INTERNATIONAL ENERGY AGENCY

Energy Strategies for Cost Effective Mitigation: Lessons from IEA Analysis

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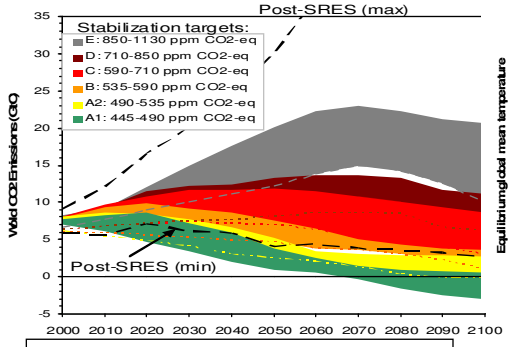
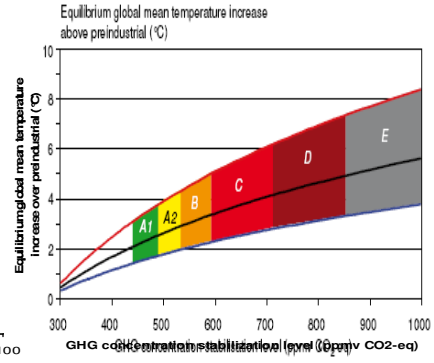
Stabilisation and equilibrium global mean temperatures

- Equilibrium temperatures reached after 2100
- Uncertainty of climate sensitivity important



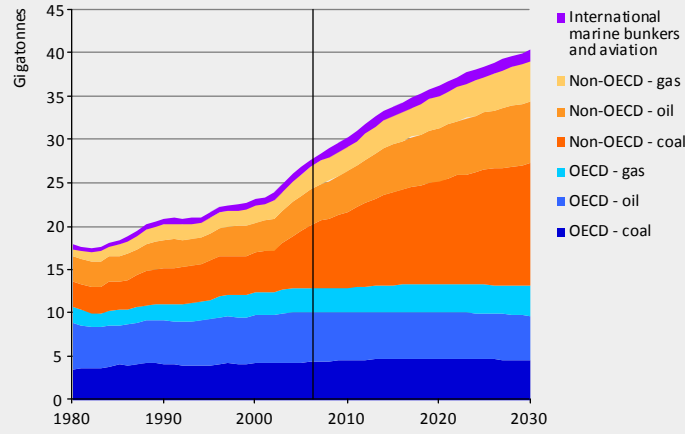


Multigas and CO2 only studies combined

IPCC

Energy-related CO_2 emissions in the Reference Scenario

World Energy Outlook 2008



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

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

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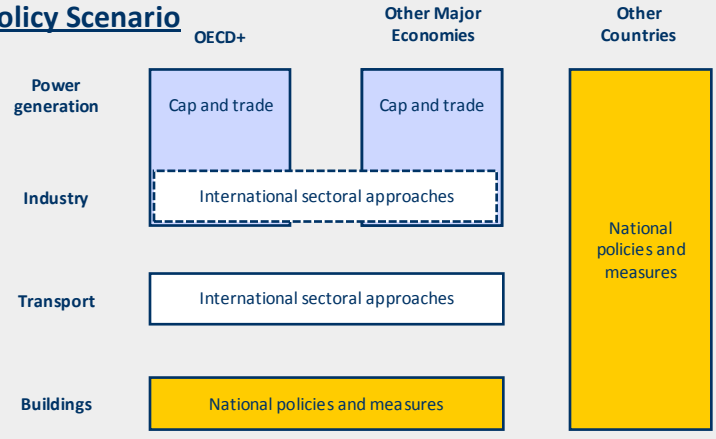
The 450 Policy Scenario



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

Reductions in energy-related CO_2 emissions in the climate-policy scenarios

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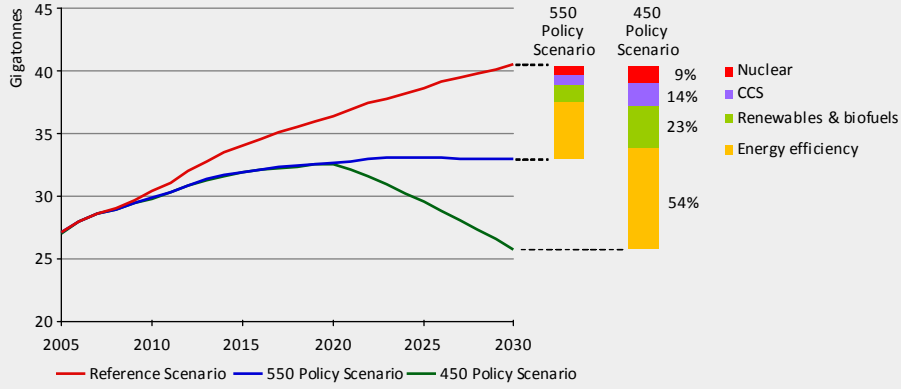
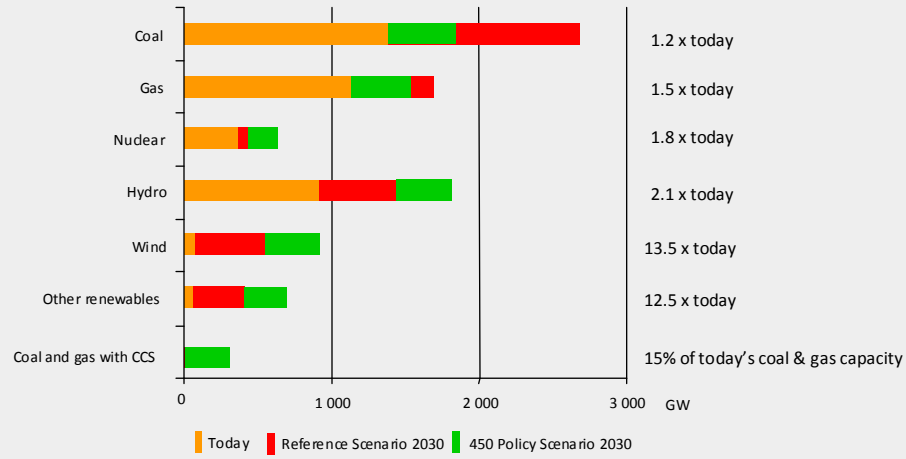


While technological progress is needed to achieve some emissions reductions, efficiency gains and deployment of existing low-carbon energy accounts for most of the savings

Total power generation capacity today and in 2030 by scenario

World Energy Outlook 2008



In the 450 Policy Scenario, the power sector undergoes a dramatic change – with CCS, renewables and nuclear each playing a crucial role

World energy-related CO_2 emissions in 2030 by scenario

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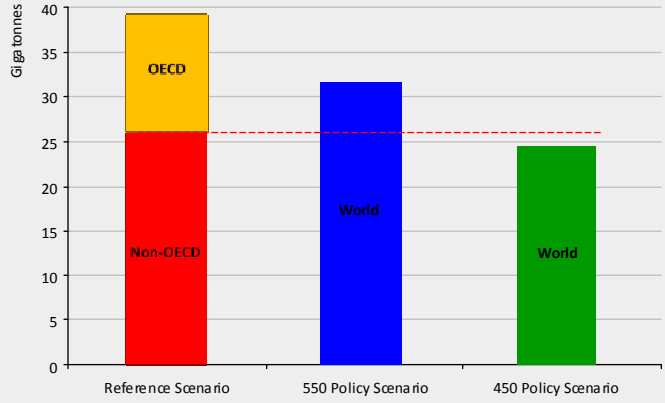

OECD countries alone cannot put the world onto a 450-ppm trajectory, even if they were to reduce their emissions to zero

Key results of the post-2012 climate-policy analysis

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550 Policy Scenario

- Corresponds to a c.3°C global temperature rise
- Energy demand continues to expand, but fuel mix is markedly different
- CO_2 price in OECD countries reaches $90/tonne in 2030
- Additional investment equal to 0.25% of GDP

450 Policy Scenario

- Corresponds to a c.2°C global temperature rise
- Energy demand grows, but half as fast as in Reference Scenario
- Rapid deployment of low-carbon technologies – particularly CCS
- Big fall in non-OECD emissions
- CO_2 price in 2030 reaches $180/tonne
- Additional investment equal to 0.6% of GDP

Total power generation capacity today and in 2030 by scenario

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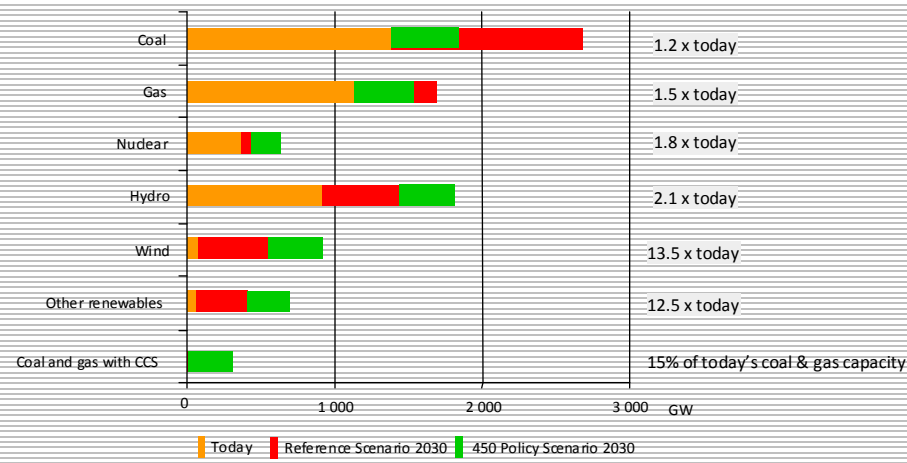

In the 450 Policy Scenario, the power sector undergoes a dramatic change – with CCS, renewables and nuclear each playing a crucial role

Change in world energy investment in the 450 Policy relative to the Reference Scenario, 2010-2030

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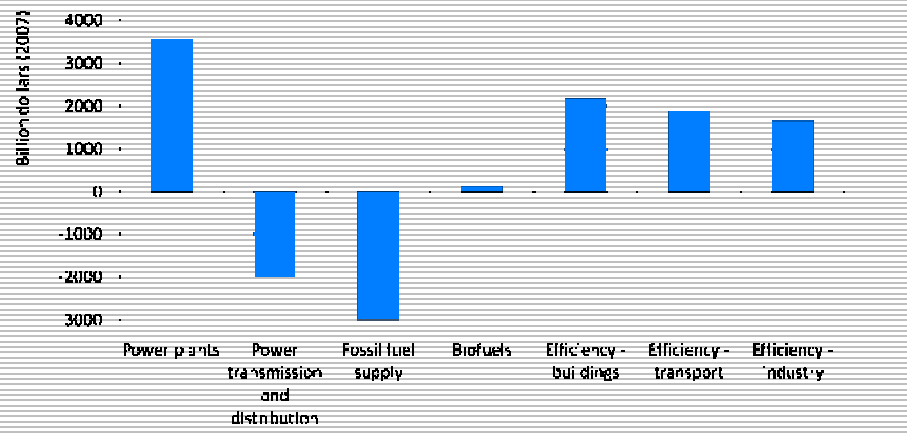

Investment in power plants and energy efficiency in the 450 Policy Scenario is substantially higher than in the 550 Policy Scenario

Revenue from full auctioning of CO_2 allowances & additional investments in cap-and-trade regions, 2013-2030

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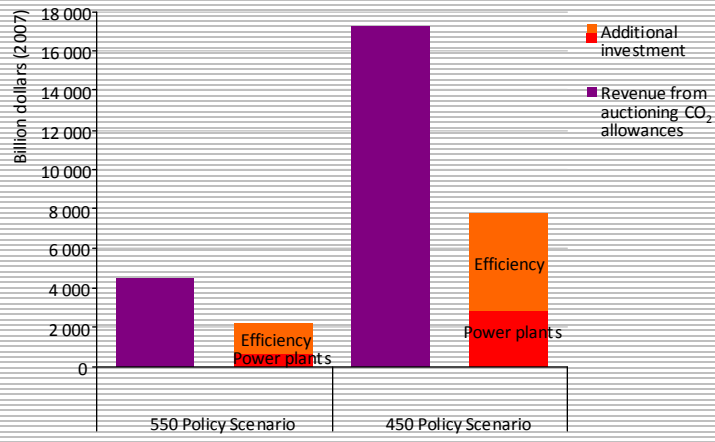
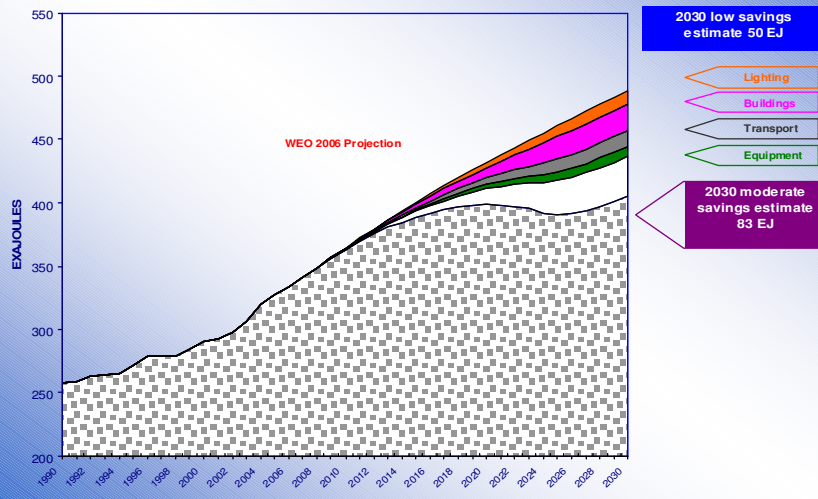


Revenues from full auctioning exceed the total additional global energy investment needed

Impact of Concrete 2006 & 2007 IEA Recommendations on World Final Energy Consumption



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Summary & conclusions

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- Current energy trends are patently unsustainable — socially, environmentally, economically
- To avoid "abrupt and irreversible" climate change we need a major decarbonisation of the world's energy system
  - *Copenhagen must deliver a credible post-2012 climate regime*
  - *Limiting temperature rise to 2°C will require significant emission reductions in all regions & technological breakthroughs*
  - *Mitigating climate change will substantially improve energy security*
- The present economic worries do not excuse back-tracking or delays in taking action to address climate change challenges