



World Energy Council
CONSEIL MONDIAL DE L'ENERGIE

THE ADVANCED ENERGY TECHNOLOGIES AGAINST CLIMATE CHANGE

Sofia, 27-28 May, 2008

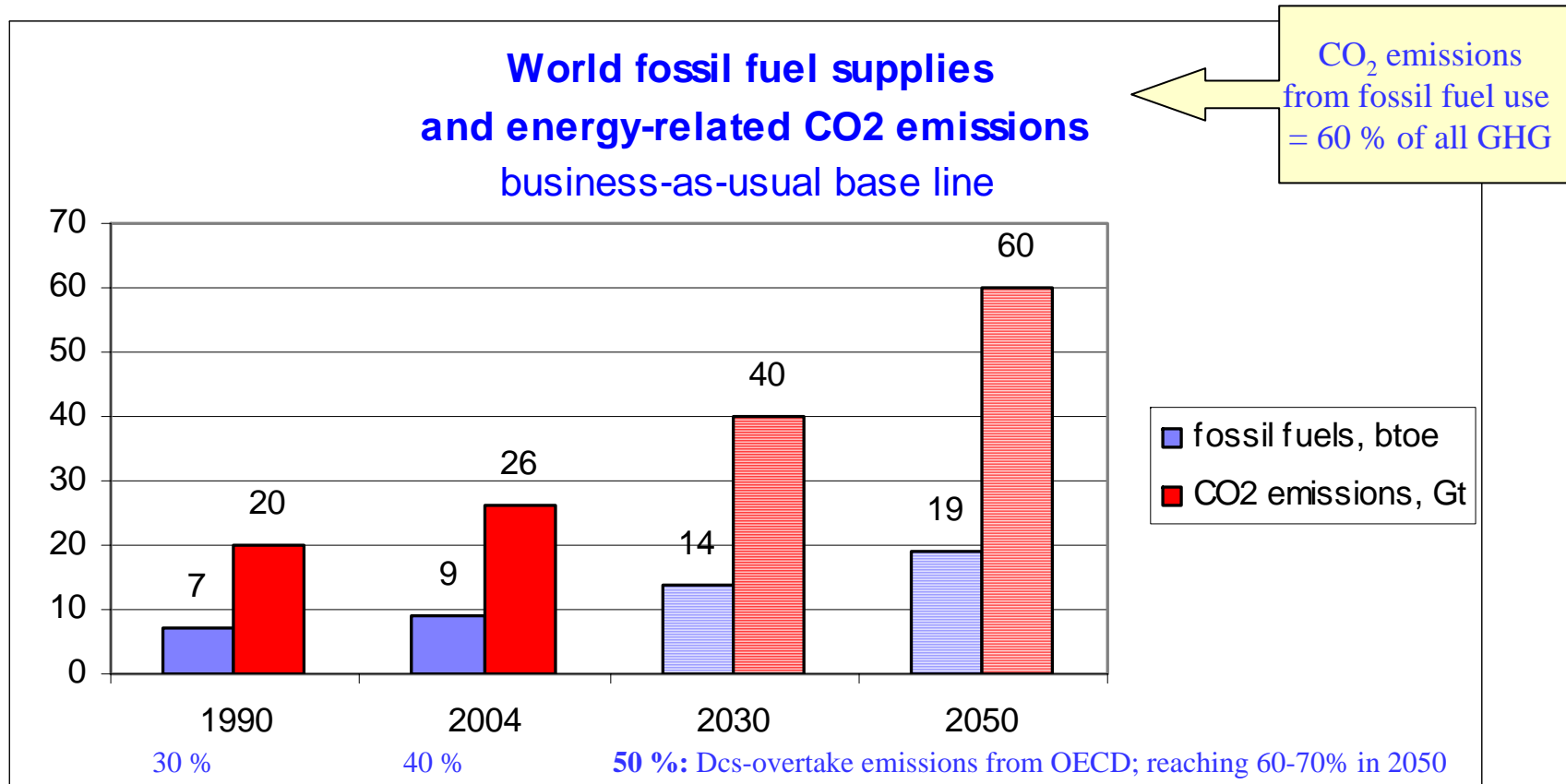


Energy and Climate Change

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World Energy Council

The present global energy dynamics are unsustainable.



Source Figure: 1990-20030: IEA, World Energy Outlook 2006, p. 492, 493; 2050: IEA, Prospects for CO₂ Capture and Storage, Paris 2004, p. 101, 109; source insert: 1990-2030: IEA, WEO 2006, p. 492, 512; 2050: WEC, Global Energy Perspectives to 2050 and Beyond, Report 1995, appendix C, scenario B: share developing countries in world primary energy supplies



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Major emitters by sectors

- Electricity: 41%-largest ,but provides greatest reduction leverage;
- Transport: 21%-Growing everywhere. Key challenge for emissions reduction;
- Industry: 18%-Fast growth in developing countries; offset by increasing efficiency everywhere;
- Buildings: 13%-Steady growth; wide variation in emissions intensity.





Growing concerns about climate change

- The growing concerns force to re-think about to:
 - change current energy policies by focusing on sustainability of the long-term energy market;
- with an ultimate goal:** to shift to lower carbon economy without compromising economic growth.



Why current policies are limited?

- Ineffective and short-sighted;
- Confusing and unfocused;
- Inadequate to face the global scale of the issue;
- Lead to more energy import dependence.

What priorities of alternative policies should be?

- to support diversification of current energy mix;
- to support technology development & deployment;
- to restrain emission growth in transport & develop carbon- free initiatives.



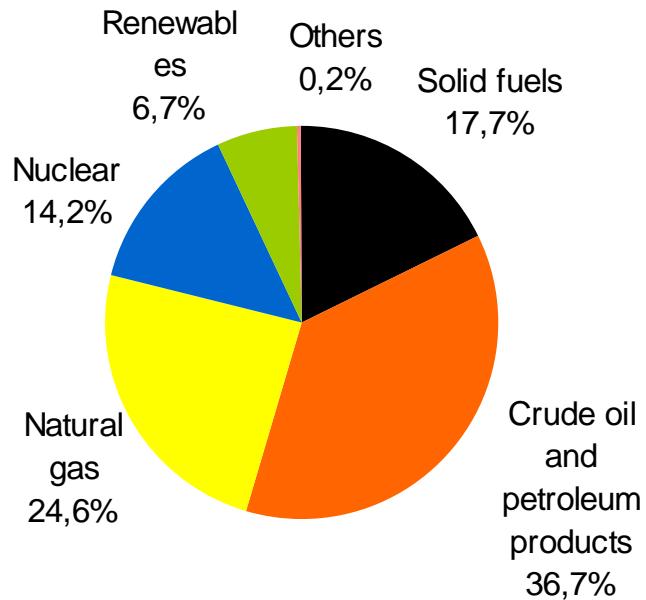
Which way to take???

Increasing
Dependency

A Low Carbon Future



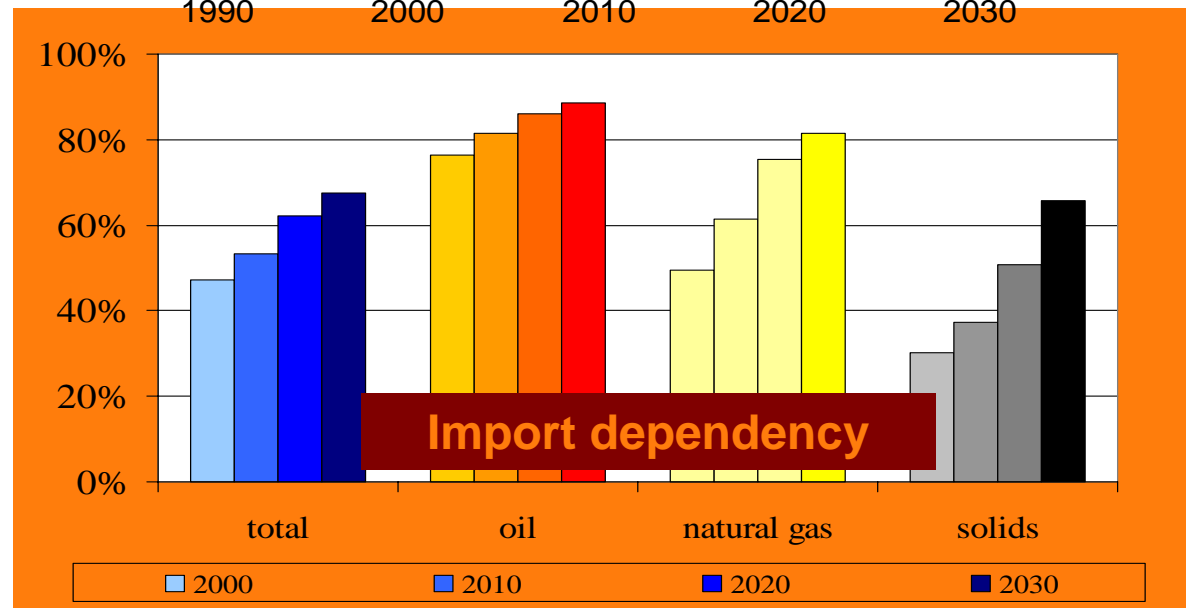
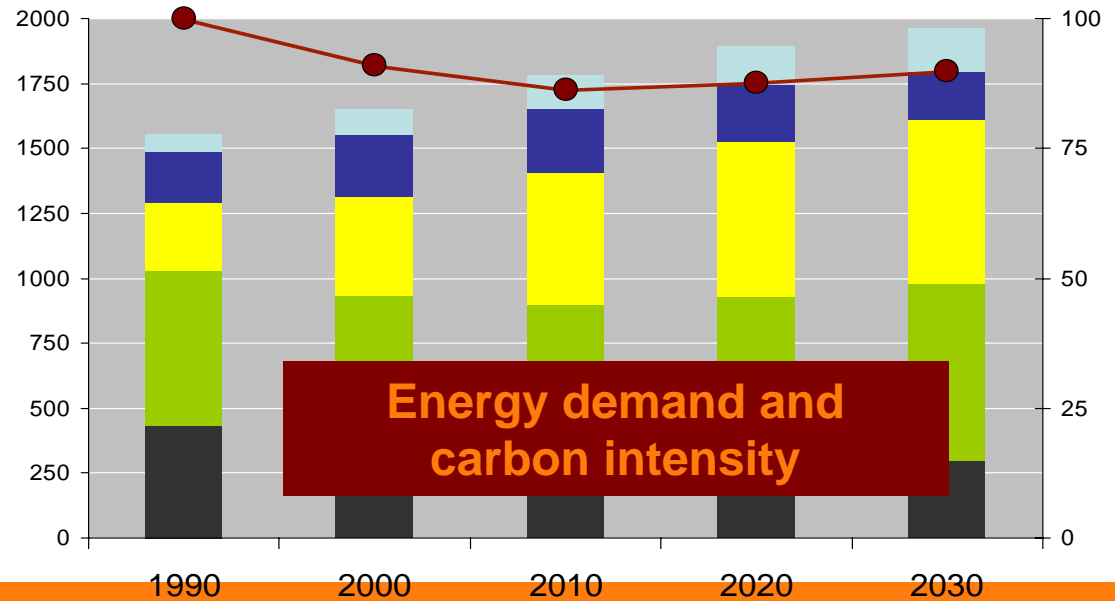
The EU energy mix: Business as usual is not sustainable



2005

~ 80% fossil fuel

Source: EUROSTAT



EU response: An Energy Policy for Europe

THE KEY DRIVERS 3x20% by 2020

By 2020 -20% EU GHG

By 2020 +20% EFFICIENCY

By 2020 binding 20% RENEWABLES in final energy consumption at EU level

BIO-FUELS

Min 10%
binding

ELECTRICITY

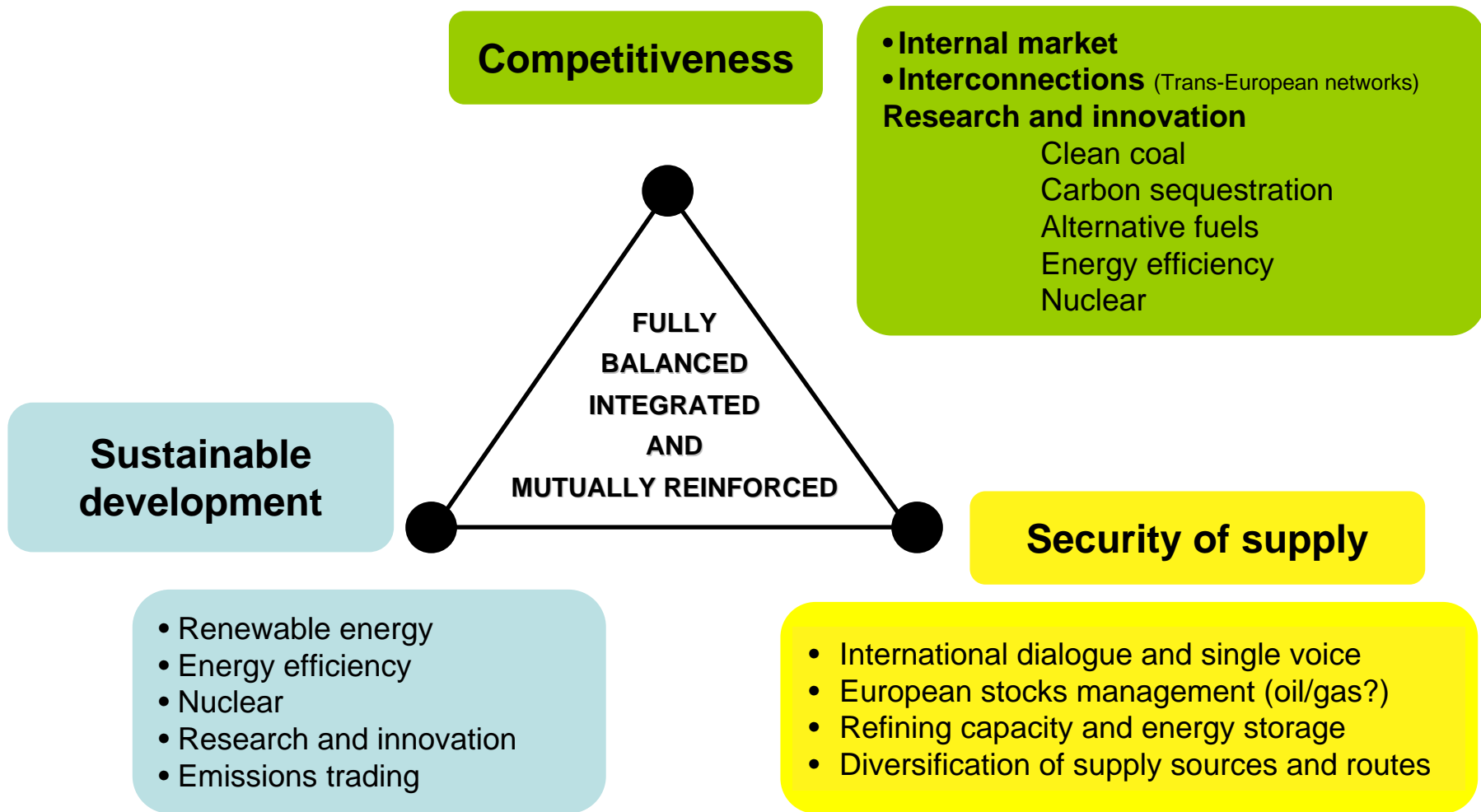
MS binding
choice

**HEATING &
COOLING**

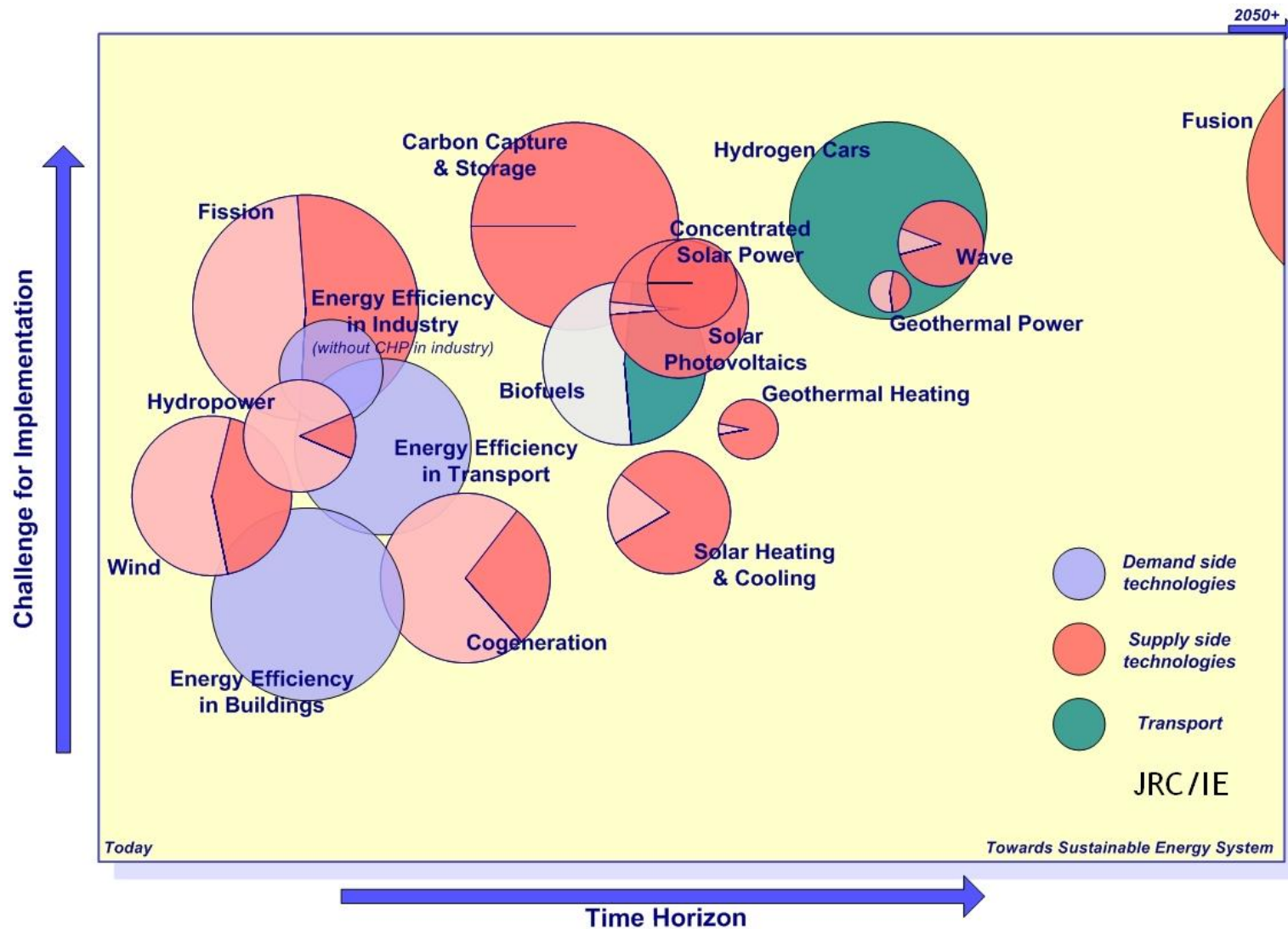
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NATIONAL TARGETS & ACTION PLANS

Triple challenge

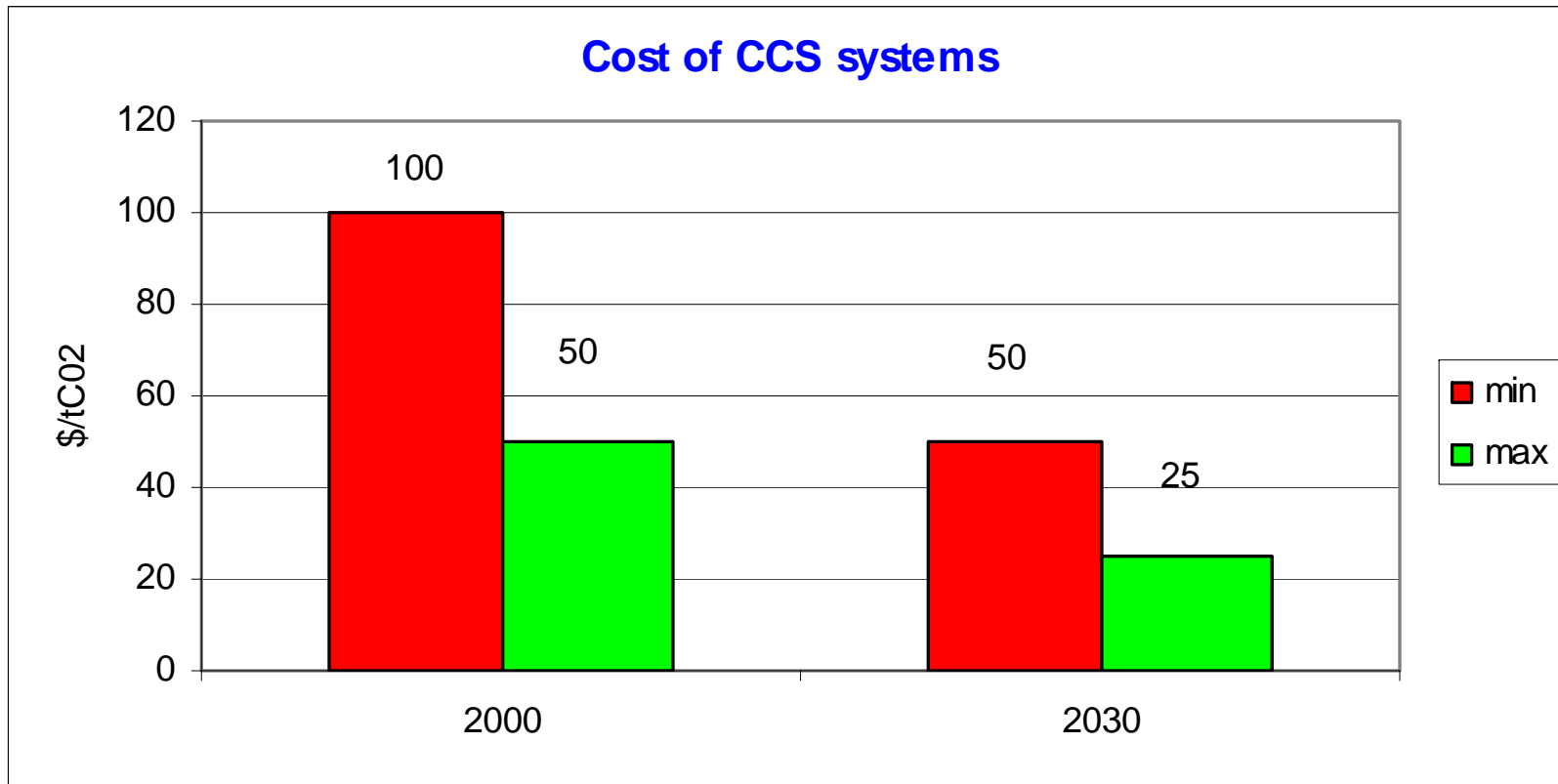


Technology Map for the SET-Plan



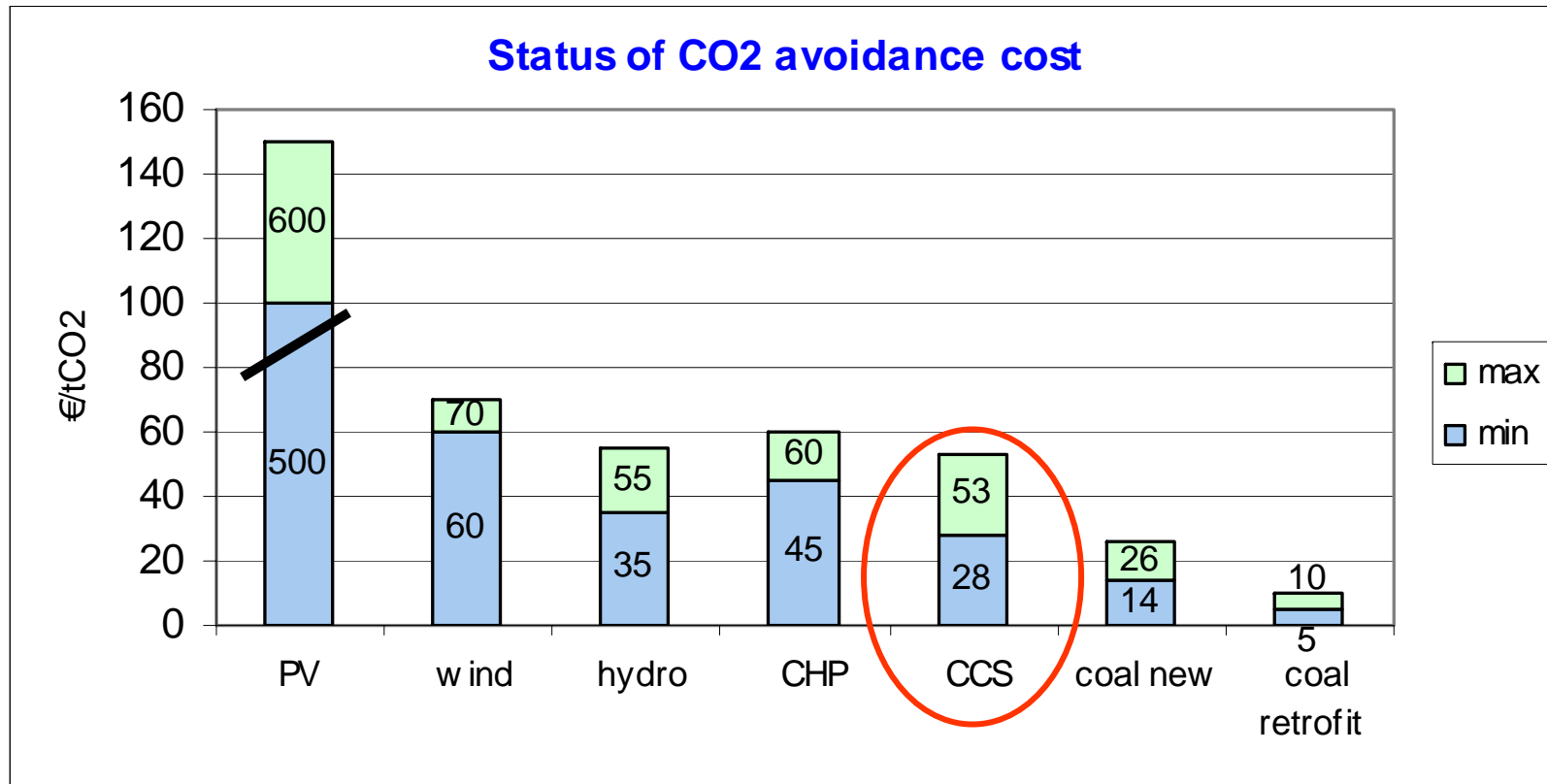
CCS: Problems- 1. Costs; and 2. Loss of efficiency; What is cost today?

Present CCS costs are too high, but are expected to be cut by half by 2030; price of kwh may rise by 2 US cents; and by 10-20% to final consumers.



Source: IEA, Prospects, op. cit., p. 17

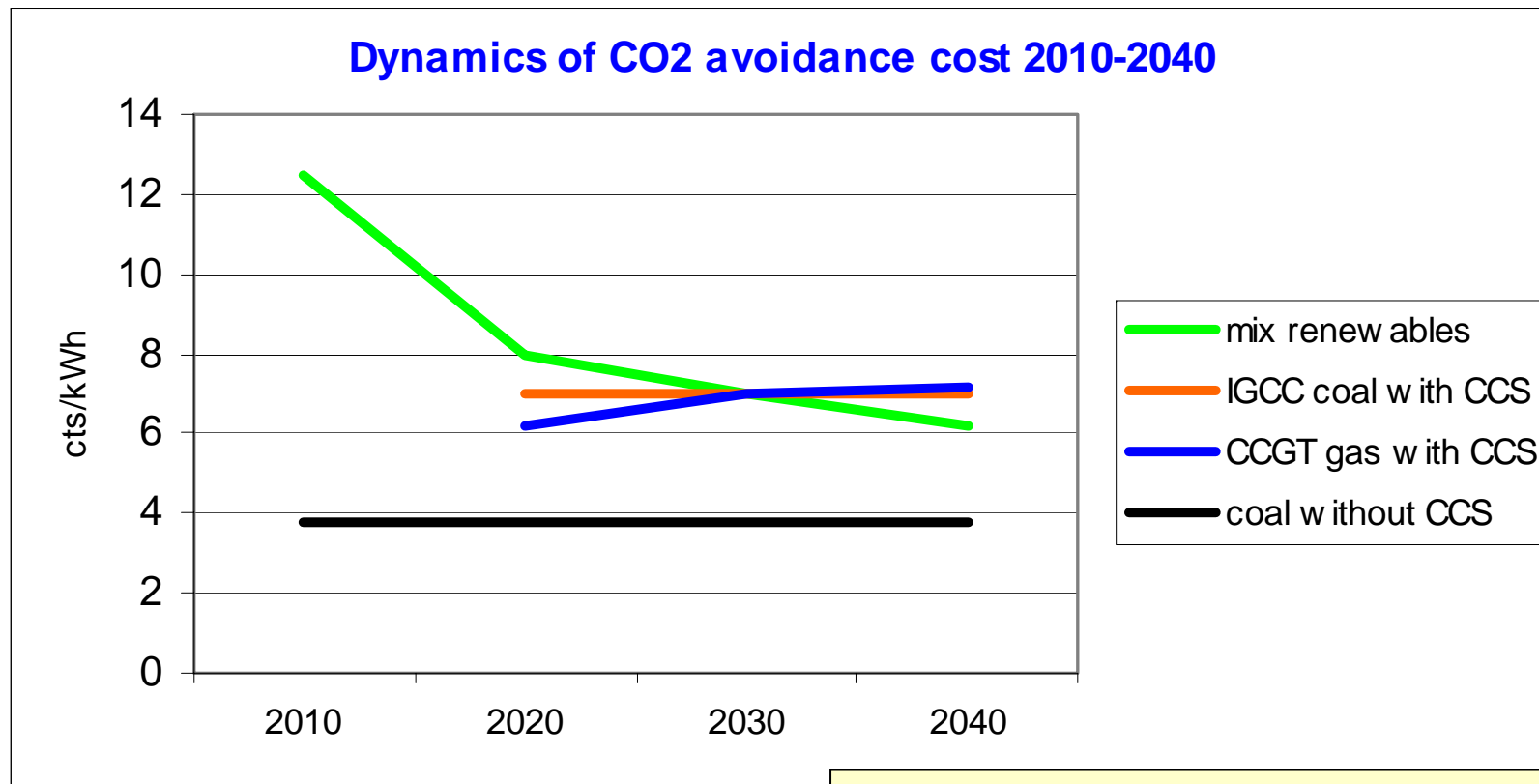
Its present competitiveness?- CCS is competitive with other mitigation options though it does not benefit from policy incentives.



Source: RWE, in Euracoal, Coal Industry Accross Europe 2005, p. 7

Its future competitiveness?

CCS will be exposed to rising competition in expanding power markets.



Source: Wuppertal Institut für Klima, Umwelt, Energie, et alii, Strukturell-ökonomisch-ökologischer Vergleich regenerativer Energietechnologien mit CCS, Wuppertal 2007, Zusammenfassung, S. 18

What policies for CCS to boost investment and reduce costs?

- Greater emphasis on CCS: eligibility of CCS in EU- ETS, CDM? A higher carbon floor price?
- Faster deployment of CCS: earlier incentives? No existing today?
a similar carbon price signal around the world? ¹⁾
a global carbon market? ¹⁾
financing CCS technology transfer to developing countries?

How much would that cost?

DC's fossil power generation capacities during 2015-2030:
+ 592 GW = + 1.4 Gt CO₂ to reach 7.9 Gt ²⁾.
At \$30/tCO₂, CCS would eliminate these incremental
emissions for \$43 billion during 15 years, or \$3 billion/year
(less in CDM- and JI-financed projects).

Is that too much for the international community?

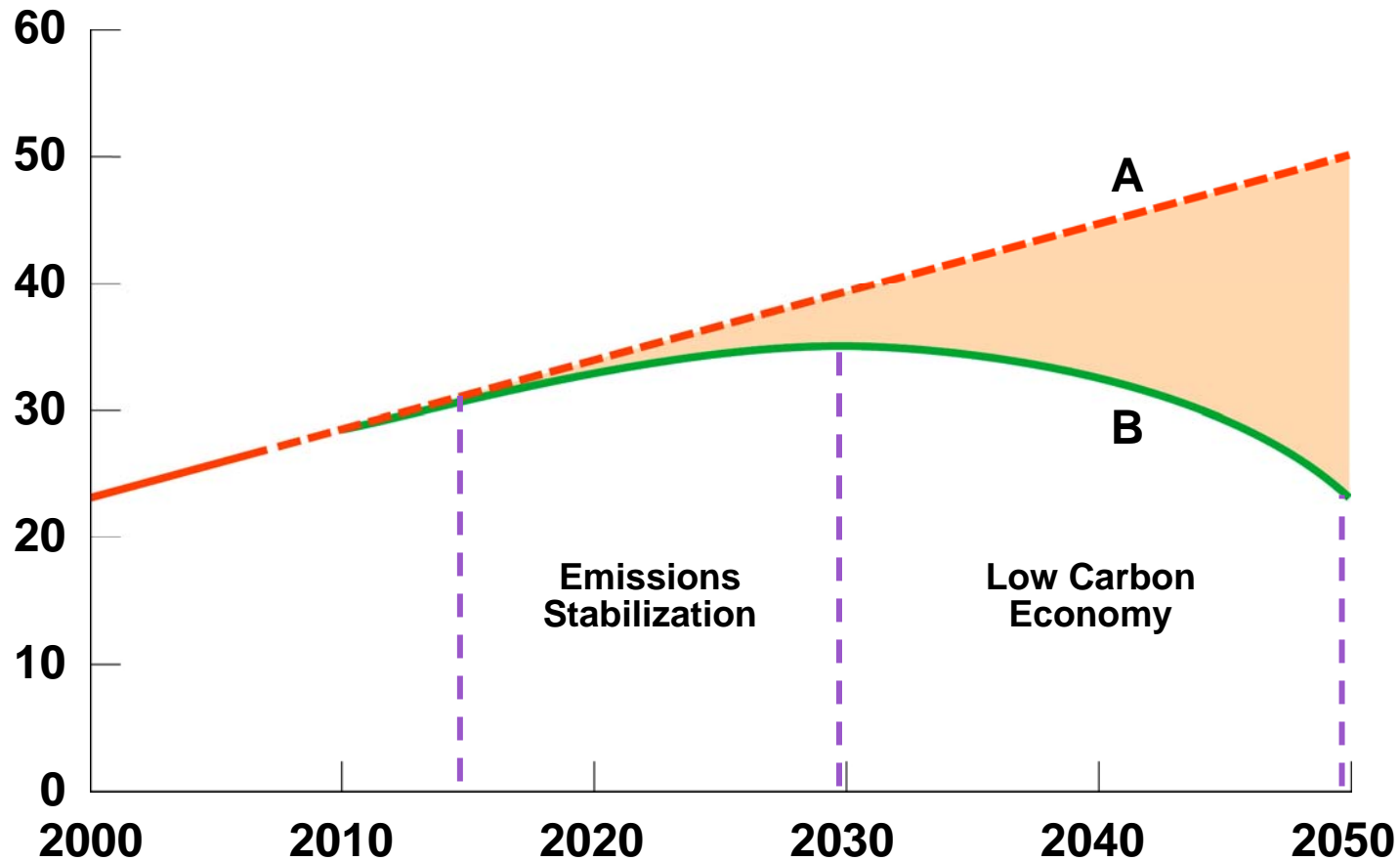
Roadmap to a Low Carbon Future

(according to WEC global Study)

- **Phase One: 2015 – Credible commitments & slower CO₂ emissions growth;**
- **Phase Two: 2030 – Emissions stabilization;**
- **Phase Three: 2050 – Sustainable emissions reduction, a low carbon economy;**

Global CO₂ Emission Scenarios

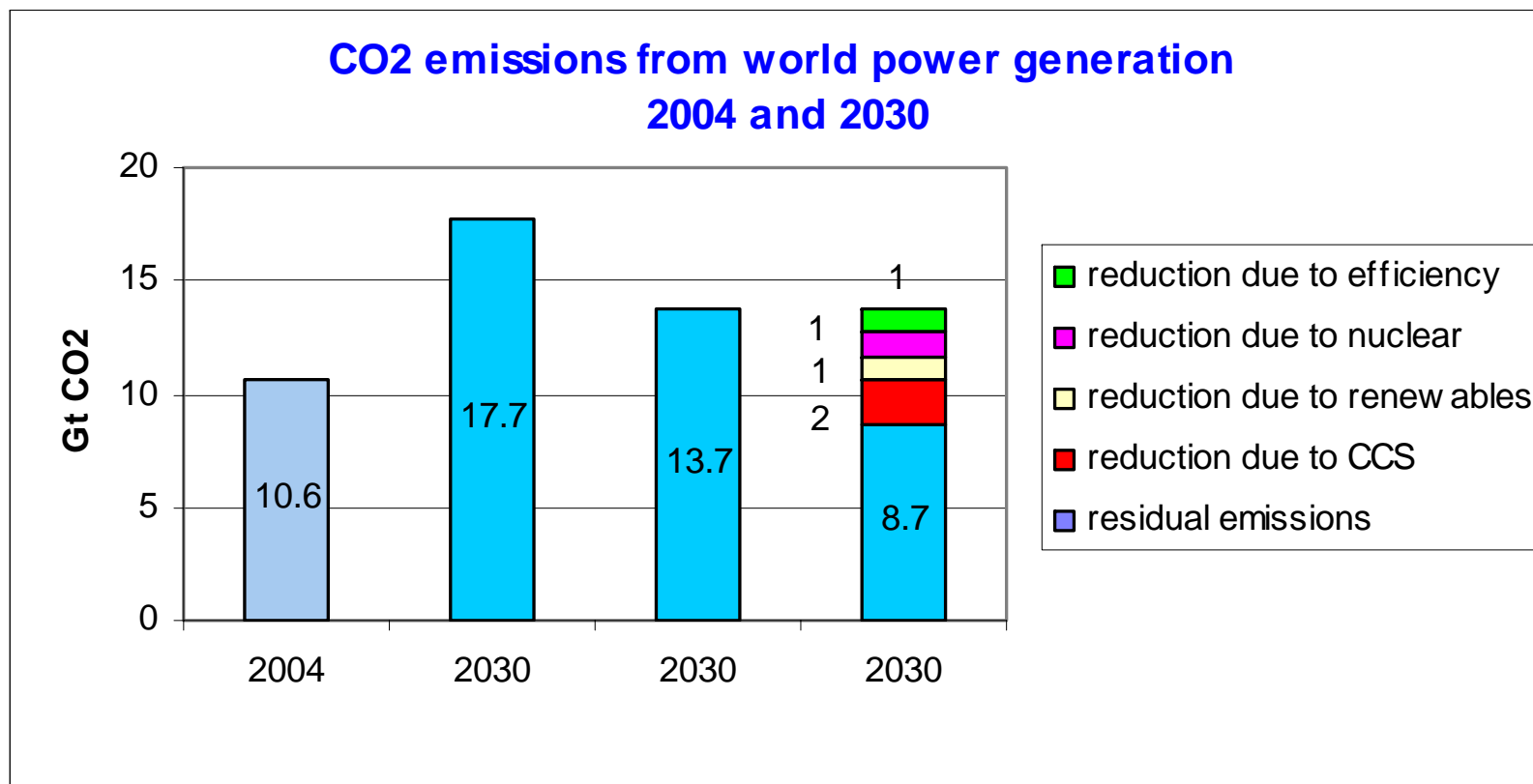
Emissions GtCO₂/yr



A – Business as usual; B – Roadmap to low carbon future

Outlook to 2030?

At 20 to 50 \$/tCO₂, CCS could reduce CO₂ emissions from world power generation in 2030 by 2 Gt, i. e. as renewables + nuclear together (IEA).



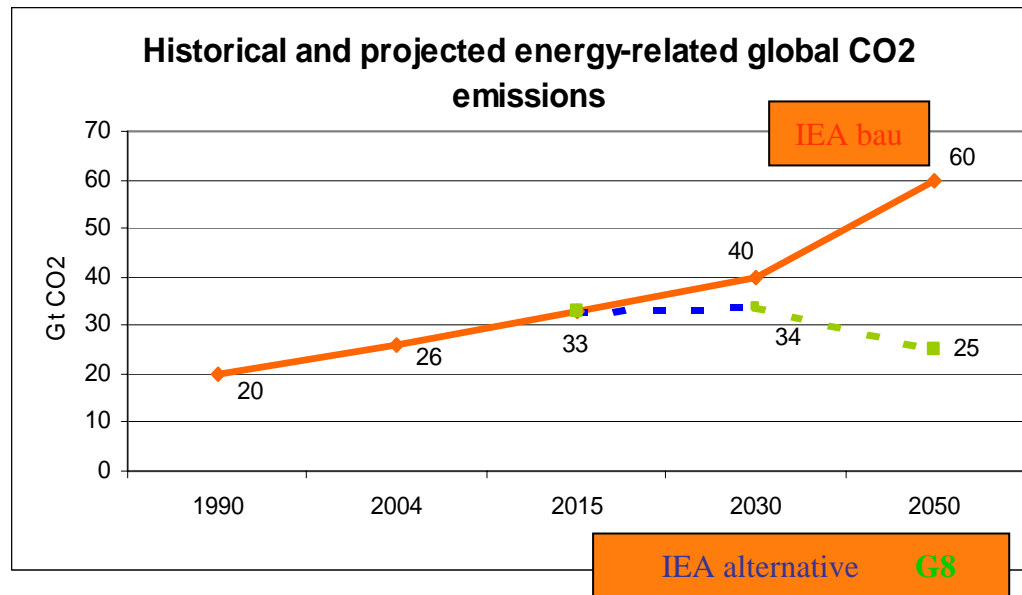
Sources: IEA WEO 2006, p. 258, 493, 528; BAPS = Beyond the Alternative Policy Scenario; see also forthcoming IEA WEO 2007, Chapter 5, Environmental repercussions, Stabilisation Case; also IPCC, Contribution of WG III to the Fourth Assessment Report, Technical Summary, Table TS.10; in the Message model, CCS tops efficiency, renewables and nuclear, at 490-540 ppm.

... and beyond?

The G8 Summit in Heiligendamm agreed to study proposals to reduce global CO₂ emissions by 2050 by at least 50 % ¹⁾.

a) If implemented, this would

→ reduce energy-related CO₂ emissions from 60 Gt to 25Gt in 2050



→ stabilise concentrations at 445-490 ppm CO_{2e} (1790: 280 ppm)

→ limit the increase of global mean temperatures to max 2.4 °C.

Source: G8 Chair's Summary; Figure: IEA, WEO 2006, op. cit., alternative scenario for 2030; for 2050 IEA, Prospects op. cit., p. 101; see also: IPCC, WG III, op. cit., figure TS. 11;



THANK YOU

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