Chaire Economie du Climat
Université Paris-Dauphine
CDC Climat

Climate Economics

Climatic Risk & International Negotiations

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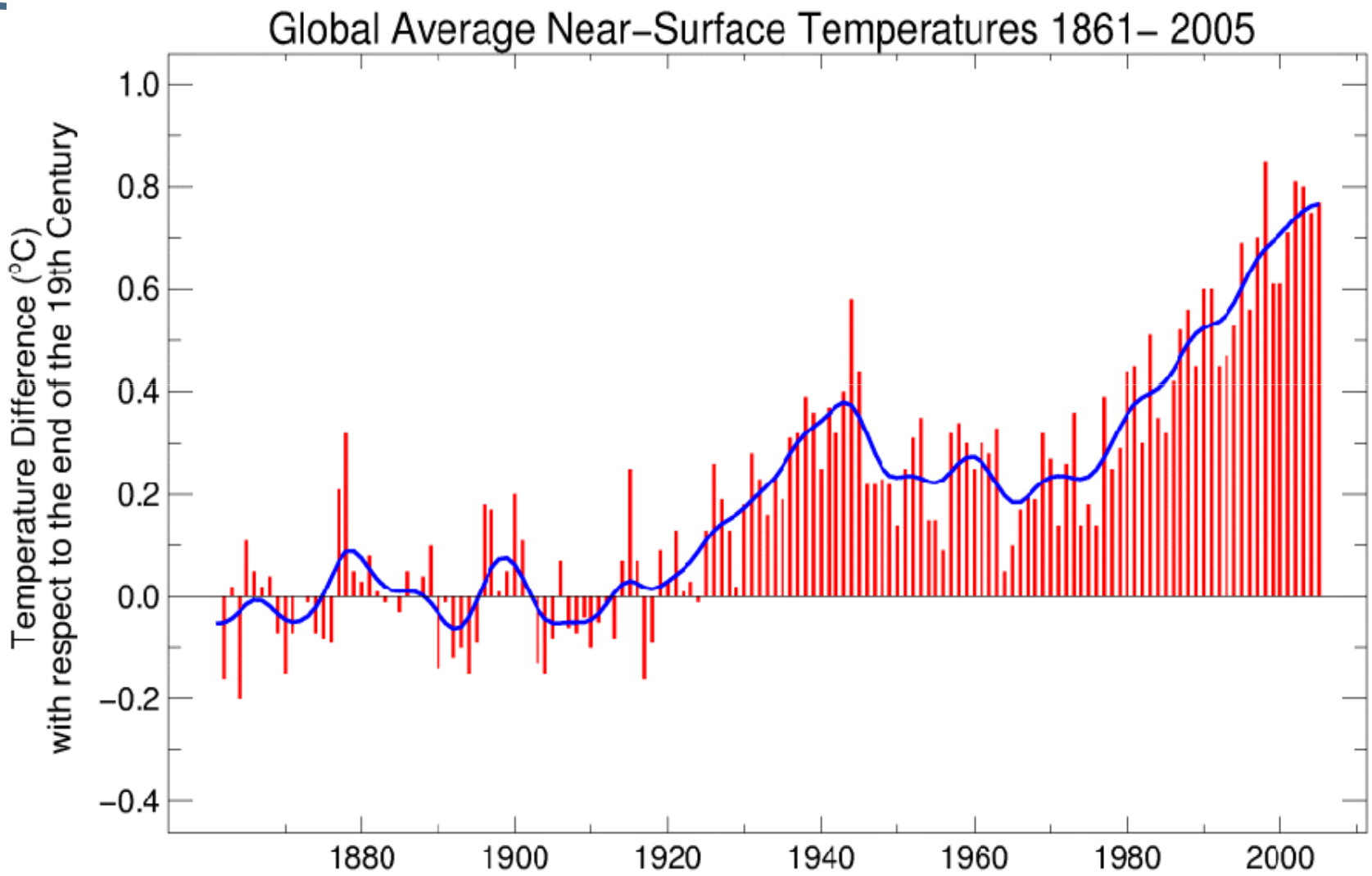
Observed temperatures

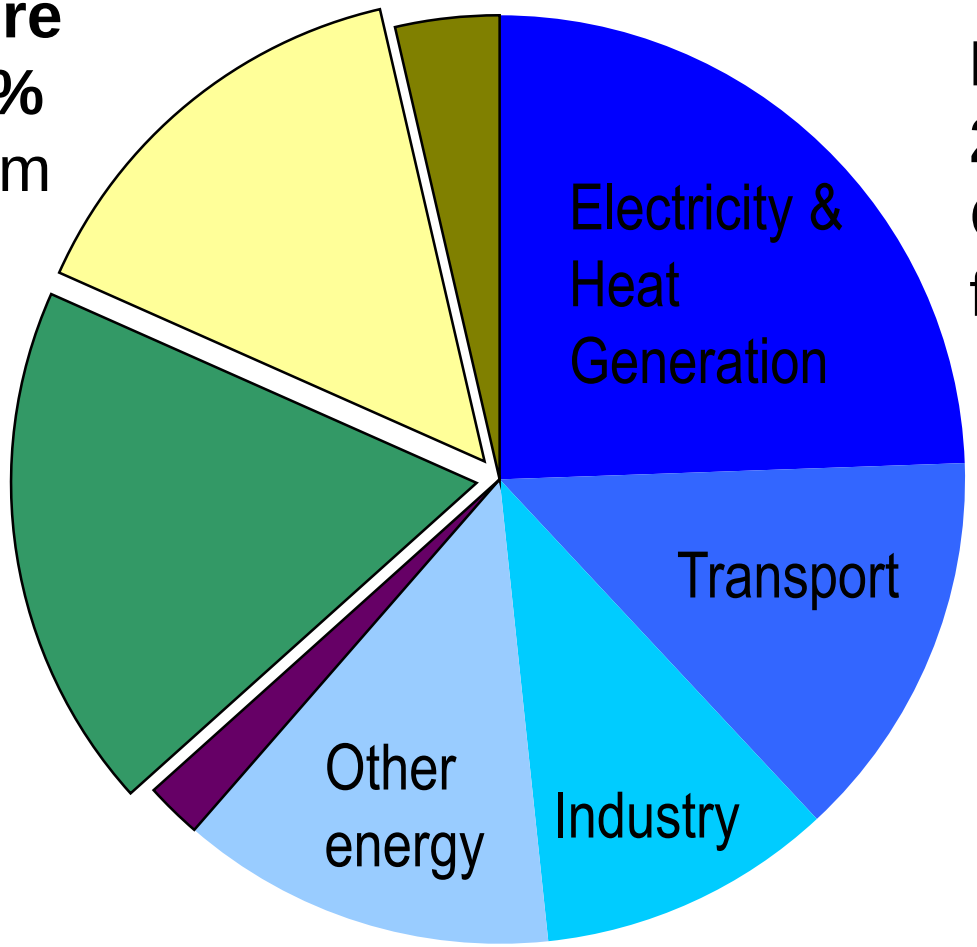


Source : Stern Review

Global emissions of greenhouse gases come from a wide range of sources

Agriculture
5.6 Gt 14%
mostly from soils & livestock

Land Use changes
7.6 Gt 18%
primarily deforestation



Energy – 25.6 Gt 61%
Consuming fossil fuels

All GHG in CO2 equivalent

Source: World Resources Institute. 2000 estimate.

Main anthropogenic emissions

Type of gas :	Emissions' origin	Weight in total (2005)	Mitigation factors
CO2 (= 1 CO2)	Fossil energy combustion ; tropical deforestation ; industrial processes	World. : 77 % France : 73 %	Energy savings & efficiency, renewable energy, nuclear, carbon sink
Methane (CH4) (= 21 CO2)	Agriculture, waste management, gas	World: 14 % France : 11 %	Methane recovery (landfill, manure, flairing…)
Nitrous oxyde (N2O) (=310 CO2)	Agriculture, chemical industry and combustion	World: 8 % France : 14 %	Conservation/alternative agriculture
SF6, PFC and HFC	Specific industrial emissions (aluminium, magnesium, semi-conductors) Climatisation, spray	World: 1 % France : 2 %	Air conditioning reduction, improvement of industrial processes

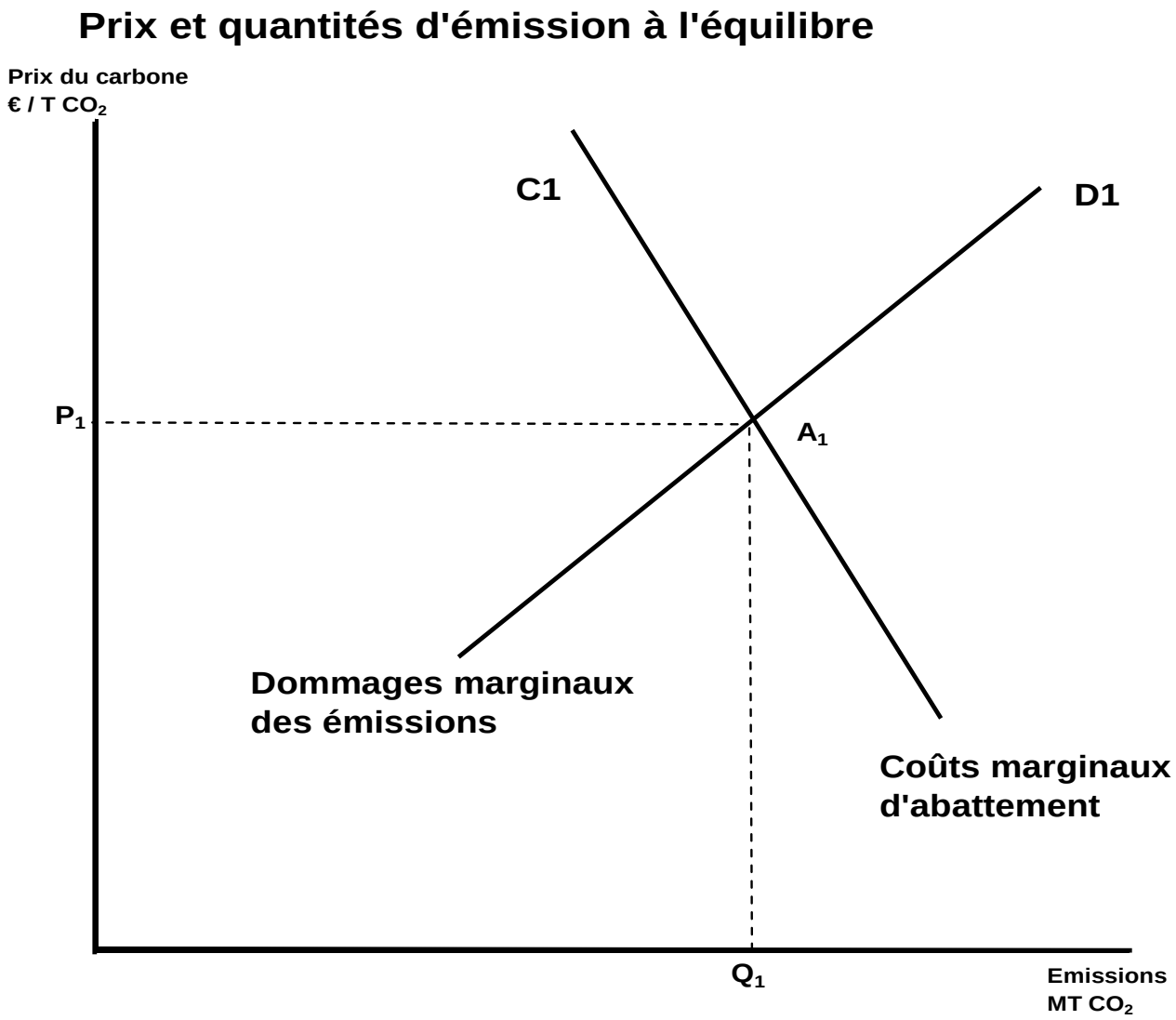
Typology of pollutants

Geographic scale	Causes	Consequences	Mitigation and results
Domestic	Domestic combustion exhausts (CO, particules, NO_X..)	Respiratory diseases : >1,5 m death/year according to UNEP in develop. countries	Housing improvement, education
Local	Concentration of CO, NO_X, particules and ozone in towns	Atmospheric degradation, respiratory diseases	Enforcement of regulatory, mandatory reduction targets in towns
Regional	Growing SO_2 concentration due to energy activity	Acid rain, forest destruction	Regulatory toughening, emissions market in the USA, reduction targets in USA and Europe
Global ➢ **Ozone layer** ➢ **GHG**	CFC emissions (sprays, refrigerators, …) GHG emissions (CO_2, methane, …)	Ozone layer depletion Rising green-house effect, climate change	Montreal protocol (1987), emissions almost disappeared UNFCCC (1992) Kyoto protocol (1997)

How we can act against pollutions

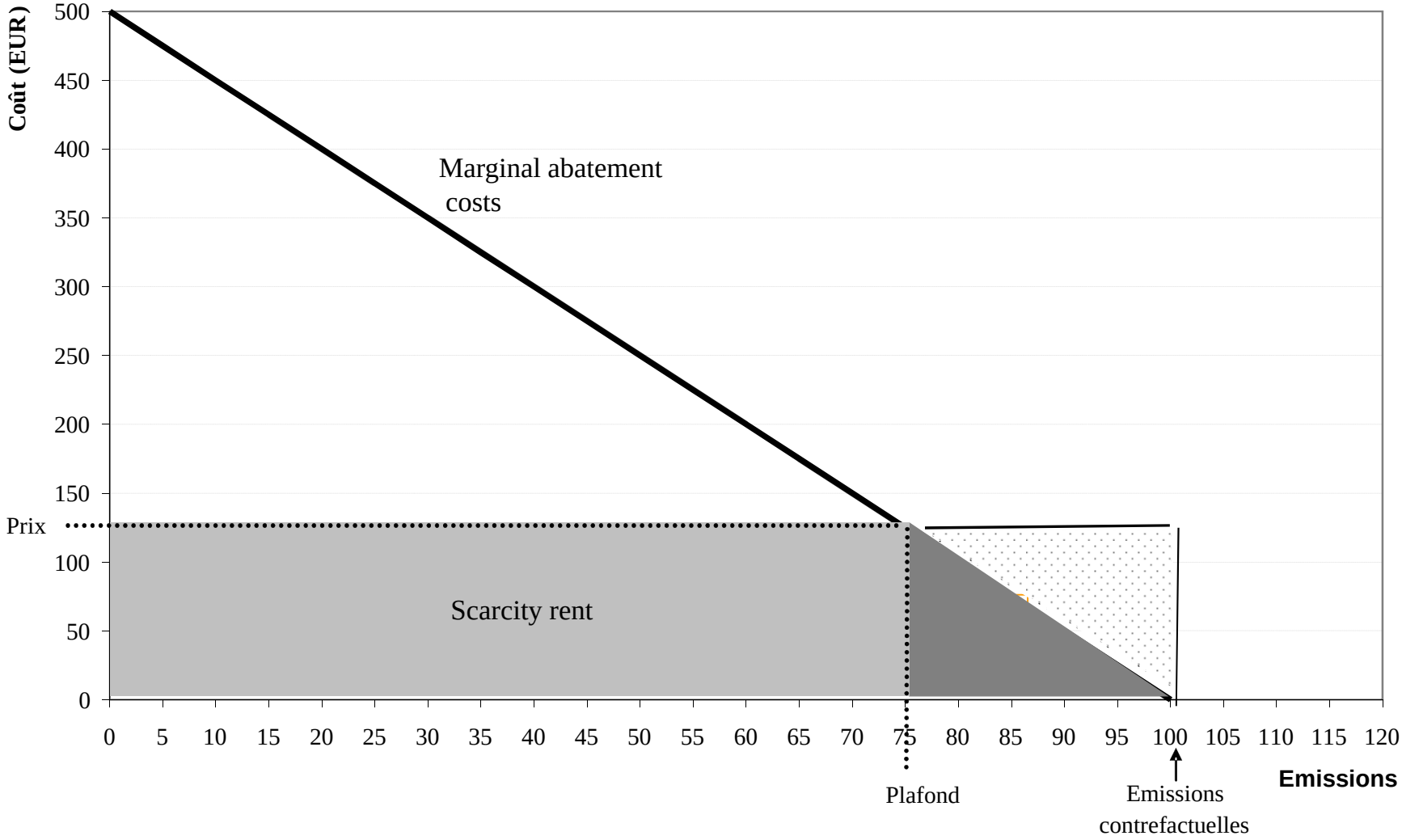
Voluntary agrements	Regulation
➢**Ex** : agreement car-makers/EU Commission on car emission reductions; ➢**Advantages** : firms' commitment; anticipation of regulatory toughening ; ➢**Drawbacks** : hard to generalize (« free riding »).	➢**Ex** : Montreal Protocol banning CFC gas (1987) ; ➢**Advantages** : very efficient if enforceable ; ➢**Drawbacks** : potentially high costs; frauds.
Taxes	**Emissions market**
➢**Ex** : carbon tax (Sweden, Ireland, Denmark…); feed-in tariff for wind/photovoltaic; royalty on water; ➢**Advantages** : if well priced, a good incentive to all economic agents; « double dividend » envisageable; ➢**Drawbacks**: risk of bad pricing: heavy costs; no certainty of fulfilling environmental goal.	➢**Ex** : US SO2 market ; Kyoto protocol flexibility mechanisms ; CO2 markets; ➢**Advantages** : economic incentive to all economic agents under scope + flexibility to lower costs + control over environmental target ; ➢**Drawbacks**: significant transaction costs and market risk.

How to price environmental damage



Two components of carbon rent

Emission reductions and rents induced by carbon price



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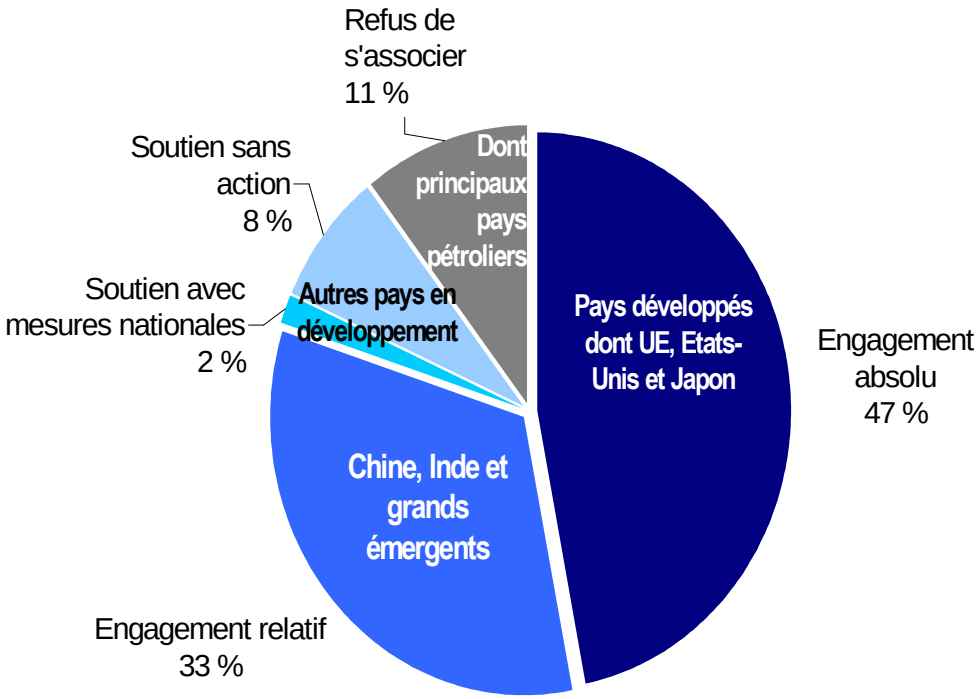
From a top-down towards a bottom-up approach for the economic tools

- **The Kyoto Protocol top-down approach:**
  - ✓ Negotiating global GHG emissions targets between countries
  - ✓ Using these targets to set-up “flexibility mechanisms”:
    - An international Sovereign allowances trading (didn’t work)
    - Two project-based mechanisms: CDM an JI
- **The bottom-up Copenhagen approach:**
  - ✓ Each country submits its own targets and/or appropriate measures
  - ✓ No global framework for carbon trading: Each country can decide to use or not market-based mechanisms
  - ✓ These market based mechanism can help in:
    - Reducing the cost of domestic emissions reduction
    - Coordinating the action of different countries

New ways of setting up pledges

- **A huge extension of world GHG emissions covered:**
  - ✓ Kyoto: less than 30%
  - ✓ Copenhagen: 75-80 %
- **But large uncertainties on the commitments:**
  - ✓ US: Copenhagen pledge contingent on a Congressional decision
  - ✓ China: 1 point of GDP growth by 2020 equivalent to 1.6 Billion T of CO_2 emissions !
  - ✓ Forestry and Land use change accounting

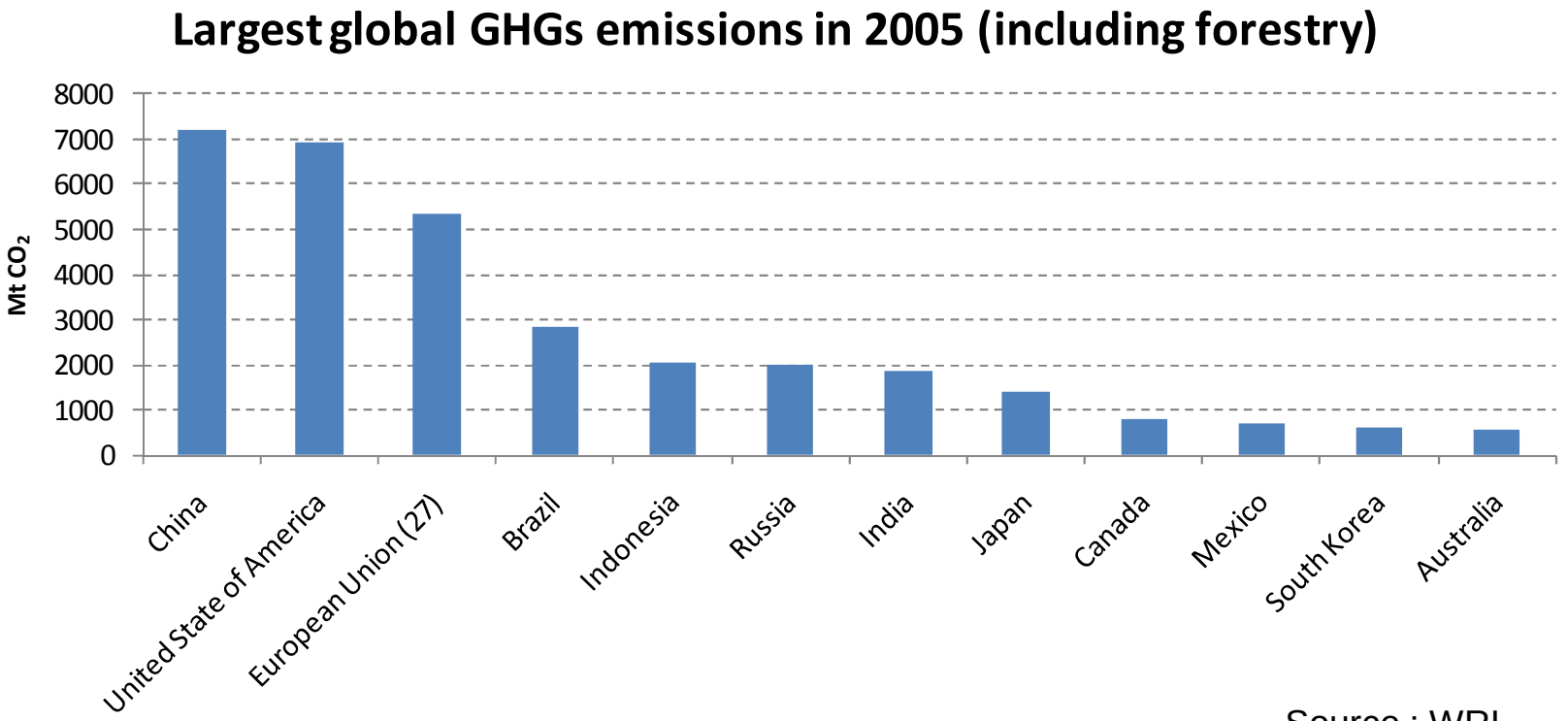
Support of countries to the Copenhagen accord
(Shares in 2005 GHG emissions)



Source : CEC Publication, Oct 2010

A shift of the negotiation's gravity center

- Kyoto was a negotiation mainly conducted between industrialized countries
- Emerging countries and the US were at the center of the Copenhagen negotiations, which better reflects their position as major economic players and major GHG emitters.



Source : WRI

What we got from Cancun

- **Back to the pre-Copenhagen era with some progresses but many questions yet to answer…**
- **Multilateralism revived; but beware of the "consensus" enforcement *vs* unanimity.**
- **A *consensual* endorsement of the 2℃ target and the necessity of a peak-emissions "as soon as possible".**
- **Developed and developing countries invited to set targets to be consolidated under the Convention.**

What we got from Cancun

- International MRV established “in a manner that is non-intrusive, non-punitive and respectful of national sovereignty”.
- Adaptation, and not only mitigation, in the highlights.
- A framework for technology transfers.
- Forest-sector emissions mitigation on track.
- Substantial funding planned with “fast-track finance” and a “Green Climate Fund”.
- Kyoto Protocol and flexibility mechanisms enjoy a respite.

What we got from Cancun

- **But:**
  - ✓ A long wish-list,
  - ✓ Ultimate decisions still contingent on negotiations to be held under the auspices of a number of existing and new Committees,
  - ✓ Japan, Canada and Russia still wary of a KP II,
  - ✓ Substantial finance commitments with no clear sources.
- **And:**
  - ✓ As long as the USA and/or China do not put a price on carbon, comprehensive outcome unlikely to emerge.

Thank you!

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- **The Chair's web-site (French and English):**

  www.ChaireEconomieDuClimat.org