International Institute for Applied Systems Analysis
IIASA www.iiasa.ac.at

science for global insight

IIASA's Role in Addressing Major Global Challenges

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Retreat of the UN EU Heads of Mission
IIASA, Laxenburg – 8 February 2013

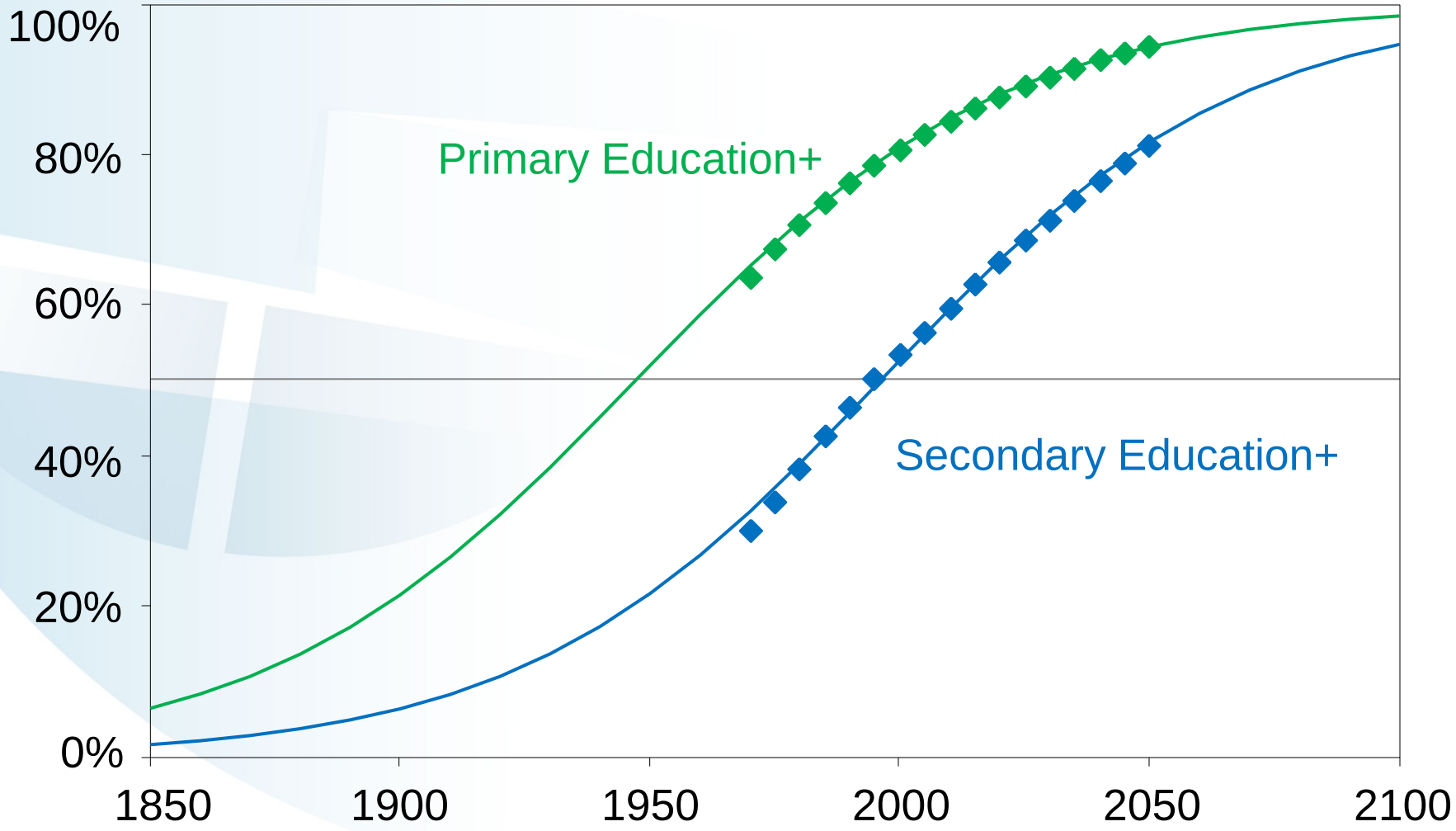
Major Global Challenges

- The industrial revolution led to unprecedented levels of affluence and production, but also inequity;
- The unintended consequences demonstrate significant impacts on our social and natural environments transcending planetary boundaries.
- Overcoming formidable global challenges requires scientific foundations for understanding, formulating effective response strategies and the multi-lateral cooperation for action plans forward.

Food for a Week, Displaced Family, Chad

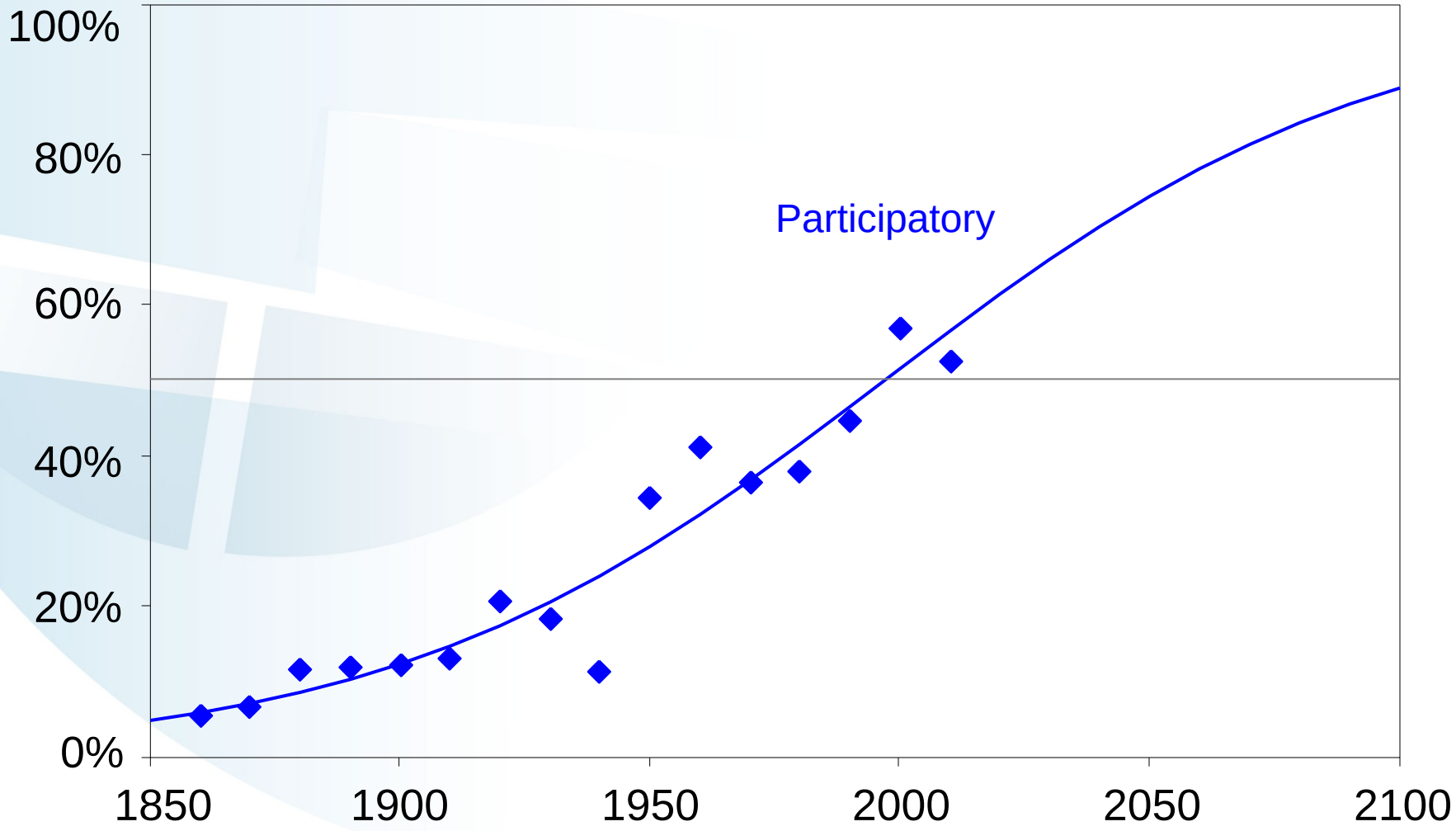
Food for a Week, German Family

Global Educational Attainment



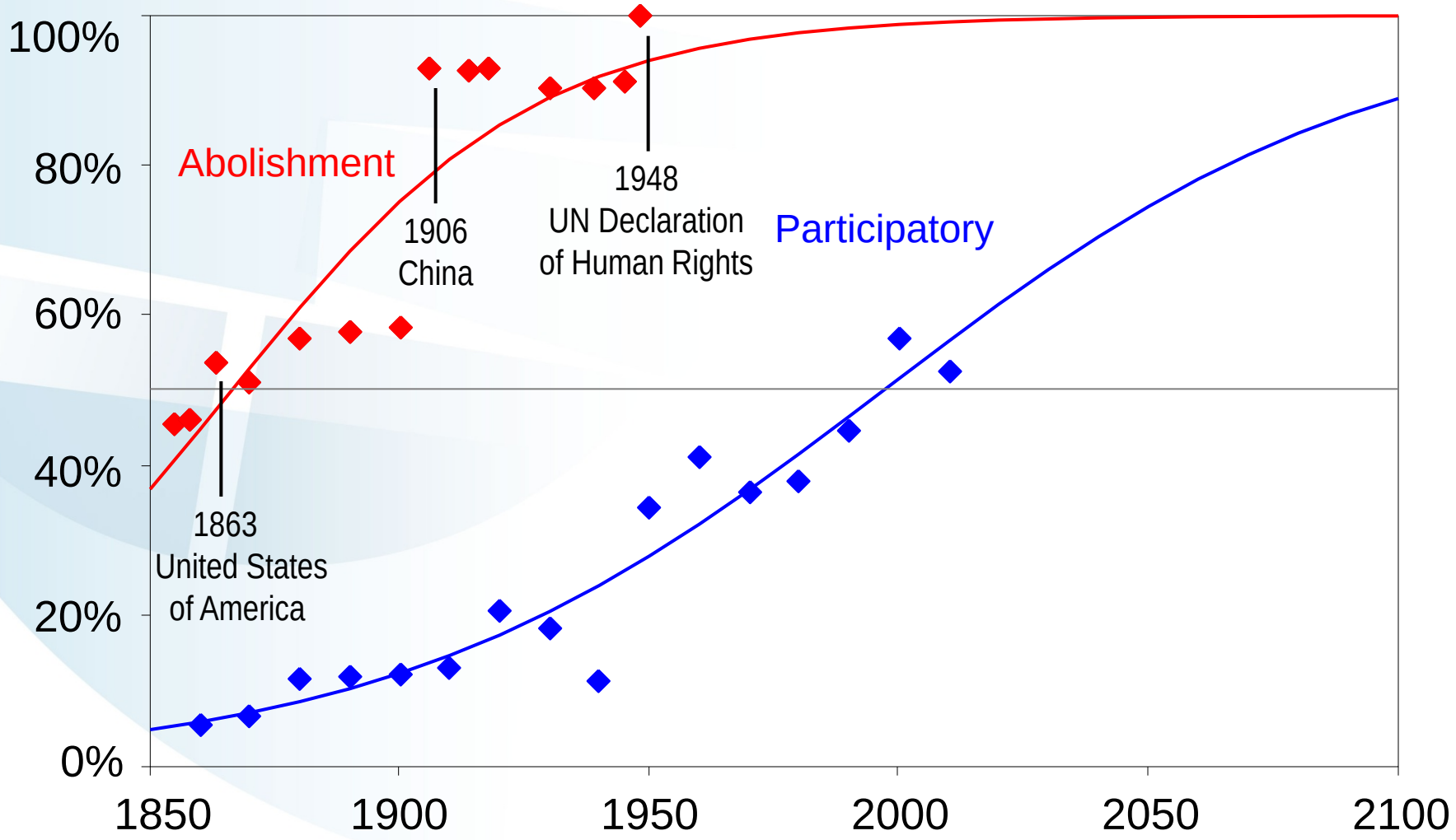
Source: Lutz et al. (2007)

Diffusion of Democracy



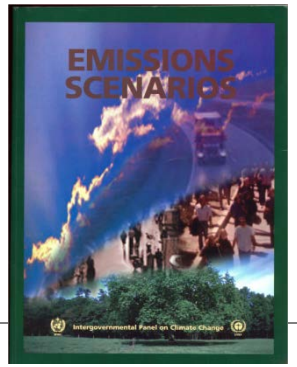
Source: Modelski & Perry, 2002; 2010

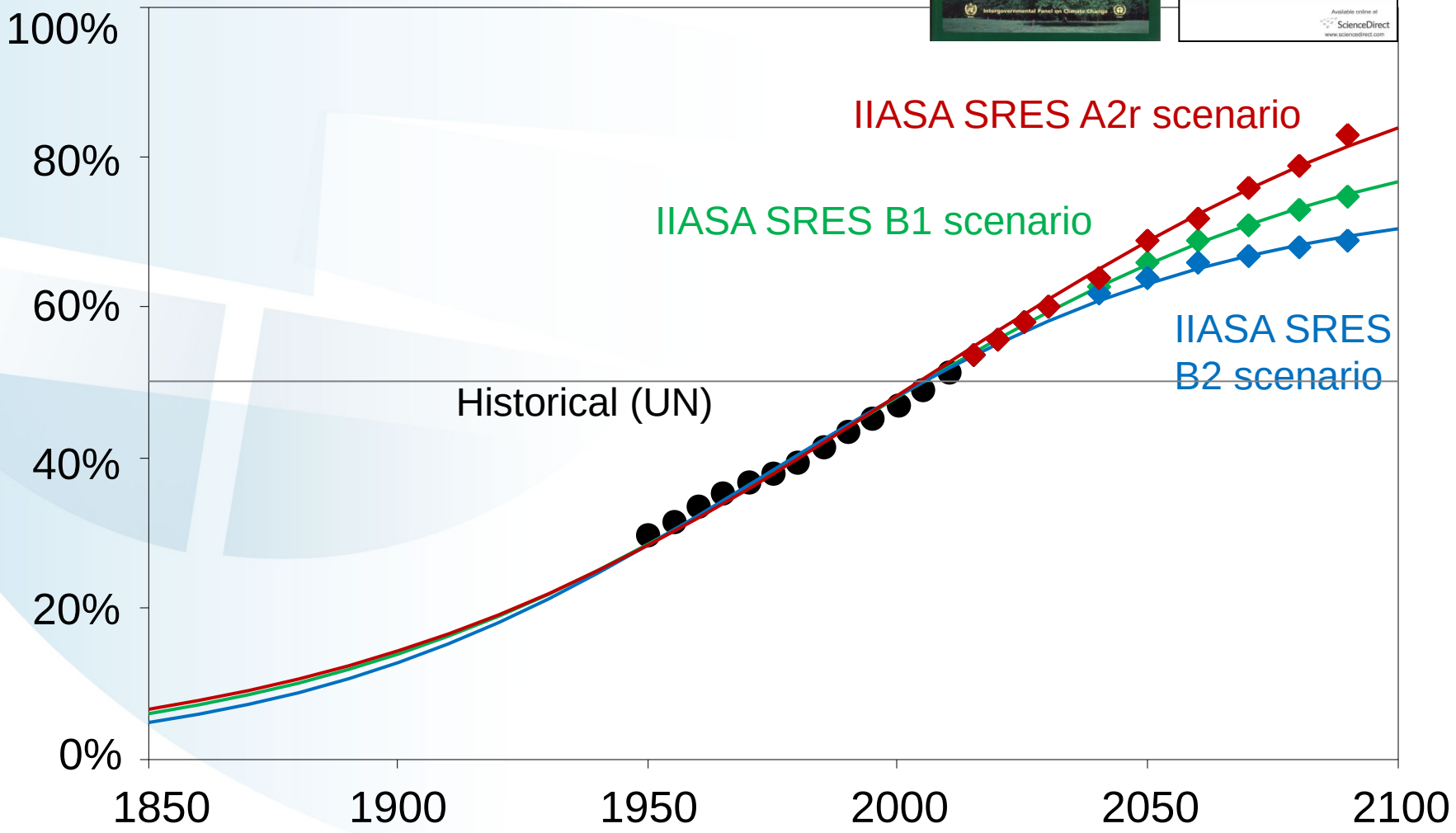
Diffusion of Democracy
Slavery Abolishment



Source: Naki & Rogner, 2012; Modelski & Perry, 2002; 2010

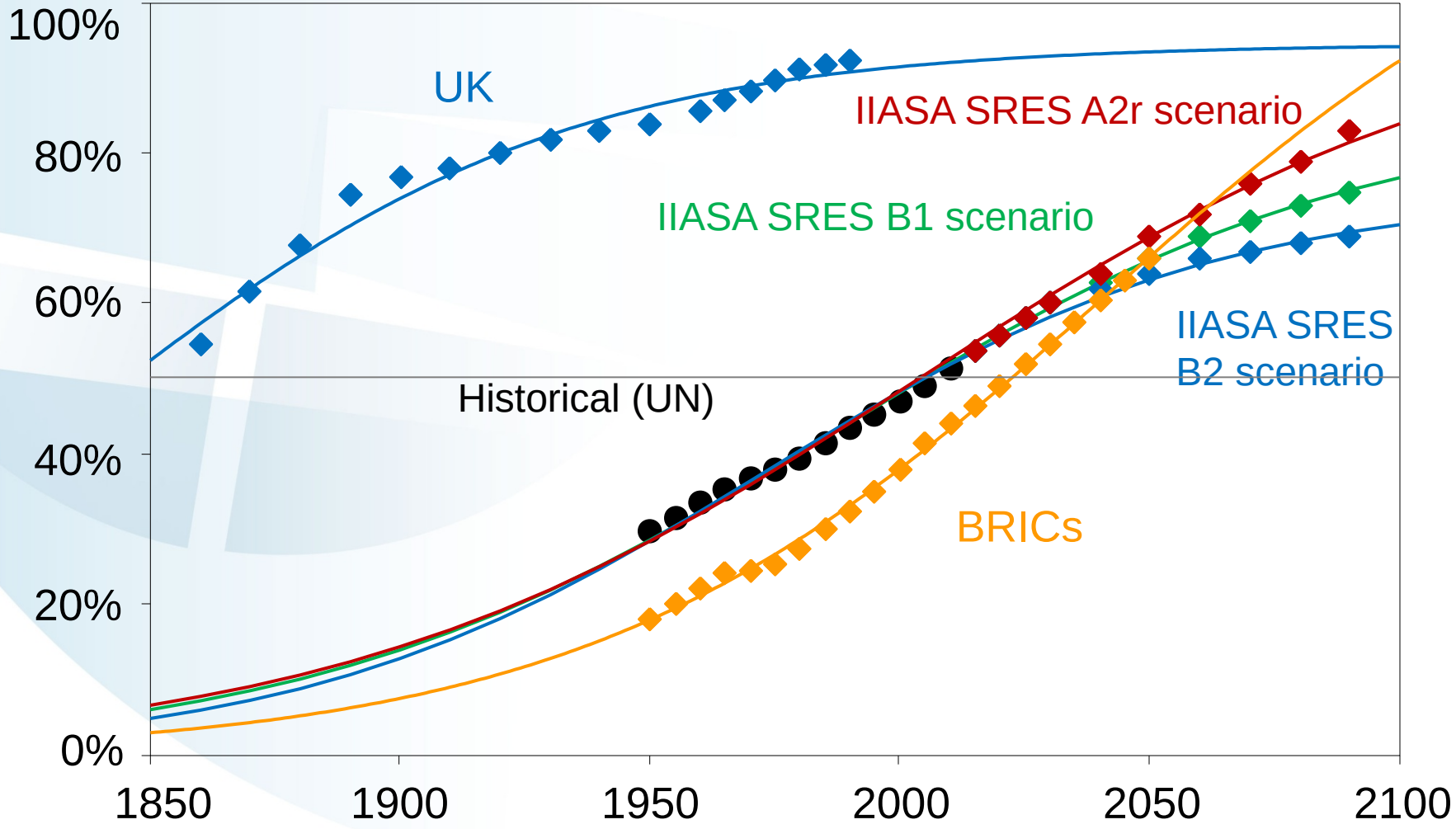
Urbanization World





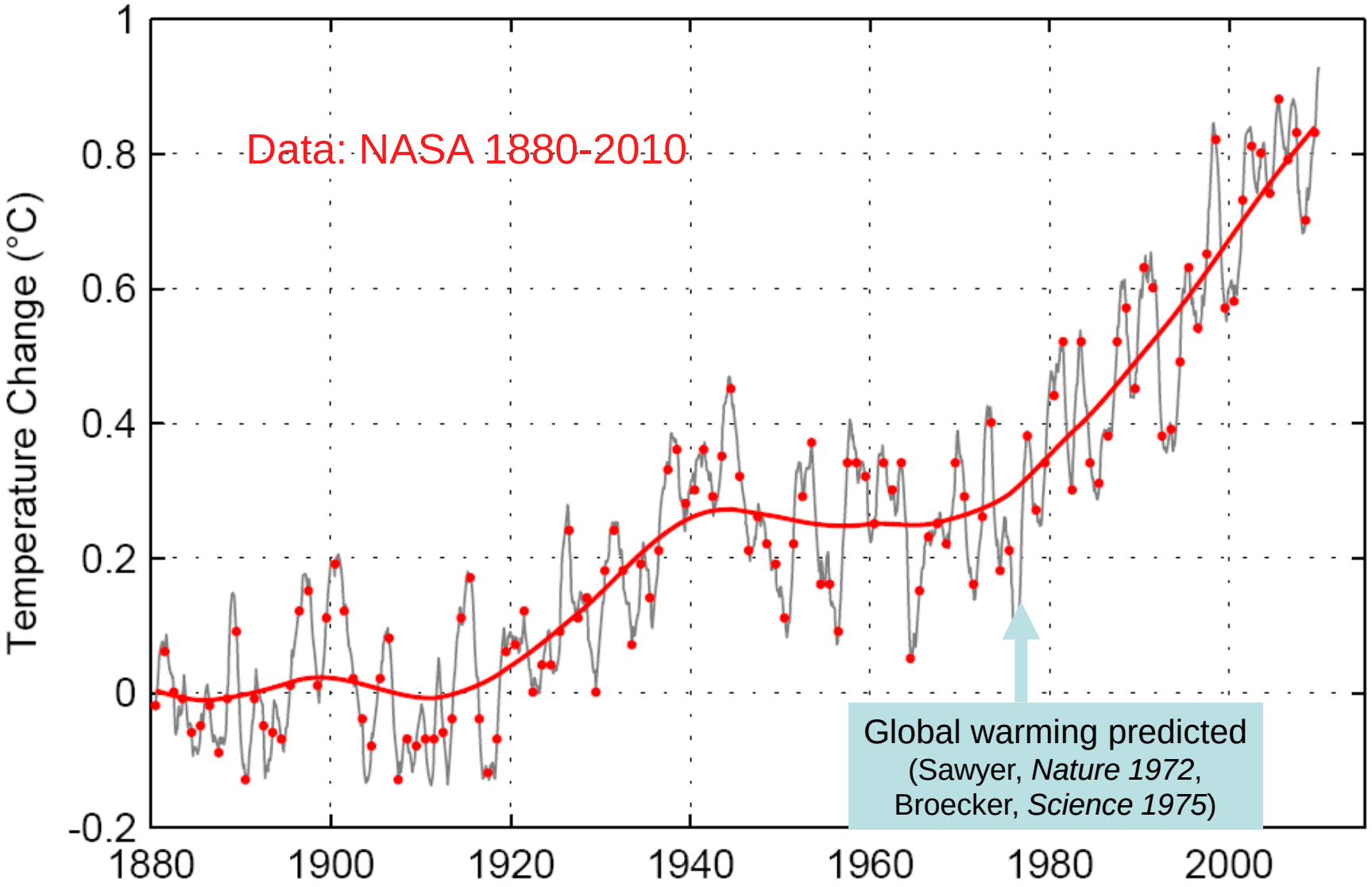
Source: Grubler, 2007

Urbanization
World, UK, BRICs

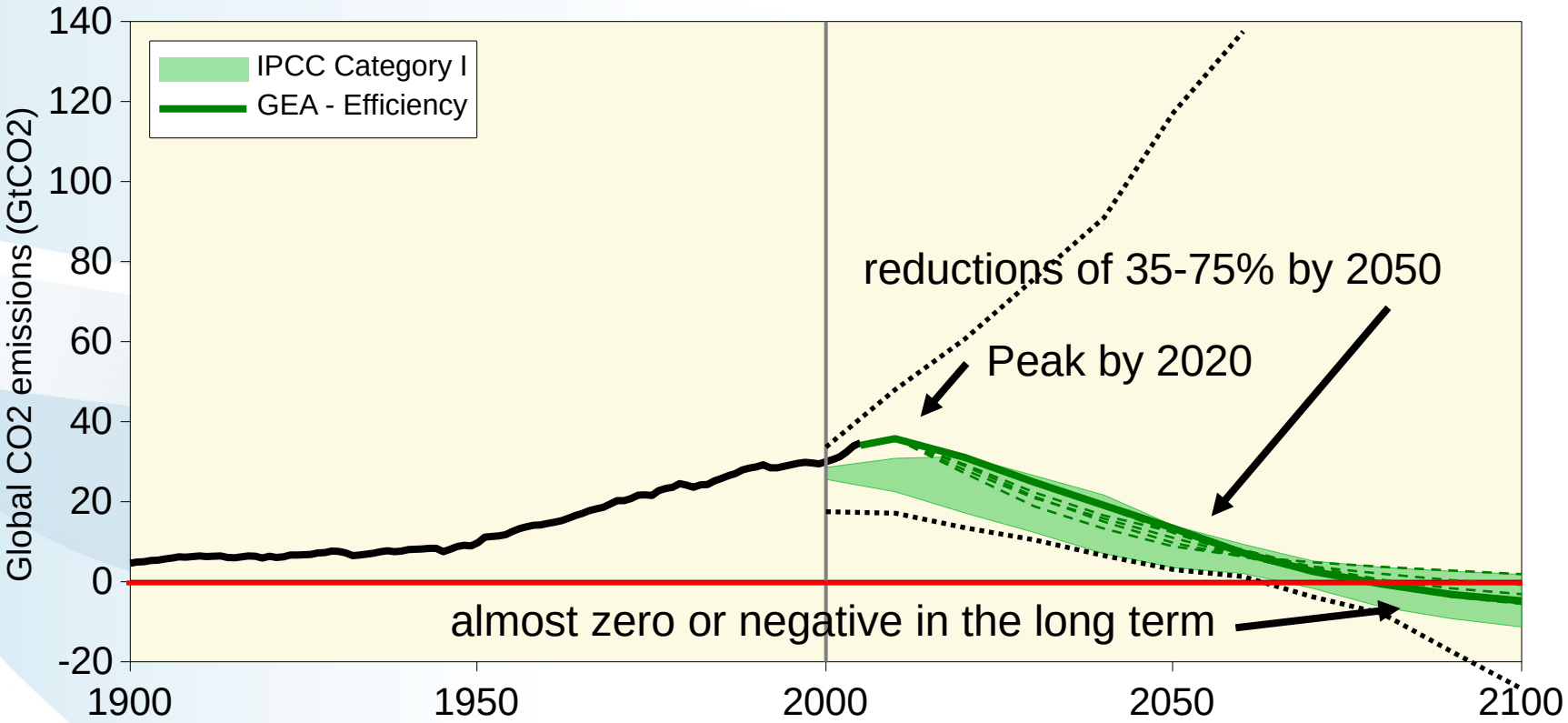


Source: Grubler, 2007

Earth is Warming

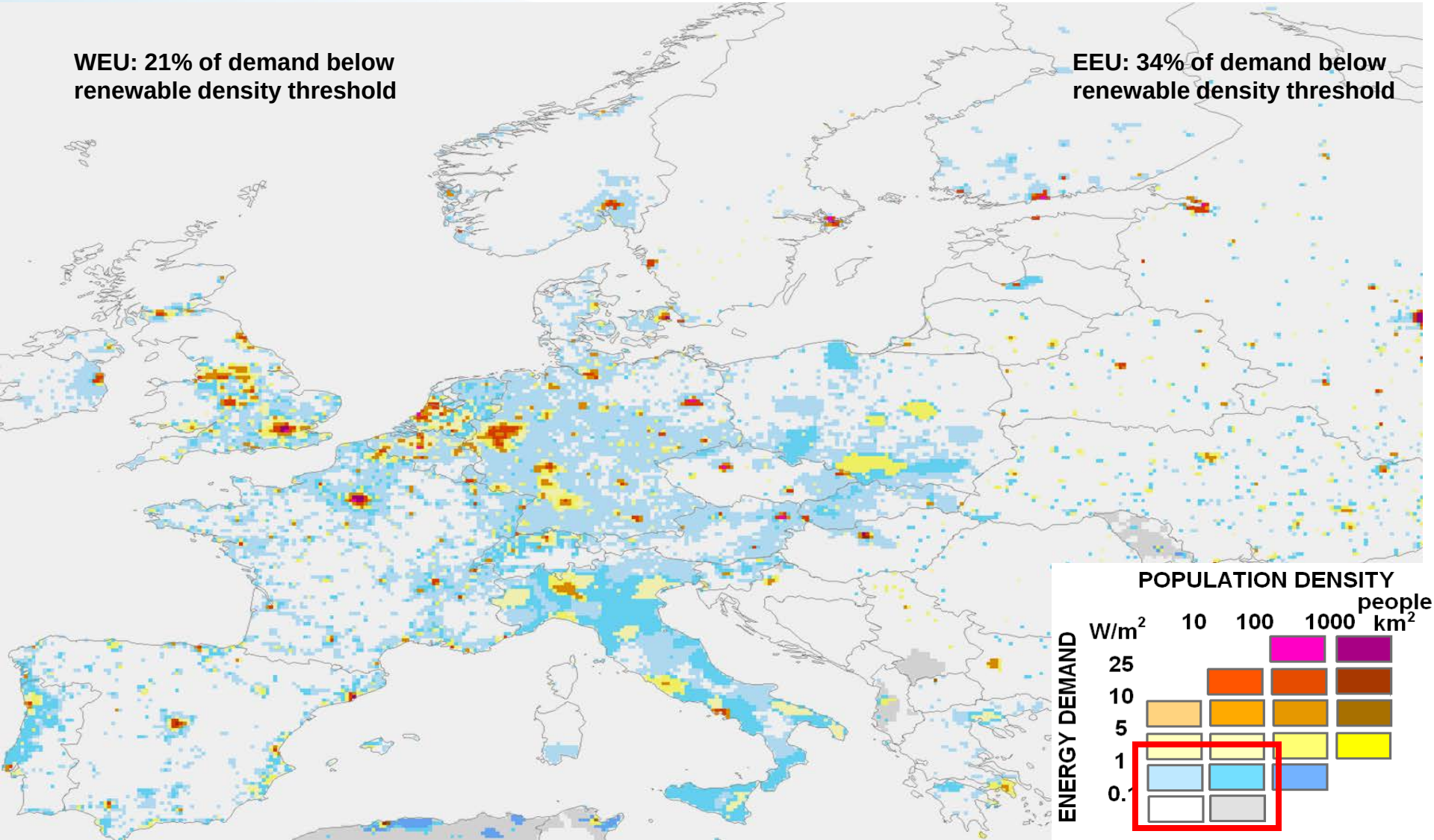


Global Carbon Emissions



Source: Riahi et al, 2012

Europe Population vs. Energy Demand Density

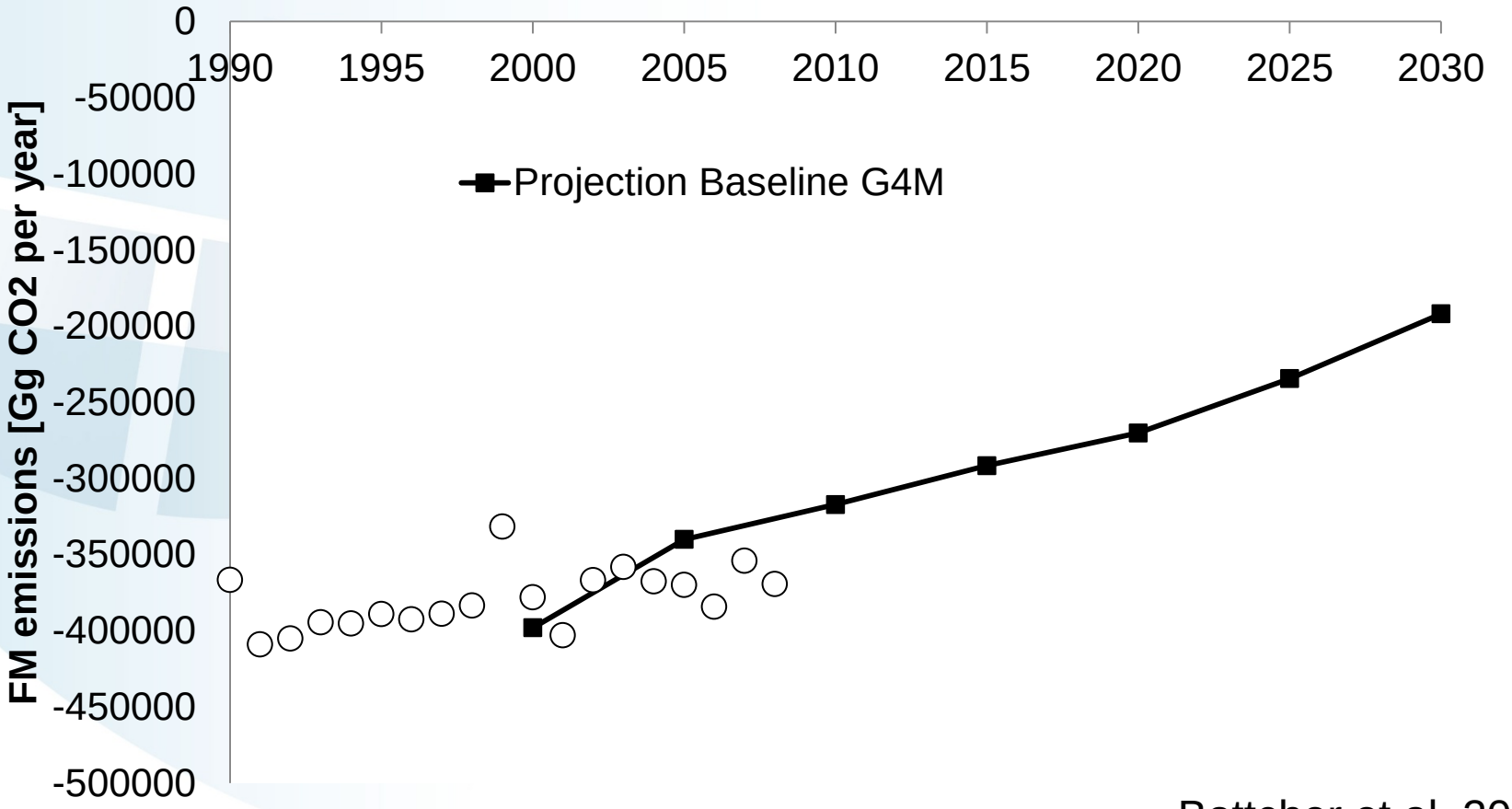


Policy background

- EU climate policy has set emission reduction targets of 20% below 1990 levels in 2020 to be achieved through measures implemented by MS
- EU climate policy has set renewable energy and biofuel targets for 2020 to be implemented by MS
  - Increased demand for bioenergy, timber, pulp and paper will lead to a decline in the forest sink
- Decline in deforestation in the Brasilian Amazon (0.47 Billion $) lead roughly to the same GHG savings as the Emission trading system (411 Billion $)

Results: Baseline development

Emissions from forest management (excl. deforestation and afforestation)
In $MtCO_2$ ($GgCO_2$) per year for EU countries (excl. Cyprus, Greece and Malta)



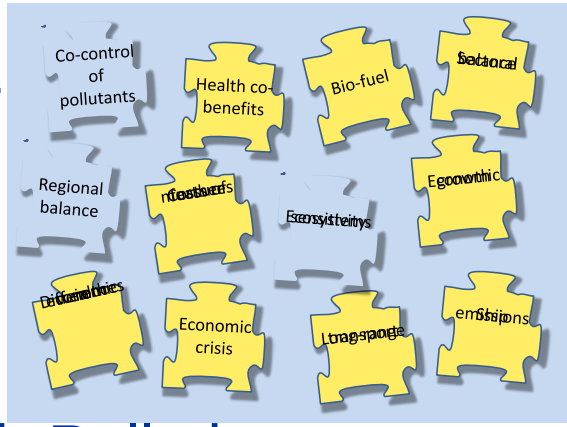
Bottcher et al. 2012

Integrated perspective to development of EU air quality legislation offered by IIASA's GAINS model

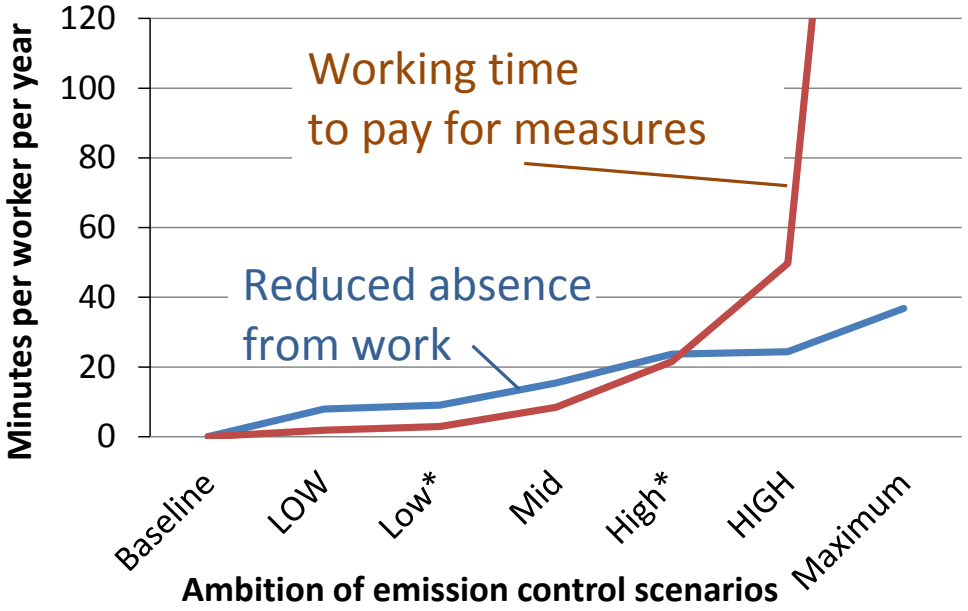
GAINS used as the central analytical tool for

1999: National Emission Ceilings Directive

2004: Clean Air For Europe Programme



2013: Revision of Thematic Strategy on Air Pollution

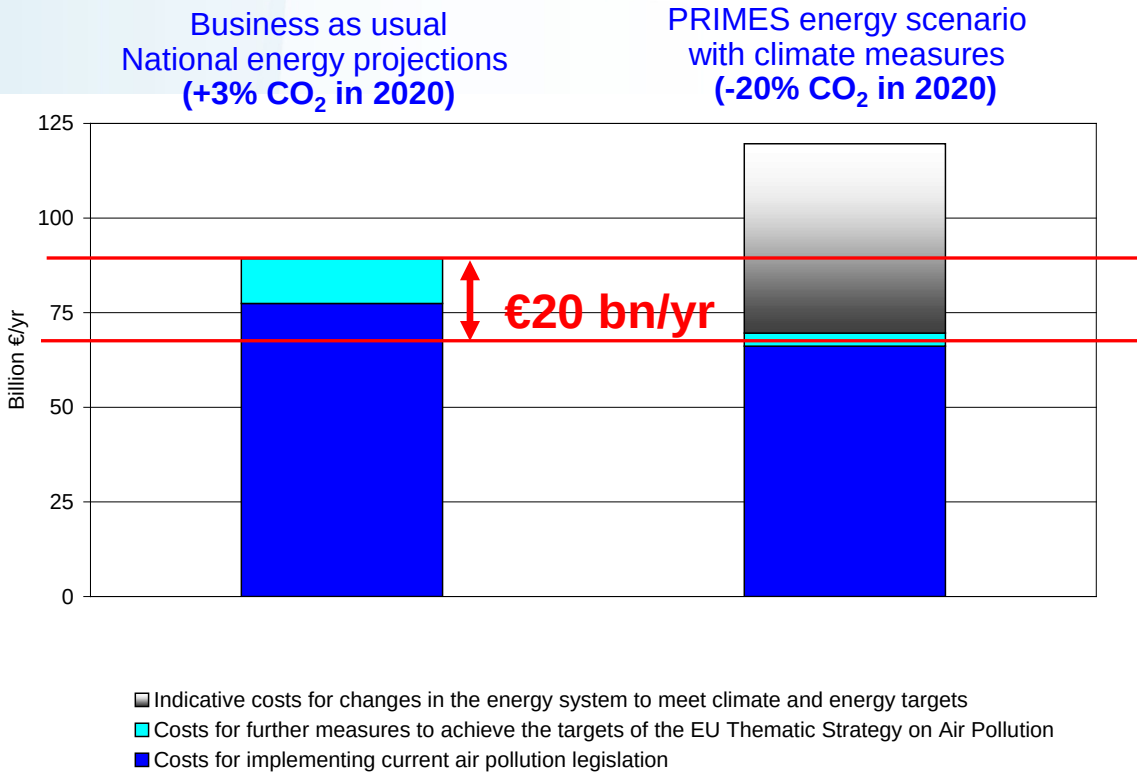


Despite significant improvements in the past:

There is still scope for highly cost-effective measures in the EU, for which just the gains in labor productivity from better health exceed mitigation costs

Further gains from more integrated climate-air pollution strategies

Air pollution control costs for achieving the EU air quality targets

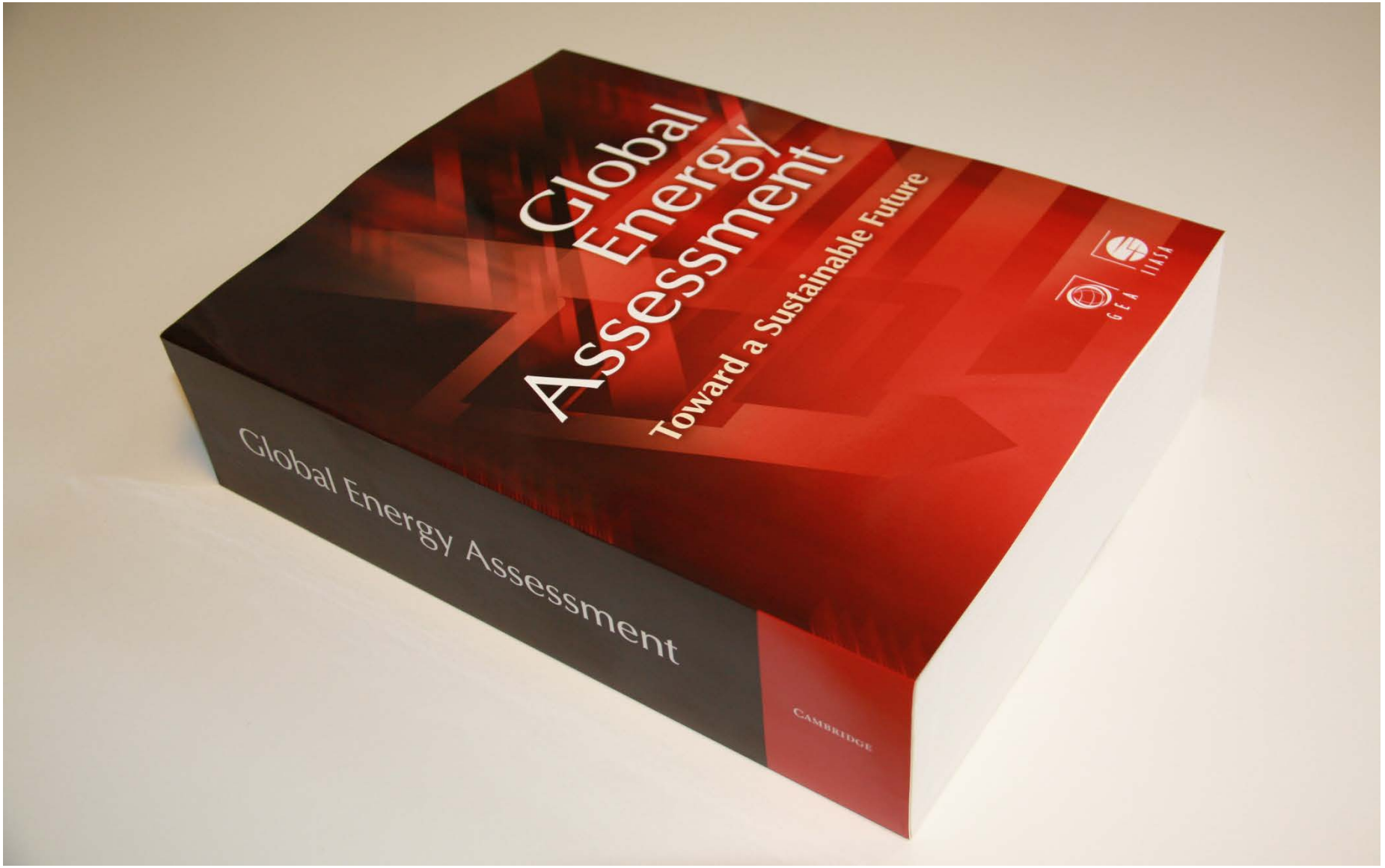


Co-benefits on health and air pollution control costs demonstrated by GAINS for

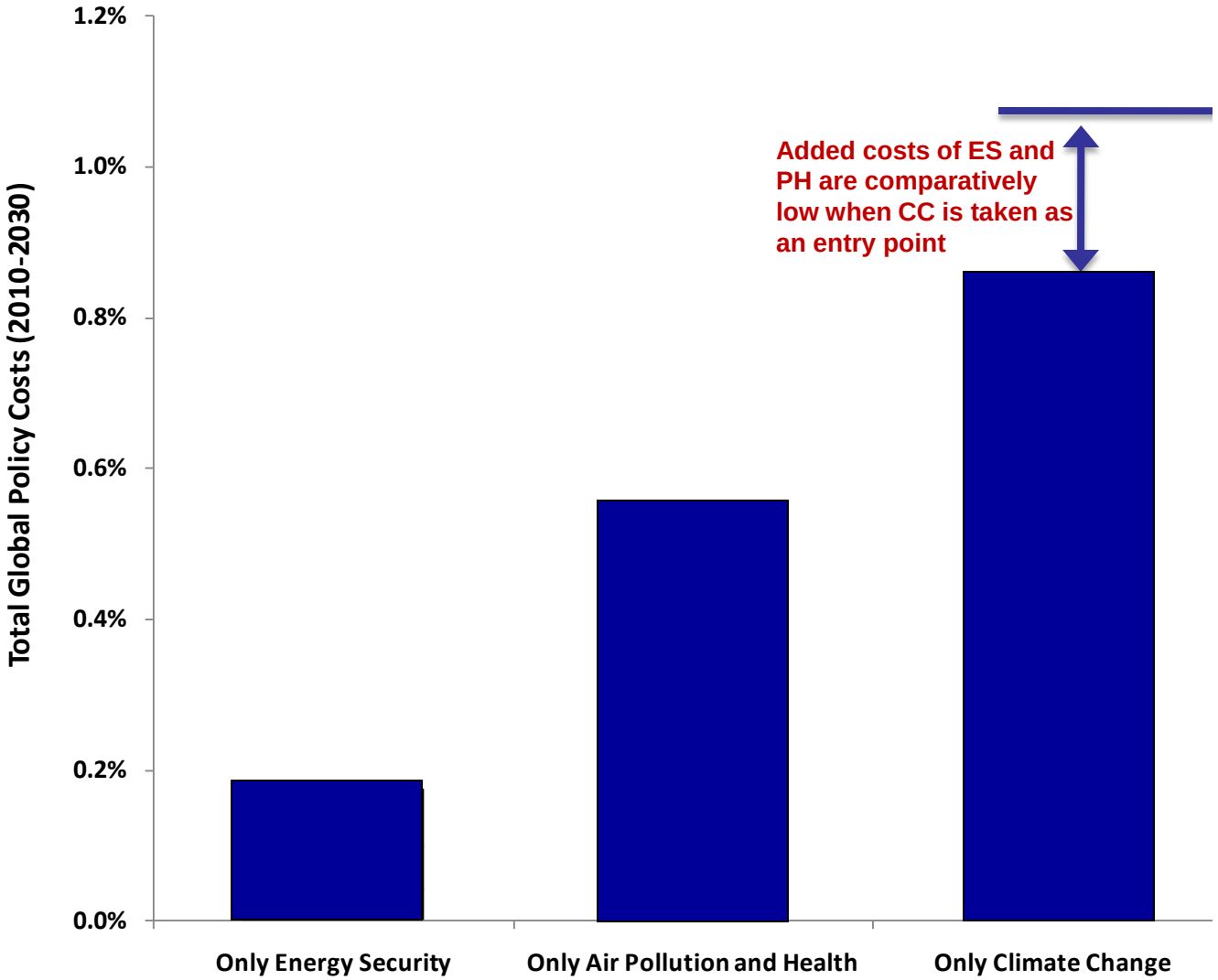
- Climate & Energy Package,
- EU 2050 Roadmap,
- and other Commission climate proposals.

Source: IIASA GAINS

www.GlobalEnergyAssessment.org



Energy Policy Costs (% GDP)



Source: McCollum, Krey, Riahi, 2012

2012 INTERNATIONAL YEAR OF
SUSTAINABLE ENERGY
FOR ALL

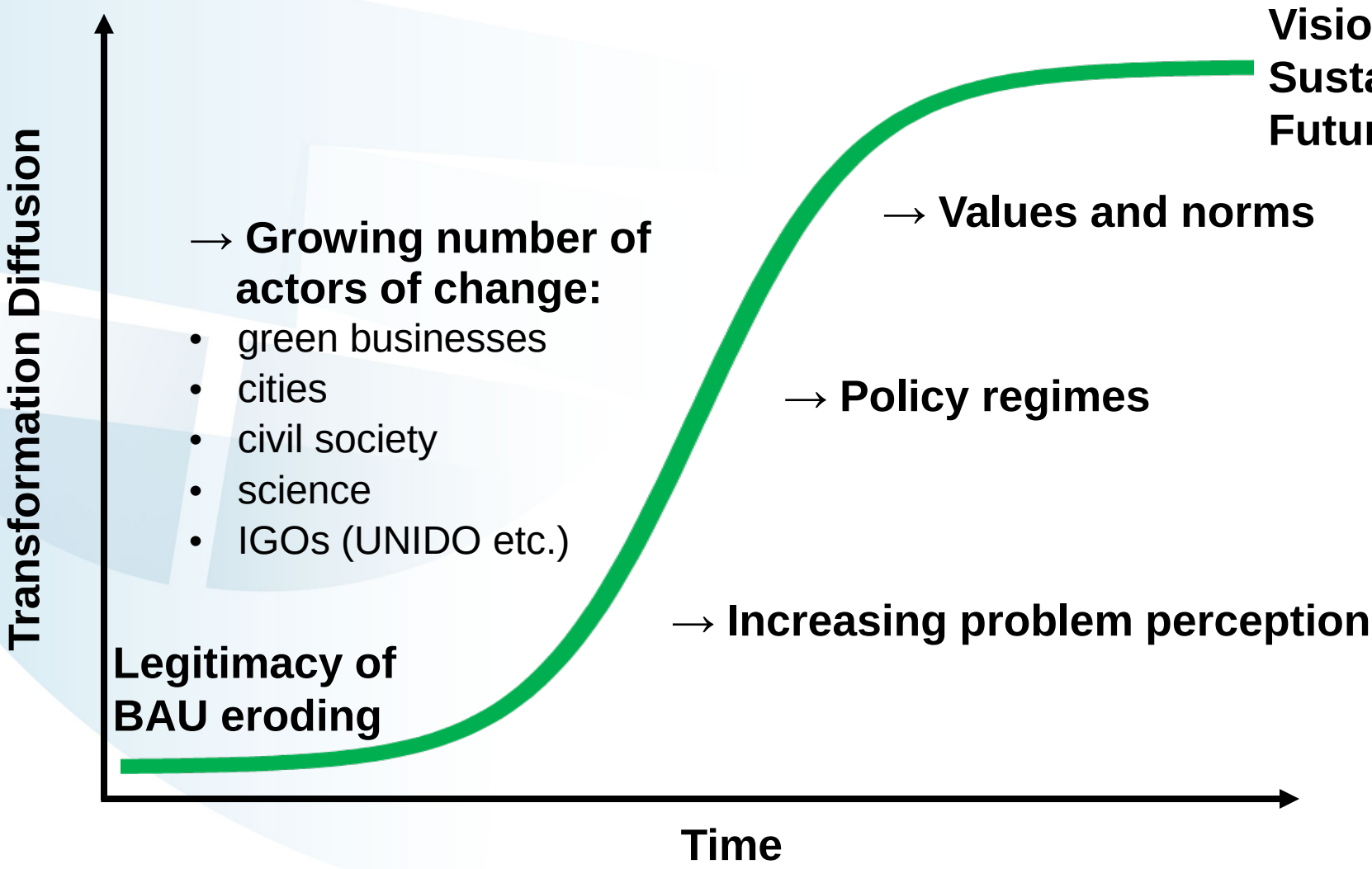
2030 Energy Goals

- Universal Access to Modern Energy
- Double Energy Efficiency Improvement
- Double Renewable Share in Final Energy

Aspirational & Ambitious but Achievable

Sustainability Transformation

"Doing More with Less" within Boundaries



Source: WBGU, 2011