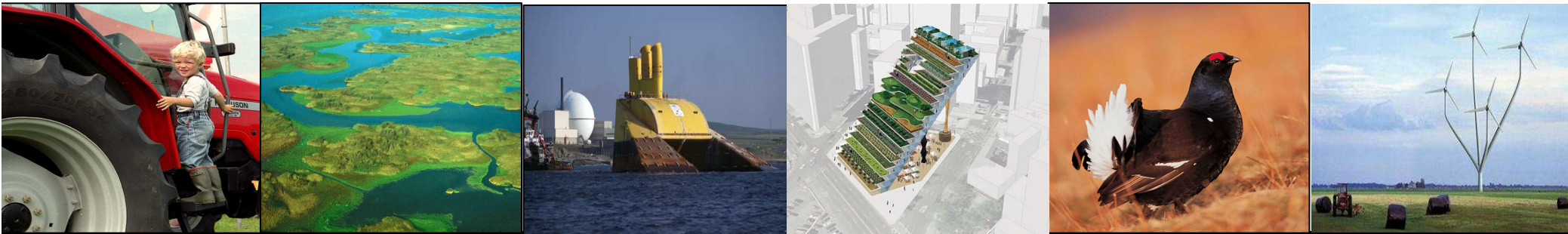


Towards a world summit on sustainable development 2012

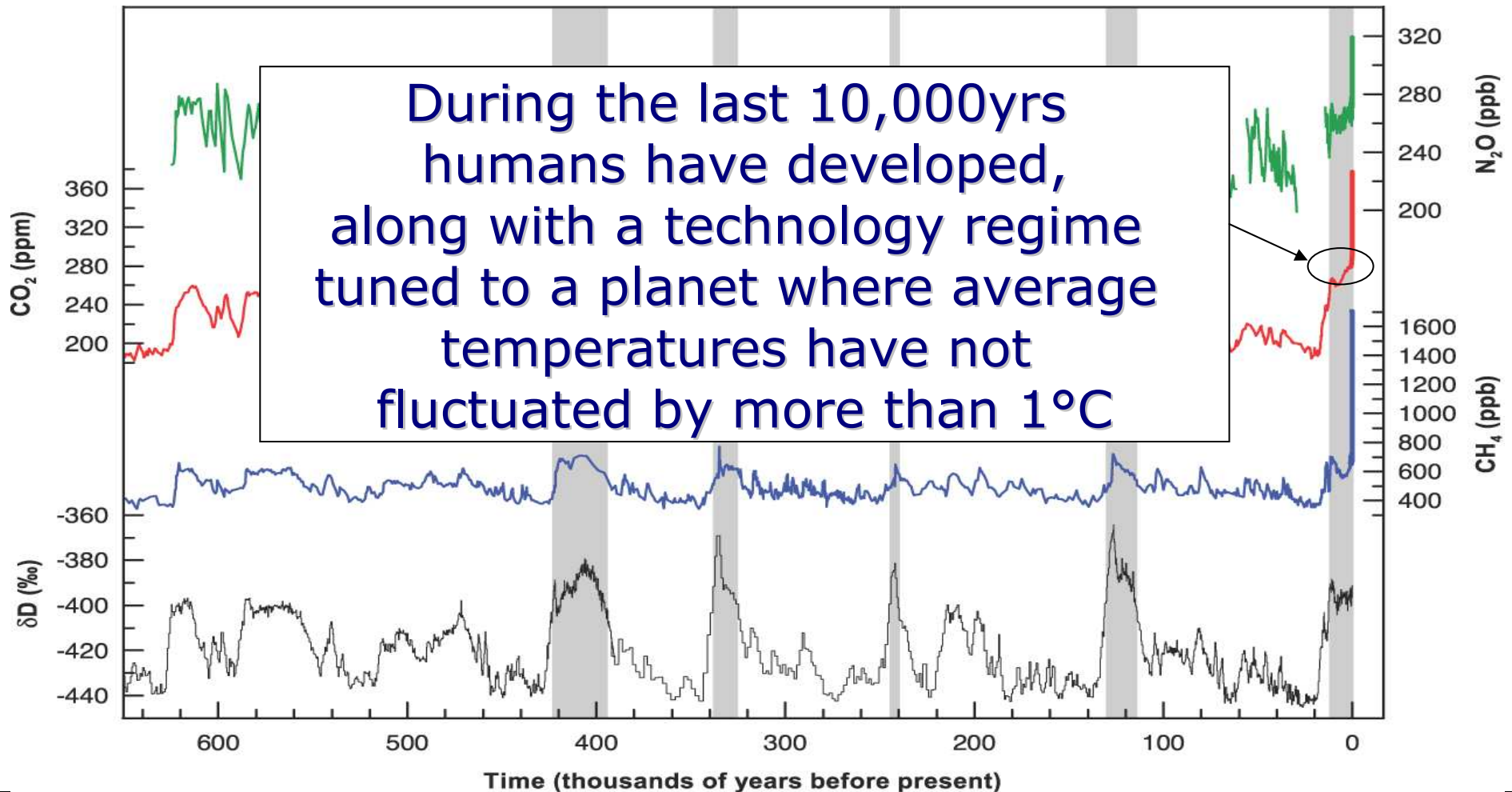
Environmental security - the other challenge for sustainable development

Prof. Jacqueline McGlade
Executive Director European Environment Agency

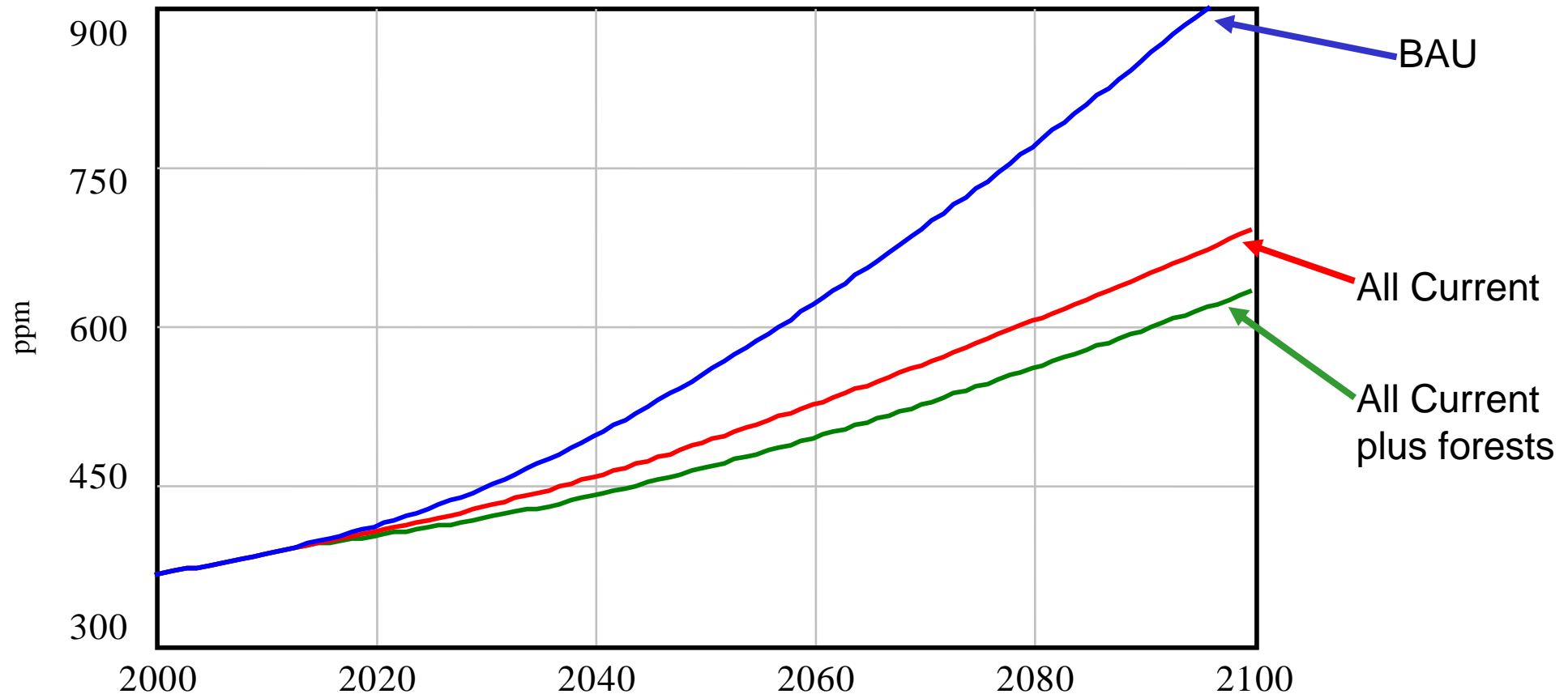


CO₂ concentration over the past 650 000 years

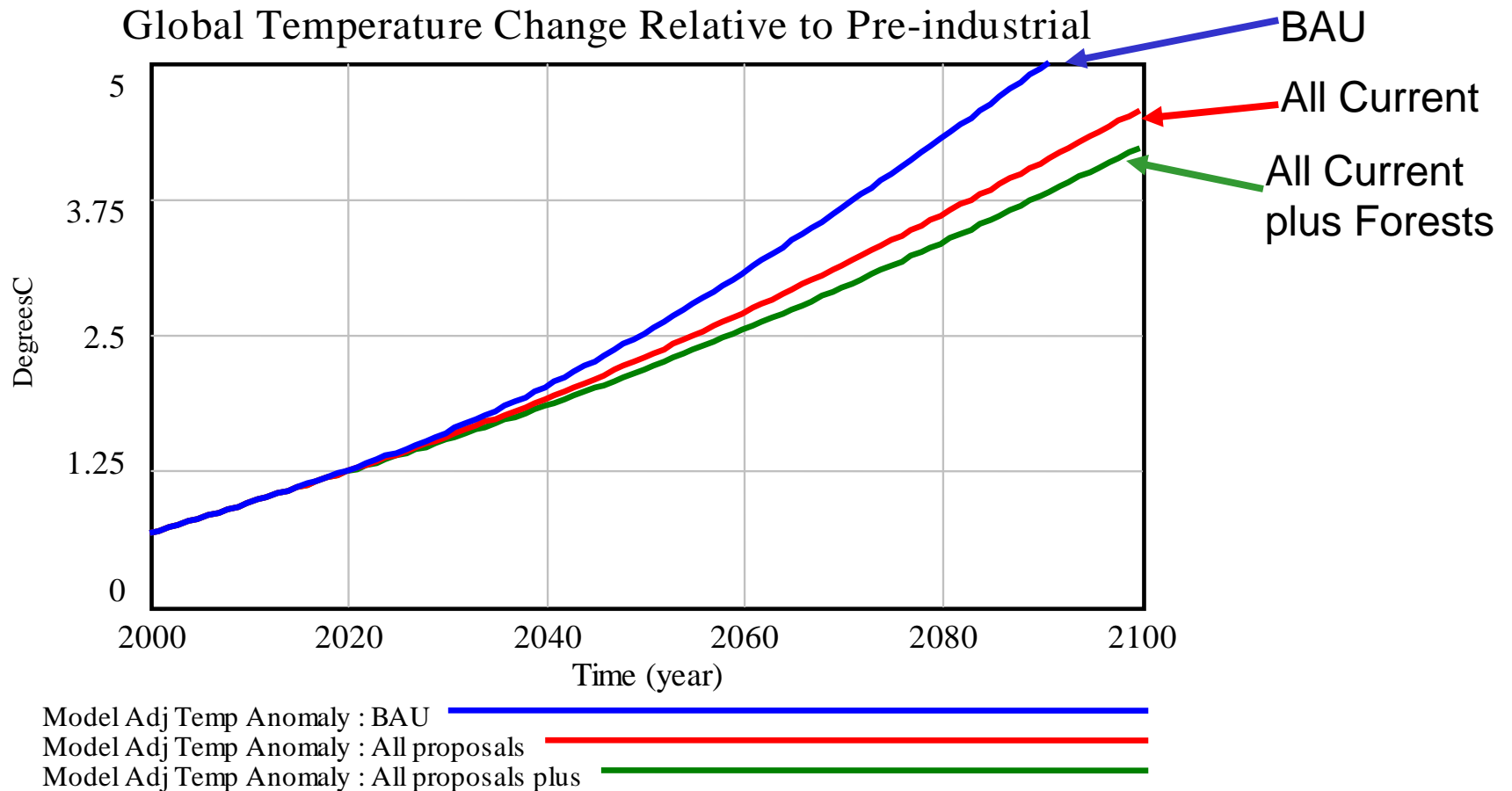
- Due to emissions from human activities the CO₂ concentration is 387 ppm (2007), far exceeding the natural range over the last 650 000 years (180 – 300 ppm)



CO₂ in the Atmosphere Would Continue to Increase



Global Temperature Change

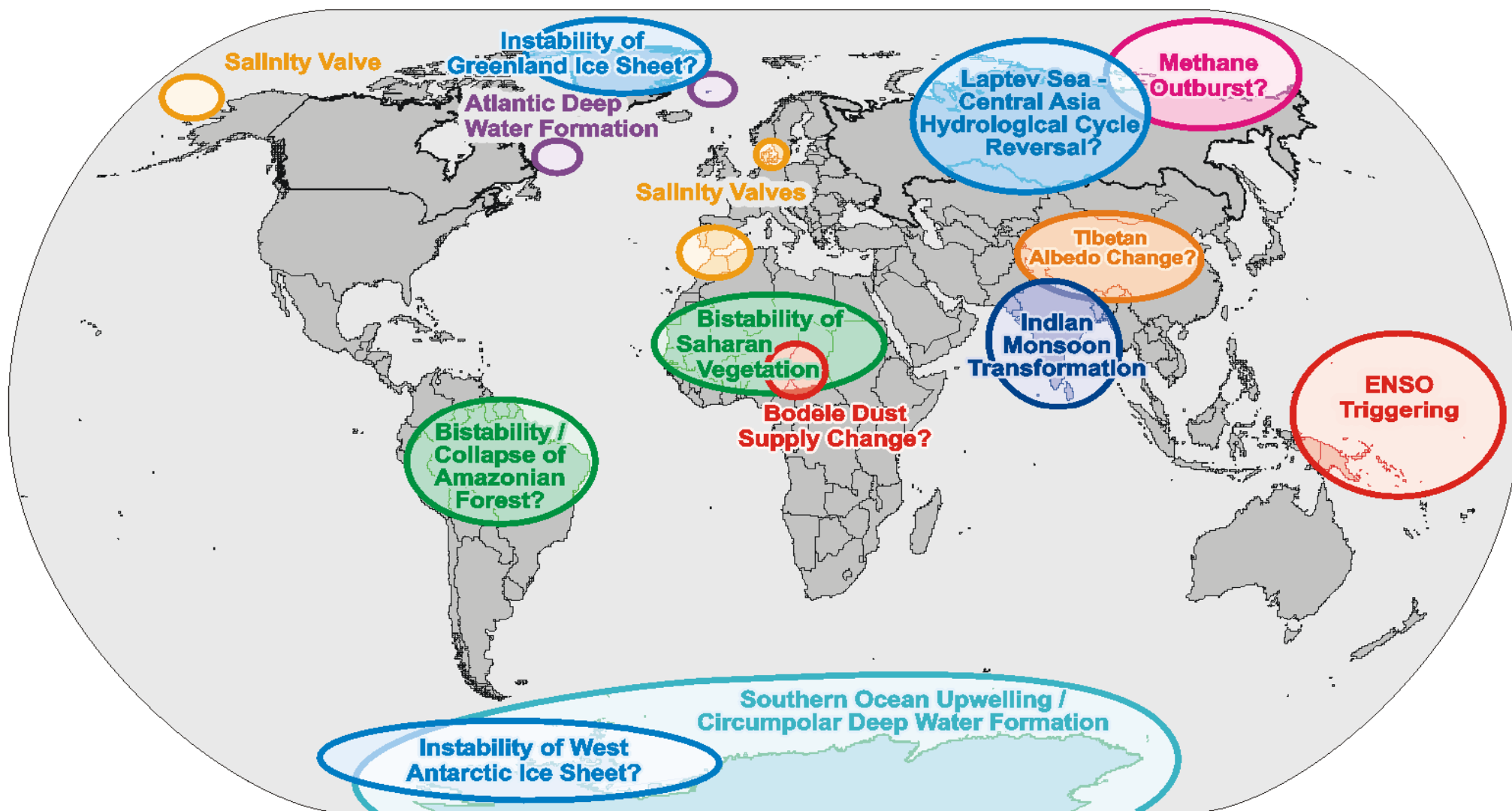




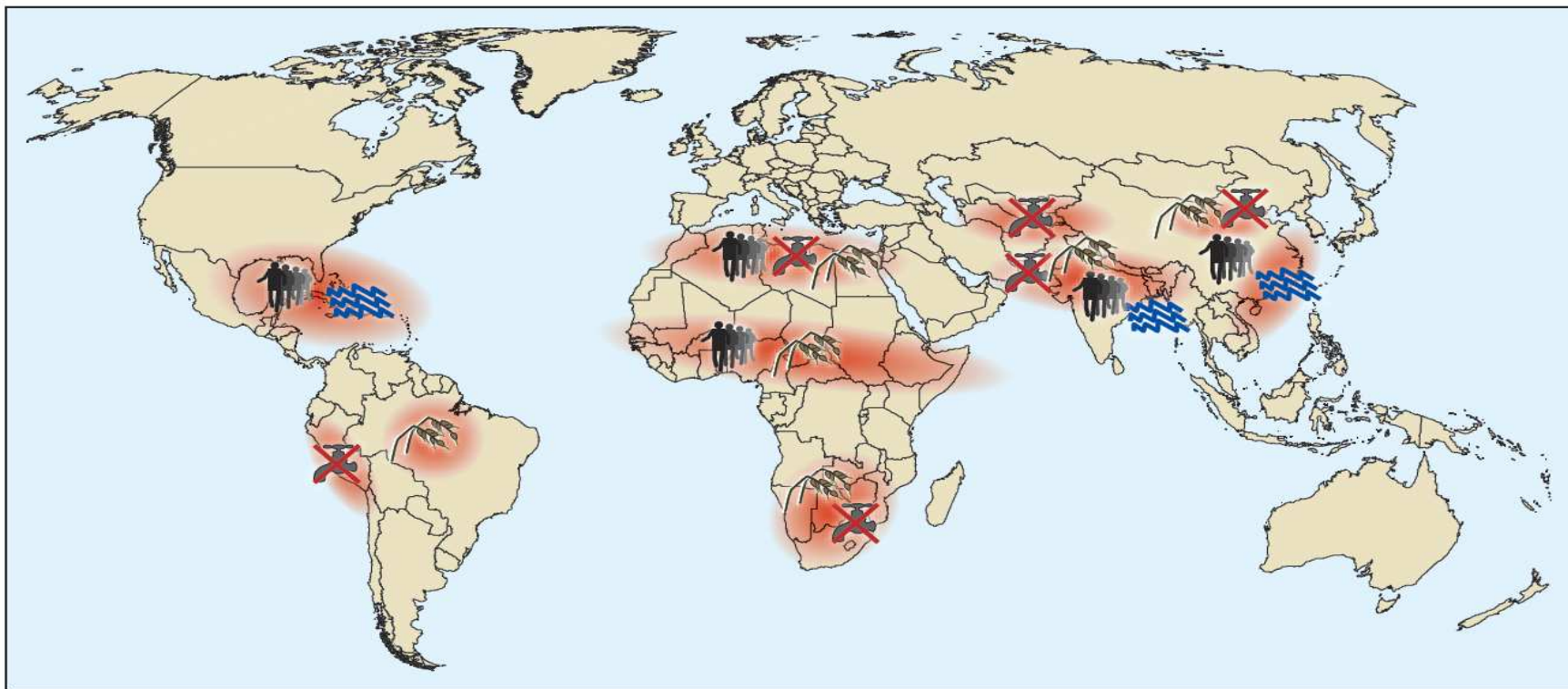
Unbearable



Tipping Points in the Earth System



Security Risks & hot spots caused by climate change



Degradation of
Freshwater Resources



Decrease of
Food Production



Hot Spot



Increase of Storm and
Flood Catastrophes



Migration



Community leaders

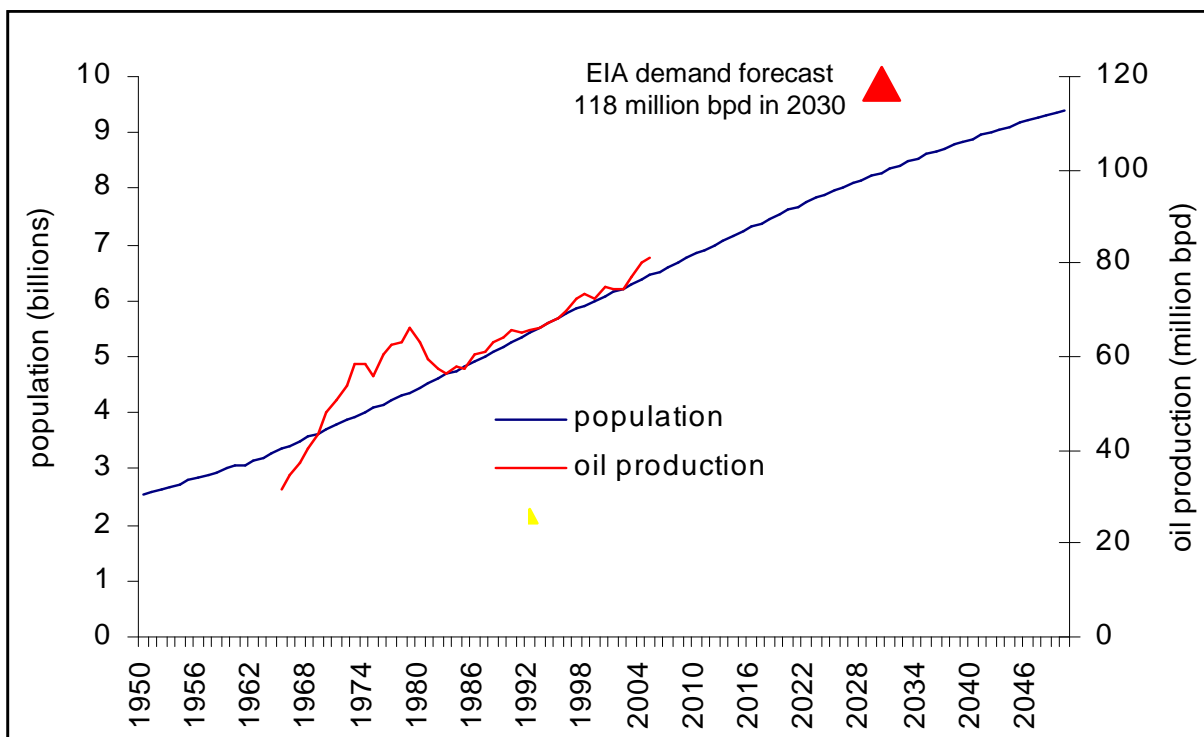


Nature has been evolving for thousands of years, humans have only been here for tens of thousands. In any competition between nature and humans, the fittest will ultimately win. And that of course will be nature!

Bhante Panyasara



World population could grow by 1.8 billion by 2031



Consumption growth since '65:

- total energy 284%
- oil 268%
- gas 435%

Energy demand growth:

- developed world +111%
- emerging economies +645%



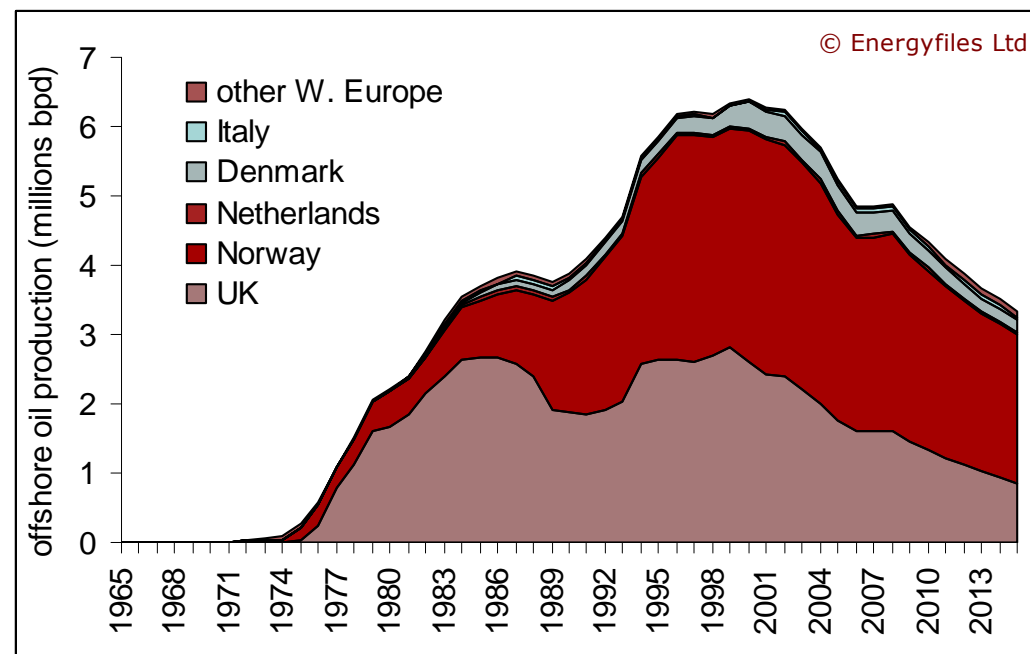
'The world's energy system is at a crossroads.
Current global trends are patently unsustainable
– environmentally, economically, socially.'

IEA, World Energy Outlook 2008

Oil is the real problem - it is the fuel of transportation



picture courtesy Transfuture.net



European offshore oil production forecast

- Oil accounts for 32% of global energy consumption
- Demand is growing
- Non-Opec production is declining
- Major politically-induced constraints

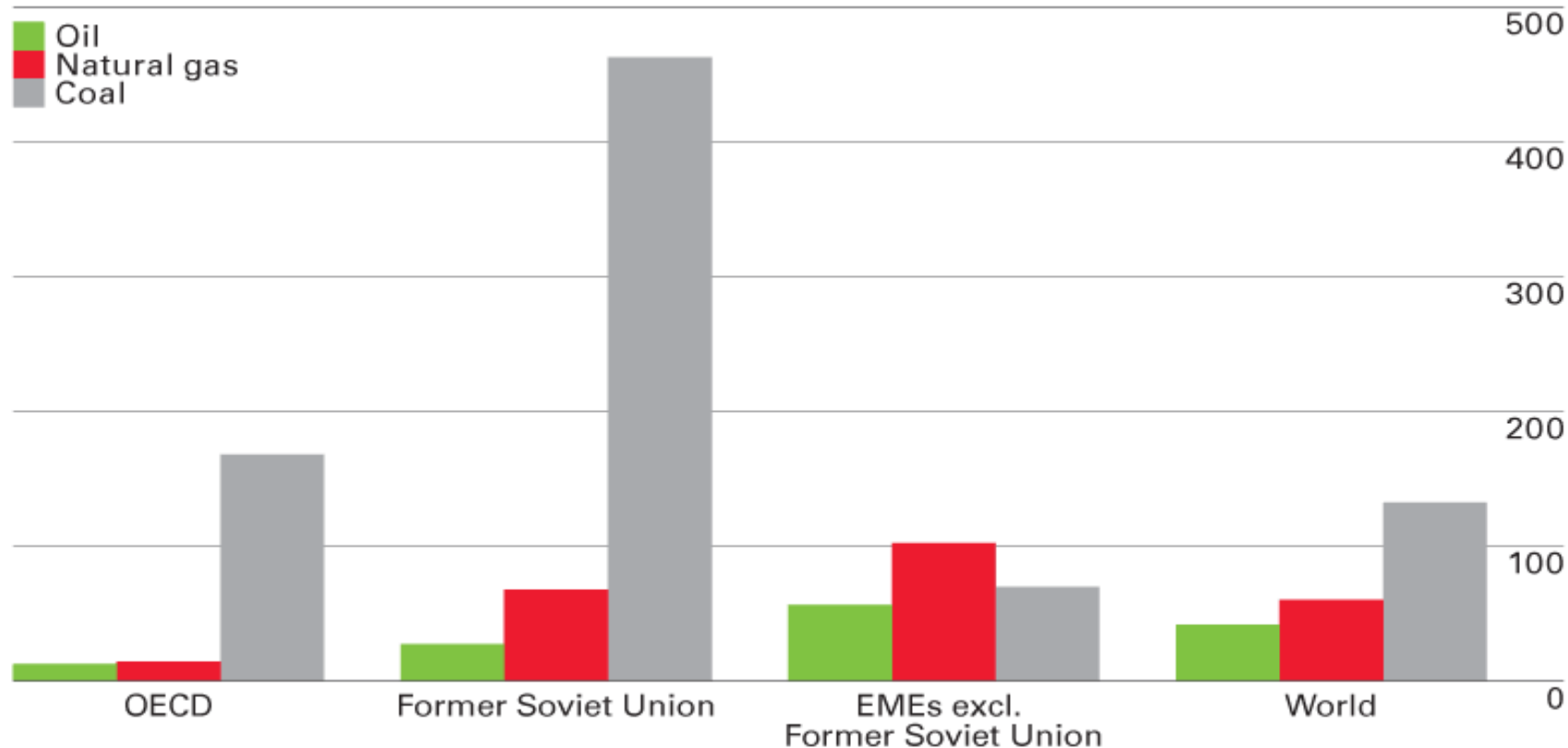


Systemic change in the transport sector
presents huge challenges and opportunities



Fossil fuel reserves-to-production (R/P) ratios

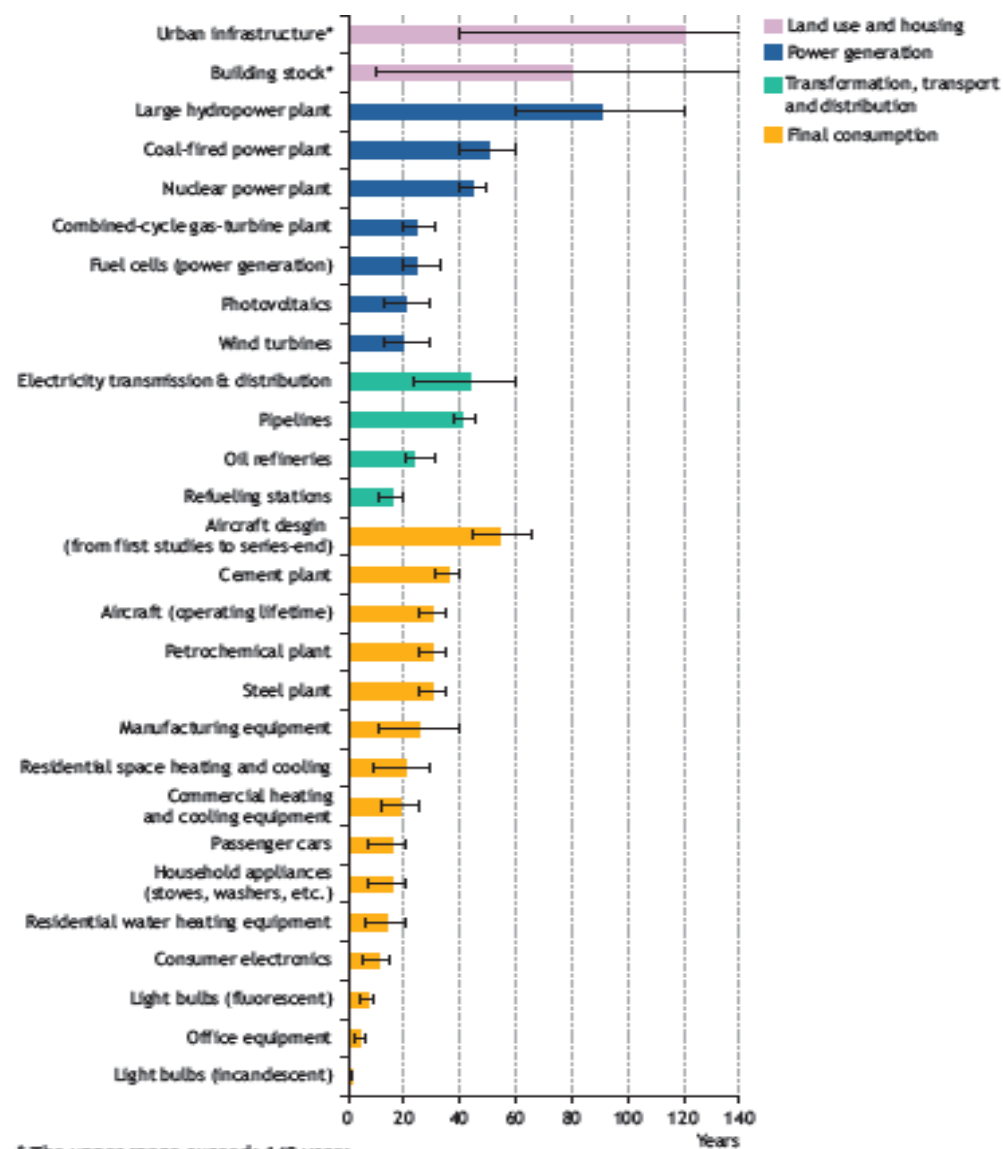
Fossil fuel reserves-to-production (R/P) ratios at end 2007
Years



Coal remains the world's most abundant fossil fuel, with an R/P ratio of more than 130 years. In addition to being cost-competitive, coal has emerged as the world's fastest-growing fuel in part because reserves are located in key consuming countries.



Life expectancy of capital assets

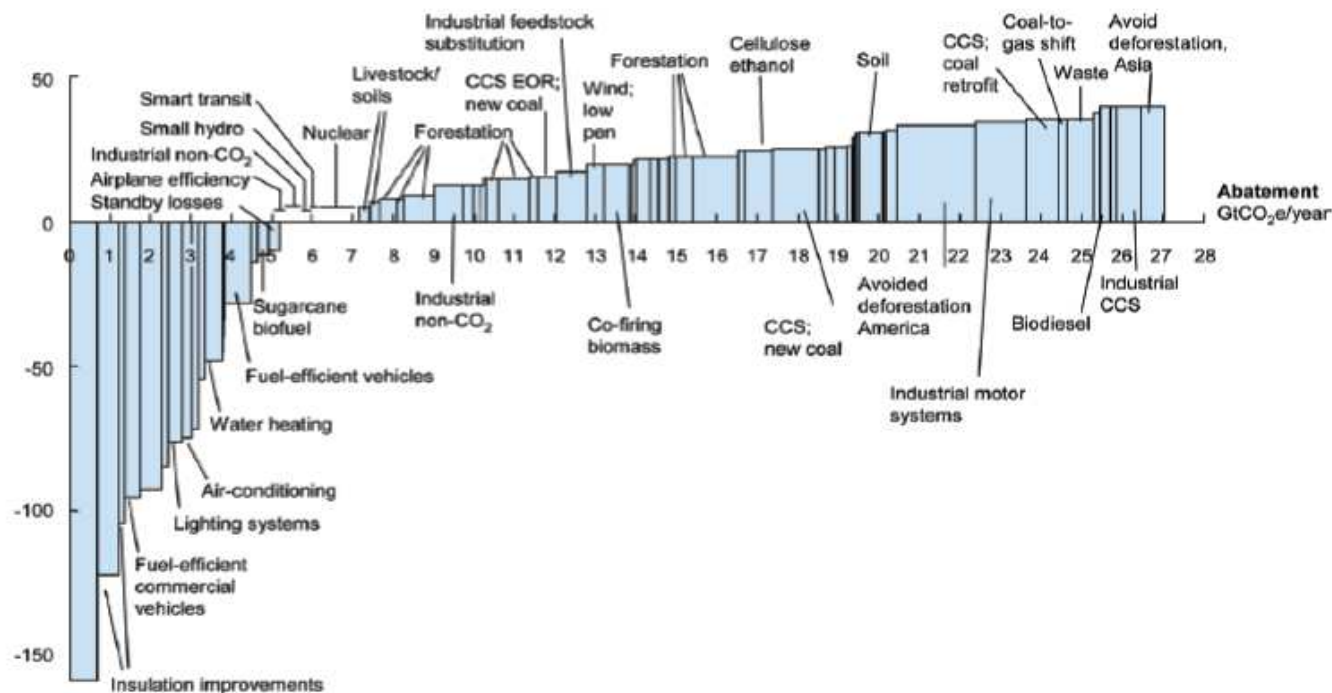


Cost of emissions reductions

McKinsey Global Institute, 2008

THE COST CURVE PROVIDES A “MAP” OF ABATEMENT OPPORTUNITIES

Cost of abatement, 2030, €/tCO₂e*

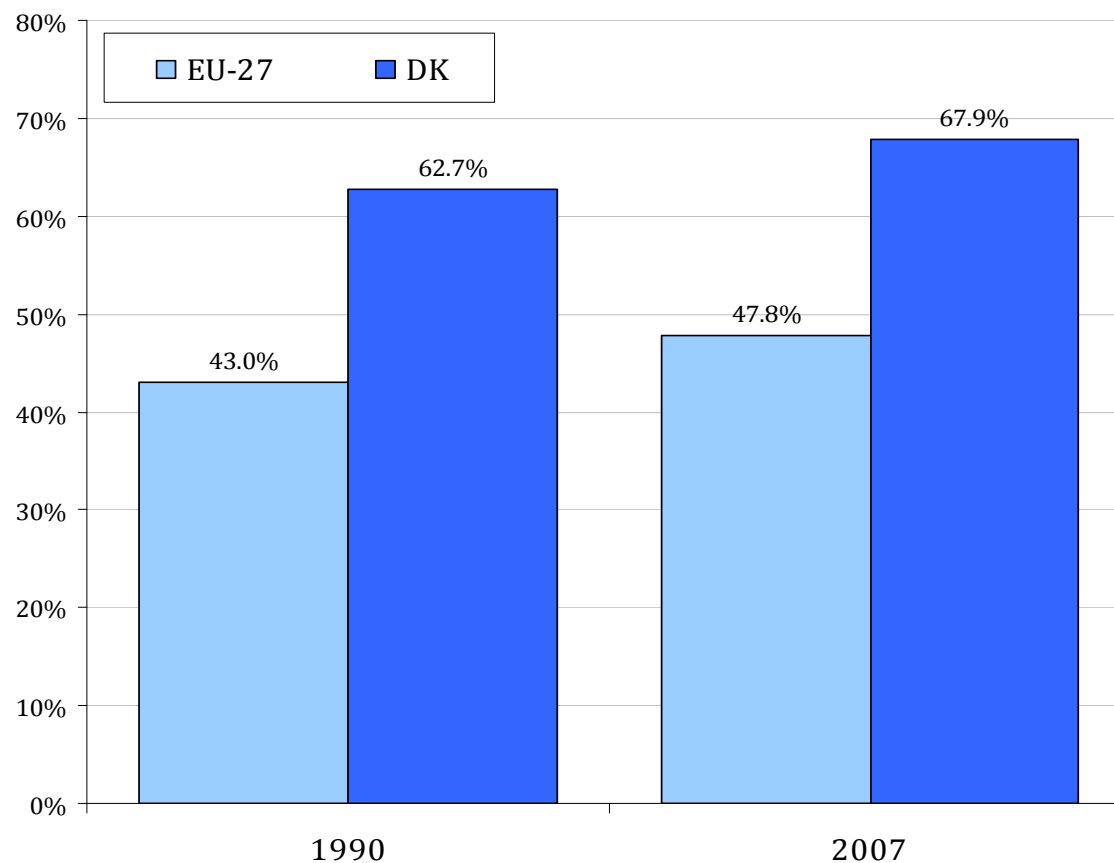


* Tons of carbon equivalents.

Source: McKinsey and Vattenfall analysis



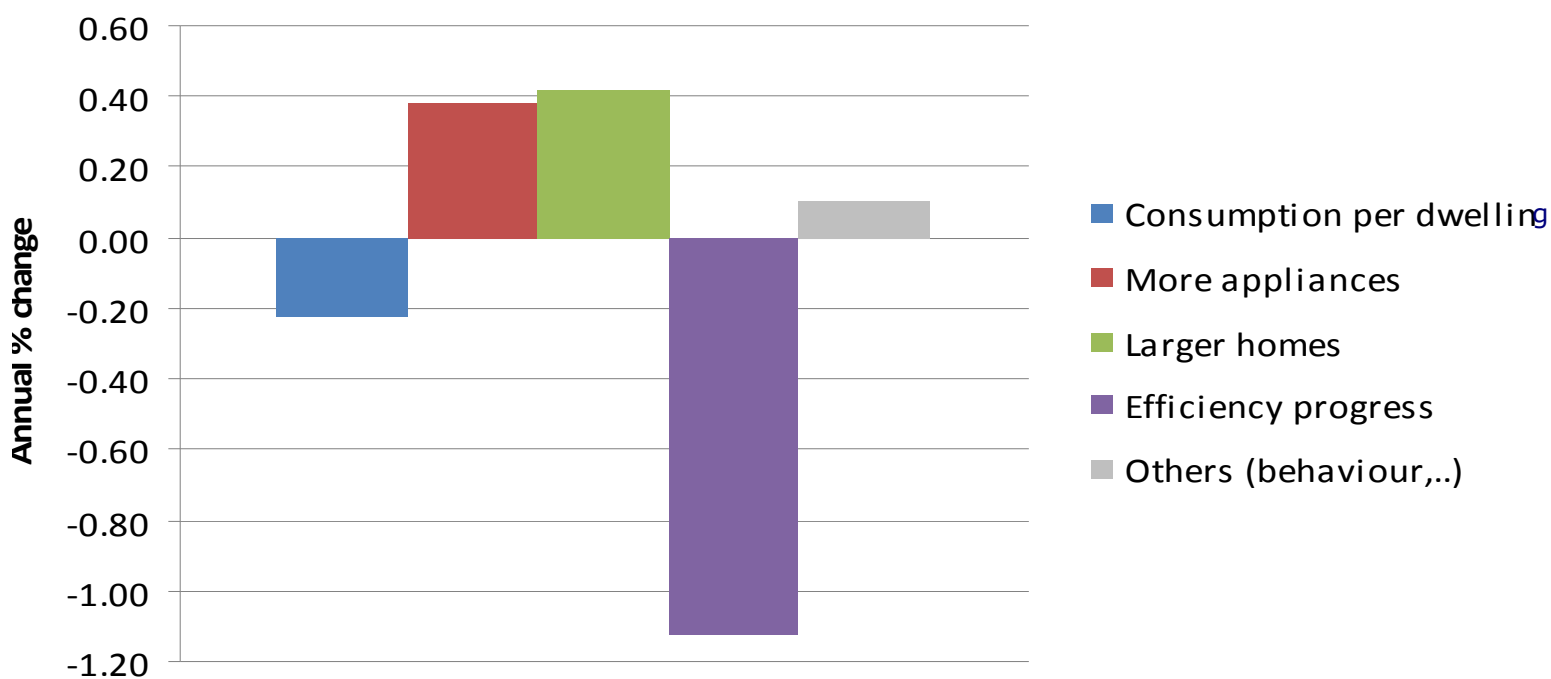
Average transformation efficiency from public conventional thermal power stations and district heating plants



Small efficiencies for
households translate into
huge savings for society



Improved efficiency is offset by changing behaviour



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Track and Plan

Save and Share

You're the key to Hohm

Be the first to conserve energy with Hohm and help us refine the recommendations during our U.S. beta.

Tons of carbon saved

Leaving your car at home just 2 days a week can save 1,590 lbs. of greenhouse gas emissions each year!

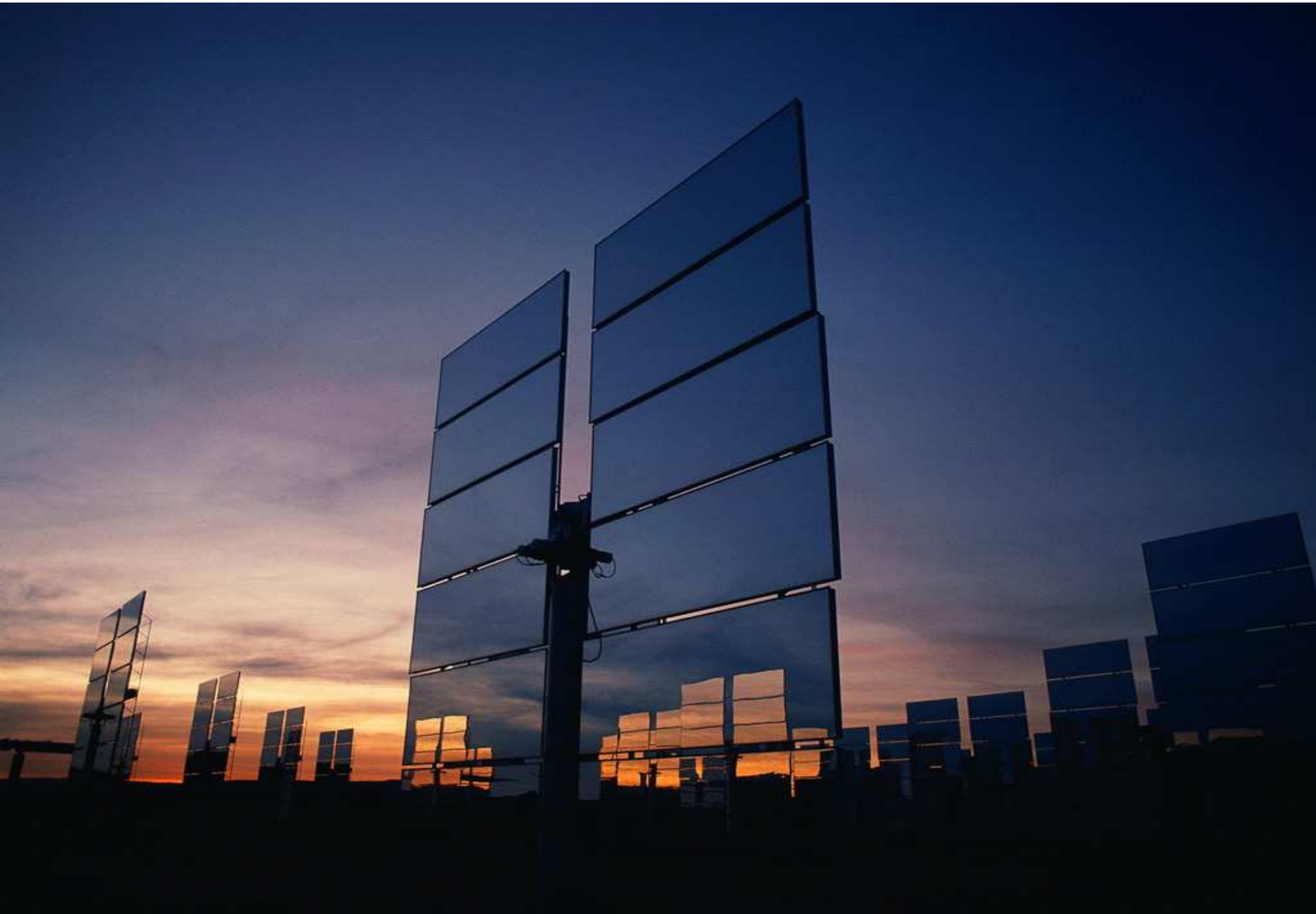
Lighting

Replacing a single 100-watt incandescent bulb with a 32-watt CFL can save \$30 in energy costs over the life of the bulb.

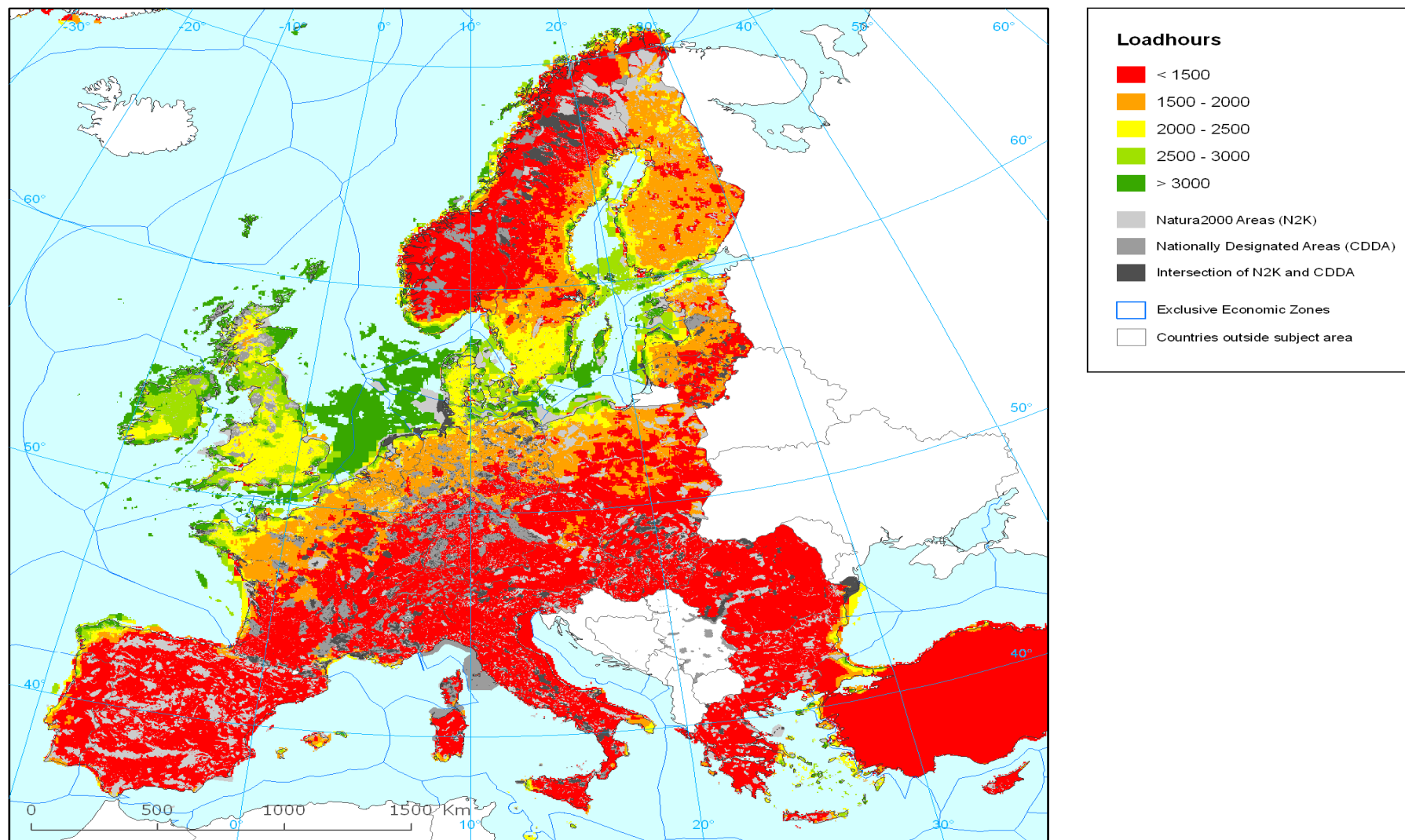
Appliances

A refrigerator built in 1993 consumes twice as much energy as new models.





Wind potential in Europe - EEA





Food insecurity

- >1 billion people go hungry each day, 200m in Africa;
- 30,000 people die each day due to hunger and malnutrition 50% are children;
- 1.4 billion people remain poor, with ultra poor in SSA;
- average farm sizes in India, Tanzania, China, Ethiopia are getting smaller;
- $\leq 12\%$ more arable land available that is not presently forested or subject to erosion or desertification;
- area of land in farm production could be doubled but only by massive destruction of forests and loss of biodiversity and carbon sequestration capacity and high marginal costs of investment;
- technology and innovations are spreading but if blocked will see poverty, hunger perpetuated

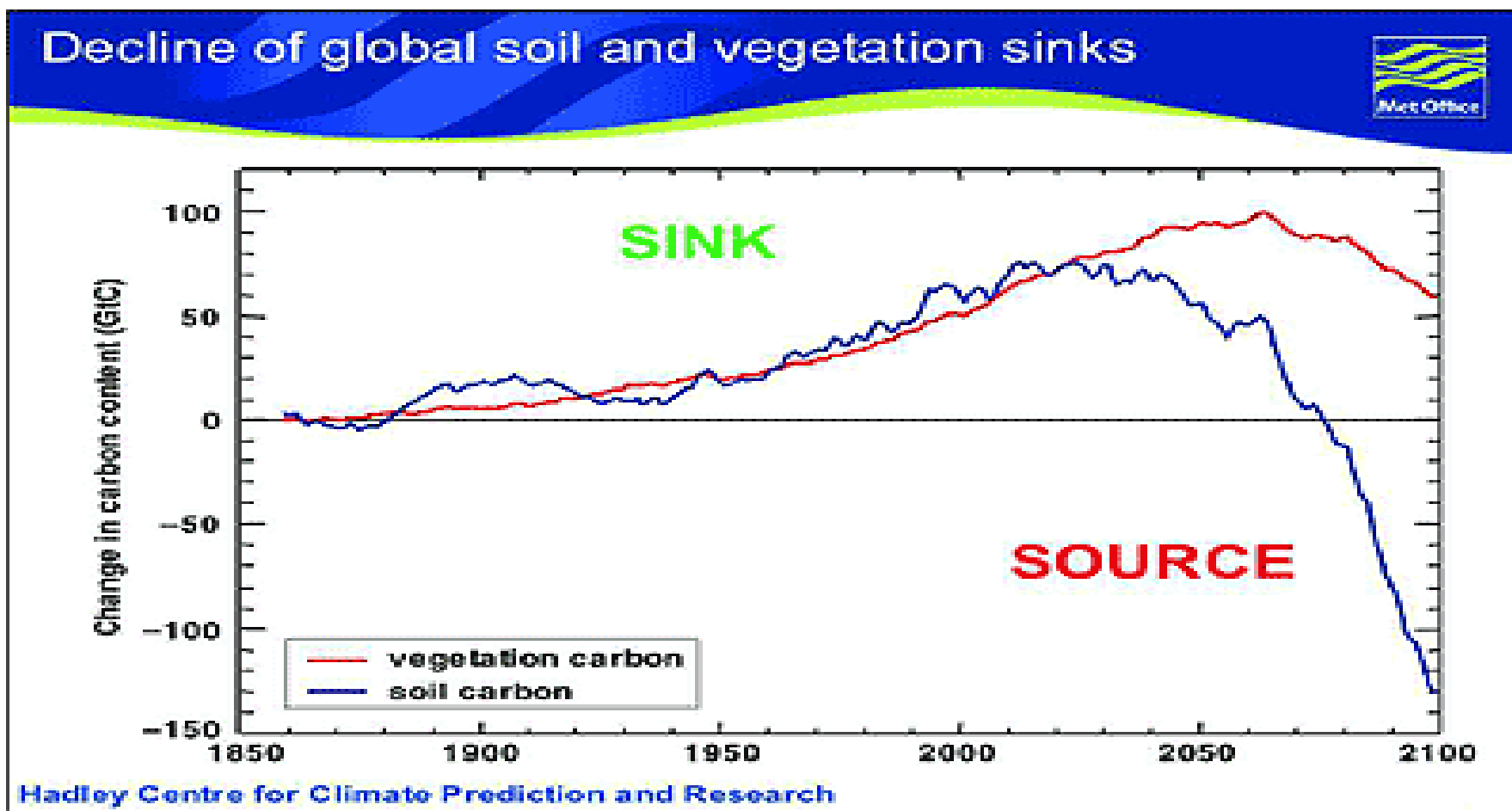


Agriculture and greenhouse gas emissions

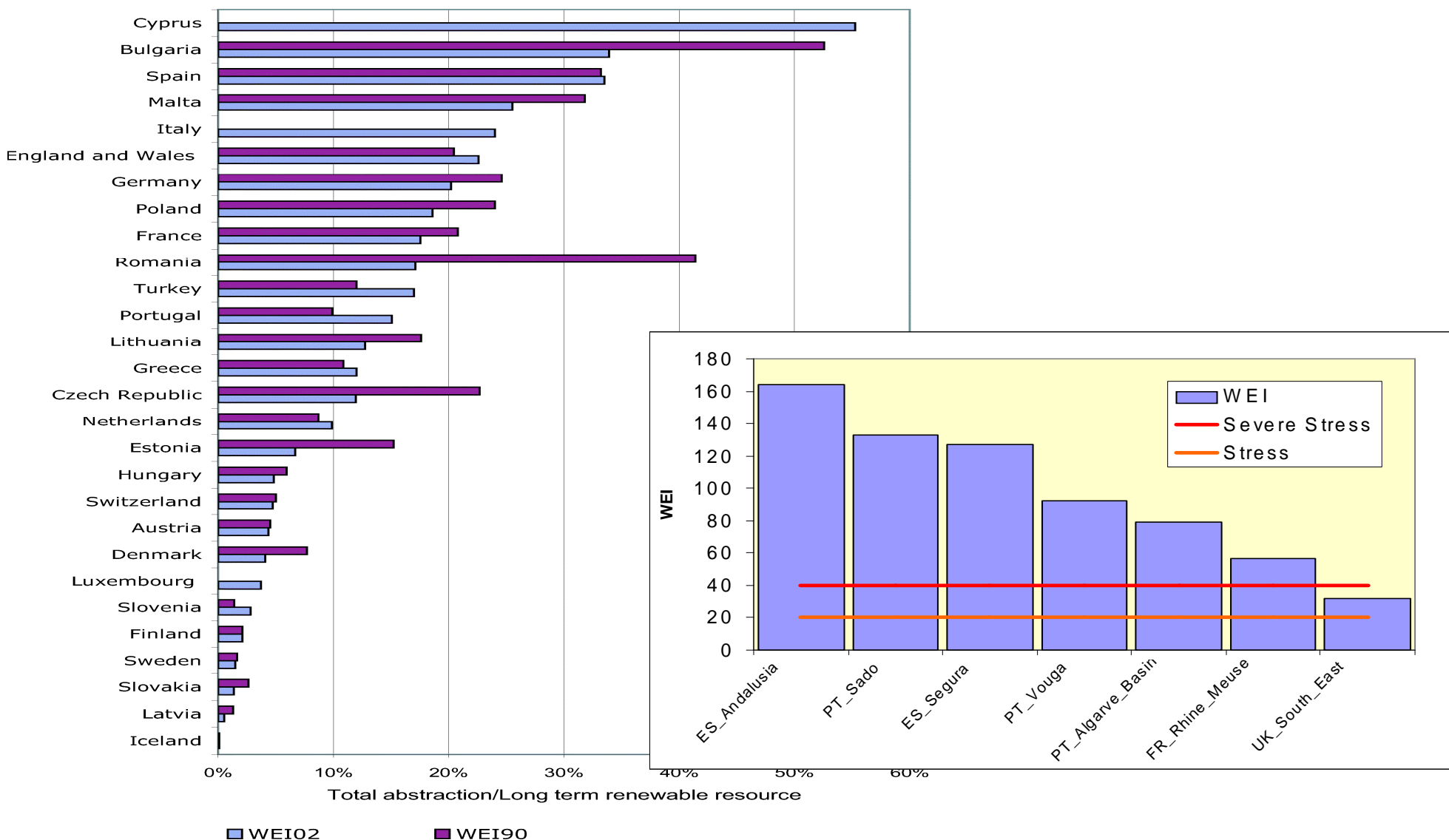
- Part of the problem globally: agriculture 13.5 % CO₂ equiv. cf transport 13.1 %, forestry 19%
- Part of the solution: biomass, carbon sequestration, soil management;
- Productivity may need to double over the next 40 years;
- Indicators for sustainability: productivity, land use, soil loss, irrigation water use, energy use, greenhouse gas emissions, total trends;



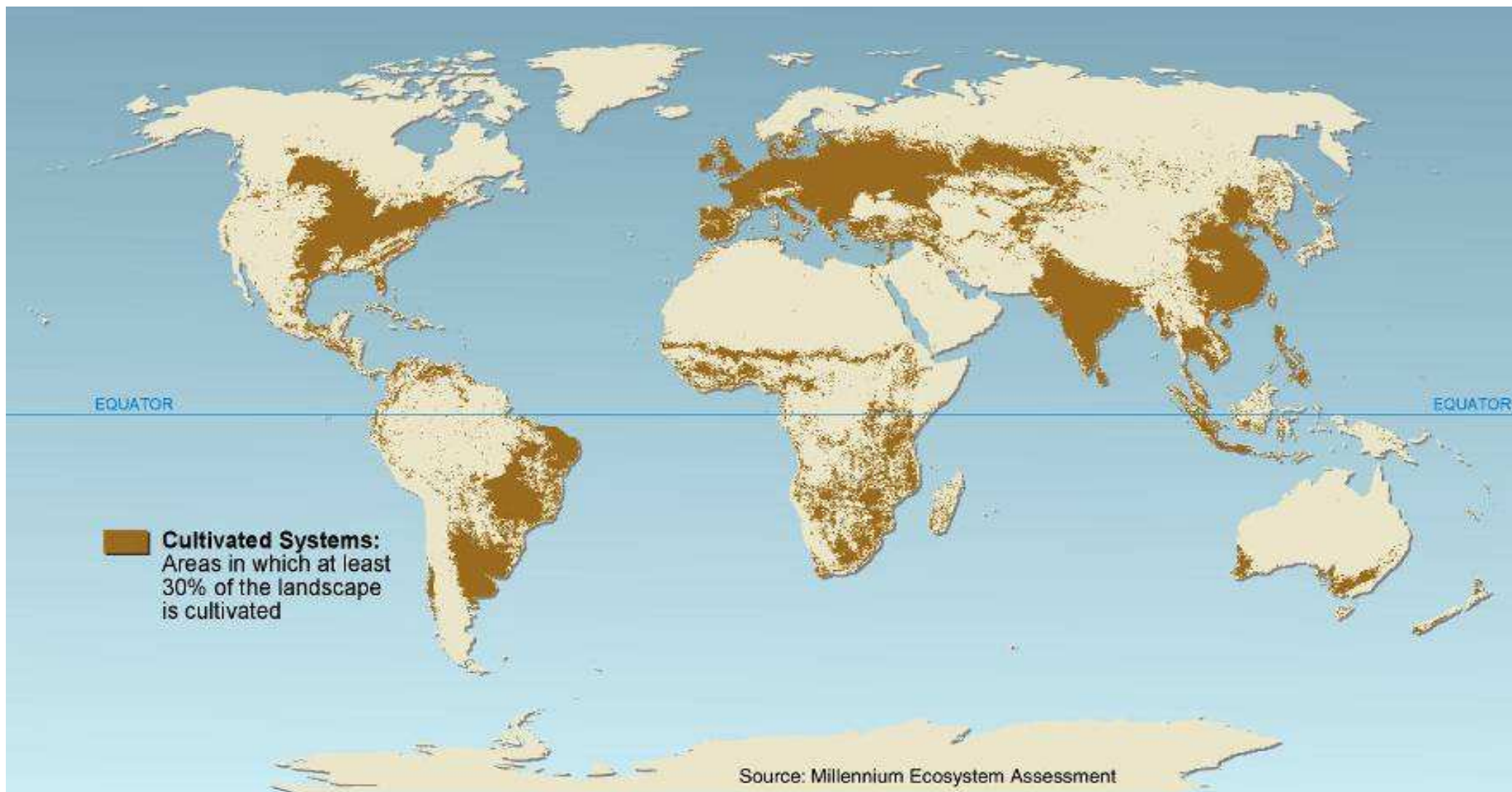
Soils' climate regulating function



Water Insecurity – Water Exploitation Index



Areas of Cultivated systems



Some Elements in an Ecoagriculture Landscape



Monteverde Cloudforest Reserve provides important source of water in landscape and downstream

Path to waterfall on Private property brings income to locals in form of Ecotourism

Shaded coffee extends wildlife habitat from reserve and reduces erosion

Windbreaks provide habitat and corridors for wildlife, control erosion, and protect livestock from wind

Coffee, Corn, Sugar Cane and other products are sold at local Cooperative

All fences are live rows of trees

San Luis Valley, Costa Rica



New forms of vertical farming



...a fast cropping concept!







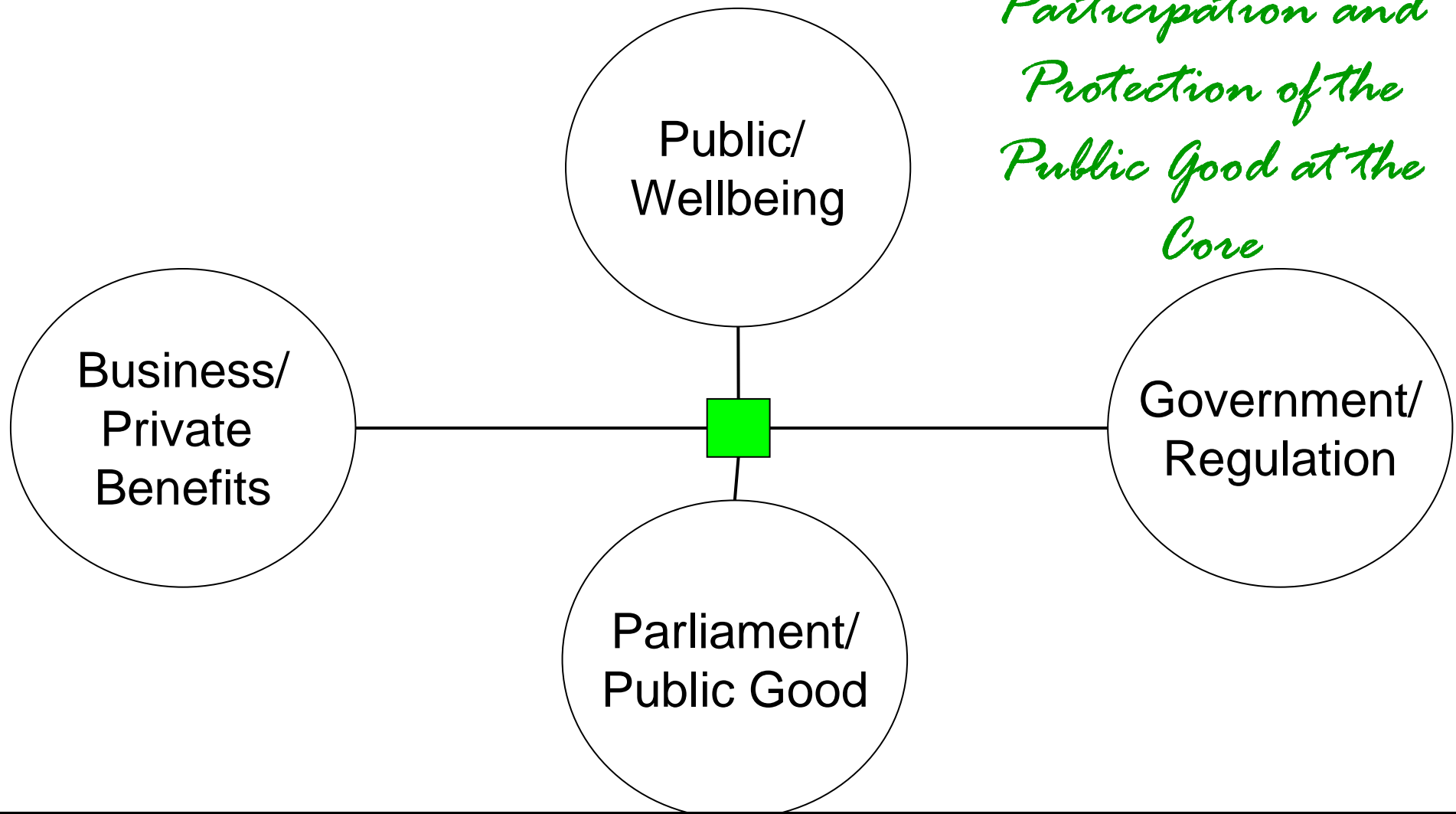
Communities



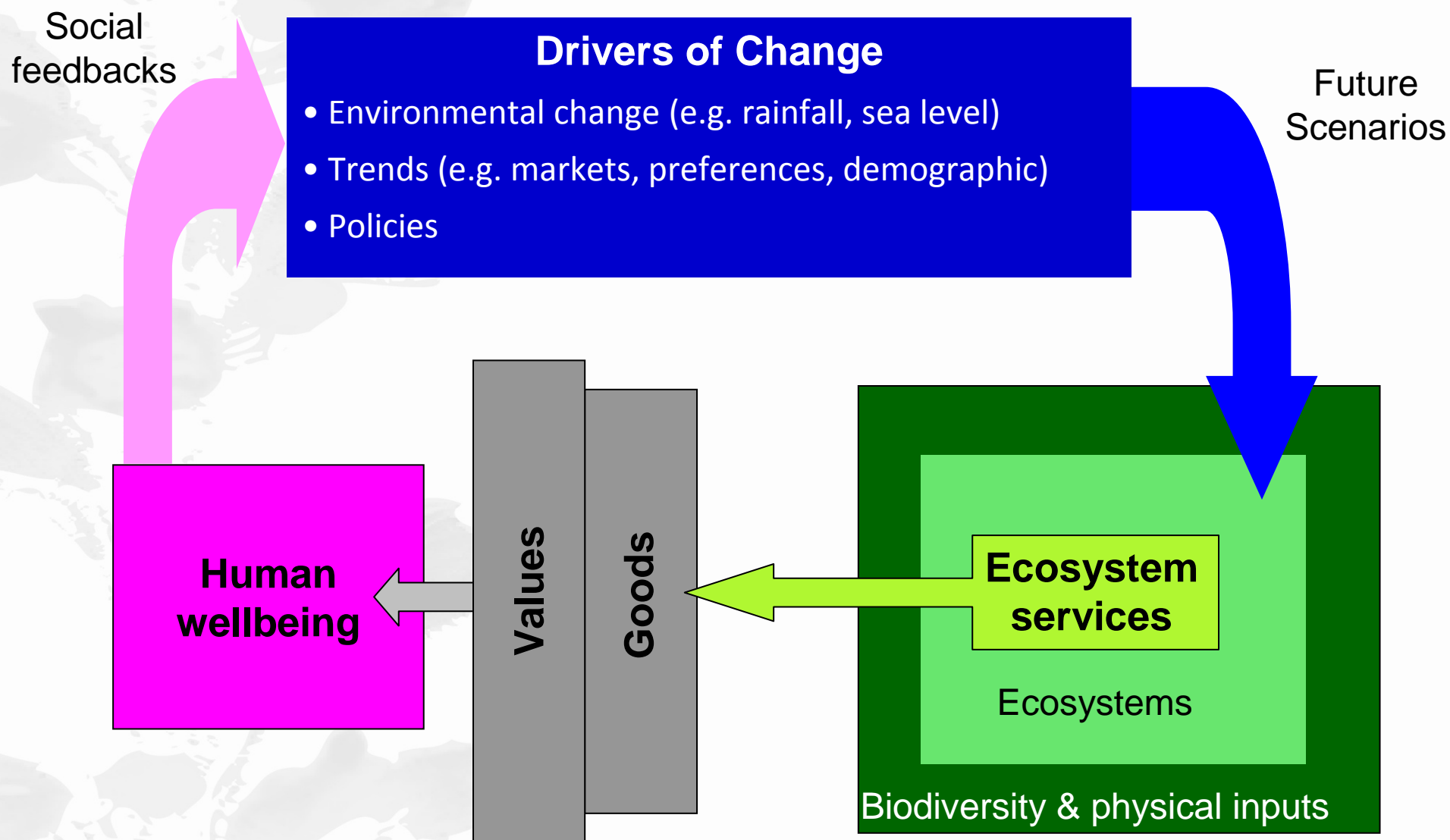
helping to secure our future



Green Economy



Phase 1 – Evolving Conceptual Framework issues

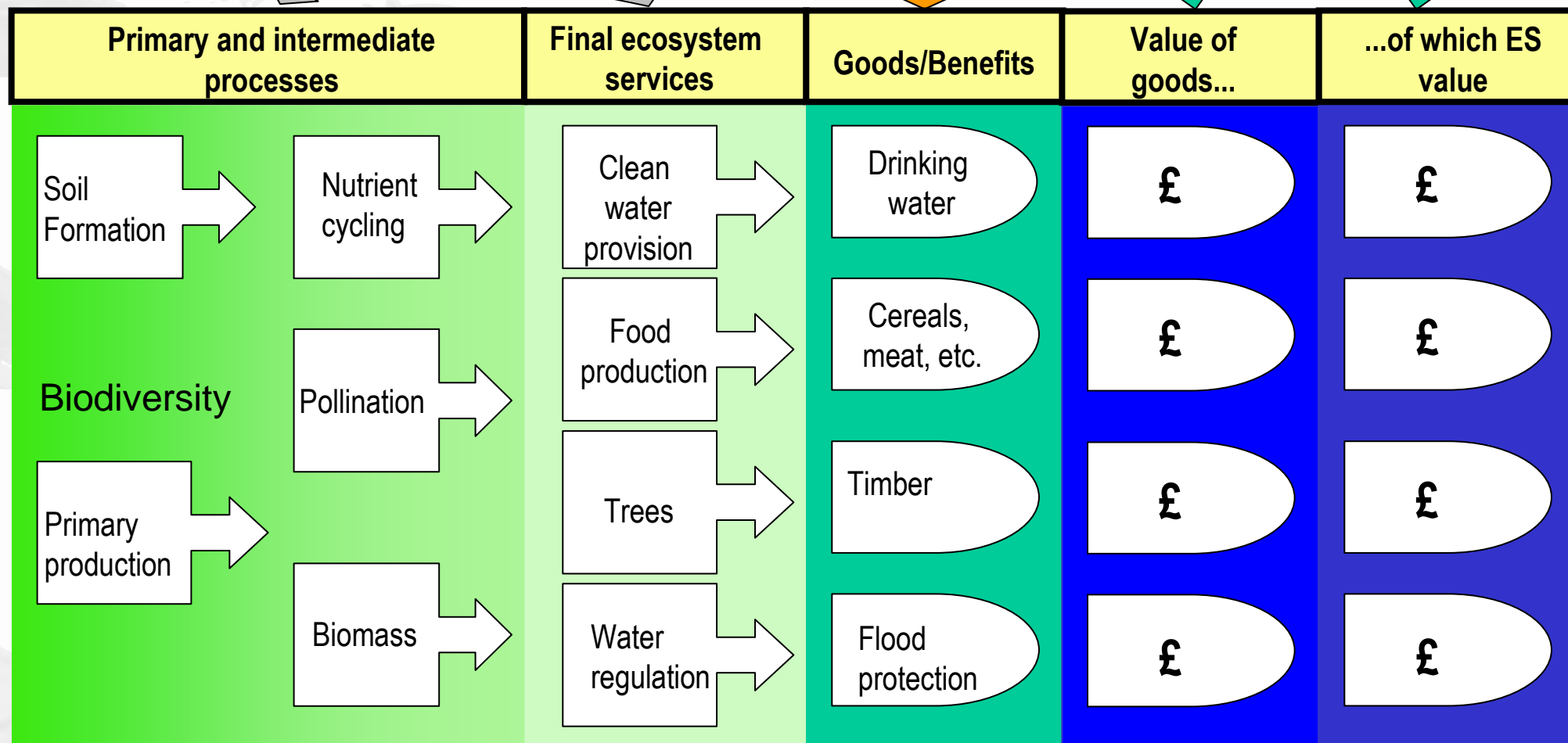


Avoiding double accounting

Physical and chemical inputs

Other capital
inputs

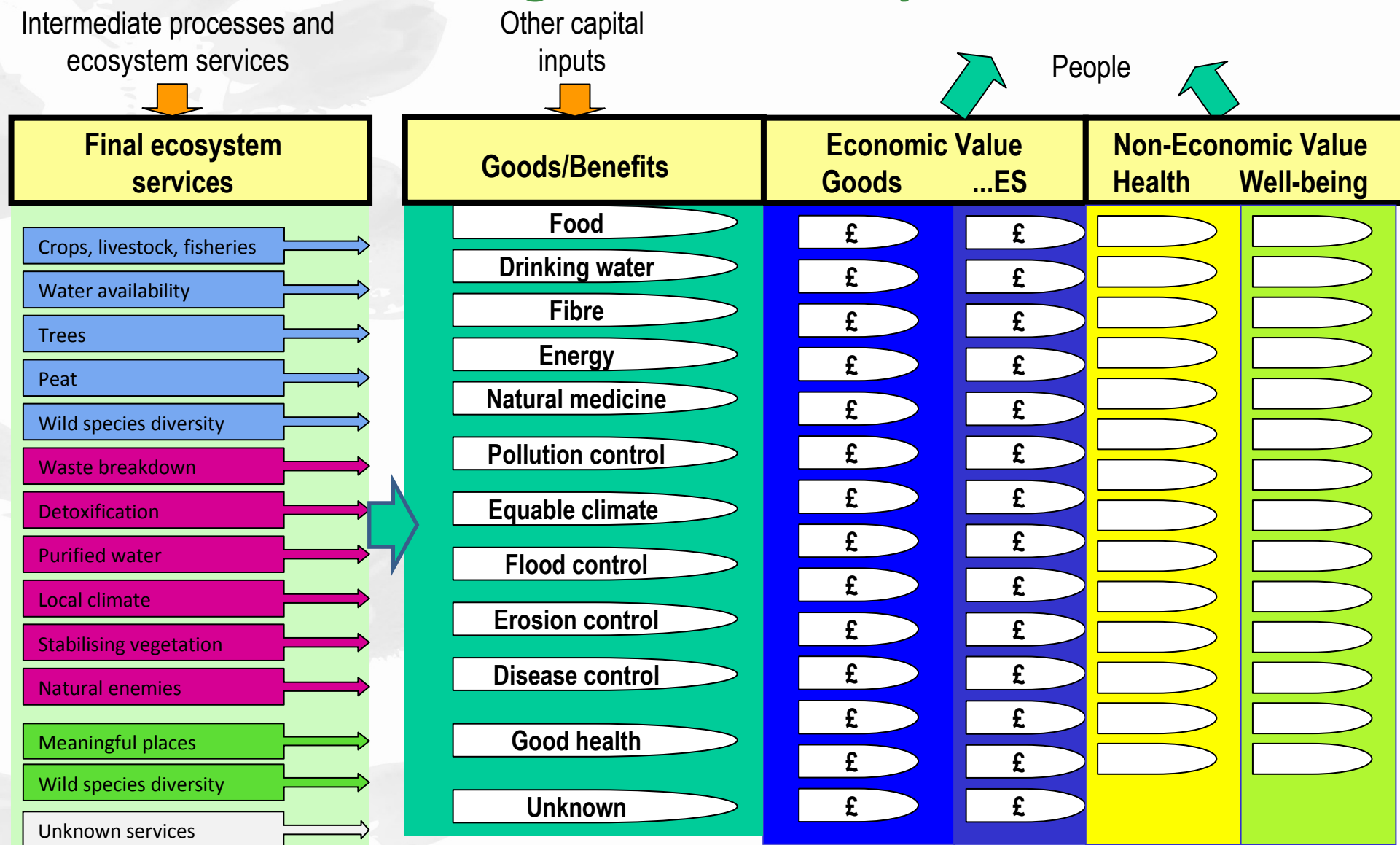
People




Ecosystem type, services and examples of goods

Ecosystem service type	Primary & Intermediate ecosystem services and processes	Final ecosystem services (<i>example of goods</i>)
Provisioning		Crops, livestock, fisheries (food) Peat bog (energy, fertiliser) Water quantity (domestic and industrial water) Trees (energy, carbon sequestration) Purified water (drinking water) Wild species diversity (crop relatives, bio-prospecting)
Cultural		Meaningful places (aesthetics, recreation, tourism, education) Wildlife (aesthetics, education, tourism, recreation)
Regulating	Climate regulation Pollination	Local climate (equable climate) Stabilising vegetation and habitats (erosion control) Water availability (flood prevention) Waste breakdown and accumulation (healthy environment) Natural enemies (disease control) Detoxification (clean air and water)
Supporting	Weathering Primary production Decomposition Soil formation Nutrient cycling Water cycling Ecological interactions	

Measures of value of goods and ecosystem services



A photograph of a forest stream with mossy banks and trees. The water is clear and reflects the surrounding greenery. The banks are covered in vibrant green moss and small plants. Tall, thin trees with green foliage line the stream, creating a dense forest scene.

To build a future in which humans can thrive will need policy decisions and citizen actions to be based on a clear understanding of the true cost of using the planet's natural capital and ecosystems