

Centre for Energy & Environmental Markets (CEEM): 2nd Annual
Conference
Sydney, 26th October 2006

Technological innovation & emission reduction

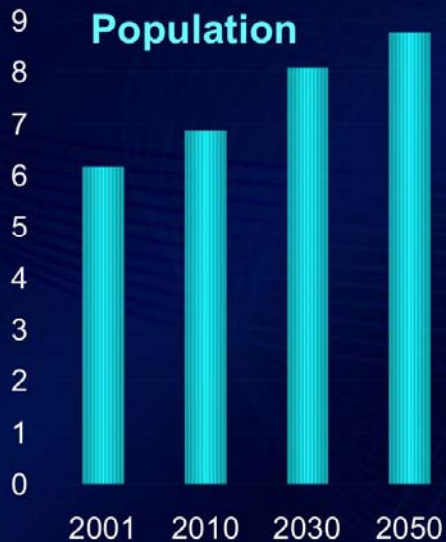
Don Gunasekera and Melanie Ford

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Global energy consumption drivers

billion

Population



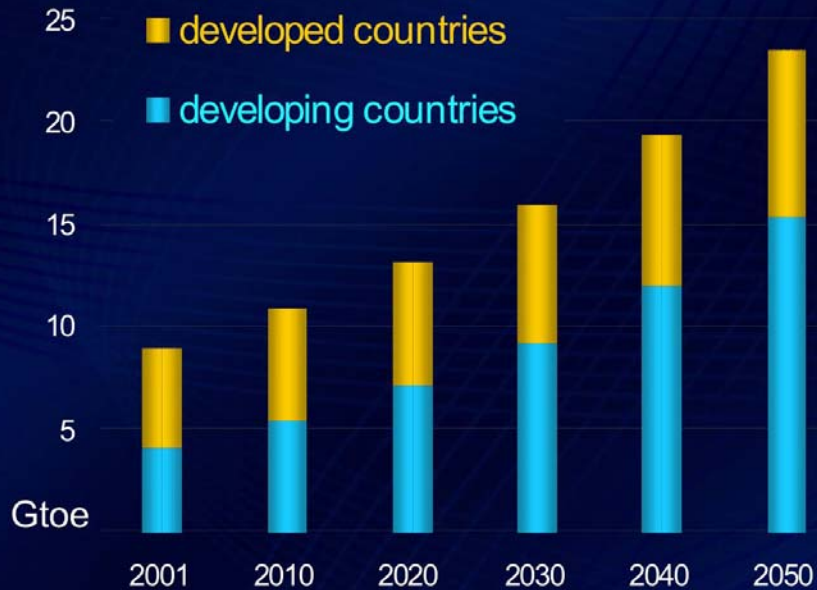
2001 US\$trillion

GDP



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Global energy consumption



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Scenario assumptions

- **global technology**
 - ▶▶ As a result of collaborative efforts under the AP6, enhanced development and diffusion of advanced technologies occurs
 - ▶▶ Focus is on electricity; transport; iron and steel; aluminium; cement; mining; and wood, pulp and paper products
 - ▶▶ Cost declines for nuclear and nonhydro renewables

- **global technology + CCS**
 - ▶▶ Technological development and diffusion as in global technology scenario
 - ▶▶ PLUS carbon capture and storage technologies for new electricity generation plant from 2015 in Annex B countries and from 2020 in China, India and Republic of Korea

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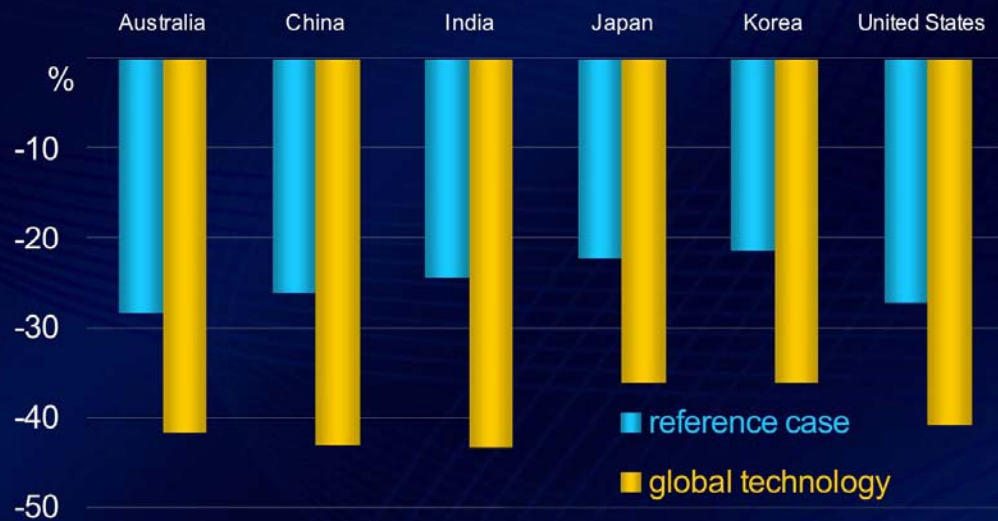
Scenario assumptions

	Global technology	Global technology + CCS
Advanced energy efficient technologies	yes	yes
Carbon capture and storage in new electricity generation	no	yes – from 2015 in key Annex B countries; from 2020 in China, India and Republic of Korea

Focus on electricity, transport and key energy intensive sectors (aluminium, cement, mining, iron and steel, and wood, pulp and paper products)

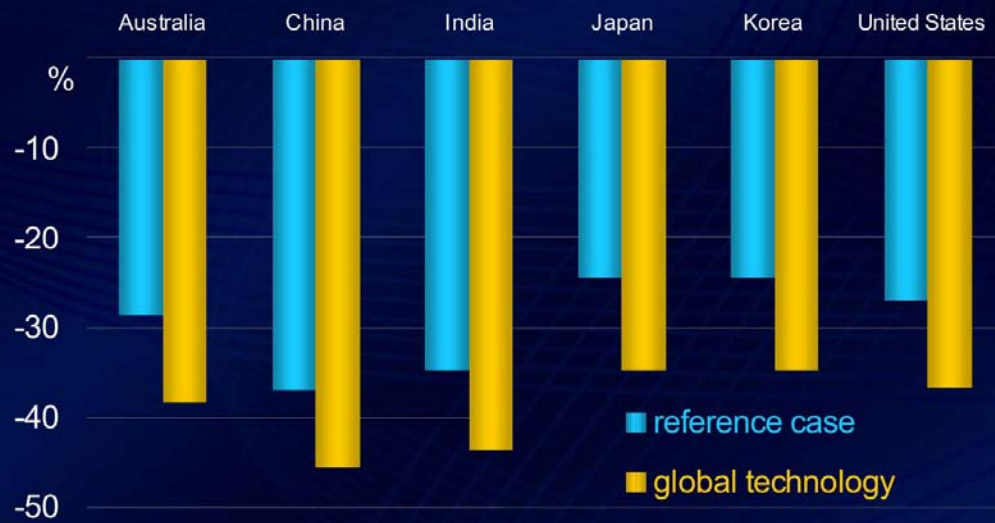
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Change in energy intensity of new black coal fired electricity plant, 2001-50



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Change in energy intensity of new gas fired electricity plant, 2001-50



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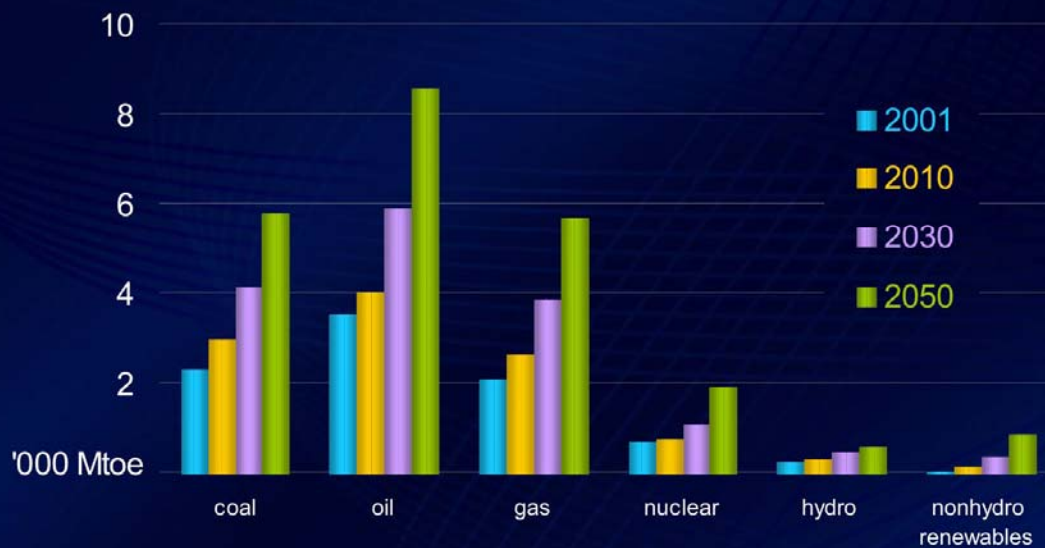
Change in energy intensity of light duty transport vehicles, 2001-50



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Global energy consumption

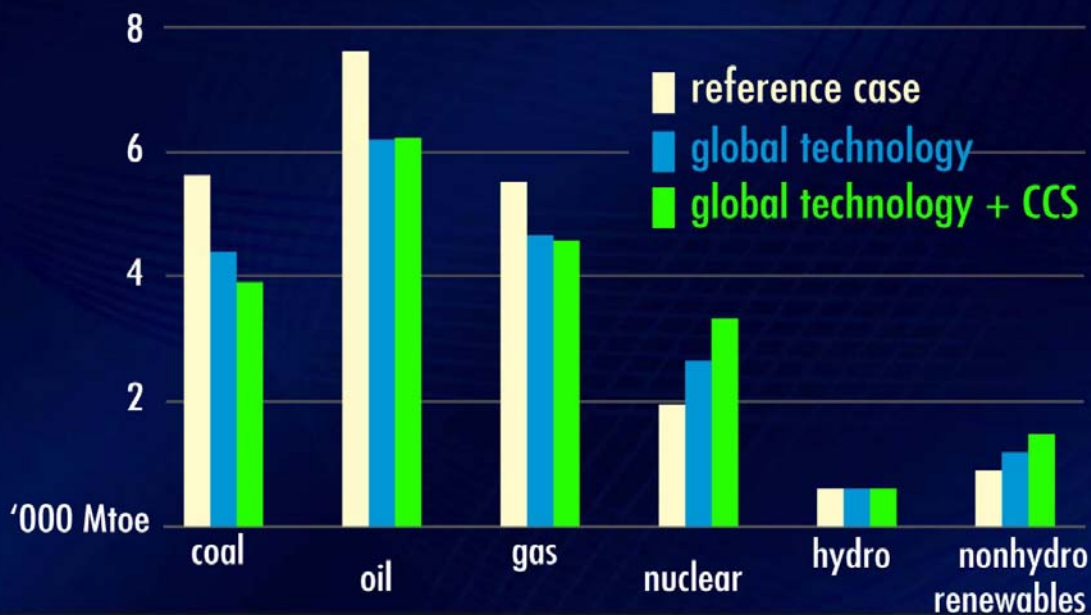
reference case



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Global energy consumption, by fuel in 2050

reference case and enhanced technology scenarios



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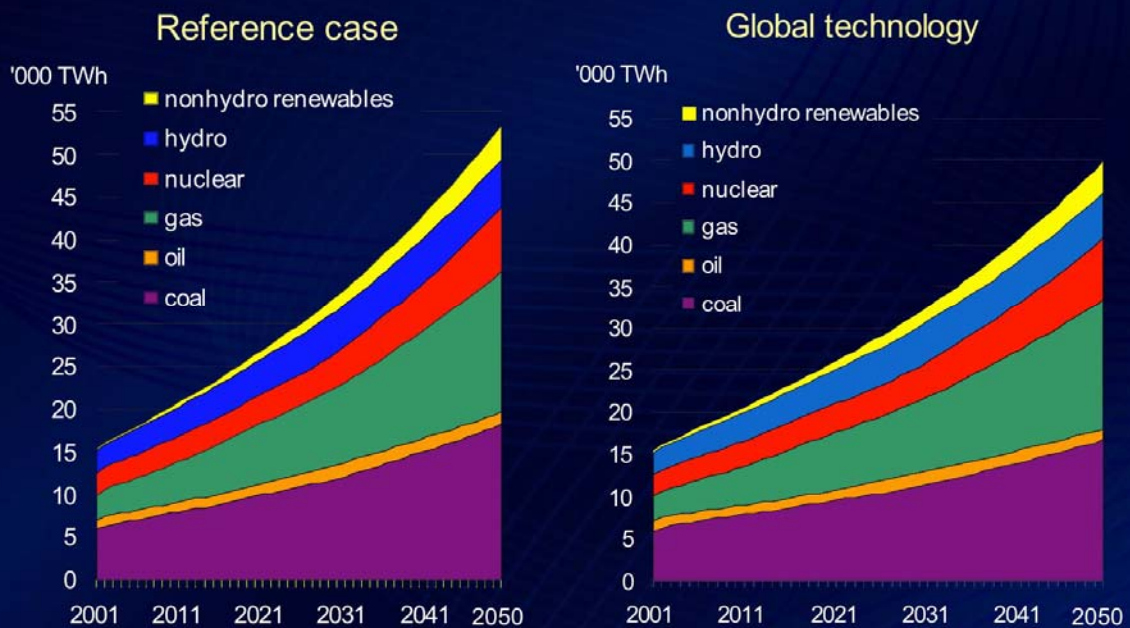
Change in global electricity generation

relative to the reference case



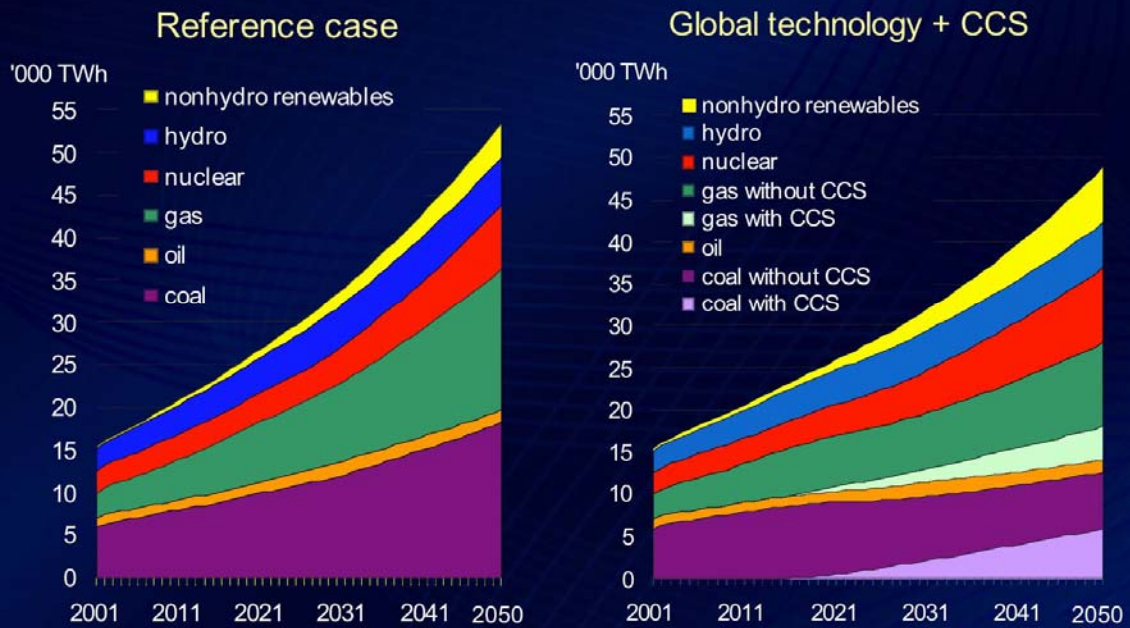
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Global electricity fuel mix



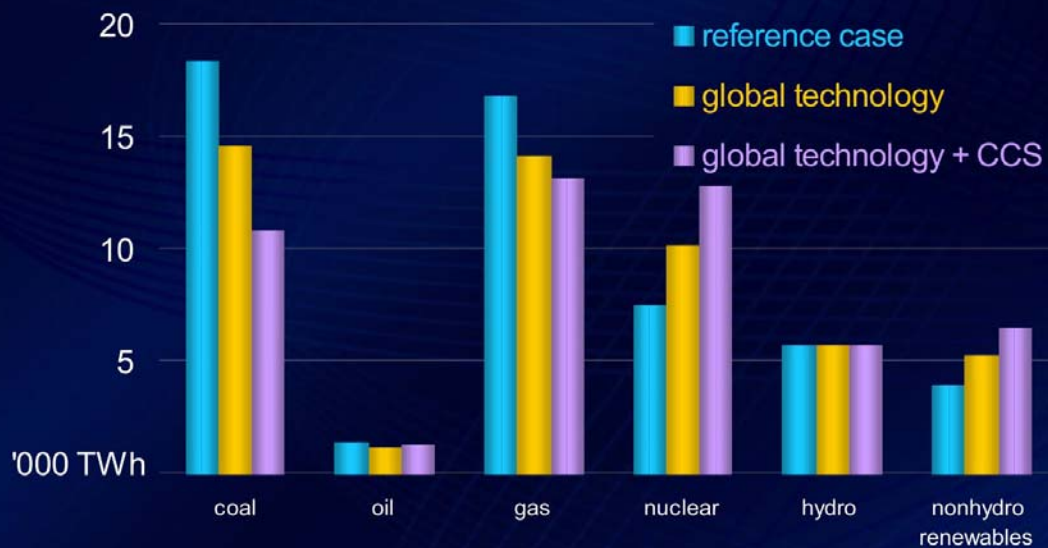
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Global electricity fuel mix



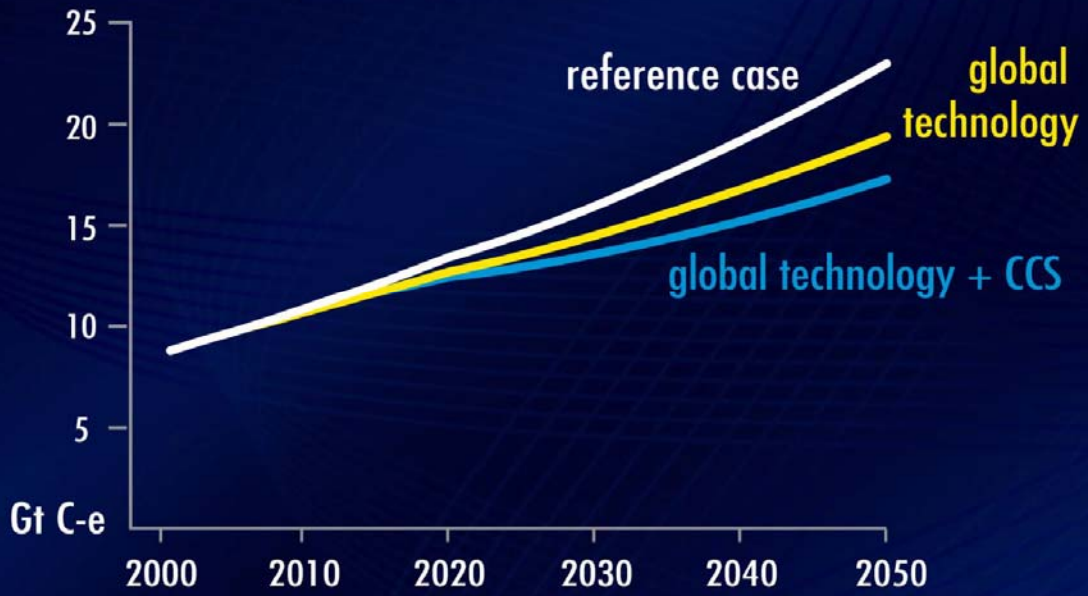
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Global electricity generation, 2050



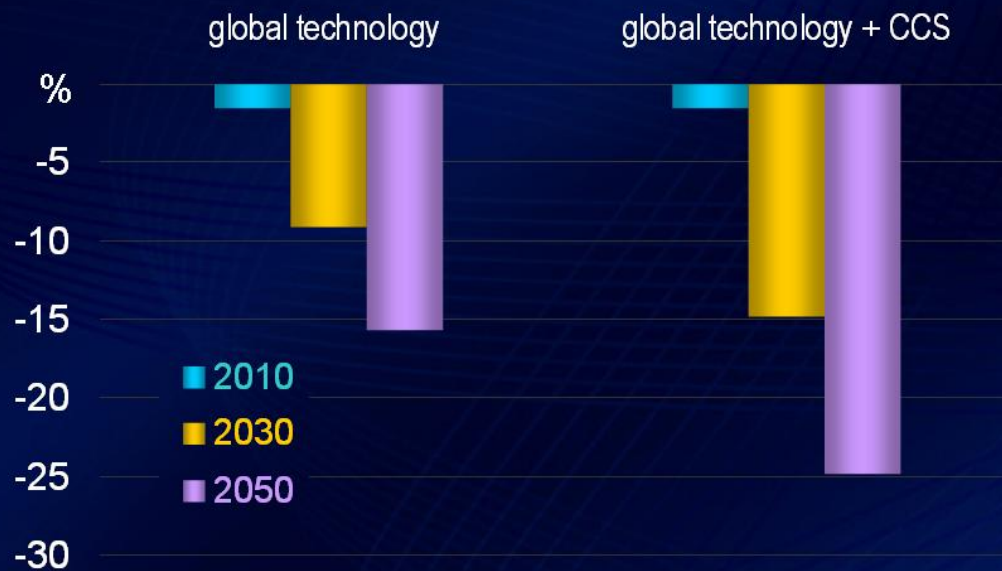
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Global emissions



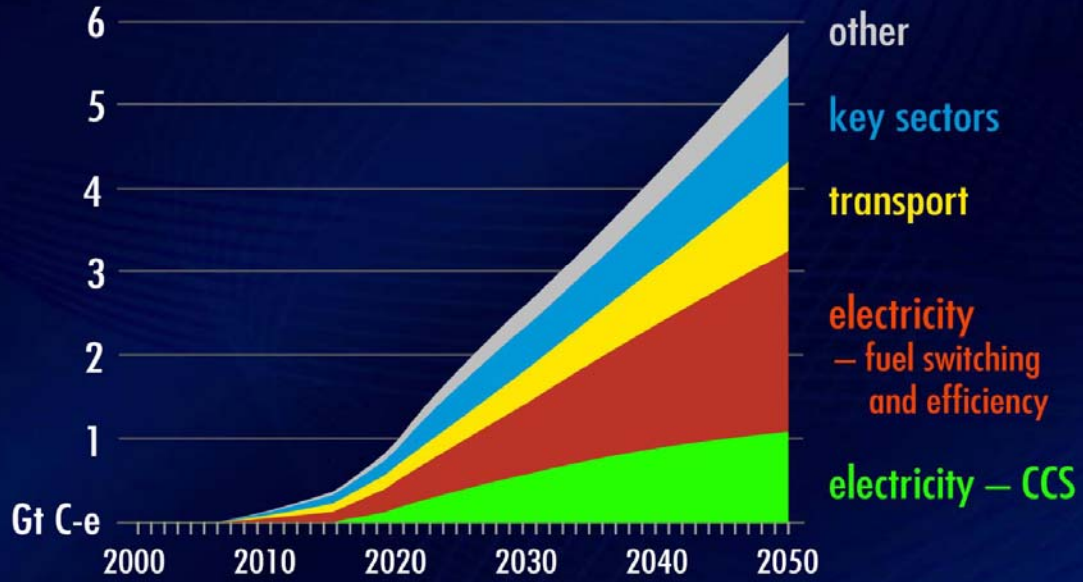
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Change in global GHG emissions relative to the reference case



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Global emissions abatement, by source global technology + CCS scenario



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