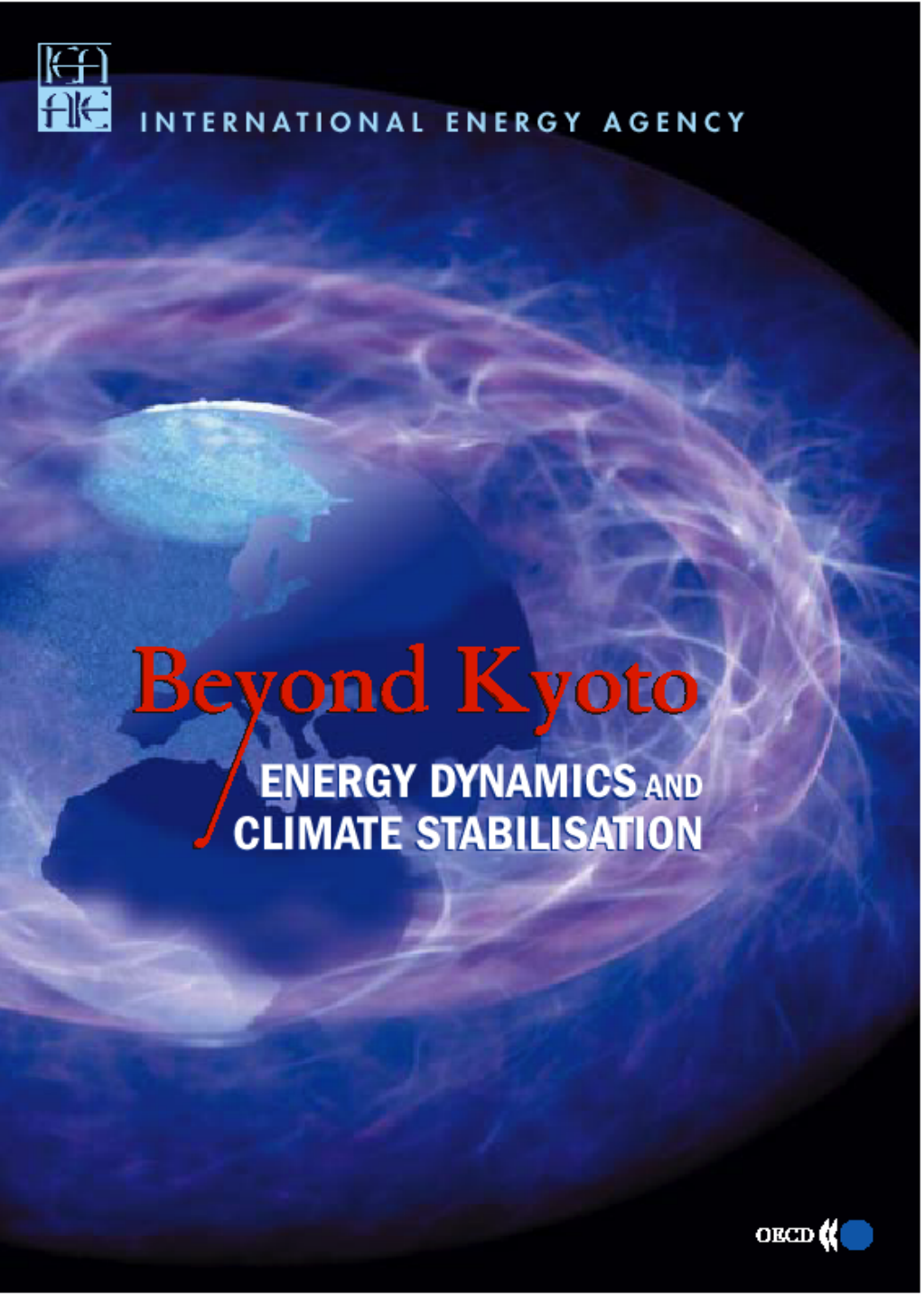


BEYOND (The first commitment period of) KYOTO

Cédric Philibert & Jonathan Pershing

Expert Workshop on Climate Change and Sustainable Development, Seoul, 19/11/2002

BEYOND KYOTO

- Global action and deeper cuts are needed
- Solutions exist, but at a cost
- Uncertainties & inertia: the ultimate objective dilemma
- Instrument choice theory and climate change
- Options for commitments
- Timing and burden-sharing
- Broadening & deepening action:
  - Non-binding targets/Price cap/Dynamic targets

Global action & deeper cuts

WRE CO_2 Stabilisation profiles (ppm)	Accumulated CO_2 emissions 2001 - 2100 (GtC)	Global emissions should peak in:	Global emissions should fall below 1990 level in:
450	365–735	2005–2015	<2000-2040
550	590-1135	2020-2030	2030-2100
650	735-1370	2030-2045	2055-2145
750	820-1500	2040-2060	2080-2180
1000	905-1620	2065-2090	2135-2270

Source: IPCC TAR Synthesis Report table 6.1

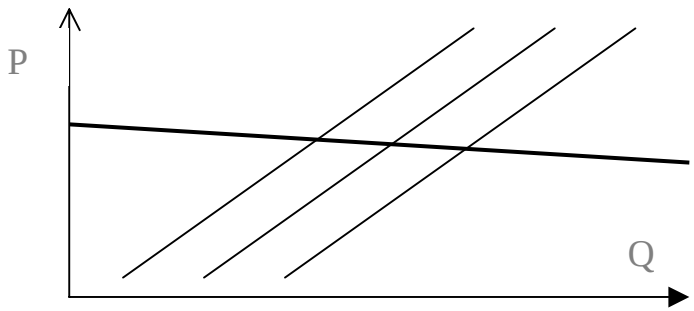
Solutions exist, but at a cost

- Improving energy efficiency
- Fuel switching (coal to oil to gas to non carbon energy sources)
- CO_2 capture and storage
- Enhancing sinks
- Reducing other GHG emissions

The ultimate objective dilemma

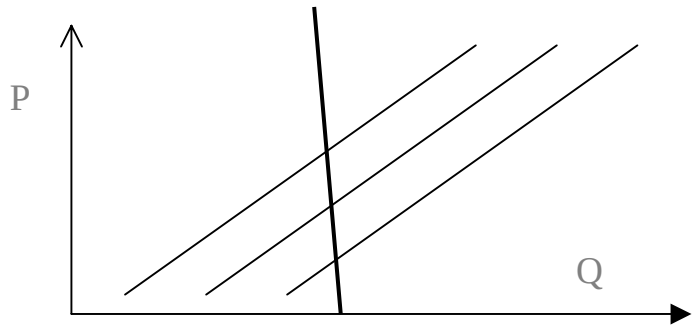
- Costs and benefits uncertain – and costs matter
- Inertia constrains - and requires - early action
- Possible way out: Aim at low concentration levels with achievement conditional on costs
- Stringency matters, not emission certainty
  - Damages relate to concentrations, abatement costs relate to emission reductions

Instrument choice theory



- If costs uncertain...
- & benefit curve flatter than cost

➔price instruments

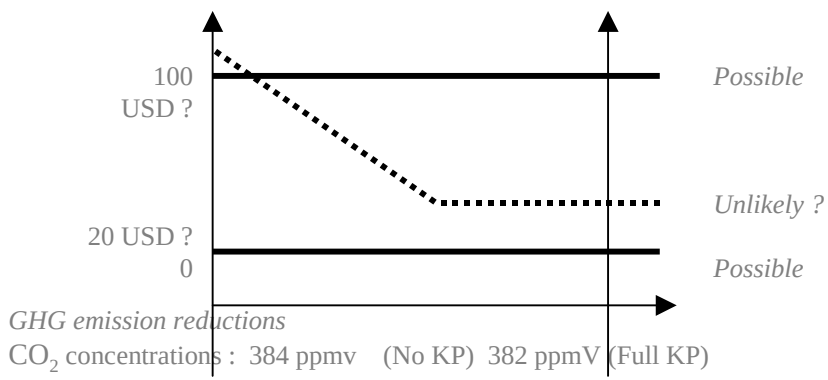


- If costs uncertain...
- & benefit curve sharper than cost

➔quantity instruments

The case of climate change

- Flat benefit curve, sharp cost curve
  - Stock externality
- Kyoto Protocol:
  - Would reduce CO_2 concentration from 384 ppmV to 382



- Certainty worth it? (nasty surprises)
  - Fixed targets would be consistent with 40% global cuts (short term) (Newell&Pizer)
  - A price instrument would allow deeper cuts at lower expected costs
  - giving up certainty favours stringency

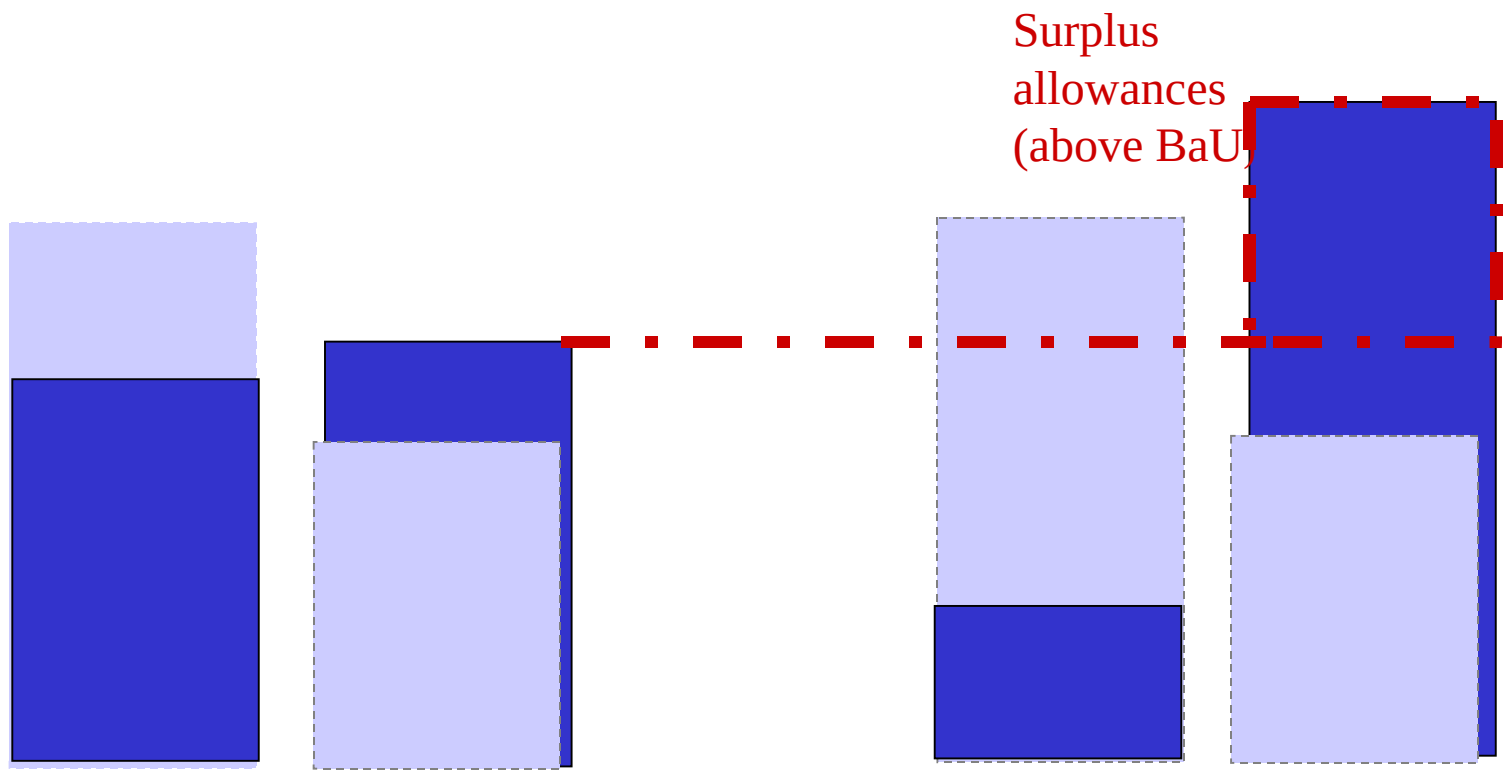
Options for Commitments

- Co-ordinated carbon taxes not widely accepted
- Technology accords may not be enough
- Quantitative targets allow emissions trading
  - Cost-effective and environmentally effective
  - Key for equity
- Fixed biding targets provide certain emission levels, but entail uncertain costs
- Developing countries concerned that binding targets may threaten their economic growth

Timing and burden-sharing

- Undirected development will not solve climate problem
- «Slow» phase in of commitments under Kyoto not enough; implies high concentrations
- Equal per capita allocation or contraction and convergence are not obvious solutions:
  - May limit environmental effectiveness
  - May eventually constrain economic development
- No-harm rule with alternative forms of quantitative targets may offer better prospects

No-harm *vs* equal per capita



Broadening and deepening action: Non-binding targets

- Surplus sellable, if any
- Incentive, no hard law
- Responsibility limited to units sold
- Targets on/close to BaU emission levels
- No risk for growth: development first!
- An option for developing countries only
- Close to CDM
- A zero price cap

The Price Cap

- Supplementary permits at a fixed price
  - Price set in the upper range of expectations
  - Many possible uses of revenues (if any)
- For countries or only economic agents
- Trading necessitates one single price or restrictions
  - Differentiated assigned amounts
  - Cap price not marginal cost
- Capping the cost may help countries accept more stringent objectives

Dynamic targets

- Assigned amounts based on economic projection, adjusted to actual growth
- Differentiated assigned amounts *and* indexation rules:
  - "Intensity targets" only a special case
  - Assigned amounts *and* level of efforts indexed
  - GDP measurement is a real issue
- Concerns for the ultimate objective?
  - Reducing cost uncertainty favours stringency

To sum up...

- Global and deeper action “beyond Kyoto”
- Stringency matters more than certainty
- More flexible options could help countries adopting sufficiently stringent commitments
- Dynamic targets an option for all countries
- Non-binding targets for developing countries and price cap for developed countries
- Many combinations conceivable
- A trade-off efficacy versus complexity?