The status of negotiations on a Technology Transfer System after the Poznan‘ conference of parties’ of the Climate Change Convention

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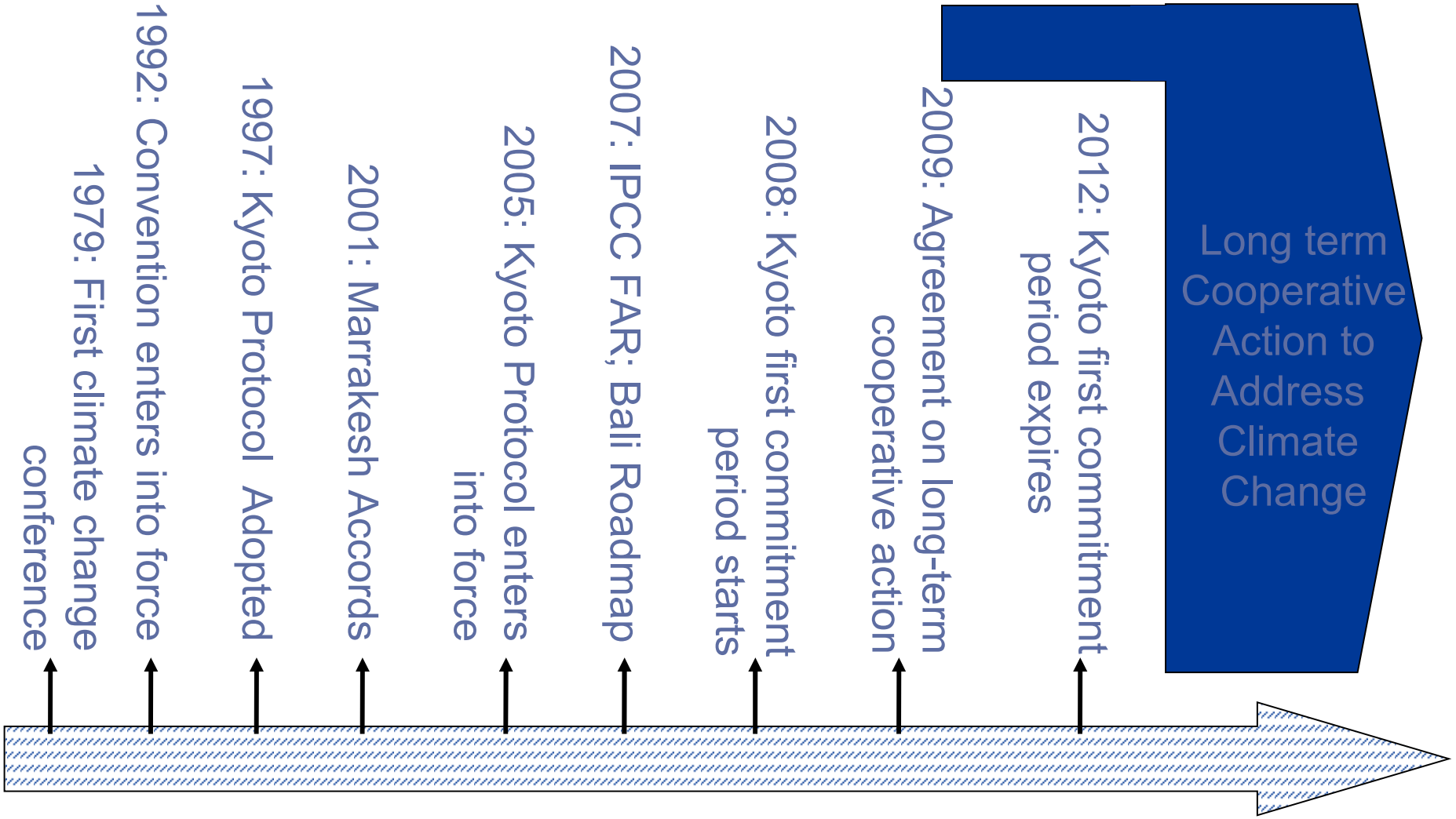
The UNFCCC: timeline



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Commitments related to technology

Art 4.1c All parties to *promote and cooperate in the development, application and diffusion, including transfer, of technologies, practices and processes* that control, reduce or prevent anthropogenic emissions of greenhouse gases

Art 4.5 The developed country Parties […] shall take all practicable steps to *promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country Parties*, to enable them to implement the provisions of the Convention. […]

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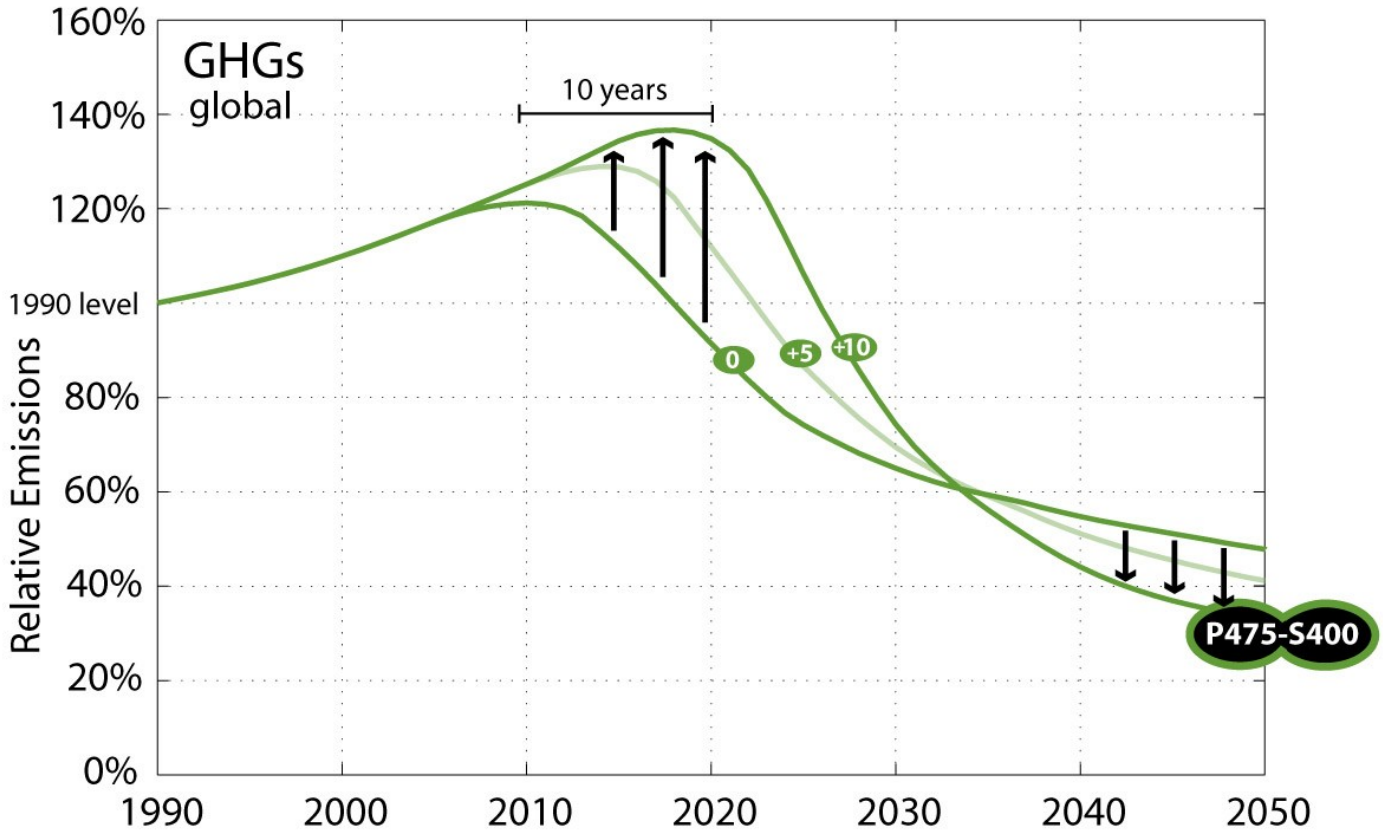
Commitments related to financing

Art 4.3 The developed country Parties [...] shall also provide such financial resources, including for the transfer of technology, needed by the developing country Parties to meet the agreed full incremental costs of imple-menting measures that are covered by Art 4.1 […].

Art 4.4 The developed country Parties […] shall also assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects.

Mitigation technology challenges



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The Kyoto Protocol (KP)

- A protocol to the Climate Convention
- Regulates commitments between countries (Parties)
- Developed countries (Annex 1) have absolute emission targets 2008-2012 (based on 1990 levels)
- Annex 1 overall reduction about – 5% (1990 – 2008-2012)
- Introduction of three flexible mechanisms:
  - International Emissions Trading/IET (Parties – between countries)
  - Clean Development Mechanism/CDM (Parties & Comp.)
  - Joint Implementation/JI (Parties & Companies)

Project Based Mechanisms

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Value of primary Certified Emission Rights (CER)

- 1 billion CERs issued
- 2.5 billion CERs expected to 2012
- Market value approx. €25 billion 2012
- Carbon finance 5-20%. Varies between technologies. The rest is other investments and loans
- Green investment flows to developing countries approx. **€125-500 billion** to 2012

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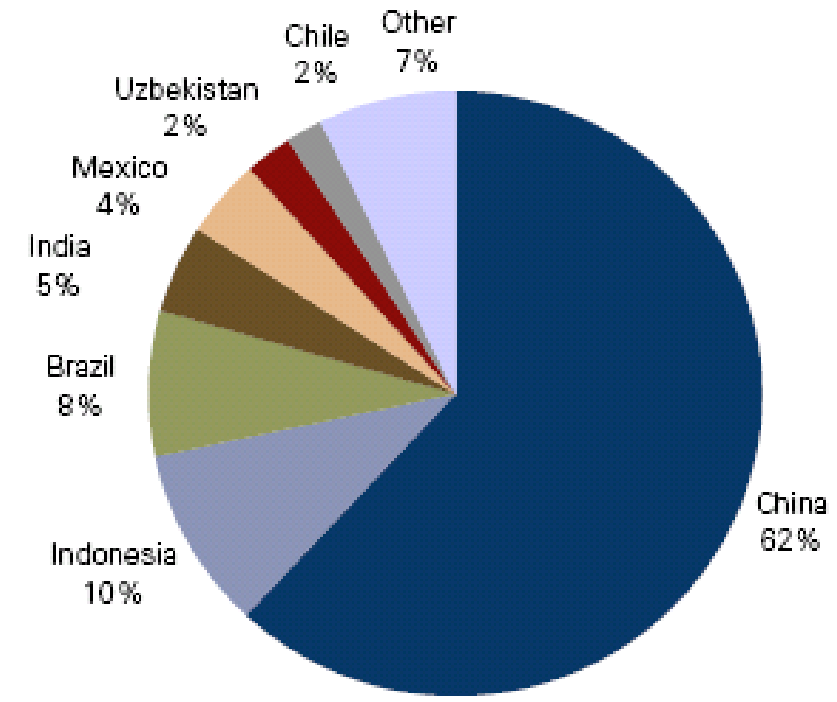
Sellers and purchasers



Source: Point Carbon

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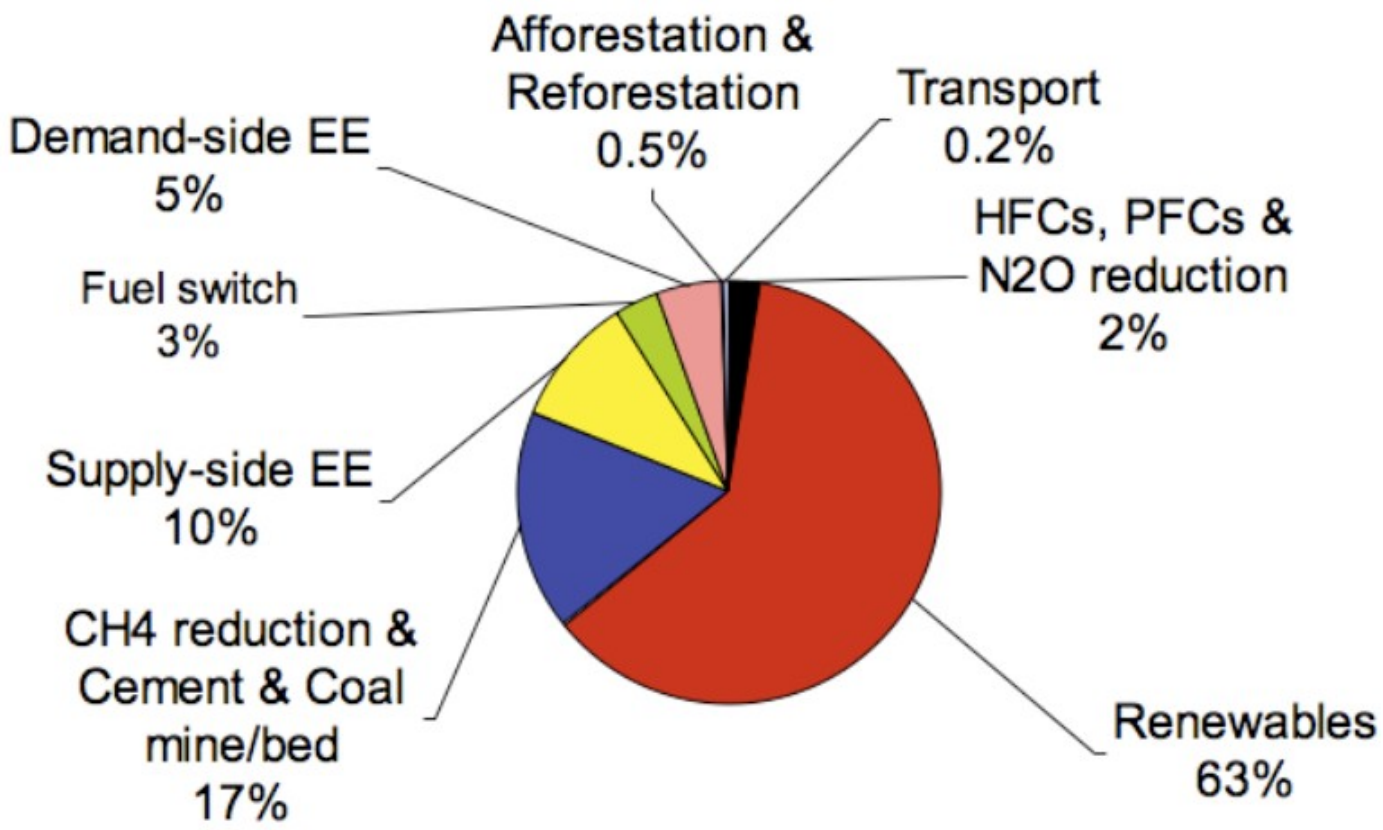
(Source: Point Carbon)

Number of CDM projects



(Källa: UNEP Risoe)

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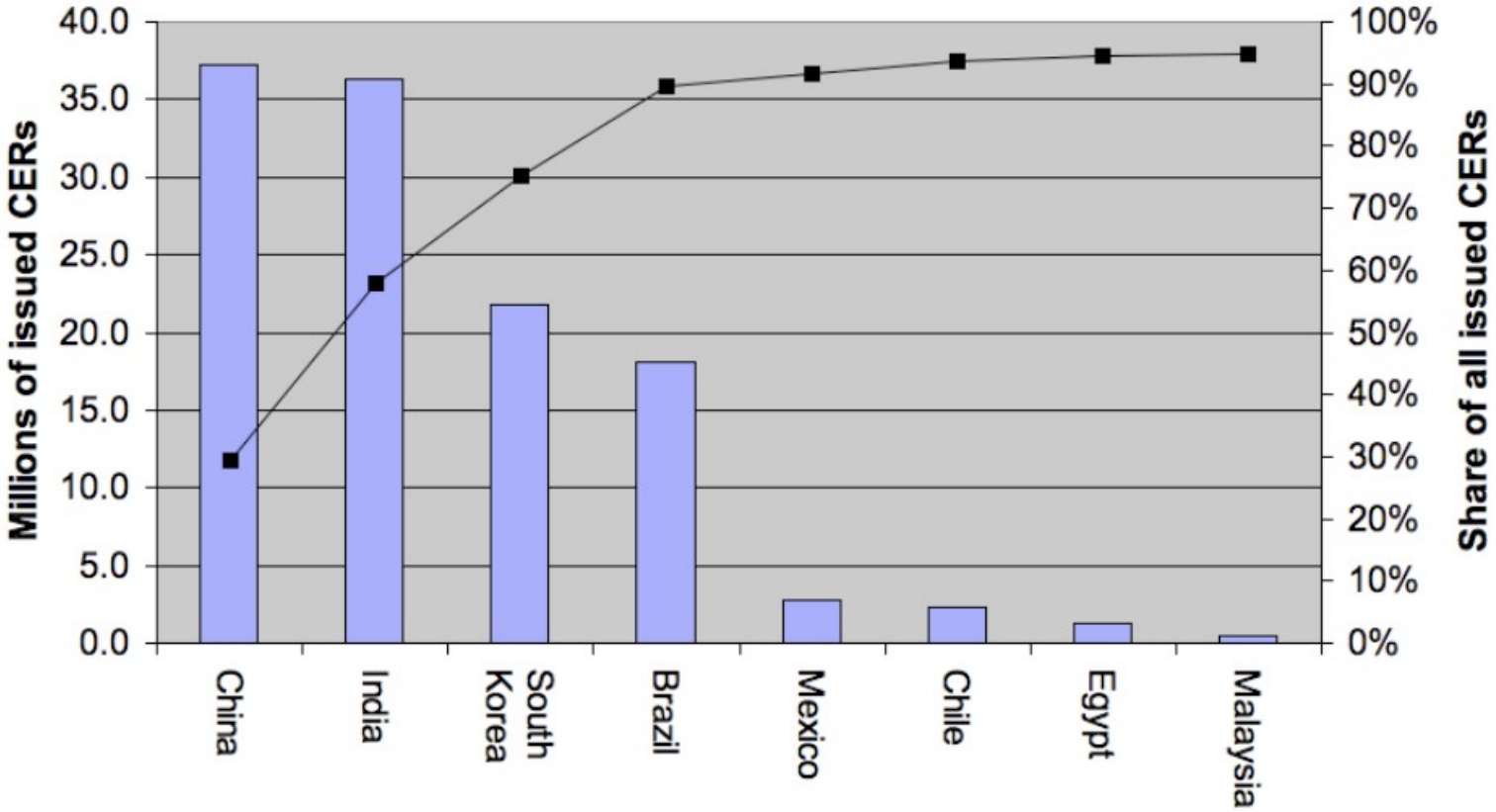
Top countries by issued CERs



(Källa: UNEP Risoe)

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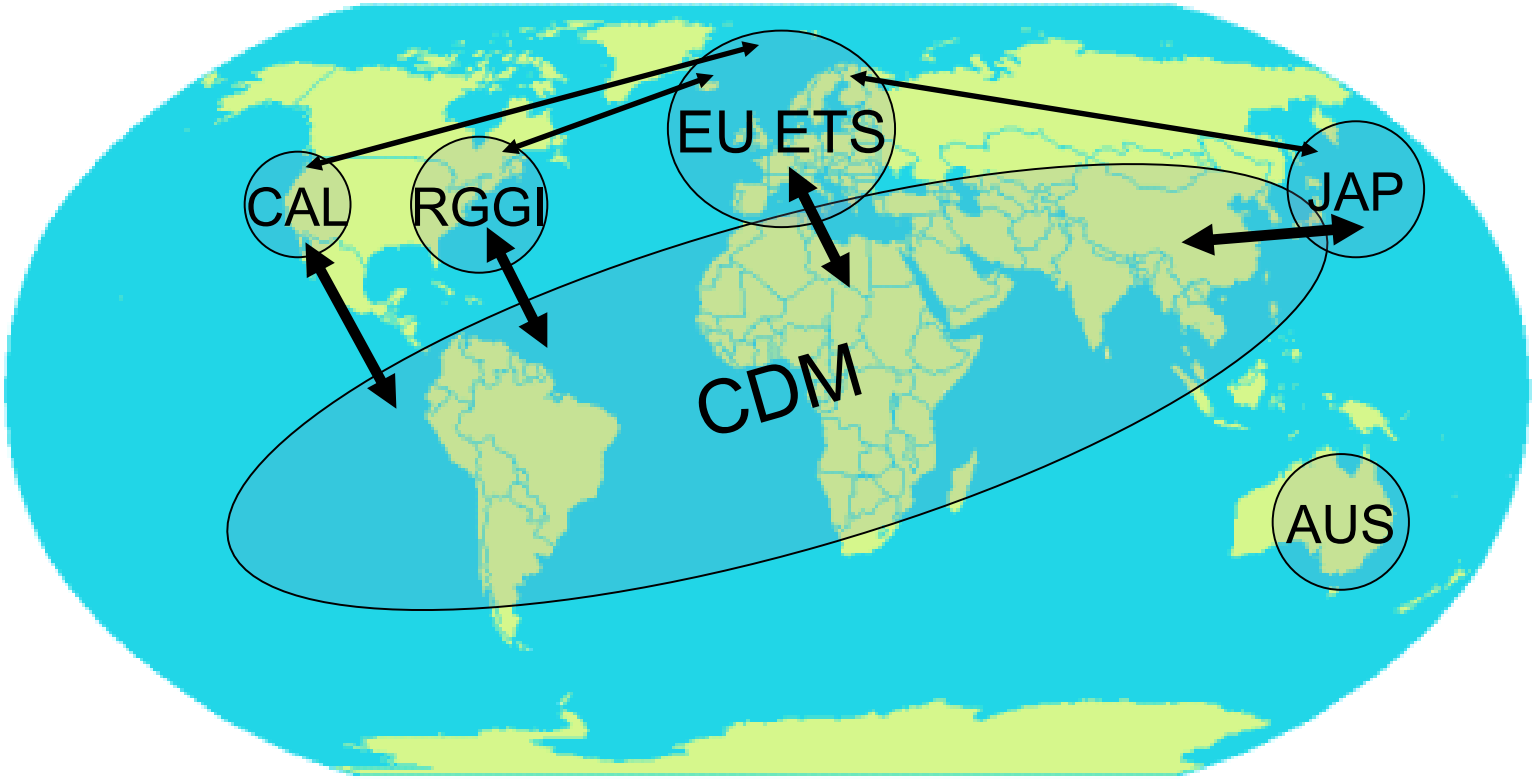
Global carbon market



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Scaling up, redirecting and optimizing needed capital - two new methods can help

- Programmatic CDM - the same methodology is used in different geographical environments at different times- already in existance, but untested; targeted at energy efficiency and distributed projects, suitable for demand-side energy efficiency.
- Sectoral CDM - instead of a project a whole sector is addressed. If carbon emission is lower than anticipated in the sector over time then credits are released and emmision rights can be solved. A sector can be transport- or electricitysector in a country

Experiences

- CDM is a cost effective way of achieving emission reductions
- CDM or JI development requires significant knowledge and experience. Experiences gained through early engagement can now be used in many ways
- Commitment and motivation of project owner are crucial - from idea to implementation!

- Lack of investment capital many times a major barrier. Mobilizing the underlying finance is a critical element – especially on less mature markets. Upfront payment can not solve problem alone. Also own capital from project owner and good investment climate is needed.

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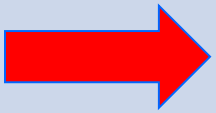
Experiences (cont)

- Risk of getting new methodologies rejected also a barrier but more methodologies are getting approved
- Consultants, NGOs & universities and other project developer have been important for the development of projects in host countries
- Technology suppliers are getting more active on the CDM (and JI) market

Experiences (cont)

- Time consuming process, but improvements are made:
  - contracts are being standardized
  - more and more projects are being approved
  - approved methodologies can be used
  - more and more knowledge in the market



Shorter lead time and lower transaction costs

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Several issues are discussed regarding the future of cdm

- The distribution between project categories – will projects in new sectors be developed? Eg district cooling, transport. Solar thermal
- The in-built objectives of the CDM - sustainable development and technology transfer. Sustainability in project is guaranteed but additional mechanism than CDM needed for technology transfer
- The regional distribution of CDM projects. Will also less developed regions cater CDM projects. Now 4 dominant countries.
- The institutions - can they cater for a much bigger CDM pipeline? The bureucracy is a bottlenec. Can the system become more efficient?
- The role of the CDM in the future - can it be made bigger – today between 5-20% of project cost? Who should participate today countries and private org – in the future also bransch or industry organisations? What do we target – cdm or adaptation?

New negotiations: Bali Action Plan

- Enhance the implementation of the Convention
- An Ad Hoc Working Group on Long-Term Cooperative Action under the Convention to address:
  - Nationally appropriate commitments or actions by developed countries and mitigation actions for developing countries;
  - Essential actions to adapt to climate change and promote climate-resilient development;
  - Mobilise finance and technology cooperation to support action.

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UNFCCC TT Framework

- Technology needs and needs assessment
- Technology information sharing / TT:Clear
- Capacity building
- Enabling environments
- Mechanisms for technology transfer / EGTT

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Expert Group on Technology Transfer under the UNFCCC

- Established by COP decision in Marrakesh 2001
- COP 13 agreed to reconstitute the EGTT for a further five years with a strengthened mandate.
- EGTT aims to enhance the implementation of Article 4.5 of the Convention and advancing the development and transfer of technology activities under the Convention.
- The EGTT comprises 19 experts (11 from NAI Parties, 8 from AI Parties) and meets at least twice a year.
- Work programme of the EGTT for 2008-2009 endorsed at SB 28

Work programme of the EGTT for 2008-2009

- Major activities of the EGTT for 2008-2009 responding to decision 3/CP.13 and 4/CP.13:
  - Activity 1: Assessing financial resources
  - Activity 2: Developing performance indicators
  - Activity 3: Developing a strategy paper
- Terms of Reference for these activities were endorsed at SB 28

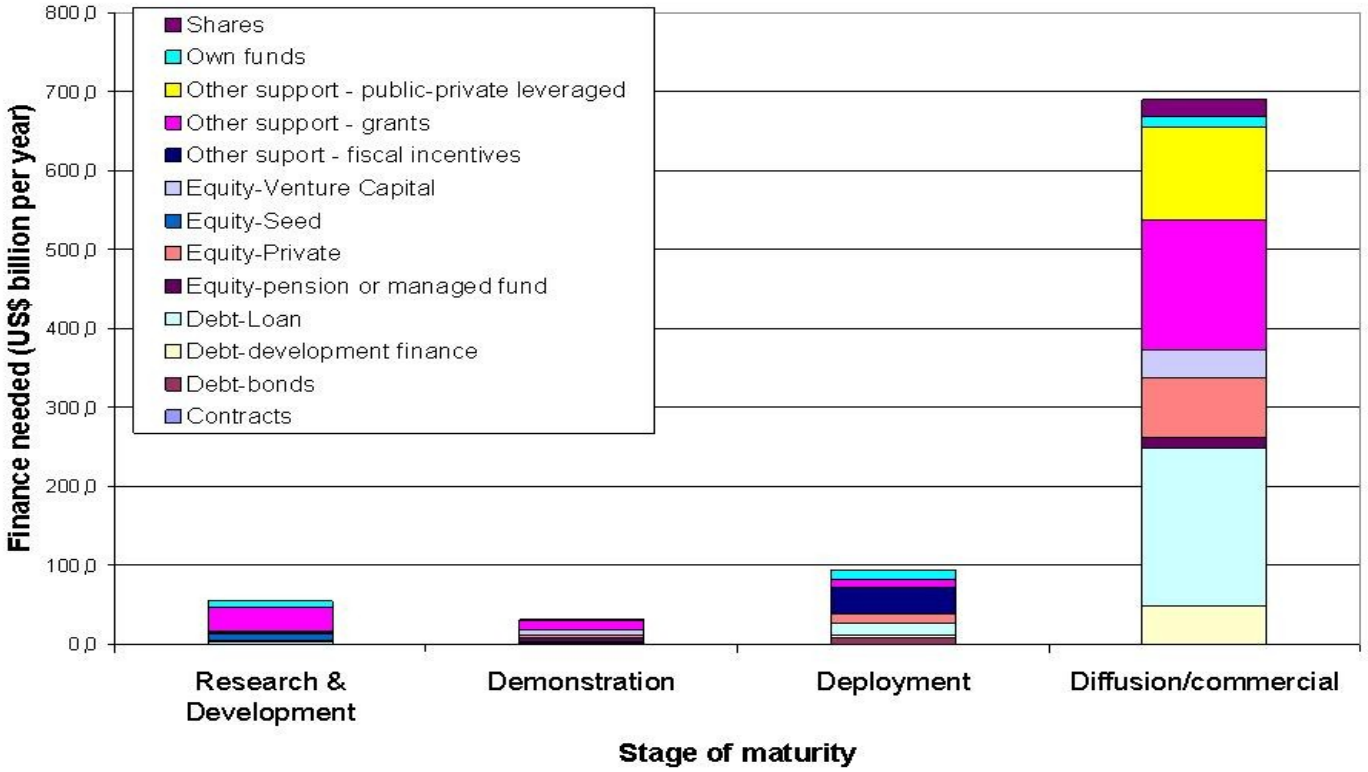
Assessing financial resources

Estimates of current financing for technology

Research and Development	Demonstration	Deployment		Diffusion		Total
Global	Global	Global	Developing Countries	Global	Developing Countries	
USD10 billion per annum – Govt USD20 billion per annum - Total	In preparation	USD33 billion per annum USD45 billion per annum	In preparation	USD71 billion in 2006	USD 14.2billion per annum	Global USD 124 to 136 billion Developing Countries: ?

Assessing financial resources

Finance need per stage of development and type of finance.



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Assessing financial resources

- Summary:
  - Estimates of the finance needs to mitigate climate change vary much and are highest for more advanced stages of technological development, but gaps are everywhere.
  - The estimate of the finance need can be as high as USD 1 trillion annually by 2030.
  - Coverage of Convention and non-Convention sources of finance is particularly low for essential sectors such as the transport, and the building sectors.
  - How private financing can be leveraged by public finance remains a challenge which will need to be addressed by new and innovative options for finance.

Developing a strategy paper
R&D categories and current programs.

Areas: Coordinated R & D agenda; coordination of existing R&D programmes: national incentives for increased private investment in R&D

Preliminary findings:

Current programs under the UNFCCC do not provide direct support for R&D on climate technologies.

- Governments in developed and developing countries fund innovative technologies in a number of areas. Investments mainly focus in three areas: basic, pre-commercial research, high-risk high-payoff projects, and commercialisation R&D partnerships with the private sector.
- There are a number of existing multilateral forums for promoting R&D cooperation such as R&D coordination through IEA technology implementation agreements, the Consultative Group on International Agricultural Research and the Center for International Forestry Research

Developing a strategy paper
Demonstration and deployment options.

Areas: demonstration and scale-up; commercialisation and investment; intellectual property access and protection

Preliminary findings:

- The GEF supports a variety of technology demonstration and scale-up projects for near-commercial climate change technologies. The GEF's experiences highlight lessons that can inform future efforts to advance technologies that are not fully commercial.
- Decisions on investments in projects to advance near-commercial technologies must be based on objective and realistic estimates of current costs and future cost reductions.
- Selecting promising markets for further technology introduction and providing technical advice with project design are very important criteria of project success.
- Industry participation and validation of interest in sustained investment in the selected technologies in the target markets is essential to ensuring that replication occurs.
- CDM, JI, and Adaptation Fund contribute (or will contribute) to the deployment of near-commercial technologies.

Developing a strategy paper
Diffusion and transfer of existing technologies.

Areas:capacity building and information dissemination; enabling environment; investment facilitation; technology access.

Preliminary findings:

- Two special funds, managed by GEF, have been established by UNFCCC: Special Climate Change Fund (SCCF) and Least Developed Countries Fund (LDCF) with voluntary contributions. An Adaptation Fund has been established in 2007 under the Kyoto Protocol with a contribution of 2% of Certified Emission Reductions (CERs) for most Clean development Mechanism (CDM) projects.
- The World Bank's Investment Framework for Clean Energy and Development, Carbon Market Continuity Fund for purchasing post-2012 credits, Carbon Facility for Low Carbon Growth, and Climate Technology Fund for GHG reduction through long term investment and technology expansion are important.
- In addition many other institutions including bilateral aid agencies, multilateral partnerships such as Asia Pacific Partnership, Climate Technology Initiative, and Private Financing Advisory Network have established a strong climate agenda.

Technologies for climate change mitigation

Sector	**Key mitigation technologies and practices currently commercially available**	**Key mitigation technologies and practices projected to be commercialized before 2030**
Energy supply [4.3, 4.4]	Improved supply and distribution efficiency; fuel switching from coal to gas; nuclear power; renewable heat and power (hydropower, solar, wind, geothermal and bioenergy); combined heat and power; early applications of Carbon Capture and Storage (CCS, e.g. storage of removed CO_2 from natural gas).	CCS for gas, biomass and coal-fired electricity generating facilities; advanced nuclear power; advanced renewable energy, including tidal and waves energy, concentrating solar, and solar PV.
Transport [5.4]	More fuel efficient vehicles; hybrid vehicles; cleaner diesel vehicles; biofuels; modal shifts from road transport to rail and public transport systems; non-motorised transport (cycling, walking); land-use and transport planning.	Second generation biofuels; higher efficiency aircraft; advanced electric and hybrid vehicles with more powerful and reliable batteries.
Buildings [6.5]	Efficient lighting and daylighting; more efficient electrical appliances and heating and cooling devices; improved cook stoves, improved insulation ; passive and active solar design for heating and cooling; alternative refrigeration fluids, recovery and recycle of fluorinated gases.	Integrated design of commercial buildings including technologies, such as intelligent meters that provide feedback and control; solar PV integrated in buildings.
Industry [7.5]	More efficient end-use electrical equipment; heat and power recovery; material recycling and substitution; control of non-CO_2 gas emissions; and a wide array of process-specific technologies.	Advanced energy efficiency; CCS for cement, ammonia, and iron manufacture; inert electrodes for aluminium manufacture.

Technologies for climate change mitigation

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Agriculture [8.4]	Improved crop and grazing land management to increase soil carbon storage; restoration of cultivated peaty soils and degraded lands; improved rice cultivation techniques and livestock and manure management to reduce CH_4 emissions; improved nitrogen fertilizer application techniques to reduce N_2O emissions; dedicated energy crops to replace fossil fuel use; improved energy efficiency.	Improvements of crops yields.
Forestry/forests [9.4]	Afforestation; reforestation; forest management; reduced deforestation; harvested wood product management; use of forestry products for bioenergy to replace fossil fuel use.	Tree species improvement to increase biomass productivity and carbon sequestration. Improved remote sensing technologies for analysis of vegetation/ soil carbon sequestration potential and mapping land use change.
Waste management [10.4]	Landfill methane recovery; waste incineration with energy recovery; composting of organic waste; controlled waste water treatment; recycling and waste minimization.	Biocovers and biofilters to optimize CH_4 oxidation.

Technologies for climate change adaptation – coastal zones

Protect	Retreat	Accommodate
• *Hard structures* – dykes, sea-walls, tidal barriers, detached breakwaters • *Soft structures* – dune or wetland restoration or creation, beach nourishment • Indigenous options walls of wood, stone or coconut leaf, afforestation	• Establishing set-back zones • Relocating threatened buildings • Phasing out development in exposed areas • Creating upland buffers • Rolling easements	• Early warning and evacuation systems • Hazard insurance • New agricultural practices, such as using salt-resistant crops • New building codes • Improved drainage • Desalination systems

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Technologies for climate change adaptation - water supplies

Use category		Supply side	Demand side
Municipal or domestic		• Increase reservoir capacity • Desalinate • Make inter-basin transfers	• Use "grey" water • Reduce leakage • Use non-water-based sanitation • Enforce water standards
Industrial cooling		• Use lower-grade water	• Increase efficiency and recycling
Hydropower		• Increase reservoir capacity	• Increase turbine efficiency
Navigation		• Build weirs and locks	• Alter ship size and frequency of sailings
Pollution control		• Enhance treatment works • Reuse and reclaim materials	• Reduce effluent volumes • Promote alternatives to chemicals
Flood management		• Build reservoirs and levees • Protect and restore wetlands	• Improve flood warnings • Curb floodplain development
Agriculture	Rain-fed	• Improve soil conservation	• Use drought-tolerant crops
	Irrigated	• Change tilling practices • Harvest rainwater	• Increase irrigation efficiency • Change irrigation water pricing

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Technologies for climate change adaptation - agriculture

Response strategy	Some adaptation options
• Use different crops	• Carry out research on new varieties
• Change land topography to improve water uptake and reduce wind erosion	• Subdivide large fields • Maintain grass waterways • Roughen the land surface • Build windbreaks
• Improve water use and availability and control erosion	• Line canals with plastic films • Where possible, use brackish water • Concentrate irrigation in periods of peak growth • Use drip irrigation
• Change farming practices to conserve soil moisture and nutrients, reduce run-off and control soil erosion	• Mulch stubble and straw • Rotate crops • Avoid monocropping • Use lower planting densities
• Change the timing of farm operations	• Advance sowing dates to offset moisture stress during warm periods

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Issues related to investment and financial flows

- Significant additional investments needed
  - Mitigation: USD > 200-210 billion p.a.
  - Adaptation: USD > 49-171 billion p.a.
- Developing country Parties call for improved access to *adequate*, *predictable* and *sustainable* financial resources a and financial and technical support (but no committment)
- Public vs. private finance
- Leveraging private investments
- What to pay with public finance
- Bilateral vs. multilateral financing
- UNFCCC/GEF vs. other multilateral mechanisms

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Status negotiation - general

- Agreement on the importance of enhanced R&D cooperation and capacity building
- **EU**: Developing countries should set emission targets, develop needs assessments, policies and mitigation plans, and participate in volontary technology cooperation. Actions from Annex 1 countries both outside and inside UNFCCC should be eligible
- **Developing countries**: No emission targets, multilateral fund and stratecic planning governed by the UNFCCC, regional innovation centres. IPR an issue

THANK YOU!

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