



INTERNATIONAL ENERGY AGENCY

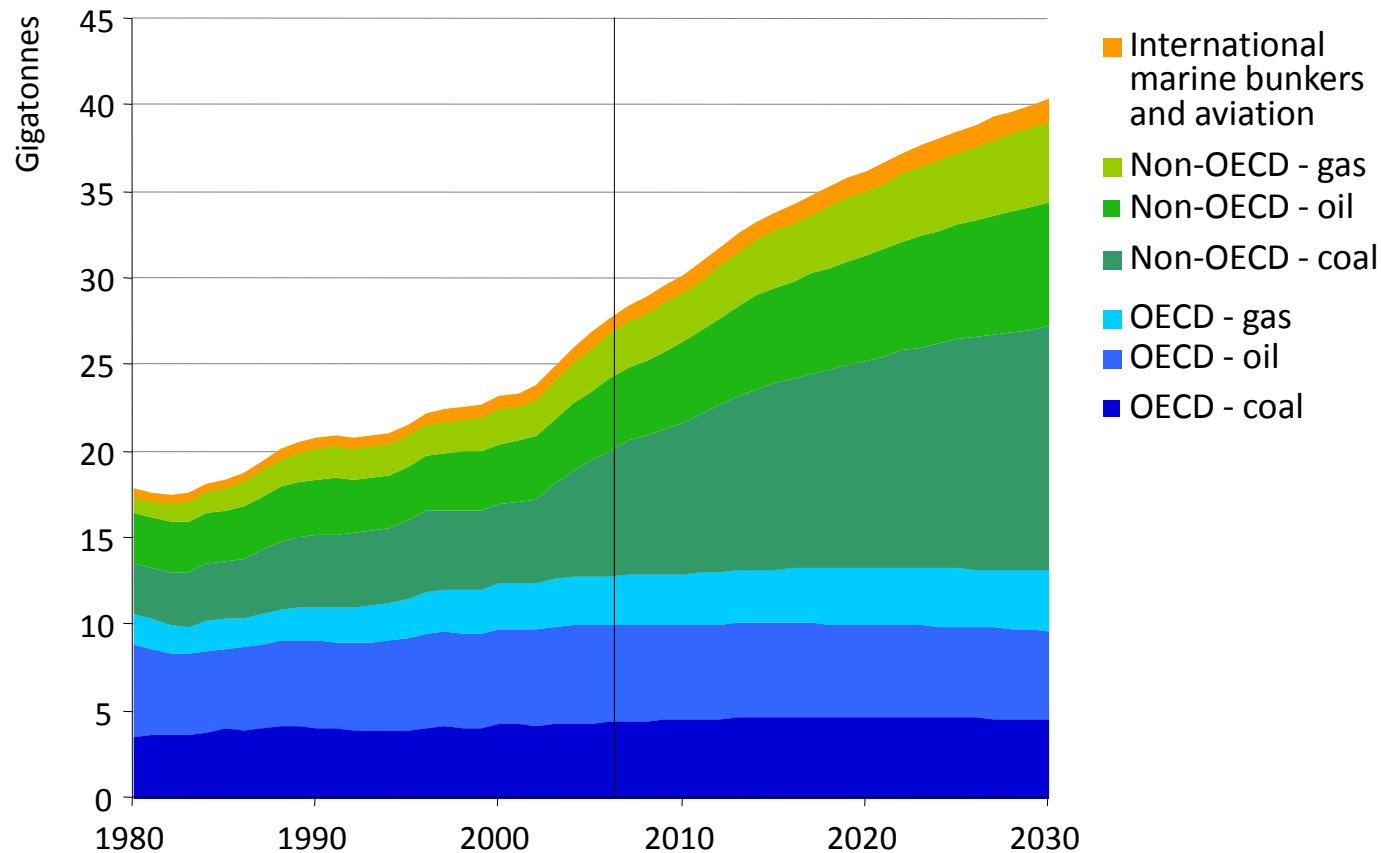


**E8 Summit
Rome, Italy
4 June 2009**

**Climate Change Mitigation –
the role of the power sector**

**Nobuo Tanaka
Executive Director
International Energy Agency**

Energy-related CO₂ emissions in Business as Usual Scenario

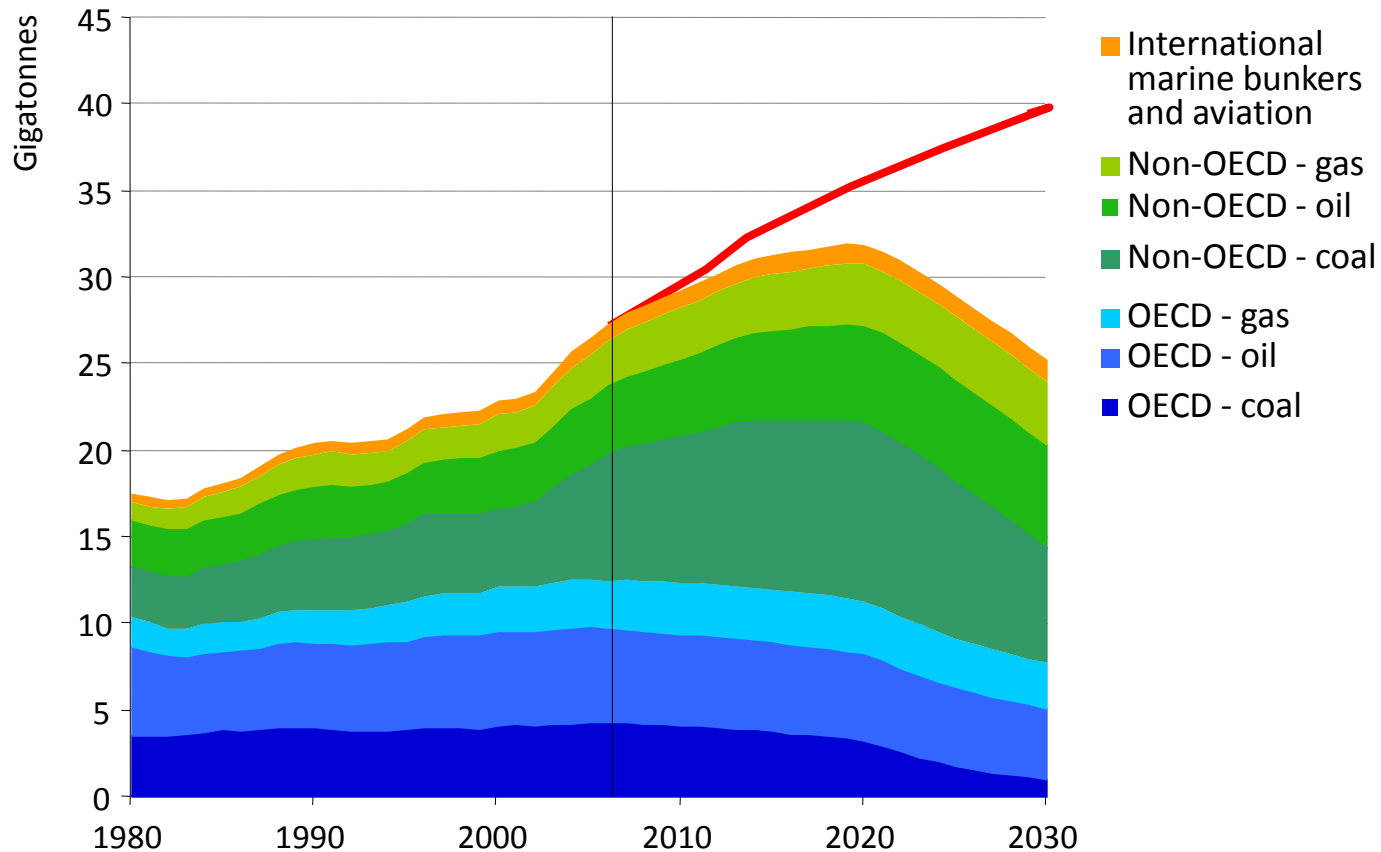


World Energy Outlook 2008, IEA

97% of the projected increase in emissions between now & 2030 comes from non-OECD countries – three-quarters from China, India & the Middle East alone



Energy-related CO₂ emissions in the 450 Policy Scenario



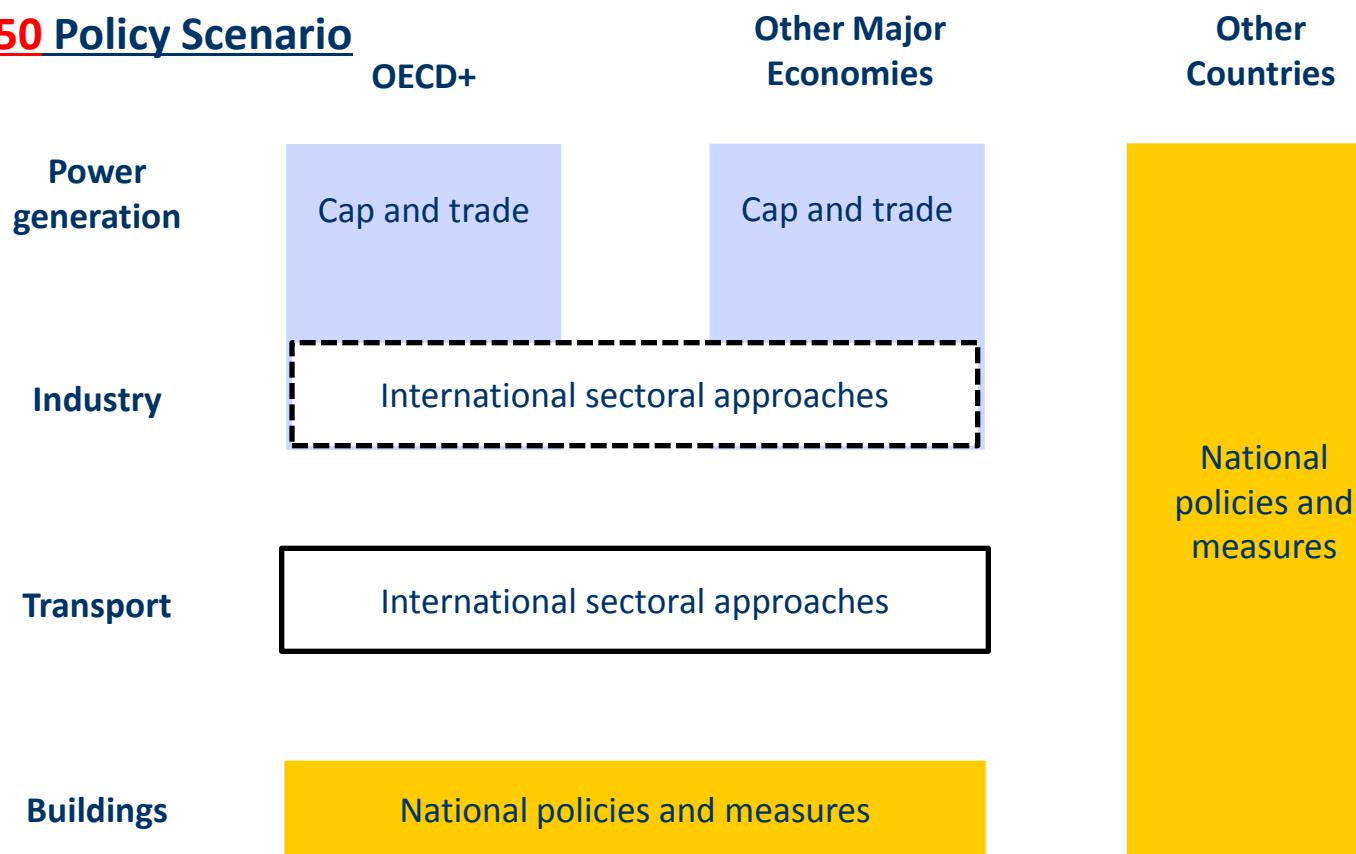
World Energy Outlook 2008, IEA

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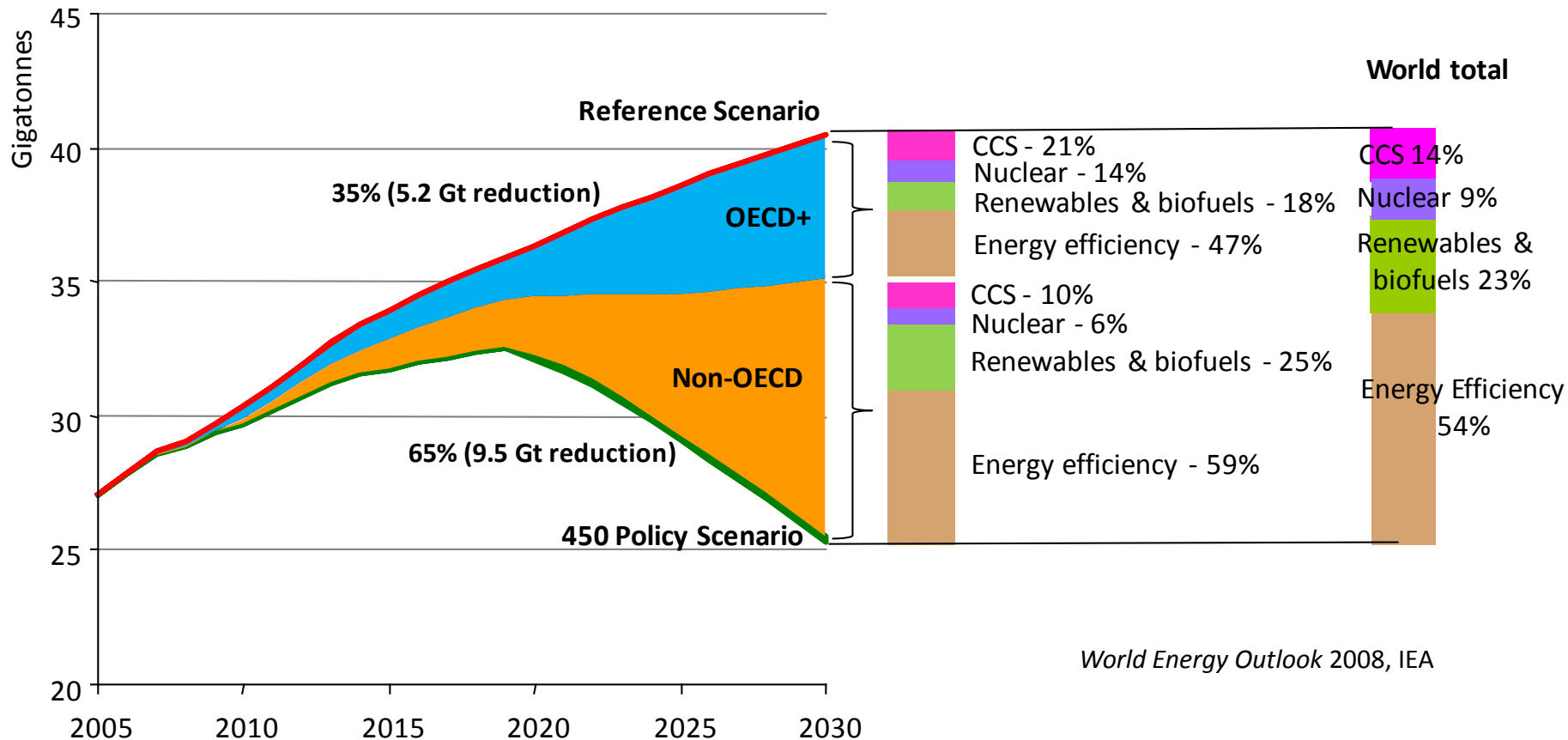
Copenhagen: a plausible post-2012 global climate-change policy regime

The **450** Policy Scenario



A combination of policy mechanisms – reflecting nations' varied circumstances & current negotiating positions – is a realistic outcome at the Copenhagen COP at end-2009

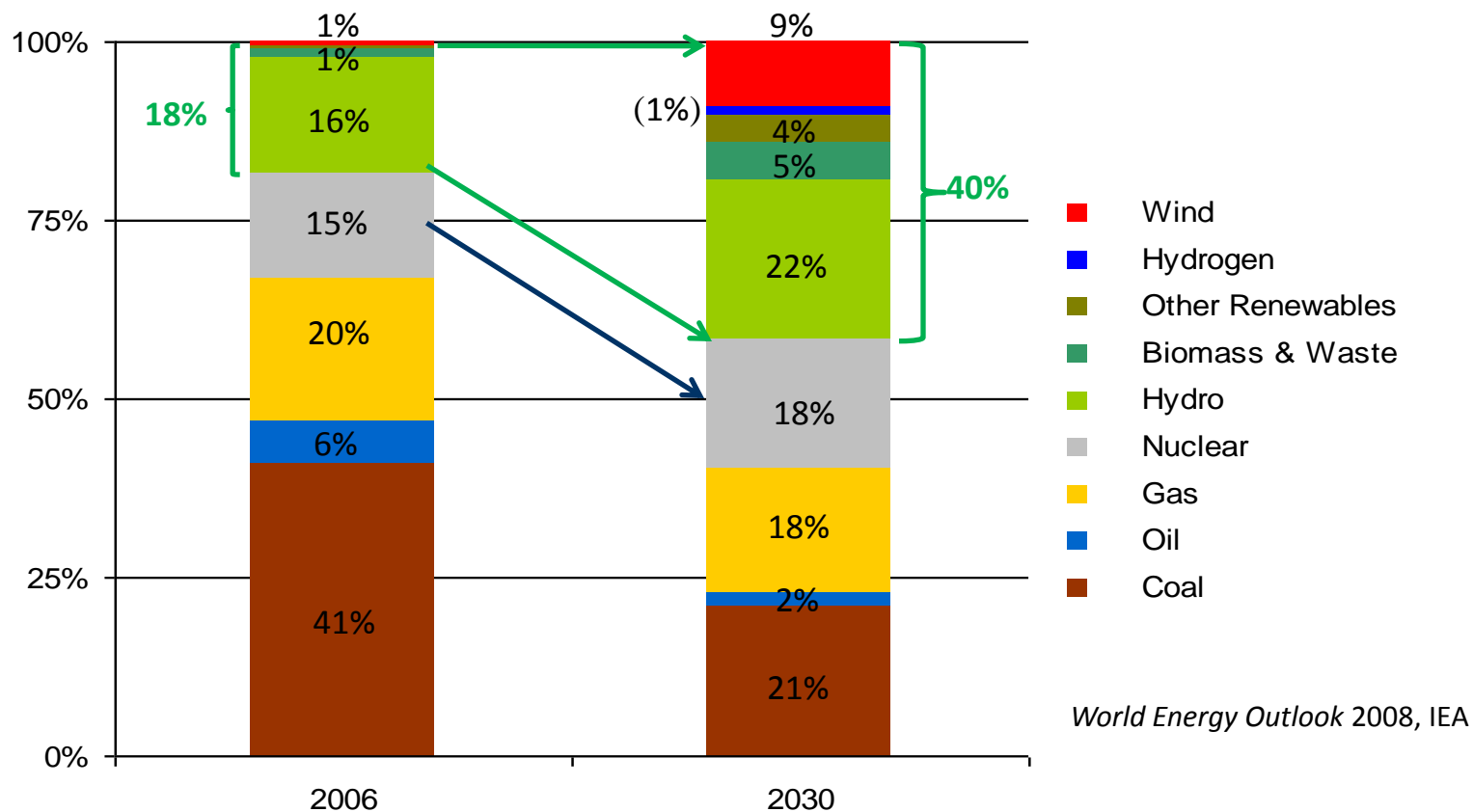
Achieving the 450 ppm scenario



- **OECD and non-OECD countries must both work towards reducing CO₂ emissions**
- **Energy efficiency plays a key role for both OECD and non-OECD countries**
- **To inform the international climate negotiations, the IEA will release an early excerpt of the WEO 2009 climate change analysis, to coincide with post-Kyoto negotiations this September**

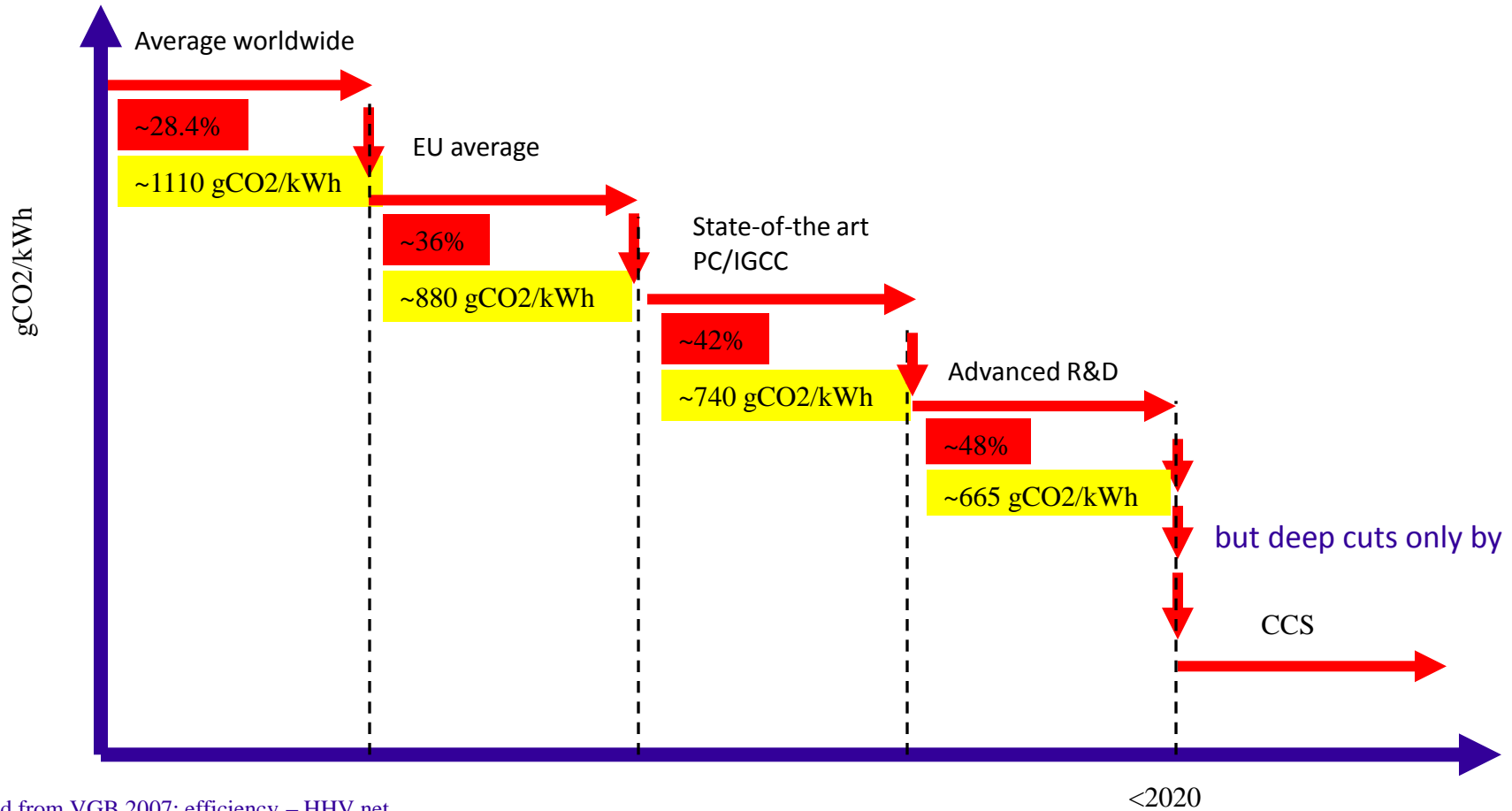


Global electricity generation 450 ppm Scenario



Renewables and nuclear account for a larger share of power generation in the 450 ppm scenario.

Energy Efficiency of coal plants and the need for CCS

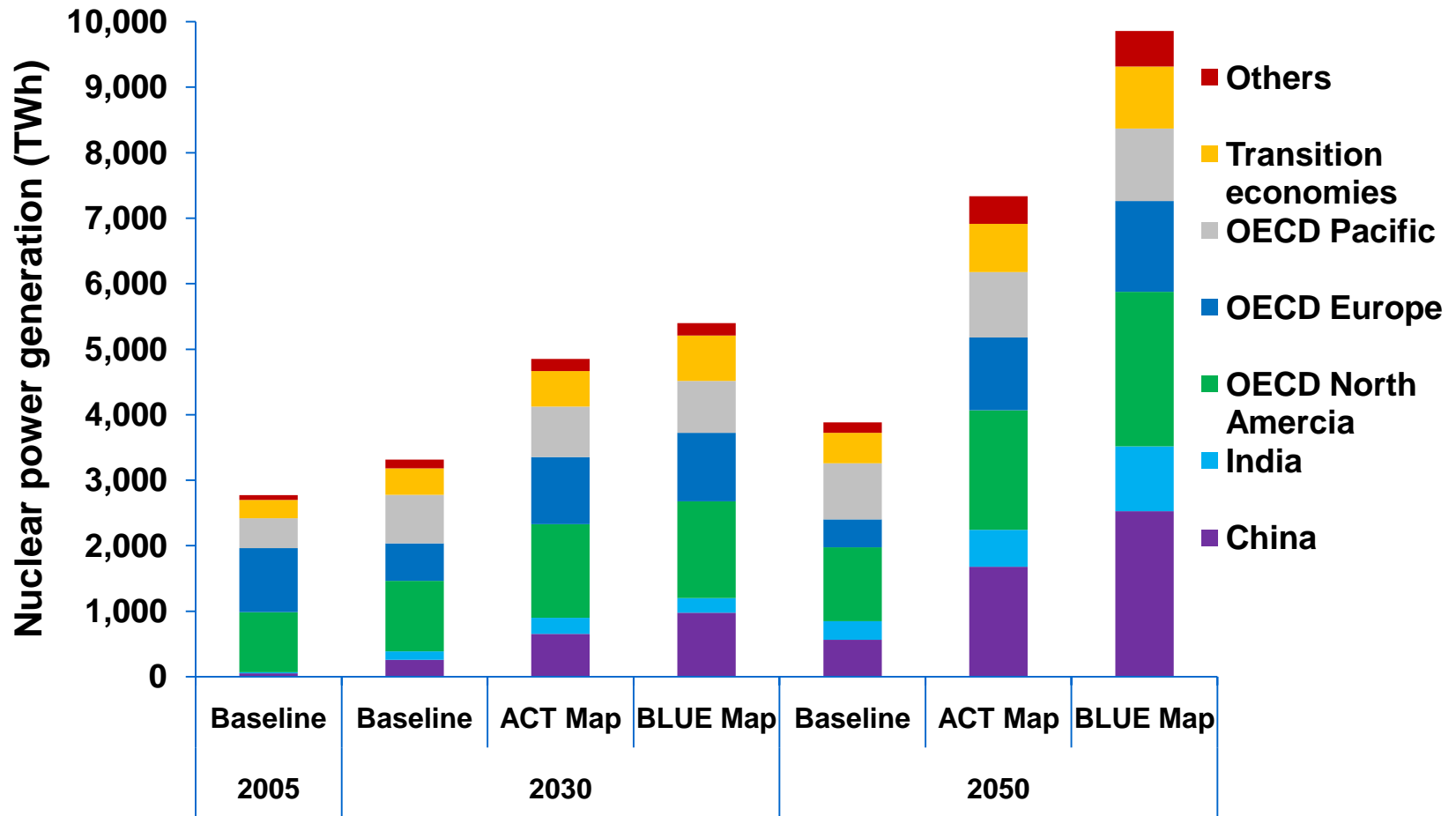


adapted from VGB 2007; efficiency – HHV.net

Energy Efficiency makes big change but deep cuts of CO2 emission can be done only by Carbon Capture and Storage (CCS)



Nuclear power needs to play a larger role in 2050



Energy Technology Perspectives (ETP) 2008 shows that significant increase of nuclear generation in both OECD countries and non-OECD countries is essential to halve the current level of energy related CO2 emission by 2050.

Nuclear – challenges and action needed

❑ Challenges which nuclear is facing

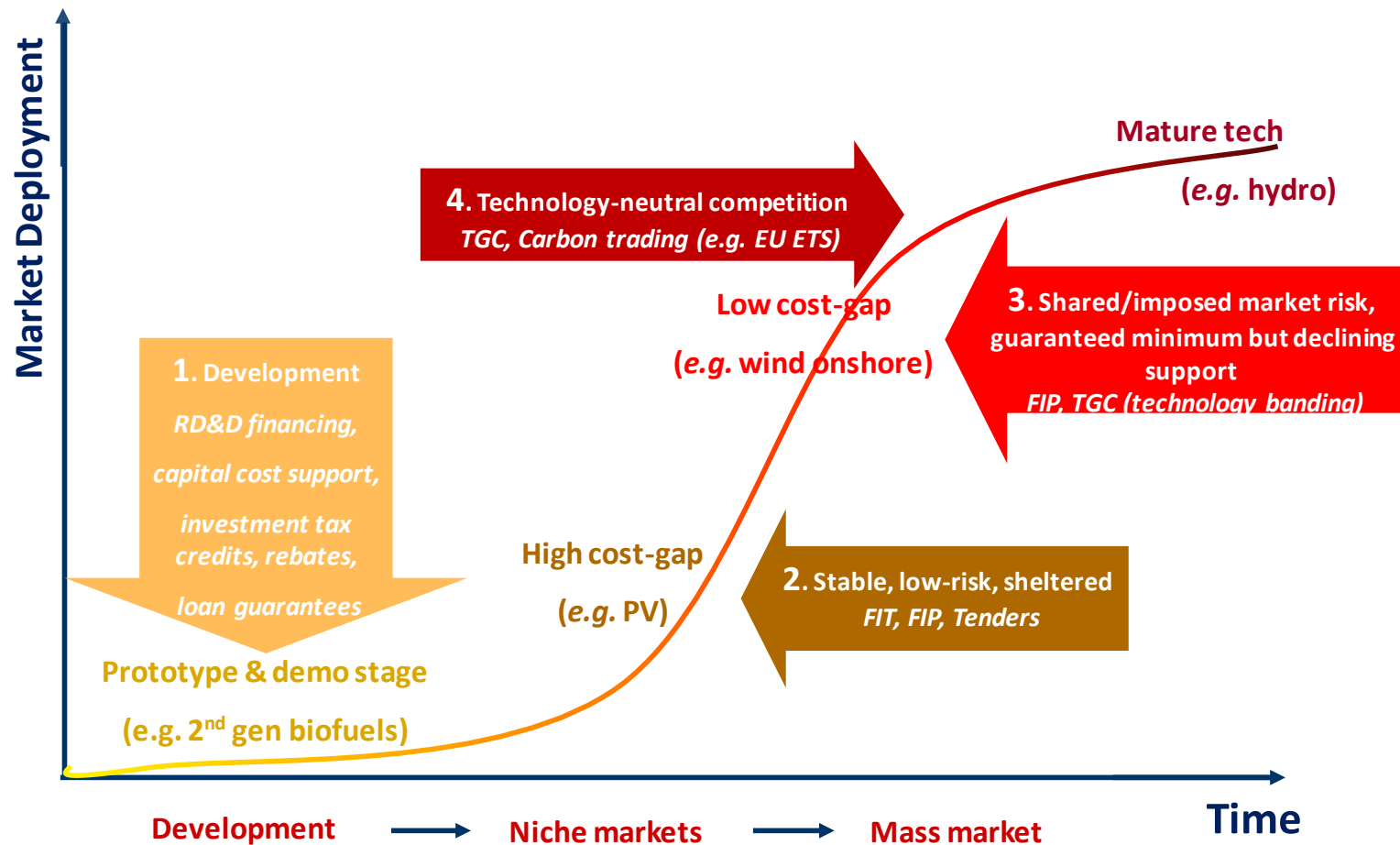
- ❑ Huge initial investment, which can be only recouped over long term, makes it uneasy to get financing in nuclear power plants
 - especially vulnerable to financing difficulties under current economic crisis
- ❑ Sufficient human resources and other production capabilities
- ❑ NIMBY (Not In My Backyard) syndrome
- ❑ Appropriate management of radioactive waste and spent fuel



❑ Key actions to be considered by governments

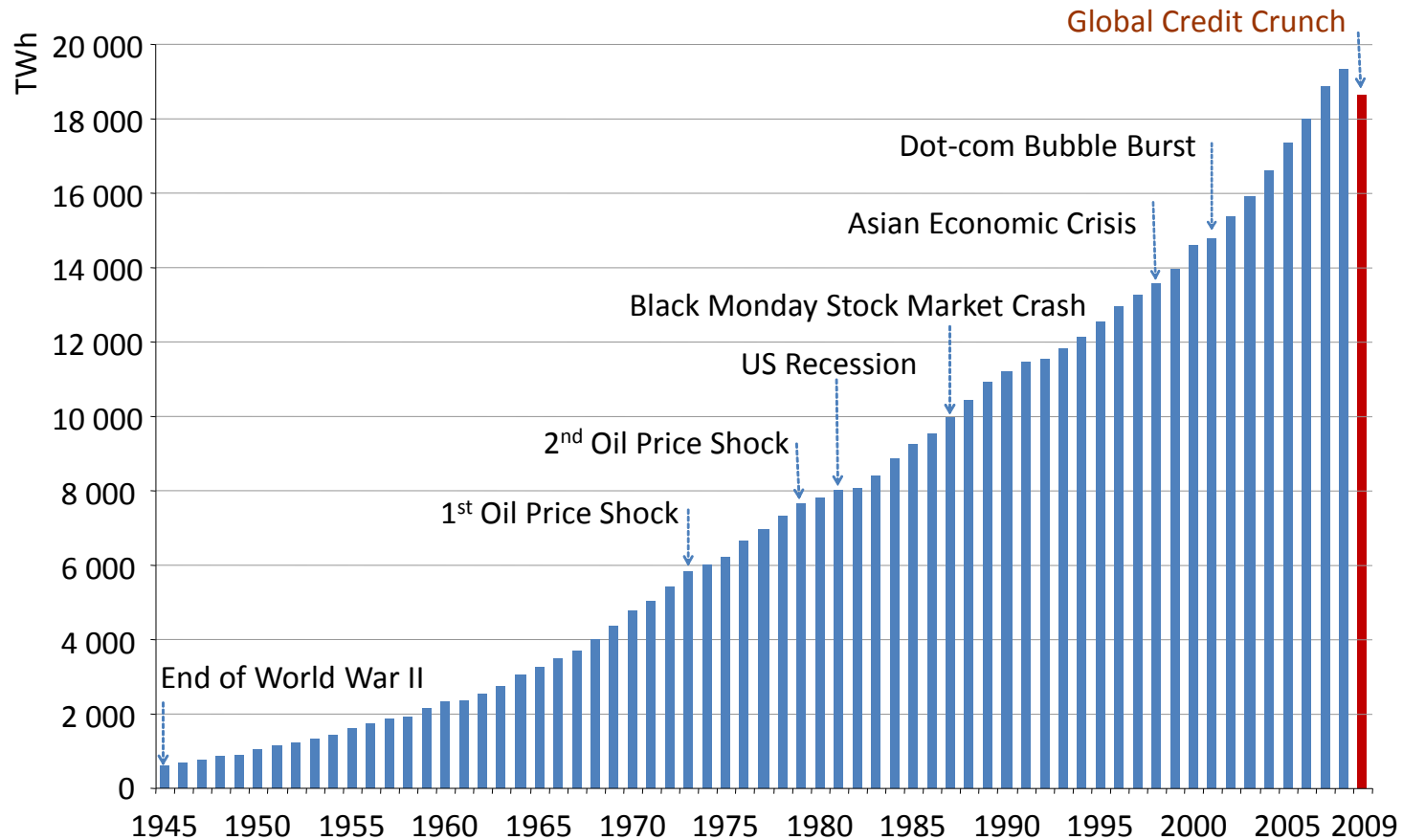
- On top of safety policy and non-proliferation policy which are prerequisite;
- ❑ Provide clear and sustained policy support and an efficient and effective regulatory system with predictability for private sector
- ❑ provide additional financial support to investors if needed
- ❑ Put in place arrangements for the management of radioactive waste and spent fuel

Supporting low carbon technologies: from development to deployment



Source: *Deploying renewables*, 2008.

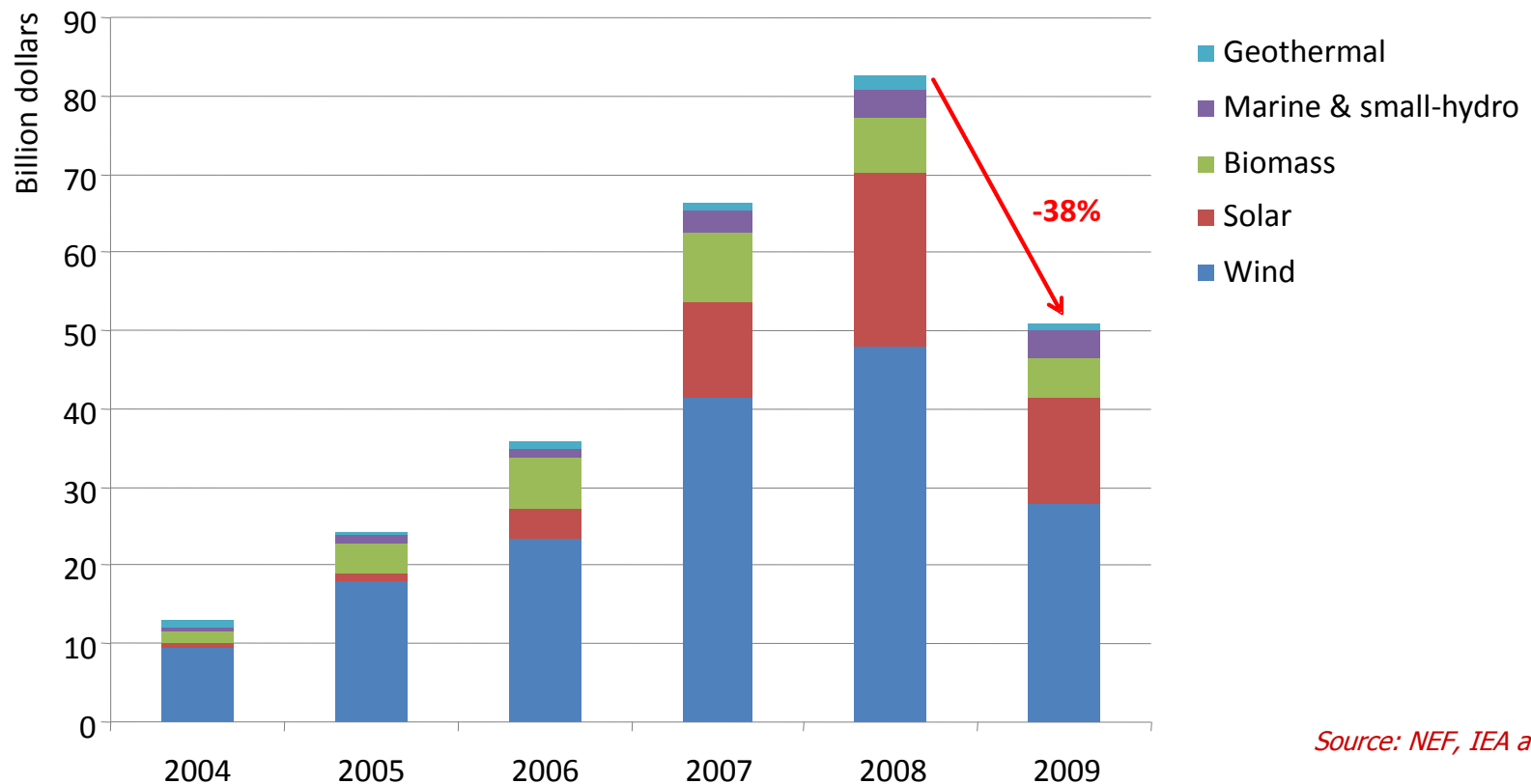
Historical global electricity consumption



Global electricity consumption could drop by as much as 3.5% in 2009 – the first annual contraction since the end of the Second World War



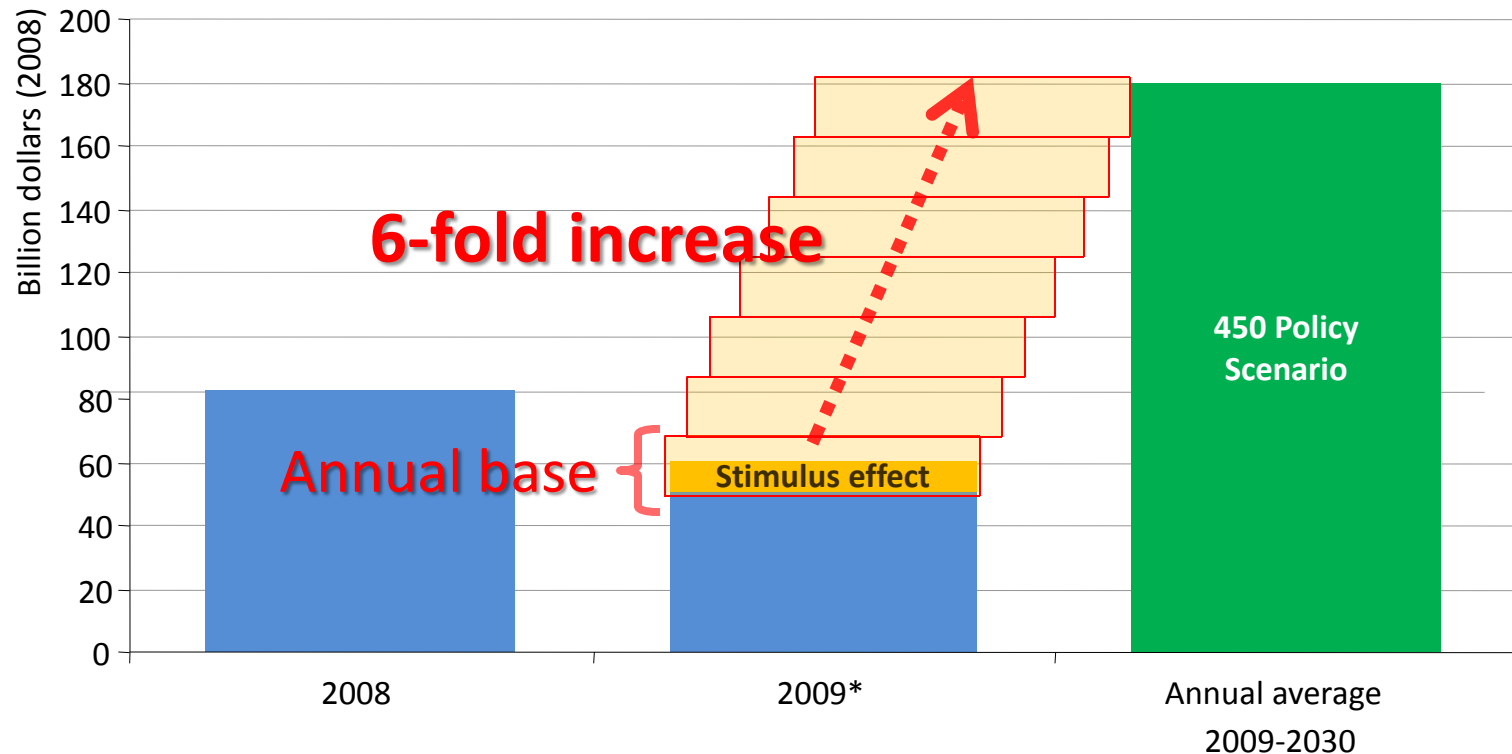
Asset financing for new build renewable assets



Source: NEF, IEA analysis

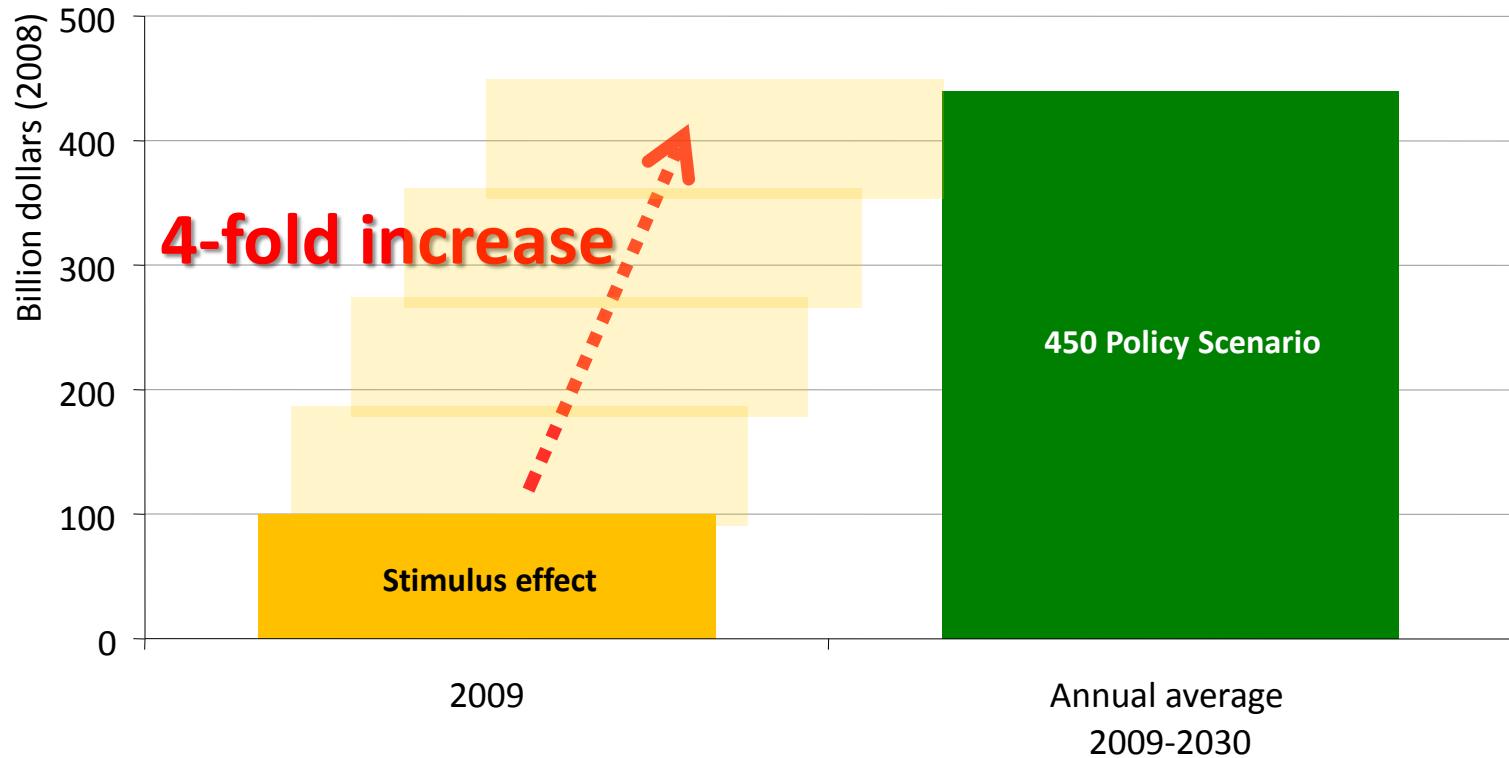
Renewable energy investment has collapsed due to lower fossil-fuel prices and the financial crisis – which has dried up sources of project finance

Global investment in renewable power generation



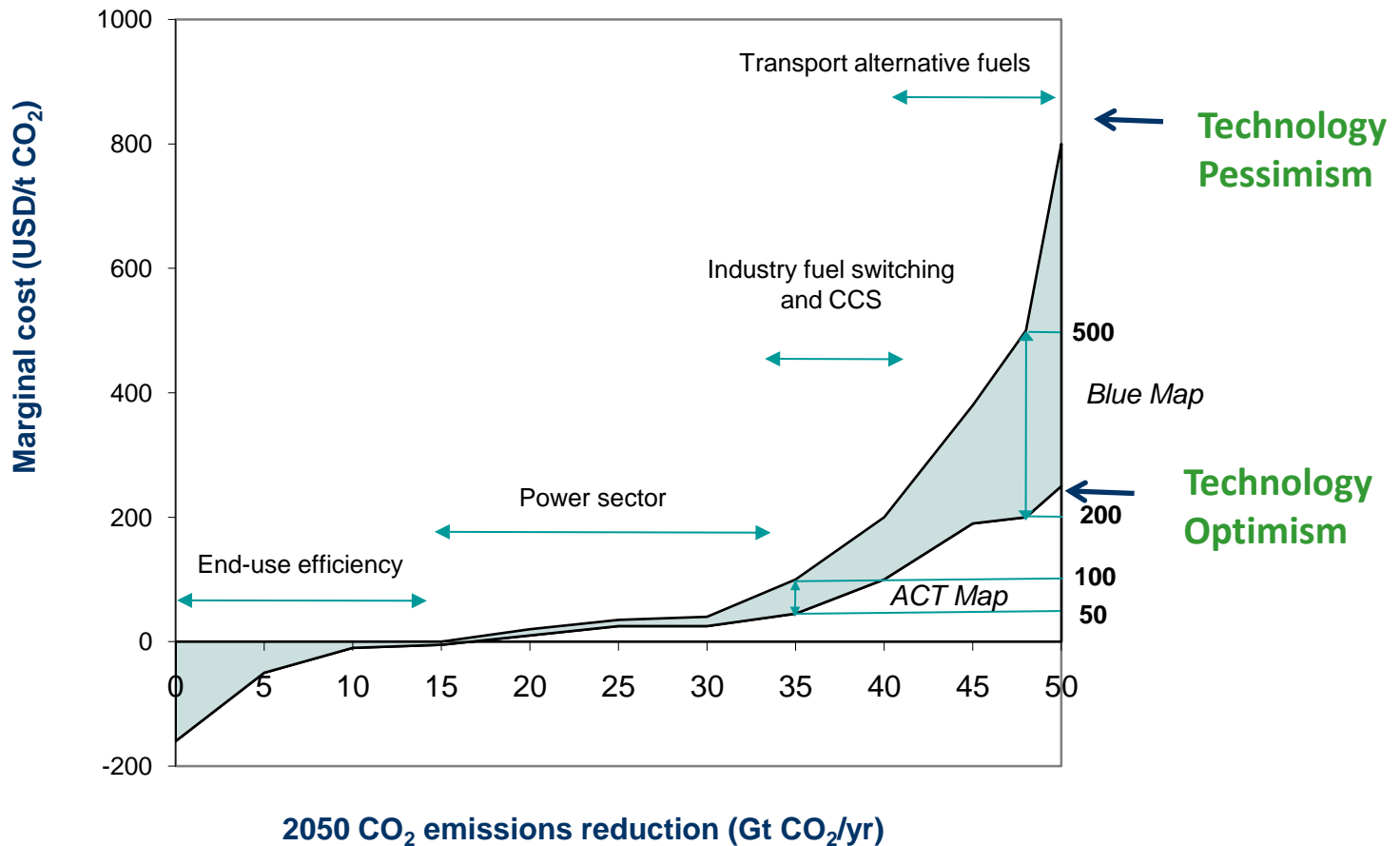
To achieve the 450 Policy Scenario, governments would need to increase funds committed to renewables 6-fold relative to their recent stimulus package

Incremental investment in the low-carbon sector



To achieve the 450 Policy Scenario, governments would need to increase funds committed to the low-carbon energy sector 4-fold relative to their recent stimulus package

Scientific breakthroughs are critically Needed to lower costs



Conclusions

- Successfully mitigate climate change requires **global commitment**
- Reducing global CO₂ emissions in the energy sector requires:
 - ◆ Significant improvements in **energy efficiency**
 - ◆ Major decarbonisation of energy – **especially in electricity**
 - ◆ Embracing a **carbon price**
 - ➔ The agreement in **Copenhagen** should encourage these evolutions
- Measures to mitigate climate change also **enhance our energy security.**