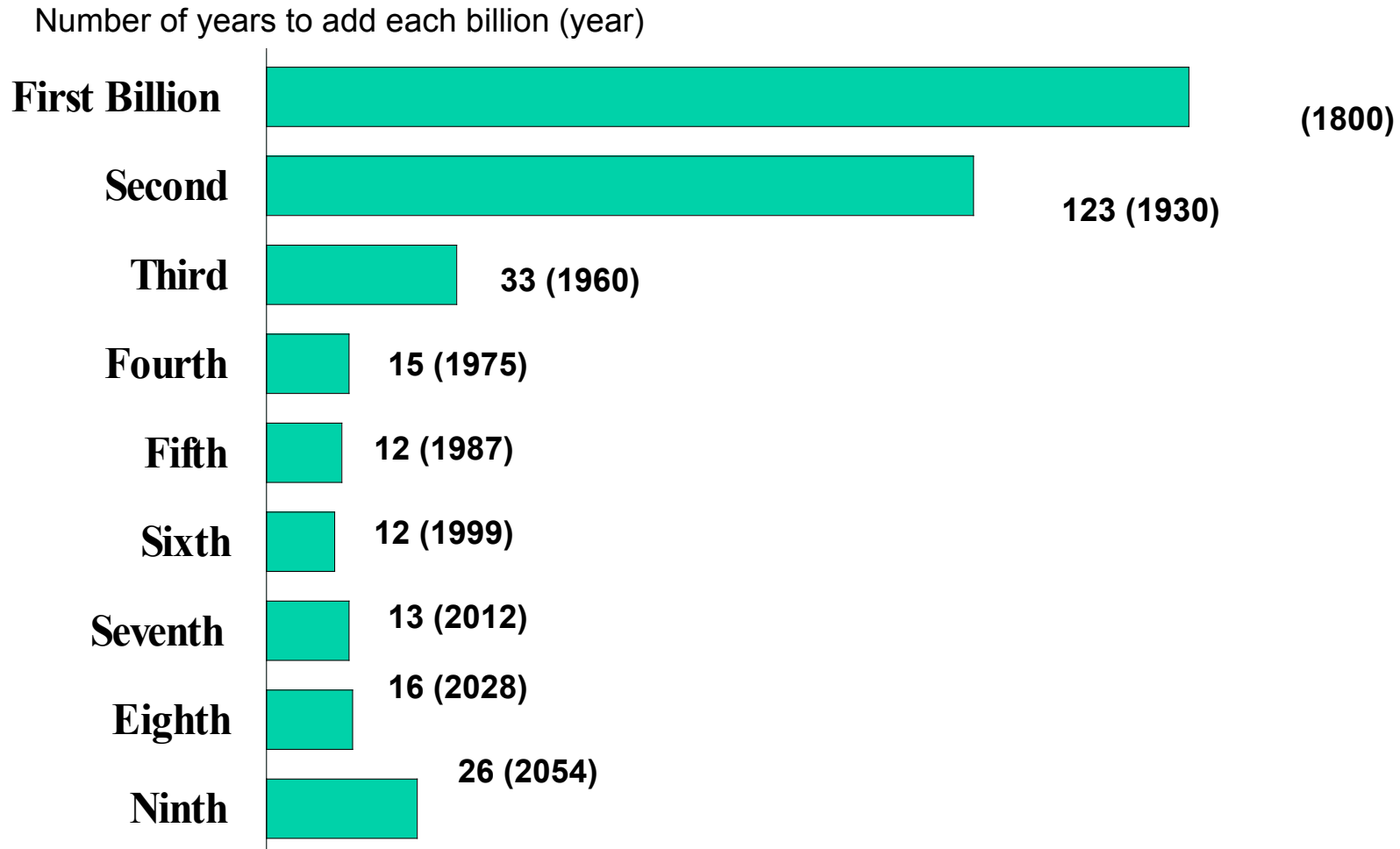
Sir David King

Chief Scientific Adviser to HM Government

*G8- UNESCO World Forum on ' Education,
Research and Innovation: New Partnership for
Sustainable Development'*

Trieste, Saturday 12 May 2007

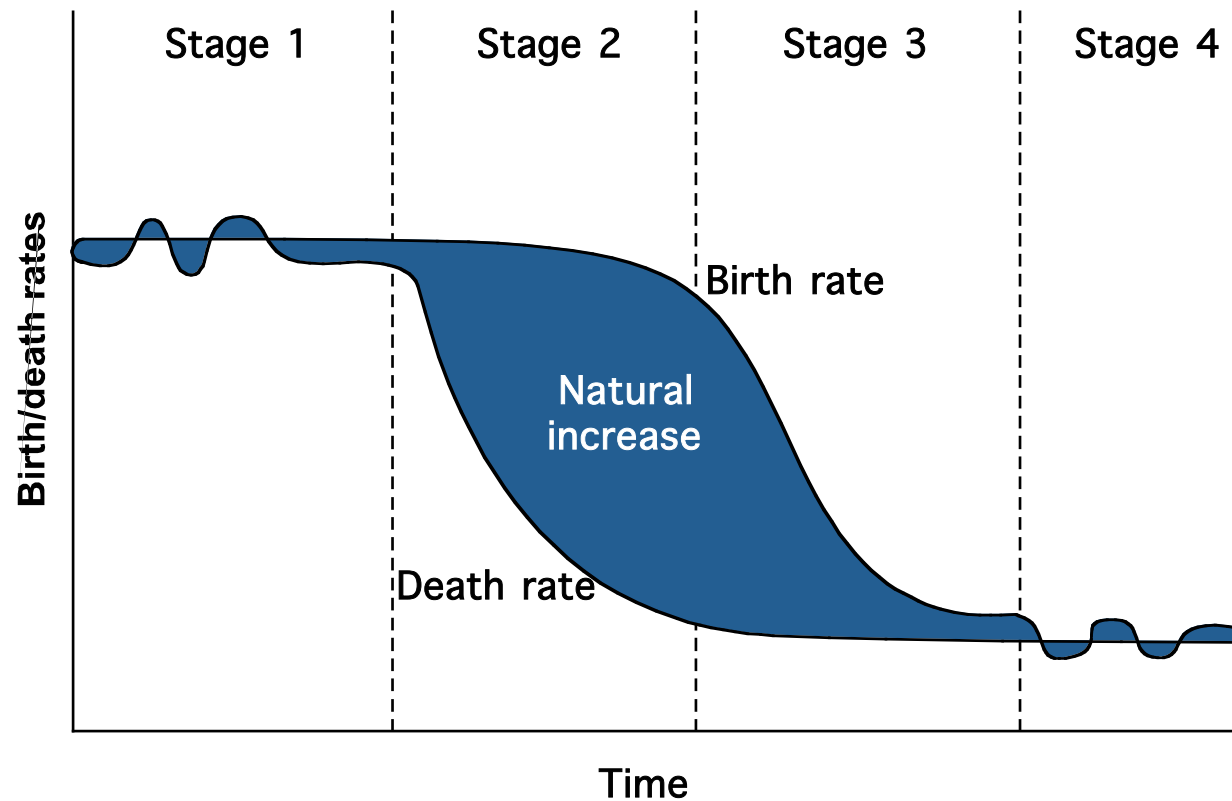
World Population Growth, in Billions



Sources: First and second billion: Population Reference Bureau. Third through ninth billion: United Nations, *World Population in 2300* (medium scenario), 2003.

Number of years to add each billion (year)

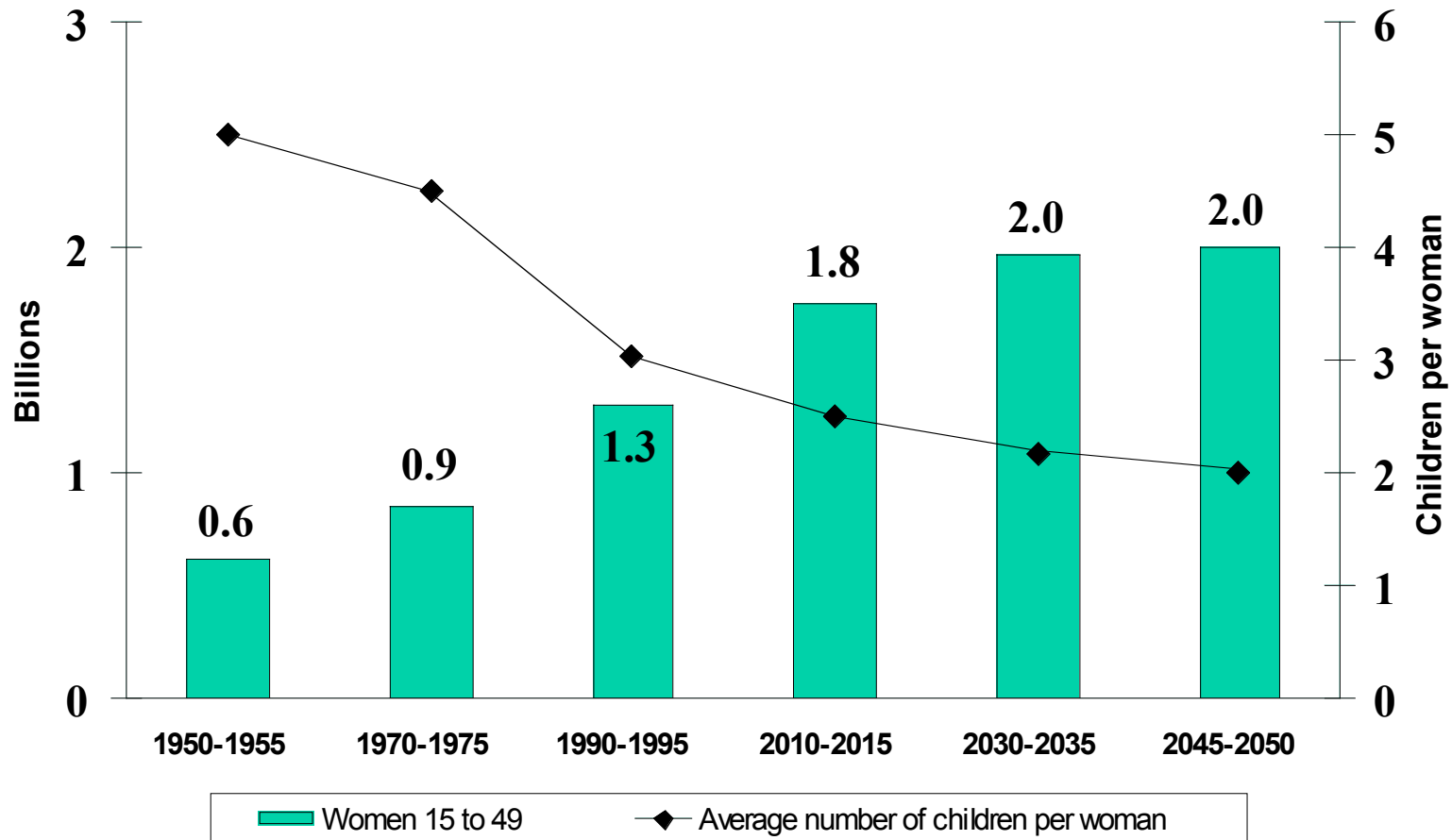
The Classic Stages of Demographic Transition



Note: Natural increase is produced from the excess of births over deaths. Source : www.prb.org

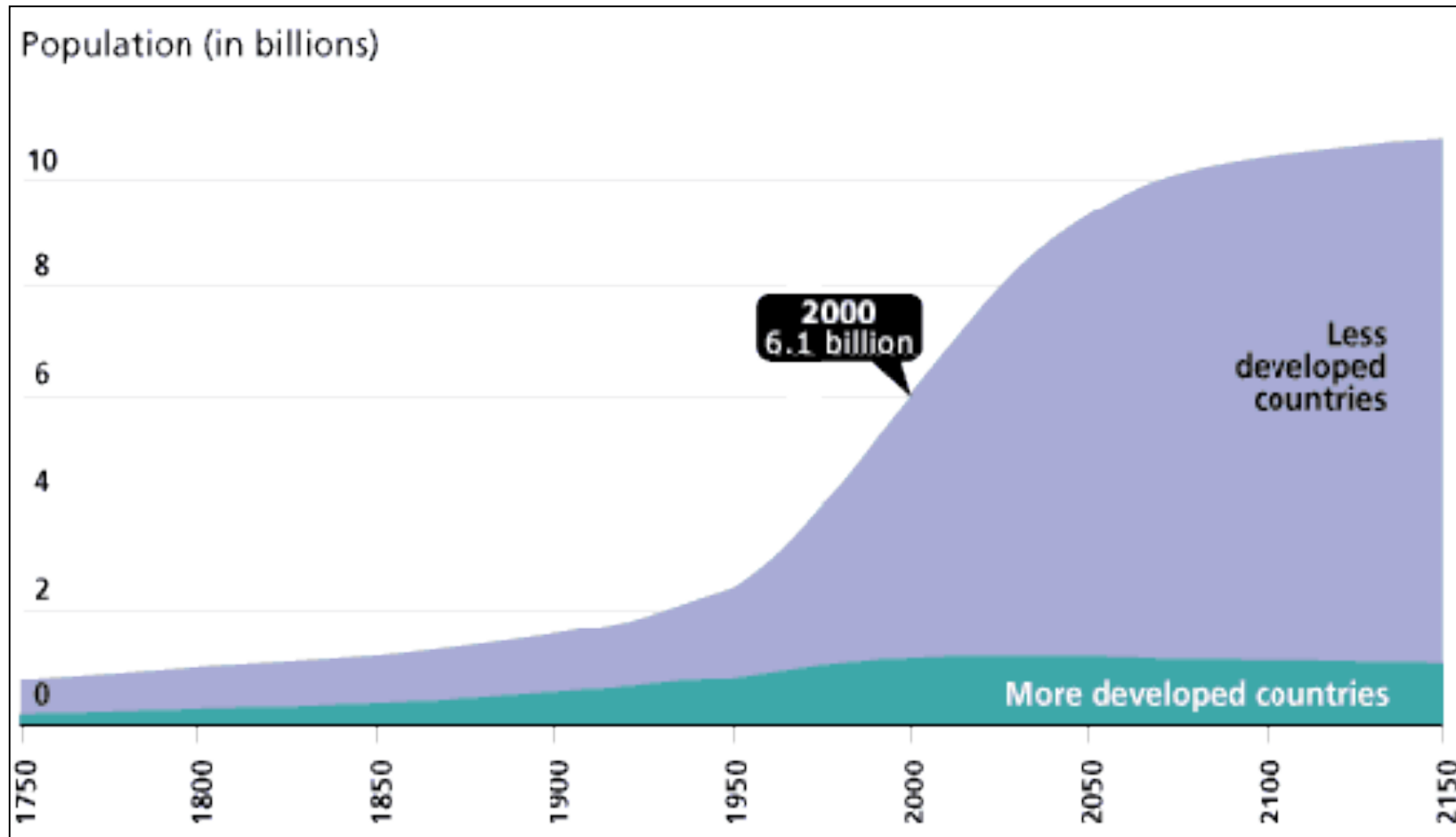
Women of Childbearing Age and Fertility

Worldwide



Source: United Nations, *World Population Prospects: The 2002 Revision* (medium scenario), 2003. Downloaded from www.prb.org

World Population Growth 1750–2150



Source: United Nations, *World Population Prospects, The 1998 Revision*; and estimates by the Population Reference Bureau.

Population Growth – the driver

- Food
- Water
- Energy
- Biodiversity
- The atmosphere –climate change
- Human capital and well being

Impact on Food

- Research urgently needed
 - should include GM research
- Need to invest in sustainable farming –this has a dual benefit
- Need land reform and trade reform
- Can feed 9 billion

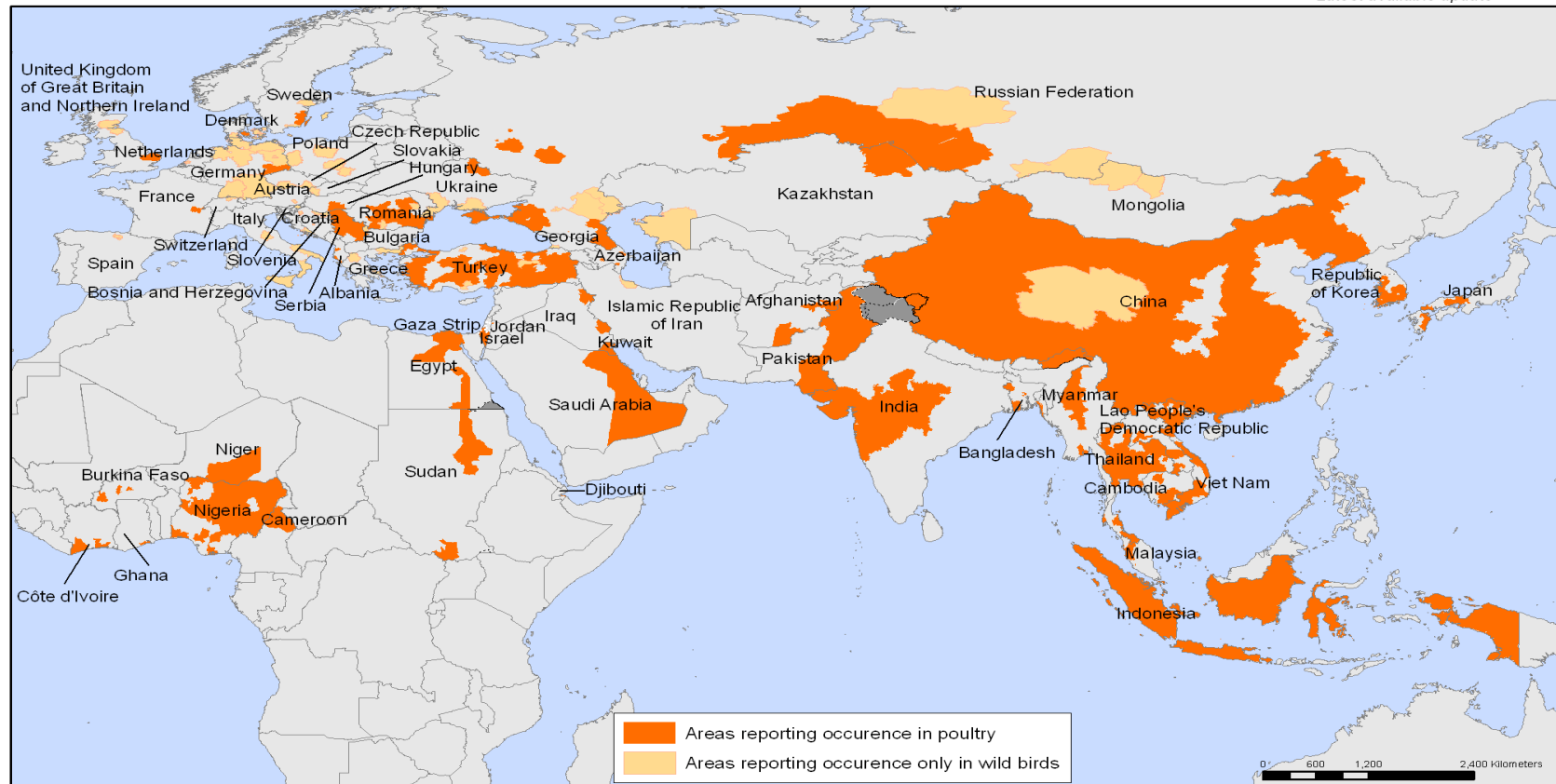


H₅N₁ Avian Flu Density

up to May 6 2007

Areas reporting confirmed occurrence of H5N1 avian influenza in poultry and wild birds since 2003

Status as of 06 May 2007
Latest available update



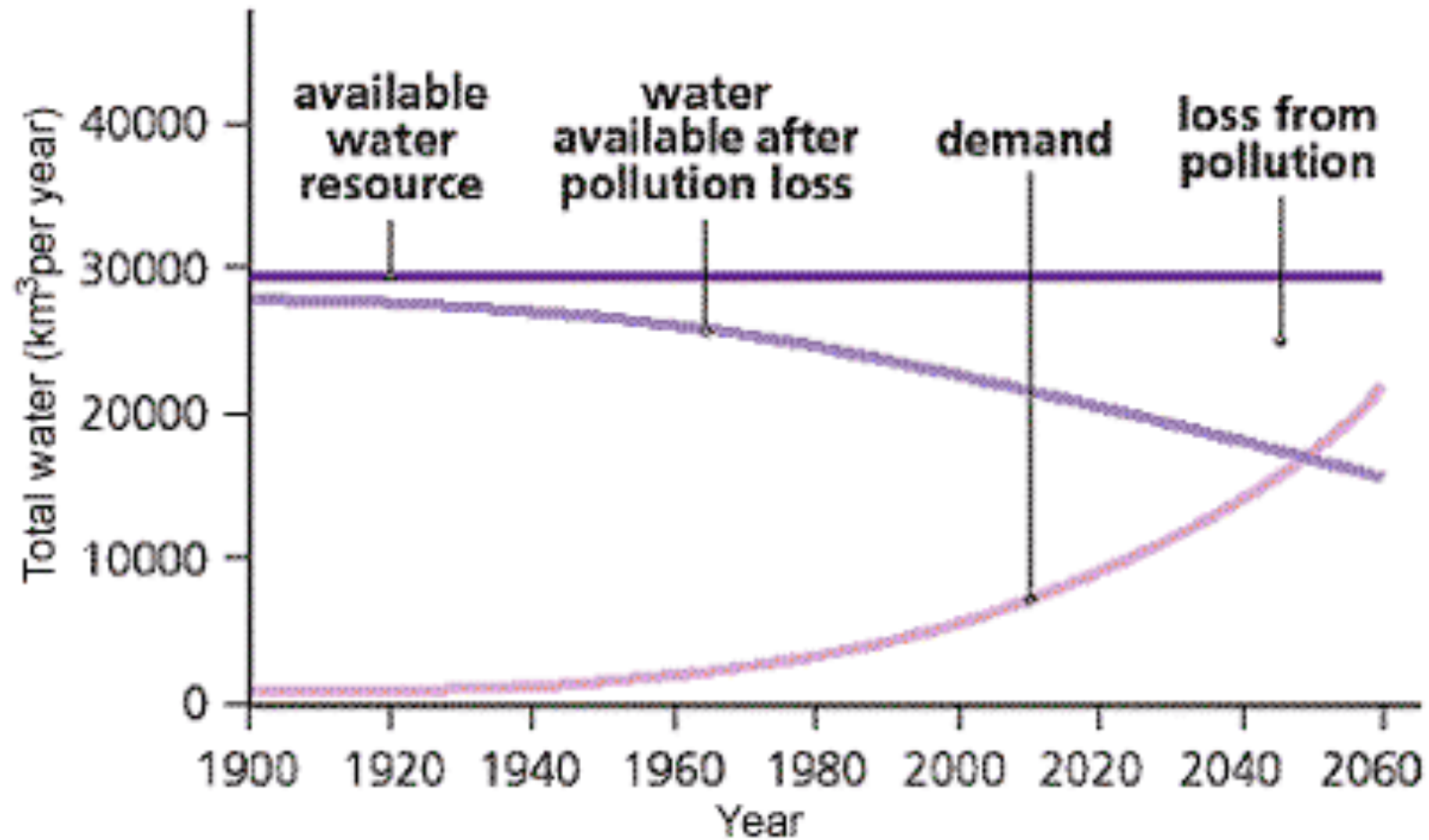
 **World Health Organization**
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The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: World Organisation for Animal Health (OIE) and national governments
Map Production: Public Health Mapping and GIS
Communicable Diseases (CDS) World Health Organization

Source: WHO

World water deficit



Source: NERC, CEH Wallingford

Population and Water

- World Resource : 12-14 million cubic metres available
 - 1989 : 9,000 cub metres per person
 - 2025 : 5,100 cub metres per person
- Population distribution does not equal water supply distribution



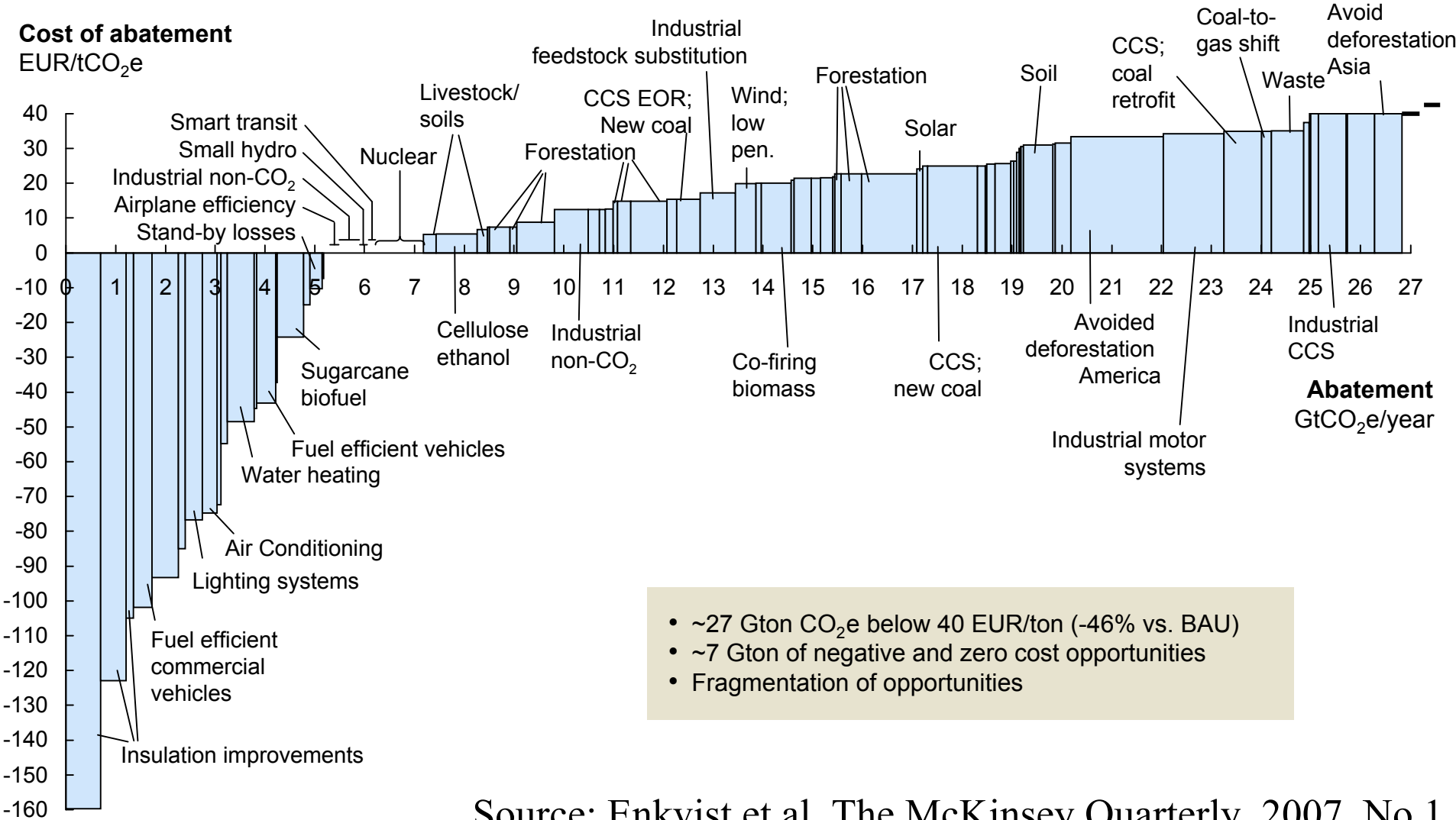
Environmental: Climate change

- Climate change and poverty eradication are greatest challenges facing us this century
- Requires a global solution – including developing countries
- Two aspects:
 - *Mitigation*
 - *Adaptation*
- All countries need to be equipped to deal with impacts



2030

Global cost curve of GHG abatement opportunities beyond business as usual



Source: Enkvist et al, The McKinsey Quarterly, 2007, No.1

Foresight: Mental Capital and Wellbeing

- Use best science across to identify & analyse the key **drivers** affecting Mental Capital and Wellbeing
- To identify future **challenges and needs** for maximising mental capital and wellbeing
- To build evidence to identify and analyse **interventions** and will consider the possible role of government, non-governmental stakeholders, and individuals



Sustainable Development

- Each generation should leave at least as large a productive base for its successor as it inherited from its predecessor

Productive Base:

Manufactured capital

Human capital

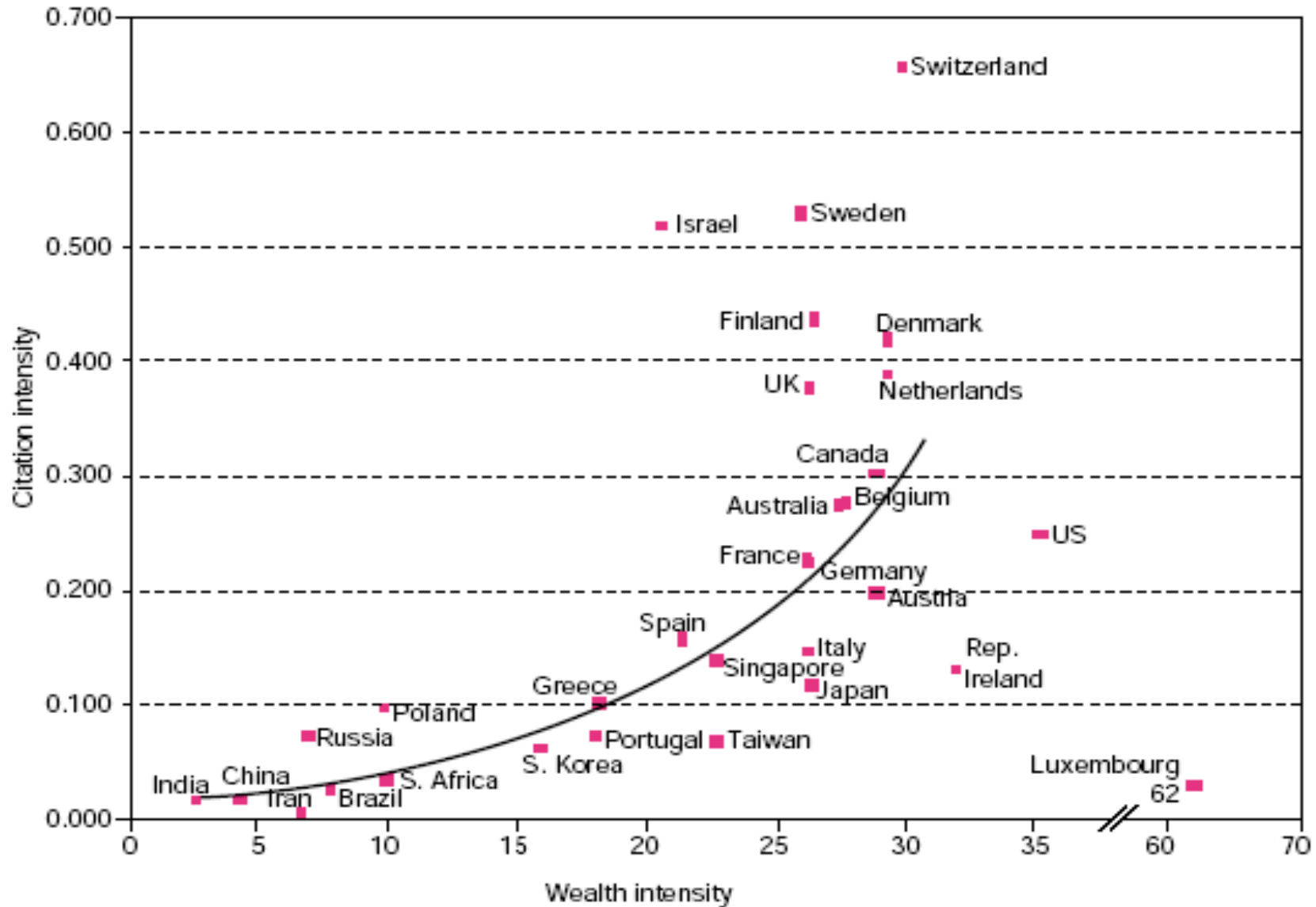
Natural/Environmental capital

+ Institutions, cultural coordinates

Social worth of
these assets =

wealth of a nation

Comparing economic and scientific wealth



A sustainable future

Science, modern medicine and technology have, since the industrial revolution provided us with societies in which we can live longer healthier lives than in the pre-industrial period....

.... Now we need to use our wealth and technology not only to manage our economies within finite natural resources but also to adapt to a warming planet while reducing the extent of that warming by drastically reducing CO₂ emissions