Side-Event on “The True Cost of Climate Policy”
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The cost of delaying participation in a global climate agreement

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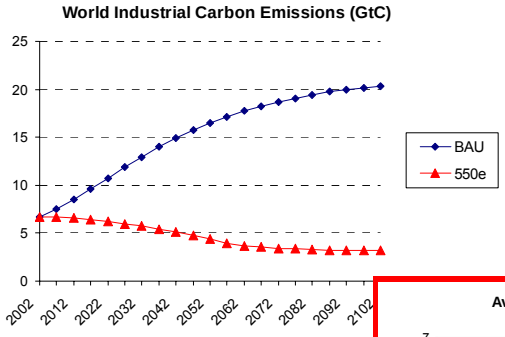
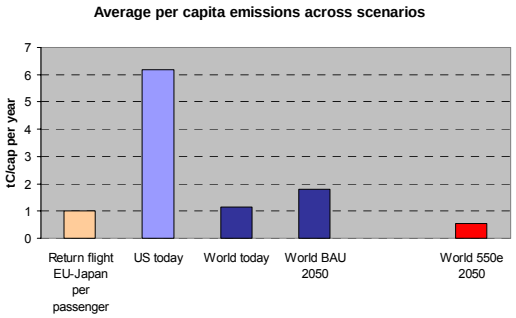
Long-term target

- European proposal:
  - max 2 degrees by end of the century
  - -20% by 2020 (possibly -30%) wrt BAU
- Other possible features:
  - Global carbon market (through linking and CDM)
  - Equal per capital allocation of allowances
- Likely to be consistent with stabilization at 400-450 ppm (CO2 only, i.e. 500-550 ppm all GHGs included).

Emission Target (450 ppm CO2 only)





450 ppm CO2 only is roughly equivalent to 550 ppm all greenhouse gases included

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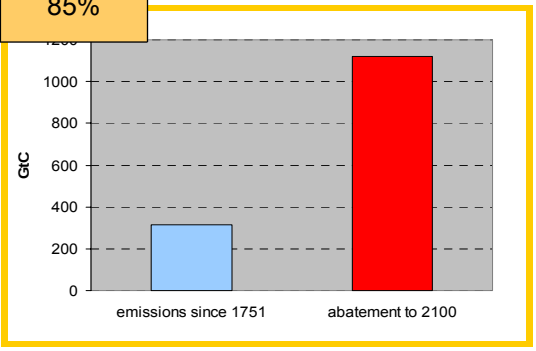
Required emission reductions

	BAU	450ppm CO2	% reduction
2005	7.8	7.8	
2030	13.0	8.0	38%
2050	17.0	4.9	71%
2100	23.6	3.6	85%



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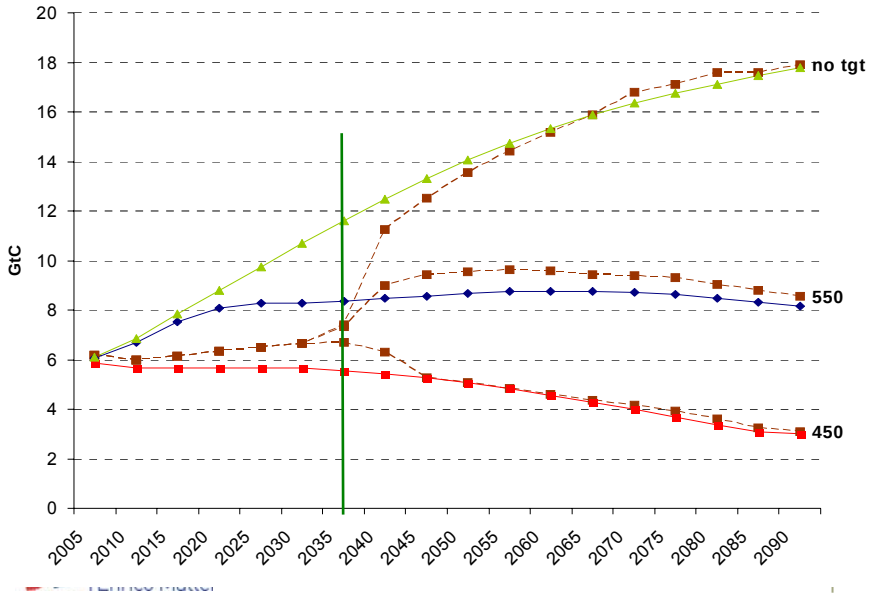
Uncertainty makes little difference….



The True Cost of Climate Policy /1

1. What is the cost of achieving a 450 ppm stabilization target?

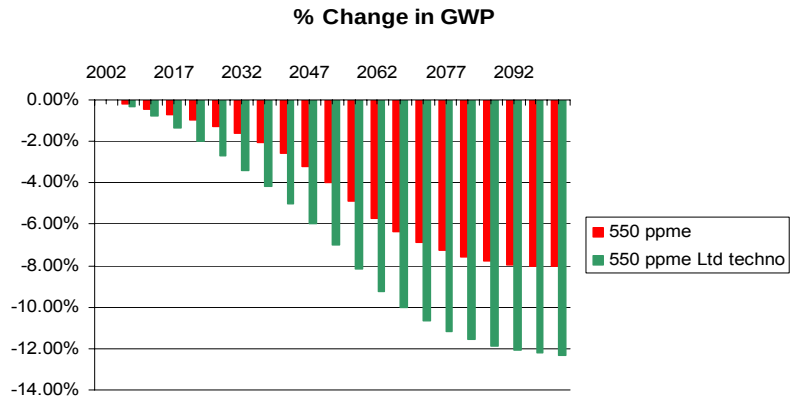
2. How does the cost change when:
   - abatement measures are delayed…
   - major developing countries postpone their abatement efforts…
   - the availability of some carbon free energy technologies is limited…
   - forestry options are not included in the package…
   - short term price signals are wrong…?

The True Cost of Climate Policy /2

- IPCC and Stern Review estimate the policy cost of 450 ppm stabilisation at about 1% of Global World Product (GWP)
- However, this figure is obtained under some unplausible assumptions on global and immediate participation, no spillovers, full technological availability, perfect long-term foresight, efficient carbon pricing, centralised decision making, etc …
- How does the cost of climate policy change when some or all of these assumptions are relaxed?

Cost of Stabilization Policy in the base case

(policy scenario with no delay, all technologies, perfect foresight, global agreement, efficient carbon pricing …)



NPV of Policy Cost (disc 5%) is about 2.0% of GWP

(larger than IPCC's because of spillovers and strategic decision making)

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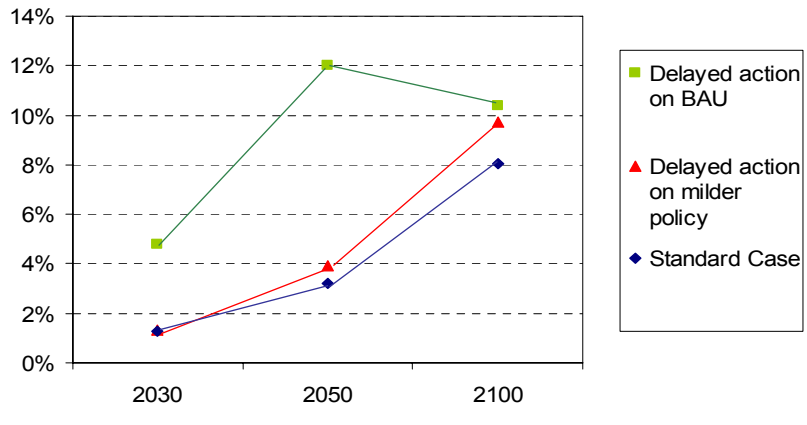
Policy Costs and Allocation Rules

NPV costs to 2100 5% (3% declining) discount rate	WORLD	
	SOVR	EPC
550ppmv CO2	0.28% (0.23%)	0.27% (0.22%)
450ppmv CO2	2.2% (5.5%)	2.1% (5.4%)

SOVR: sovereignty, EPC: equal per capita

Large gap between 450 and 550.
Allocation scheme doesn't affect global figures …
But highly affects cost distribution.

Cost of delayed global action (GWP losses)



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Delayed action largely increases cost of climate policy.
If delay of global action is above 20 years, then the 450 ppm target becomes unfeasible

Proposal

Act **now**, even though action may be limited and suboptimal (less ambitious than what it should be to stabilize concentrations at 450ppm). In this way:

- the cost of action would be smoothed over time
- incentives to climate friendly innovation would be larger
- cheap abatement opportunities are exploited sooner
- technological and knowledge spillovers are immediately effective
- ….

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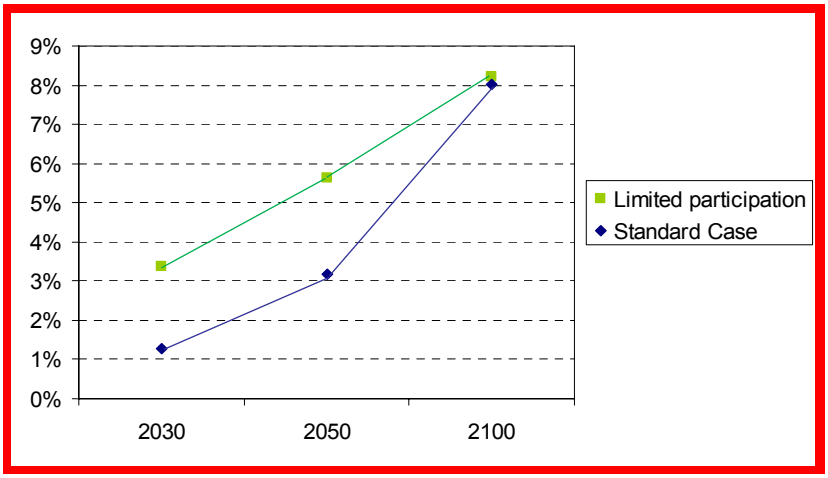
Costs of developing countries' delayed participation (GWP losses)



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Short run mitigation costs are much larger if developing countries delay participation to a climate agreement by 20 years

Proposal

Developing regions should be allowed to trade emissions reductions below their baseline, rather than below a binding target. In this way, through an efficient international carbon market, marginal abatement costs would be equalised and the extra cost of limiting mitigation efforts to a subset of developed countries would wane, i.e. global GWP losses would be very close to those if all countries participated immediately to a climate agreement. (Bosetti, Carraro and Tavoni, 2008).

Allowing reduced deforestation of tropical ecosystems to be used as carbon credit could help to avoid that a vast quantity of CO2 emissions go into the atmosphere (as well as providing important co-benefits such as the conservation of biodiversity).

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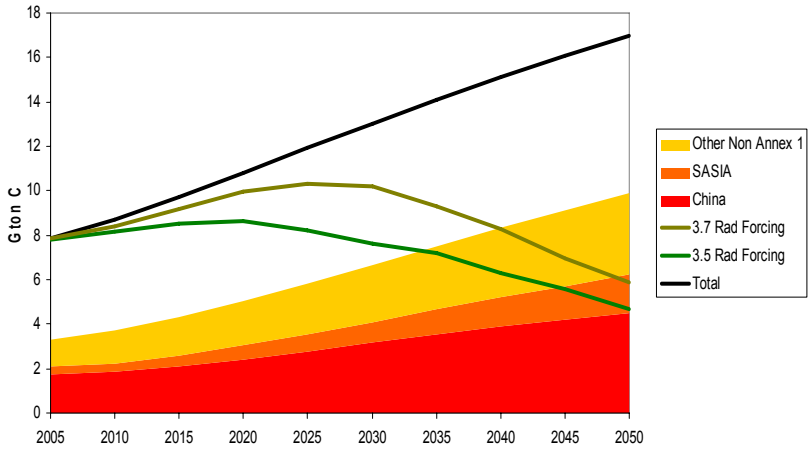
Time is short….



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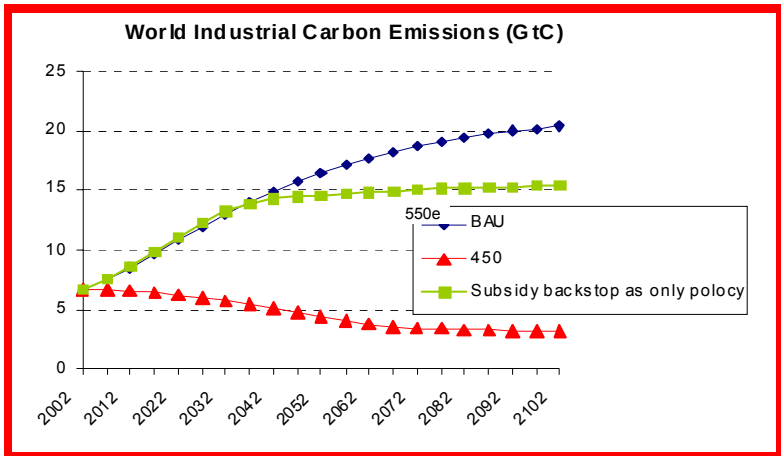
Energy R&D as a stand alone policy



An energy R&D policy alone will not achieve emission reductions needed to stabilize concentrations.

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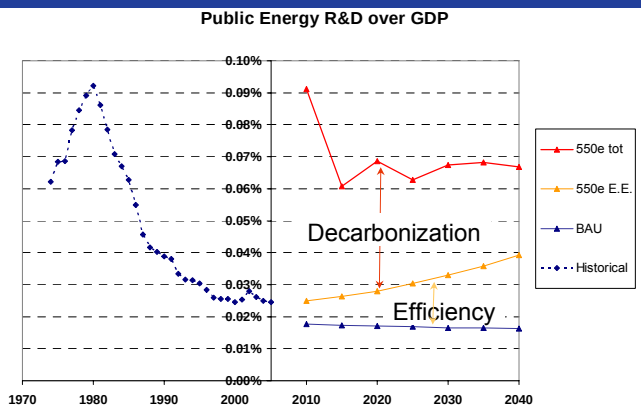
Public Energy R&D



4 fold increase in public energy R&D investments needed (roughly 40 billions/yr).
Return to 1980s figures (yet 2 order of magnitude smaller than physical investments in commercial technologies -> cheap insurance policy).
Focus on both improving efficiency but mostly on innovation in low carbon technologies.

Conclusions

- A set of linked and/or integrated cap and trade schemes is the likely post-Kyoto regime.

- Major developing countries should be induced to participate in a "global" (although fragmented) carbon market and allowed to trade from their baseline emissions without "binding" targets.

- Climate policy in developed countries should be implemented anyway, even without the immediate participation of developing countries and even if consensus is achieved only on "mild" policy.

- A significant increase in carbon prices in needed and should be complement by a large increase in public energy R&D expenditure.

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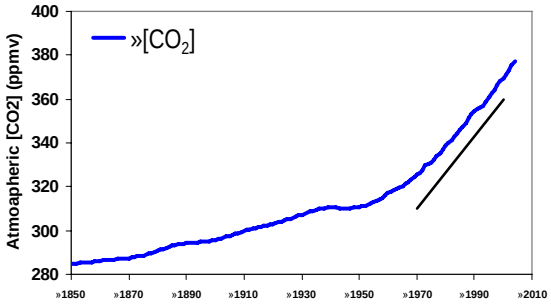
Atmospheric CO_2 Concentration

Year 2007
Atmospheric CO_2 concentration:
382.6 ppm
35% above pre-industrial



1970 – 1979: 1.3 ppm y^{-1}
1980 – 1989: 1.6 ppm y^{1}
1990 – 1999: 1.5 ppm y^{-1}

2000 - 2006: 1.9 ppm y^{-1}

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NOAA 2007; Canadell et al. 2007, PNAS