EU, energien og den globale klimapolitik

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EU, Energy, and Global Climate Change

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Major IPCC Findings

- Results from IPCC AR4 Mitigation Policies based on review of 1000's of studies.
- Focus on technical and economic studies of mitigation policies globally and regionally and in different sectors.
- Various policy options have been identified, and GHG emission growth can be offset with low economic costs.
- Flexibility mechanisms are very important incl. global cooperation, emission trading, JI and CDM projects, and multiple gasses and sectors.
- Many new international stabilisation studies are available, low costs for some targets if full emission trading and international collaboration is assumed.
- Large concensus about mitigation cost estimates incl. USA, EU, China, India and other DC's.
- But……..Large uncertainty about the costs of 2 degree target despite this is strongly recommended by climatologists and scientists.

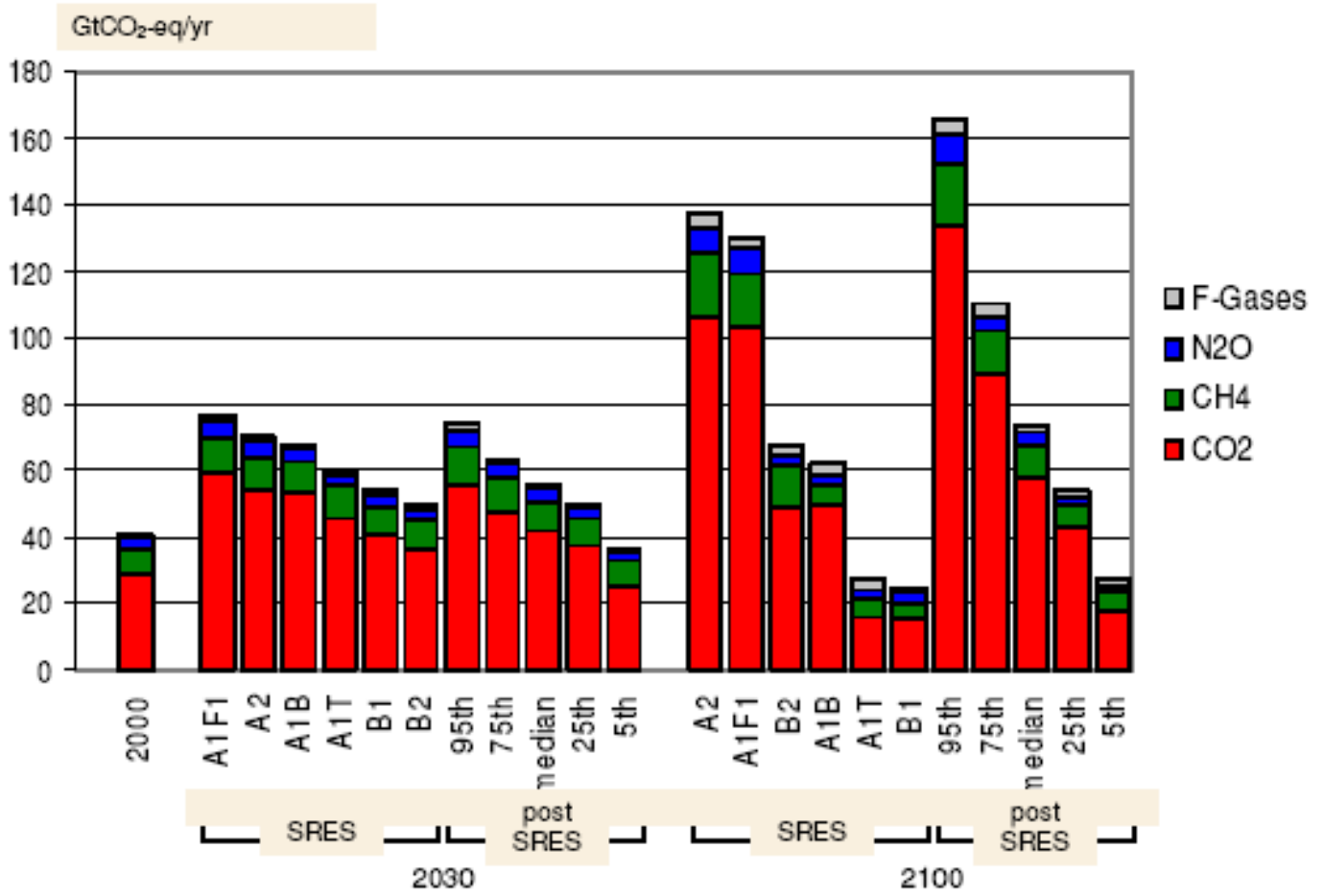

Figure SPM 4: *Global GHG emissions for 2000 and projected baseline emissions[10] for 2030 and 2100 from IPCC SRES and the post-SRES literature. The figure provides the emissions from the six illustrative SRES scenarios. It also provides the frequency distribution of the emissions in the post-SRES scenarios (5th, 25th, median, 75th, 95th percentile), as covered in chapter 3. F-gases cover HFCs, PFCs and SF_6 [1.3, 3.2, Figure 1.7].*

Stab level (ppm CO2-eq)	Global mean temp. increase at equilibrium (°C)	Year CO2 needs to peak	CO2 reduction in 2050 compared to 2000	# studies
445 – 490	2.0 – 2.4	2000 - 2015	-85 to -50	6
490 – 535	2.4 – 2.8	2000 - 2020	-60 to -30	18
535 – 590	2.8 – 3.2	2010 - 2030	-30 to +5	21
590 – 710	3.2 – 4.0	2020 - 2060	+10 to +60	118
710 – 855	4.0 – 4.9	2050 - 2080	+25 to +85	9
855 – 1130	4.9 – 6.1	2060 - 2090	+90 to +140	5

The growth of CO_2 emissions from developing countries

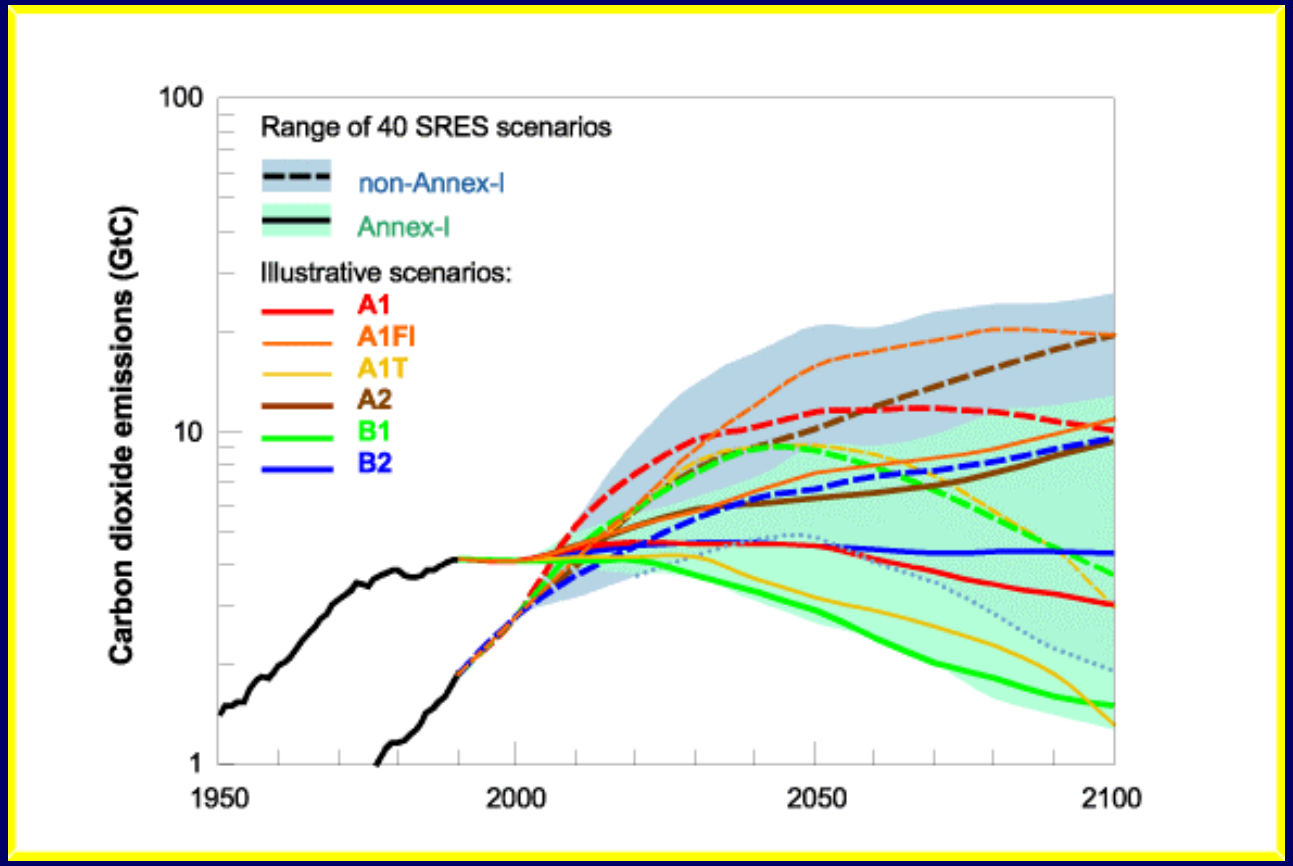

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***Table SPM.4**: Estimated global macro-economic costs in 2030[16] for least-cost trajectories towards different long-term stabilization levels.[17, 18]*

Stabilization levels (ppm CO_2-eq)	Median GDP reduction[19](%)	Range of GDP reduction [19, 20](%)	Reduction of average annual GDP growth rates (percentage points) [19, 21]
590-710	0.2	-0.6 – 1.2	< 0.06
535-590	0.6	0.2 – 2.5	<0.1
445-535[22]	Not available	< 3	< 0.12

[16] For a given stabilization level, GDP reduction would increase over time in most models after 2030. Long-term costs also become more uncertain. [Figure 3.25]

[17] Results based on studies using various baselines.

[18] Studies vary in terms of the point in time stabilization is achieved; generally this is in 2100 or later.

[19] This is global GDP based market exchange rates.

[20] The median and the 10th and 90th percentile range of the analyzed data are given.

[21] The calculation of the reduction of the annual growth rate is based on the average reduction during the period till 2030 that would result in the indicated GDP decrease in 2030.

[22] The number of studies that report GDP results is relatively small and they generally use low baselines.

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Table SPM.6: *Estimated global macro-economic costs in 2050 relative to the baseline for least-cost trajectories towards different long-term stabilization targets*[42] *[3.3, 13.3]*

Stabilization levels (ppm CO_2-eq)	Median GDP reduction[43] (%)	Range of GDP reduction[43, 44] (%)	Reduction of average annual GDP growth rates (percentage points)[43, 45]
590-710	0.5	-1 – 2	< 0.05
535-590	1.3	slightly negative – 4	<0.1
445- 535[46]	Not available	< 5.5	< 0.12

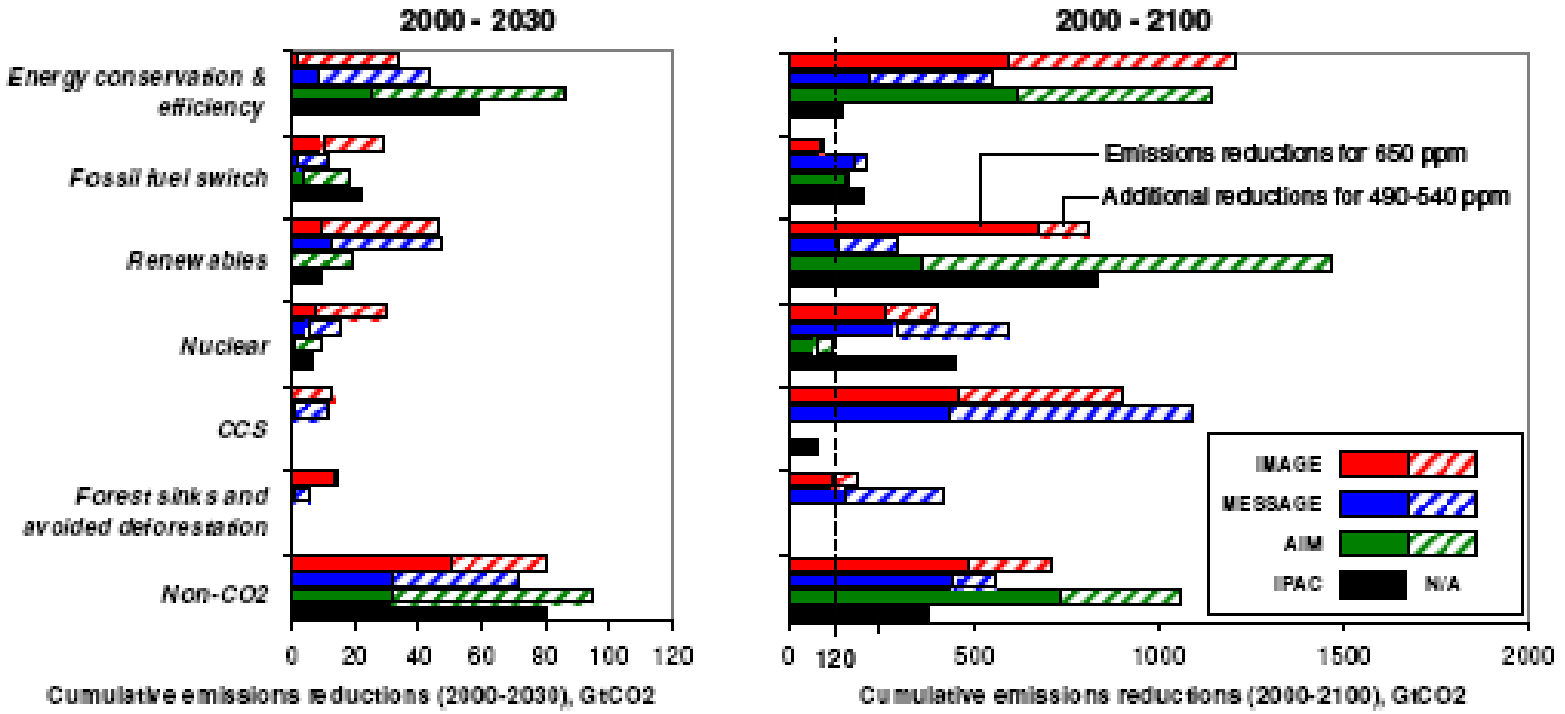
2000 - 2030
2000 - 2100
Energy conservation & efficiency
Fossil fuel switch
Renewables
Nuclear
CCS
Forest sinks and avoided deforestation
Non-CO2
Emissions reductions for 650 ppm
Additional reductions for 490-540 ppm
IMAGE
MESSAGE
AIM
IPAC
N/A
0
20
40
60
80
100
120
0
120
500
1000
1500
2000
Cumulative emissions reductions (2000-2030), GtCO2
Cumulative emissions reductions (2000-2100), GtCO2

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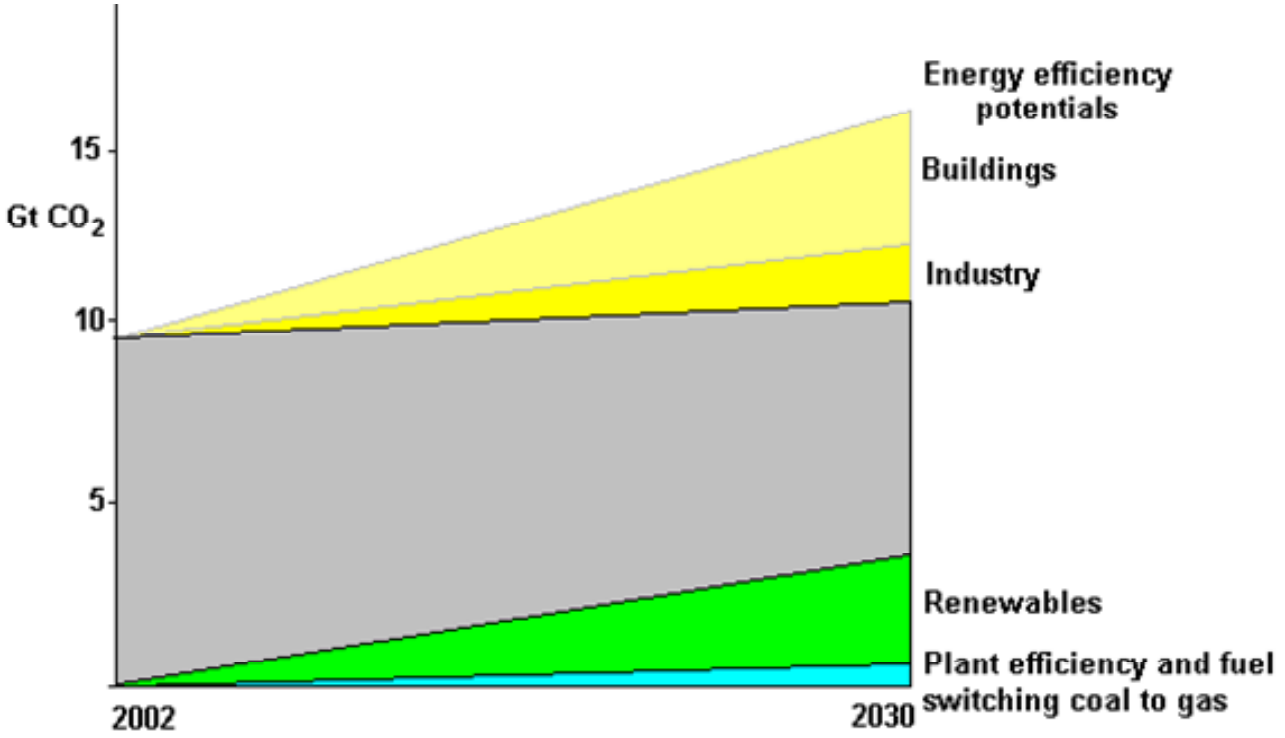
***Table SPM 1**: Global economic mitigation potential in 2030 estimated from bottom-up studies.*

Carbon price (US/tCO_2-eq)	Economic potential ($GtCO_2$-eq/yr)	Reduction relative to SRES A1 B (68 $GtCO_2$- eq/yr) %	Reduction relative to SRES B2 (49 $GtCO_2$- eq/yr) %
0	5-7	7-10	10-14
20	9-17	14-25	19-35
50	13-26	20-38	27-52
100	16-31	23-46	32-63

Potential emission reductions from additional hydro, wind, geothermal, bioenergy, solar at <US$ 50 /tCO2



The share of renewables in the total electricity supply can rise from 18% in 2005 to 30 – 35% by 2030 (at carbon price < US$50/tCO2eq).

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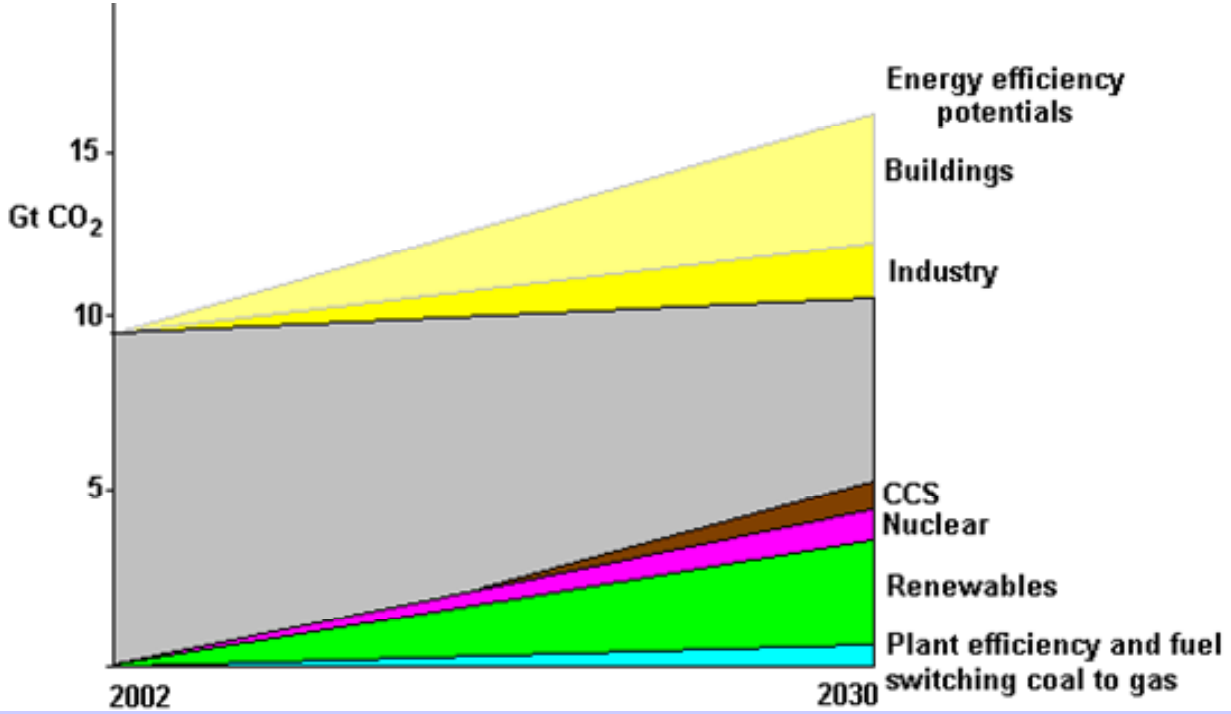
Potential emission reductions from additional CCS in new coal and gas plants at <US$ 50 /tCO2



Fossil fuel share of electricity generation without CCS drops to < 50% of total supply by 2030 (at carbon price < US$50/tCO2eq).

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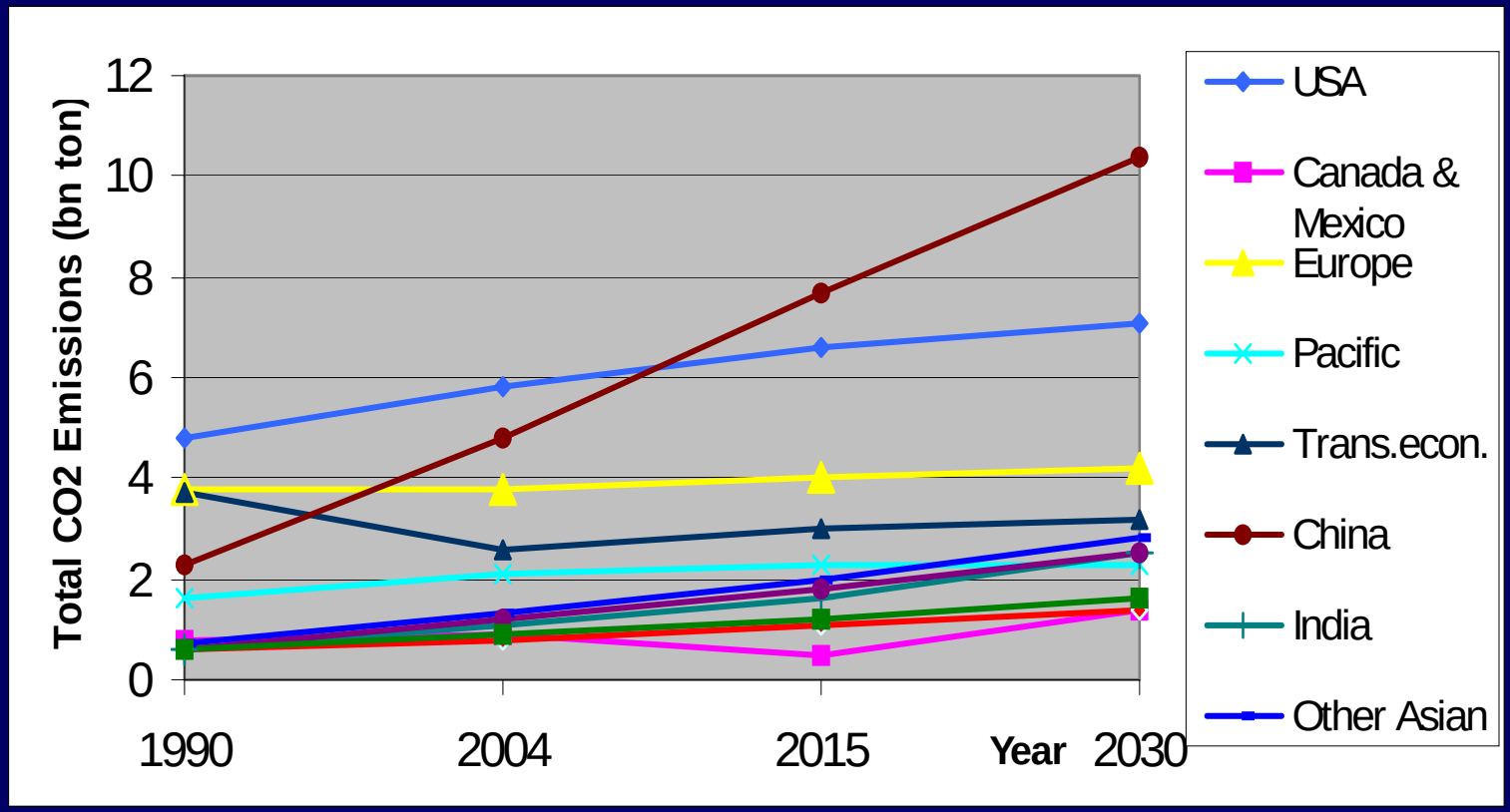
Energy Supply Conclusions

- Net additional investments required to keep 2030 at 2005 level are about 5-10% (on the top 20 trillion $ until 2030)
- Energy efficiency improvements (30% with negative costs in building sector).
- Renewable energy can increase from 18%in 2005, to 30-35% in 2030 (with 50$ carbon price).
- Wind energy 7% of global electricity production in 2030 (with 30$ carbon price).
- Price volatility can support renewable energy but also enhance coal use.
- Nuclear power can increase from 16% in 2005 to 18% in 2030.
- CCS can make an important contribution.

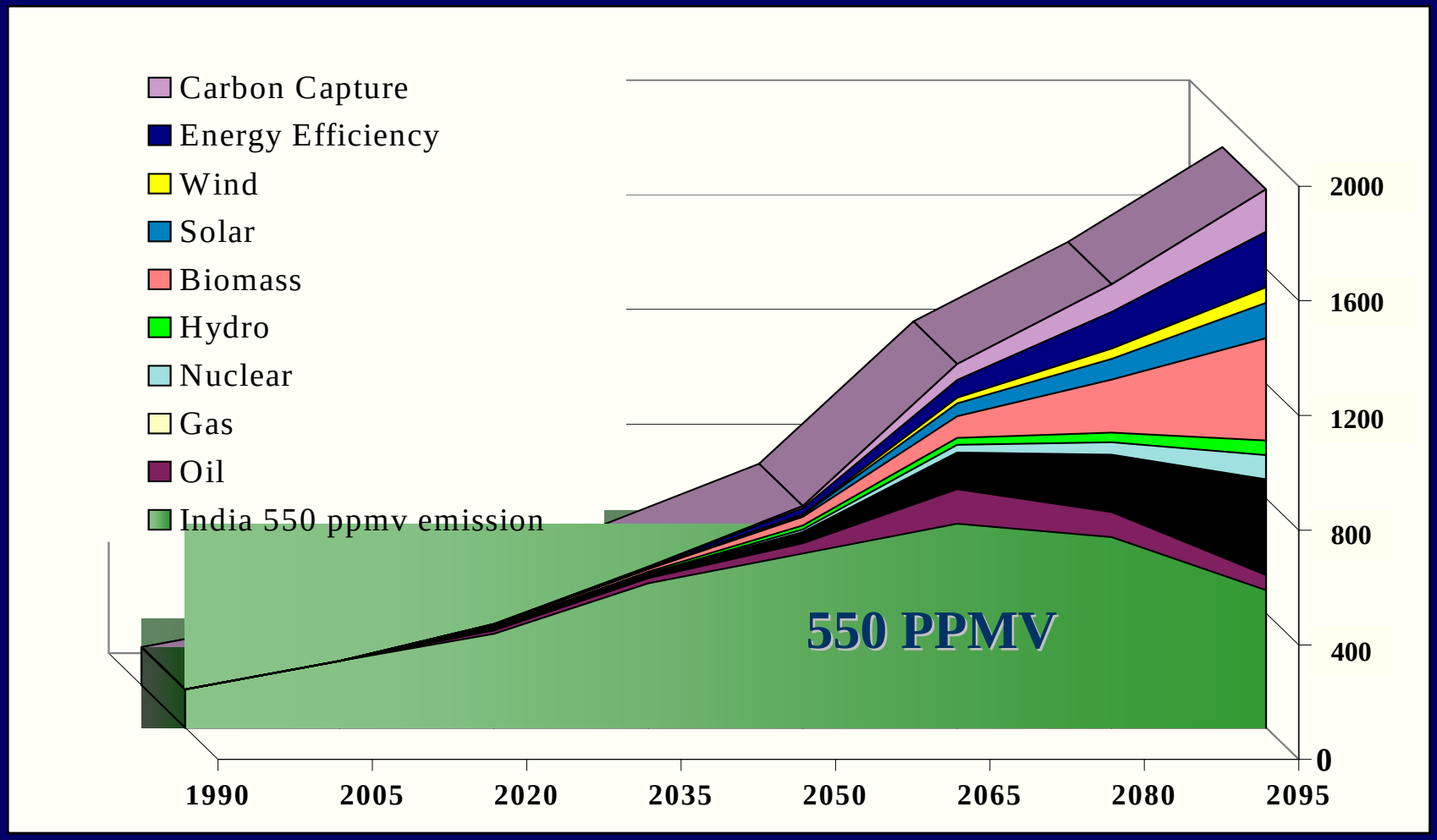
How Far are We with the Cost Estimates

- Low costs for targets up to around 550 ppm or 2.5-3 degree.
- Few studies that meet 2 degree targets.
- 2 degree target requires that emissions in 2050 should be up to 80% below 2000 level.
- Wide range of technical options with low costs, 10% with negative costs.
- Low cost options include energy efficiency improvements that can be difficult to implement.
- Major GHG emission reductions will have to take place in DC's due to their large share of future global GHG's.

CO2 Emissions from Energy 1990-2030, IEA WEO 2006



Stabilisation Scenario for India



Different Perspectives on Post 2012

- Annex 1 and non Annex 1 with targets based on GDP intensity, per capita, baseline, or other principles.
- Initiative by 10 largest emitters.
- Climate change moves from ministry of Environment to Finance, Development and Industry/Energy.
- New policy perspectives:
  - Expand the carbon market.
  - Technology driven initiatives.
- EU policy dilemma:
  - Internal burden sharing to start on renewable and emission targets.
  - Little progress with emission reductions.
  - Industry not ready to carry the burden.
  - Renewable energy push.
  - Internal consensus moves attention away from DC collaboration (block policy a straight jacket).
  - No international support to EU stabilisation target.

EU Climate and Energy Perspectives

- Climate-Energy conclusions:
  - Low costs for targets up to around 550 ppm or 2.5-3 degree.
  - Few studies that meet 2 degree target.
  - 2 degree target requires that emissions in 2050 should be up to 80% below 2000 level - It is time to do the homework.
  - Wide range of technical options with low costs, 10% with negative costs. Low cost options include energy efficiency improvements that can be difficult to implement.
- EU energy and climate policies should have an international perspective: High priority to DC partnerships.
- Start constructive dialog with US, Canada, Japan, and Australia.
- Climate-energy policies should be addressed in the context of sustainable development.