International environmental agreements

No success without developing countries participation and compliance enforcement mechanisms.

Presentation by
Cathrine Hagem, Statistics Norway

9th Energy Economics Policy Seminar in The Hague, 26 September 2012.

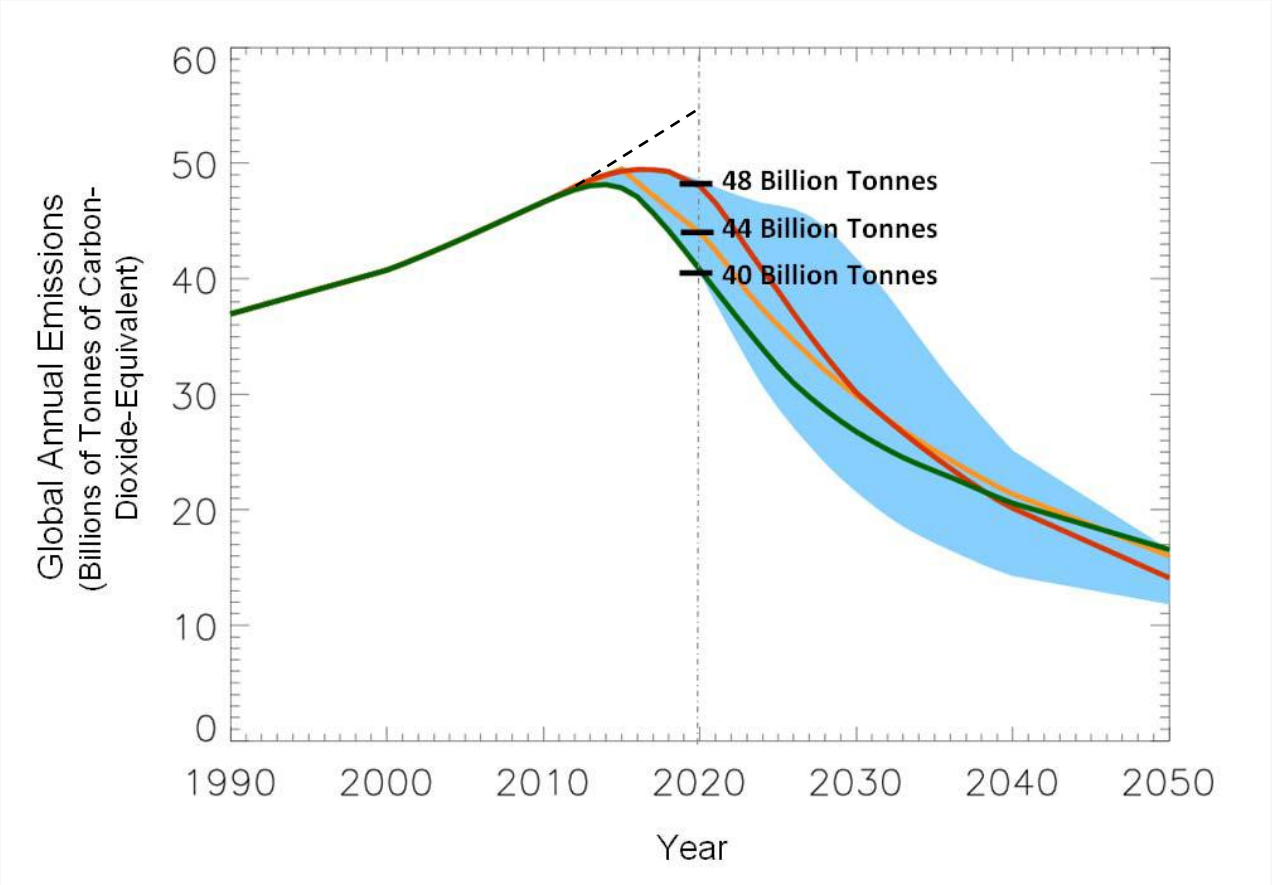
Outline

- The challenge
- The need for deep emissions cuts in developing countries
- The need for compliance enforcement mechanisms (?)
  - Deposit system

Present status: Tough targets, but weak instruments.

- Ambitious global emissions reduction target (2°C)
- No legally binding global climate agreement.
  - ..and no agreement on a second commitment period for the Kyoto protocol.
- Durban 2011: Legal agreement on climate change no later than 2015.
  - Unilateral targets and ambitions (Copenhagen accords, 2009)

Range of paths for global annual emissions that mean a reasonable chance of meeting a 2°C goal



Source: Stern and Taylor (2010)/Bowen and Ranger (2009)

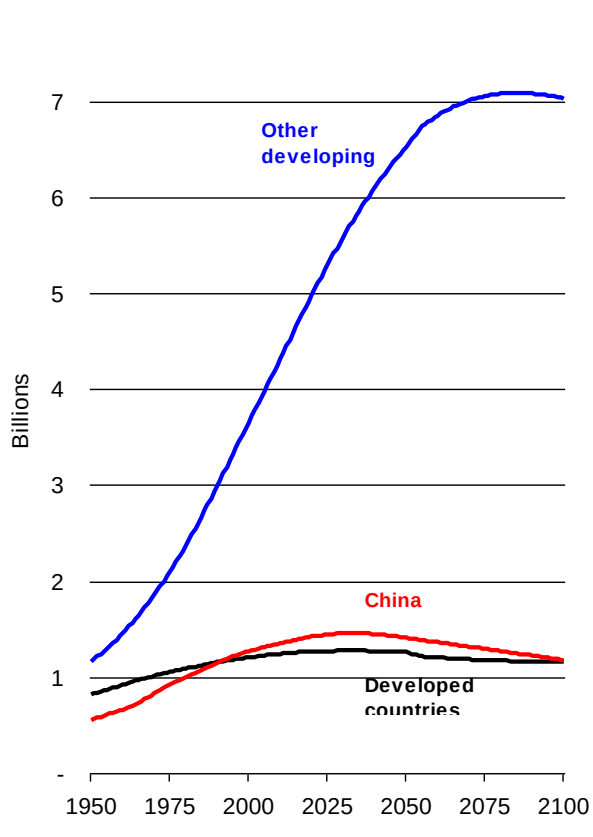
Annex I versus non-Annex I countries. "Industrialized" versus "Developing" countries

- Kyoto protocol: Binding commitments only for Industrialized countries.

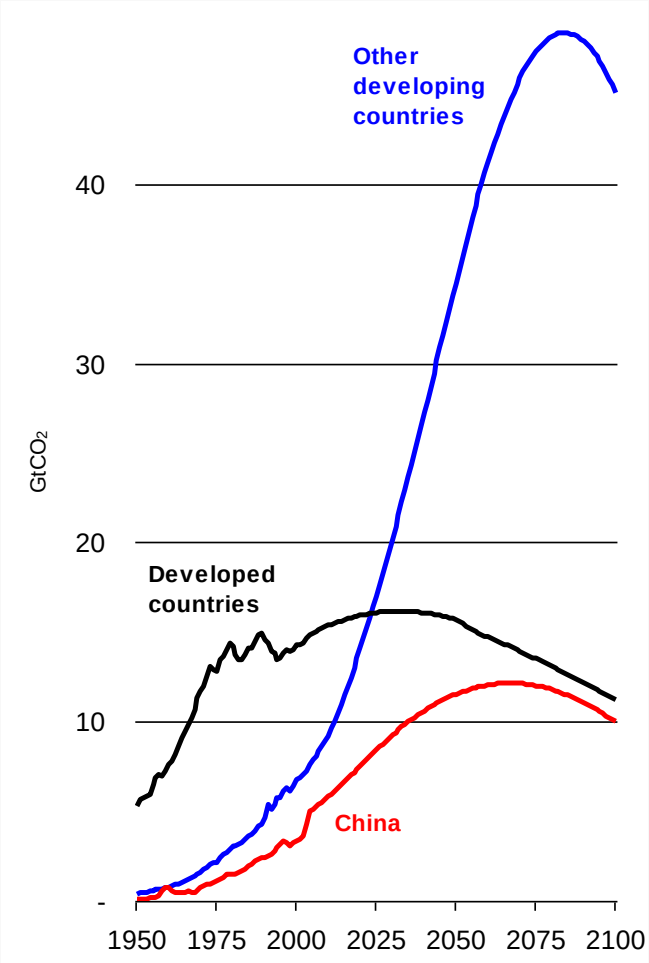
- Emission from industrialized countries constituted around 55% of global emissions in 1990.

- Industrialized countries' share of global emissions fall significantly over time.

World population growth 1950 – 2100. UN projections, medium scenario. Billion people.



Global emissions, historical figures and projections from IPCC reference scenario A1 Message.



Global emission reductions that are consistent with a 3°C –target.

CO_2 emissions (Gt CO_2) in 2004 and 2050 in the business as usual:

	2004	2050
Developing countries	13	46
Developed countries	15	16
World	28	62

3°C – target (550 ppm): Global emissions should not exceed in 20 Gt CO2 in 2050. *(Stern Review). 70% emissions reductions relative to BaU*

- Climate convention's principles:
  - "…common but differentiated responsibilities".
  - "…developed country Parties should take the lead in combating climate change.."
- Cost effectiveness demands global participation.
- Cost-effectiveness versus burden-sharing consideration?
  - Permit allocation, redistribution of tax revenues, financial transfers.

Numeric illustration of developing countries' participation. 3°C – target

A. Global permit trading.

Permit allocation: Developing countries allocated permits = BaU.

B. Global permit trading.

Permit allocation: Developing countries have zero participation costs.

C. Clean development mechanism, CDM.

- (20 % transaction costs, 70% "participation rate")

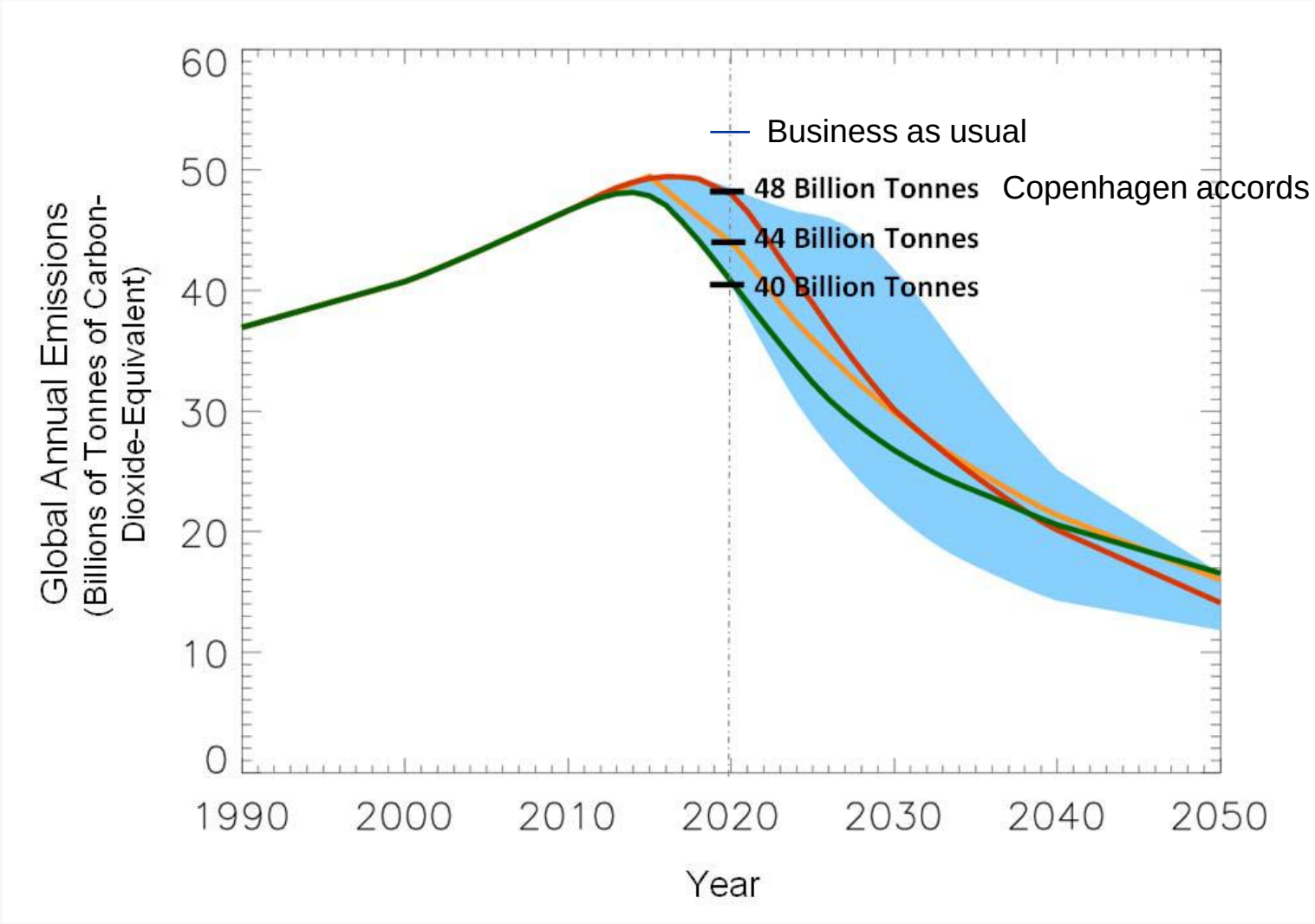
Net costs (% of GDP) in 2050. 3°C – target

Regime	Non-Annex I	Annex I	Total world
1. Global permit trade. (BaU- allocation to non-Annex I)	-1,3	4,7	1,1
2. Global permit trade. (Zero net costs for non-Annex I)	0	2,7	1,1
3. CDM	-2,0	6,3	1,5

Broader and deeper participation ?

- Copenhagen accords (2009): emission targets and ambitions: 13 % below business as usual 2020.
  - Developed countries: 19% reductions. Developing countries: 11% reductions.
- No legally binding commitments.
- Targets conditional on other countries' efforts.
  - EU: 20% (30%) within 2020

Range of paths for global annual emissions that mean a reasonable chance of meeting a 2°C goal



Source: Stern and Taylor (2010)

Is there a need for compliance enforcement mechanism?

- Voluntarily agreements may not need compliance enforcement mechanism.
- “if we make promises at Copenhagen, we’ve got to be sure that every country is going to keep them” - Gordon Brown.
- The government signing the treaty is not responsible for the compliance.
- Political gains from ratification - no intension of complying.

Non-compliance further delays slow climate actions.

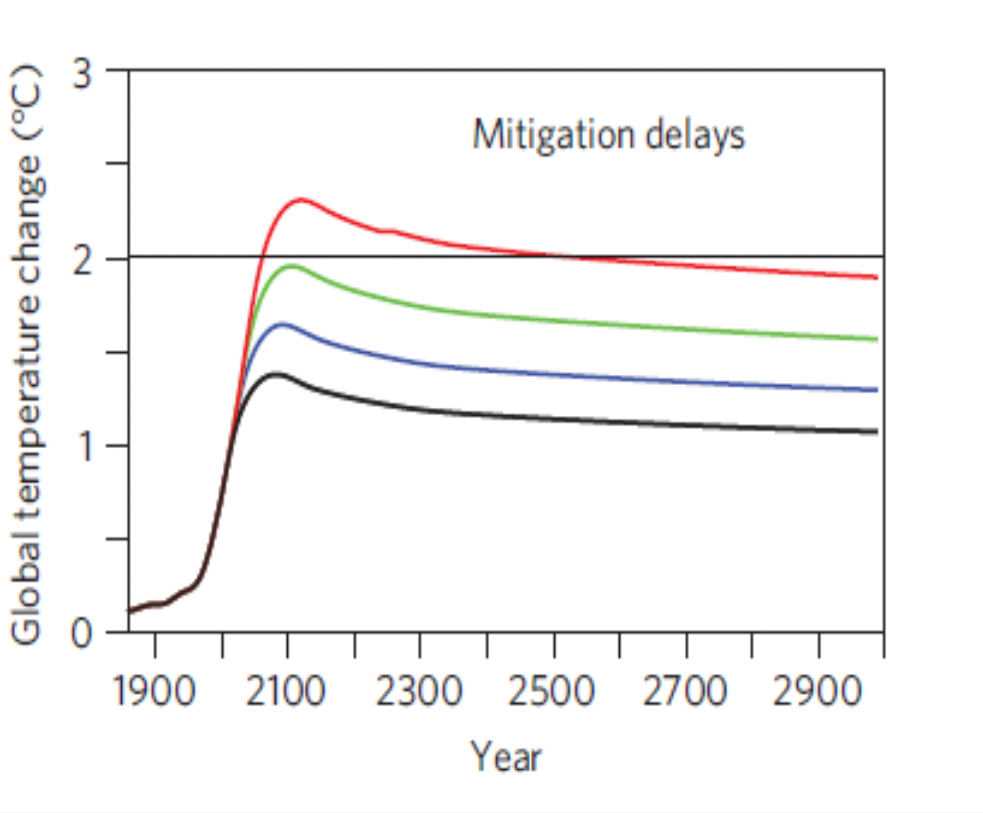
- From the establishment of IPCC (1988) to the Kyoto protocol's first commitment period:

  20 years…

- From "Follow-up agreement negotiations" (2007) to Durban ambitions for 2020:

  13 years…

Impact on temperature of postponing ambitious mitigation efforts (3% mitigation rate)



Source: P. Friedlingstein et al, Nature Climate Change (2011), DOI: 10.1038/NCLIMATE1302

Kyoto's compliance enforcement mechanism

- Compliance committee for the Kyoto Protocol.
  - Facilitative branch and enforcement branch (EB).

- EB applies punitive consequences for non-compliance:

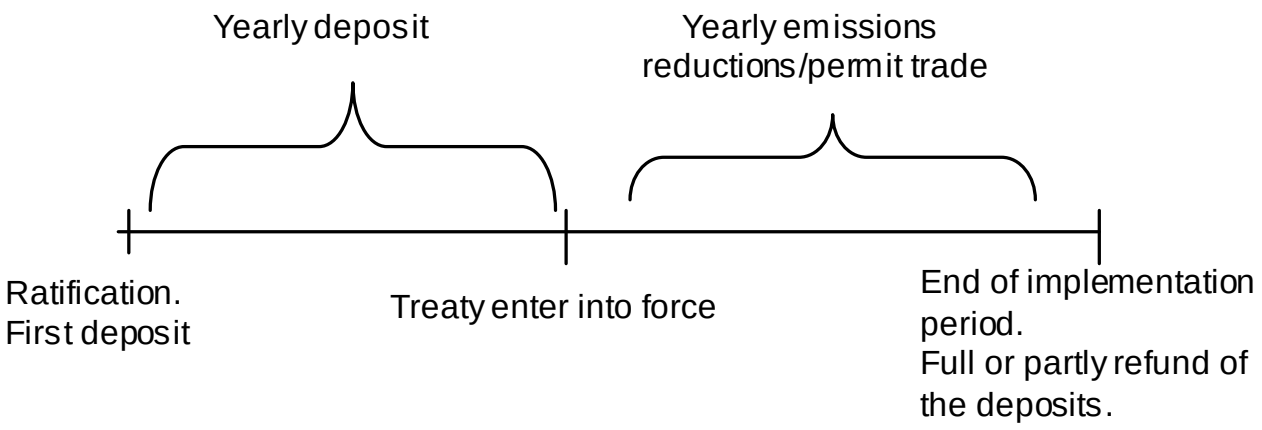
  - Additional emissions reductions penalty (30% penalty).
  - Lose the right to sell permits until the EB reinstates it.

- Two main problems with the compliance system:
  - Emissions reductions are not legally binding
    - self-punishment mechanism, no-second order punishment mechanism.
  - Imposing sanctions might lead to adverse economic effects for compliant countries
    - undermines the credibility of the threat.

Alternative compliance enforcement systems

- Reducing abatement.
- Restricting access to new technology.
- Trade restrictions/tariffs.
- Fines.
- Deposit system.

Deposit system



Total deposits = total net costs of compliance

Strengths and weakneses

- Strengths:
  - Simple
  - Does not require the cooperation of the non-compliant country
  - Credible punishment
  - Unfeasible to escape
  - Prevent countries from feigning climate friendliness

- Weaknesses
  - Increases the cost of participating.
  - High national debt prevents countries from making large deposits.

Simulated outcome of a deposit system.

Cap and trade treaty based on Copenhagen accord's pledges.

	Abatement ambitions. (% relative to 1990)	Permit purchase (MtCO2)	Yearly costs (% of GDP)	Estimated 5-years deposit (% of GDP)
USA	**1**	**-673**	**0.04**	**0.18**
Japan	**25**	**238**	**0.26**	**1.32**
Europa	**30**	**911**	**0.24**	**1.19**
Russland	**20**	**-475**	**-0.24**	**0.00**

- Commitments:
  - deposits
  - early investment in green technology
  - binding R&D investments in the preparation stage

- Trade off between “credibility” of the treaty and additional costs.

Conclusions

- The 2°C – target demands broad participation and deep cuts in developing countries.

- Ambitious climate agreements demands compliance enforcement mechanisms.
  - Deposit system (?)

Thank You!

References

- Nicholas Stern and Christopher Taylor (2010), "What do the Appendices to the Copenhagen Accord tell us about global greenhouse gas emissions and the prospects for avoiding a rise in global average temperature of more than 2°C?", Policy paper March 2010, Centre for Climate Change Economics and Policy Grantham Research Institute on Climate Change and the Environment In collaboration with the United Nations Environment Programme (UNEP)

- http://www2.lse.ac.uk/GranthamInstitute/publications/Policy/docs/PBMitigatingBowenRangerDec09.pdf
- Hovi, J., M. Greaker, C. Hagem and B. Holtsmark, 2012, "A credible compliance enforcement system for the climate regime," *Climate Policy* 12 (6): 741-754.
- Hagem, C. and B. Holtsmark, 2011, "Is the clean development mechanism compatible with an ambitious climate agreement?" Environmental Economics, vol 2, Issue 3, 24-35.
- Gerber, A. og P.C. Wichardt (2009). Providing Public Goods in the Absence of Strong Insti-tutions, Journal of Public Economics 93, 429–439.
- Finus, M. (2008b). The Enforcement Mechanisms of the Kyoto Protocol: Flawed or Promis-ing Concepts? Letters in Spatial and Resource Sciences 1, 13–25.
- P. Friedlingstein et al, Nature Climate Change (2011), DOI: 10.1038/NCLIMATE1302
- Aakre, S. og J. Hovi (2010). Emission Trading: Participation Enforcement Determines the Need for Compliance Enforcement, European Union Politics 11, 427–445.
- The **Stern Review on the Economics of Climate Change** (2006).