

# Harvard Project on International Climate Agreements

Robert N. Stavins and  
Joseph E. Aldy



# Overview

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# The Current Situation

## The Framework Convention on Climate Change:

- Signed in 1992 at Rio de Janeiro Earth Summit. Ratified by United States in 1992. Entered into force in 1994.
- Ultimate objective: “Stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.”
- Non-binding voluntary aim for industrialized countries: stabilize greenhouse gas emissions at 1990 levels starting in 2000.
- “Common but differentiated responsibilities”: Industrialized countries – responsible for a majority of the increase in atmospheric greenhouse gas concentrations and wealthier – expected to take first steps in mitigating climate change.
- Established pilot program for project-based emission trading, known as joint implementation.

# The Current Situation

## The Kyoto Protocol:

- Negotiated in 1997. Entered into force in 2005. First commitment period lasts from 2008-2012.
- Original goal was to reduce industrialized countries' greenhouse gas emissions by an average of 5 percent below 1990 levels.
- Established a “cap-and-trade” system: national emission caps assigned to industrialized countries, and they may trade among themselves to meet the targets in the most efficient manner.
- Assigned initial responsibility for mitigating climate risks to industrialized countries. Developing countries do not have emission commitments under the Kyoto agreement.
- Industrialized countries can earned “credits” by undertaking emissions-mitigation projects in developing countries (known as Clean Development Mechanism, or CDM)

# The Current Situation

## Kyoto: Strengths and Weaknesses

### Strengths:

- Market-based approach.
- Flexibility to comply with commitments.
- Focus on industrialized countries puts burden on those primarily responsible for problem. Also, industrialized countries have a greater ability to pay for mitigating risks.
- Established emissions inventorying, monitoring, and reporting that will need to underlie future policies.
- Serves as the first step of a necessarily long policy process.

### Weaknesses:

- Four of the five largest greenhouse gas emitters in the world do not face constraints on their emissions:
  - US has not ratified the agreement.
  - Russia's commitment is so generous it will not bind before 2012.
  - China, India have no emission commitments.
- Potential for “emissions leakage” – carbon-intensive firms may relocate to places with fewer or no restrictions.
- Weak compliance incentives: withdrawal provision undermines idea of “legally binding” commitments.

# The Current Situation

## Status of ongoing international negotiations:

- UNFCCC Dialogue and Kyoto Protocol-based mandate for second period commitments:
  - Launched at 2005 Montreal COP to discuss post-Kyoto commitments.
  - Many expect these processes to recommend a negotiating mandate at the Bali COP with the intent of developing a new agreement by 2009.
- G8+5: Group of Eight industrialized nations have invited five major developing countries (Brazil, China, India, Mexico, and South Africa) to work together on energy development and climate issues:
  - Launched at 2005 Gleneagles G-8 meeting as a smaller, more nimble forum for debating climate and energy policies.
  - Will make recommendations to UNFCCC at 2008 Hokkaido G-8 meeting.
- Complementary processes include UNGA High-Level Special Session on Climate Change September 24, Bush Administration “Big Emitters” Meeting September 27-28, and various NGO efforts.

# Overview of Project

- **Goal:** Develop and promote the design of a scientifically sound, economically rational, and politically pragmatic post-2012 international policy architecture to address global climate change.
- **Ideas:** Draw upon the ideas of leading thinkers from academia, private industry, government, and advocacy organizations, both in the industrialized world and in developing countries.
- **Background:** Harvard Environmental Economics Program hosted a workshop in 2006 to bring together the leading thinkers on this issue from around the world. The workshop highlighted six potential policy frameworks – each an idea that could form the backbone of a new international agreement.
- **Book:** These six policy frameworks published in a book – *Architectures for Agreement: Addressing Global Climate Change in the Post-Kyoto World* – in September 2007.

# Overview of Project

## **STAGE ONE:**

Discuss the proposition that the world ought to explore alternatives to Kyoto. Uses six proposals from the book as a starting point, but include many other outside ideas as well.

## **STAGE TWO:**

Conduct economic modeling and policy analysis to develop a small set of promising policy frameworks and key design elements.

## **STAGE THREE:**

Explore the key design principles and alternative international policy architectures with domestic and international audiences, including the new administration, and the new Congress in the spring of 2009.

# Evaluation Criteria for Proposals

- Environmental outcome
- Dynamic efficiency
- Dynamic cost-effectiveness
- Equity
- Flexibility in response to new information
- Incentives for participation and compliance

# Major Themes from All Proposals

- Focus on policy infrastructure instead of goals.
- Market-based implementation supported.
  - Harmonization of emissions prices can occur through:
    - International cap-and-trade.
    - National cap-and-trade with coordinated safety valve prices.
    - Greenhouse gas emission tax.
    - Implicit price harmonization as countries attempt to mimic other countries' stringency in their domestic efforts.
- Doubts about the value of Kyoto's Clean Development Mechanism, which lets industrialized countries invest in projects to reduce emissions in developing countries.
- Can an international market-based system work without a supra-national authority?

# Major Themes from All Proposals

- Need for a “fair” climate policy.
  - Graduation, progressive targets for developing countries.
  - Integrate with development, trade policies.
  - Adaptation merits additional, substantial attention.
- Promoting participation
  - Engage domestic constituencies.
  - Focus on effort, not outputs, through pledge and review.
  - Expand negotiations to integrate development, trade.
  - Narrow negotiations to small number of key nations.

# The Six Proposals

- Targets and Timetables
  - Jeffrey Frankel “An Economist’s Kyoto”
  - Axel Michaelowa “Son of Kyoto”
- Harmonized Domestic Policies
  - David Victor “Carbon Clubs”
  - Warwick McKibbin and Peter Wilcoxon “National Cap-and-Trade”
- Coordinated and Unilateral Policies
  - Scott Barrett “Multi-Track Approach”
  - William Pizer “Pledge and Review”

# Proposal #1: “An Economist’s Kyoto”

- **Author:** Jeffrey Frankel, Kennedy School of Government, Harvard University
- **Details:** Quantitative targets set by *formulas*
  - Formulas account for historic emissions, current emissions, income per capita, population, other factors.
  - Converge in long-term to per capita targets.
- Progressive targets – stringency increases with countries’ per capita income.
- Index emissions targets to economic growth for developing countries.
- International emission trading.
- Could incorporate a safety valve as insurance against unexpected high costs.

# Proposal #1: “An Economist’s Kyoto”

## How this proposal is like Kyoto:

- Centralized, multilateral process for setting quantitative emission targets.
- Focus on market-based implementation: emission trading.
- Industrialized countries have more stringent targets than developing.

## How this proposal is different from Kyoto:

- Allocates caps through a formula.
- Includes developing country emission caps.
- Developing country targets indexed to economic growth.
- Long-term: Emission targets assigned on per capita emissions basis.

# Proposal #1: “An Economist’s Kyoto”

## Potential Pros:

- Builds on existing policy foundation in Kyoto.
- Reliance on market-based institutions (emission trading) would create lower costs for compliance.
- Emission trading can provide gains to trade to developing countries – and elicit their participation.
- Trading, banking, safety valve, indexed targets can reduce risks of inadvertent stringency of targets.

## Potential Cons:

- Developing countries have previously rejected similar proposals for generous initial emission targets.
- Does not provide any new incentives for compliance.
- Some countries may not defer traditional negotiations in favor of a formula for setting targets.
- Proposal does not address multilateral cooperation on R&D, adaptation.

## Proposal #2: “Son of Kyoto”

- **Author:** Axel Michaelowa, Perspectives Climate Change
- **Details:** Long-term, notional goal of atmospheric stabilization of 550 ppm (~ double pre-industrial levels)
- Cap-and-trade
  - Commitments are quantitative targets, more stringent than Kyoto. (Emissions 23 percent below 1990 levels in 2013-2017)
- Advocates a graduation index: developing countries “graduate” to emission targets once their per capita income and per capita emissions pass certain thresholds.
  - Stringency of targets varies across countries.
  - Includes near-term commitments from the US, Australia, and other developing countries, but not China and India.
- Covers international transport, biological and geological carbon sinks, and sources of ground-level ozone

# Proposal #2: “Son of Kyoto”

## How this proposal is like Kyoto:

- Quantitative targets are primary form of commitment.
- Promotes international emission trading.
- Differentiation: industrialized countries take more ambitious commitments than developing countries.

## How this proposal is different from Kyoto:

- Sets long-term concentration stabilization goal.
- Provides mechanism for developing country accession.
- Expands to nationwide (policy-based) CDM for countries without targets.

# Proposal #2: “Son of Kyoto”

## Potential Pros:

- Builds on existing policy foundation in Kyoto.
- Long-term goal may provide better signals for long-term R&D investments.
- Promotes international emission trading.
- Transitioning CDM towards commitments through “policy-based” country-wide CDM is an improvement on project-based status quo.

## Potential Cons:

- Does not explicitly address poor participation incentives in Kyoto structure:
  - Would US accept an ambitious target after rejecting 1990 –7%?
  - Why should developing countries join?
- Graduation index may be considered arbitrary: excludes low emissions/high income and high emissions/low income countries.

## Proposal #3: “Climate Clubs”

- **Author:** David Victor, Stanford University
- **Details:** Inspired by the weaknesses in Kyoto: It's challenging to get all countries to believe it's in their national self-interest to join an international agreement.
- Wants small group of *most important* countries for climate change to engage in negotiations.
- Country-level pledges of action with periodic reviews.
- Allows for harmonized pricing within fragmented (perhaps regional) emission trading markets.
- To engage developing countries, need to integrate climate policy with issues important to them, such as energy development and local air pollution.

# Proposal #3: “Climate Clubs”

## How this proposal is like Kyoto:

- Differentiation: industrialized countries take more ambitious commitments than developing countries.

## How this proposal is different from Kyoto:

- Focus on a smaller set of important countries – like L20, G8+5.
- Decentralized approach – relies on national and regional incentives for action.
- Need to integrate more fully climate and development to engage developing countries.

# Proposal #3: “Climate Clubs”

## Potential Pros:

- Smaller negotiating venue may be more successful.
- Review process provides opportunity for countries to learn from one another.
- Organic evolution of trading through small regional efforts may be superior to top-down global regime.

## Potential Cons:

- Are voluntary pledges of policies and actions sufficient to address climate change?
- Will industrialized countries implement policies and finance this broader development agenda?
- Smaller venue outside of UN system could elicit opposition from those who want voice in negotiations.

# Proposal #4: “National Cap-and-Trade”

- **Author:** Warwick McKibbin, Australian National University, and Peter Wilcoxon, Syracuse University
- **Details:** National-level cap-and-trade, coordinated internationally but no international trading
- Nations allocate *free* long-term permits: Each permit grants owners permission to emit a specified amount of carbon dioxide over the life of the permits
  - Firms can also purchase an unlimited amount of annual permits from their governments at a predetermined price
- Countries coordinate on predetermined annual permit price
  - Serves as a price ceiling (or safety valve) on permit market
- Countries decide their own commitments
  - Multilateral negotiations provide guidance for commitments
  - Some long-term permits are perpetual, but others expire, tightening targets
  - Governments may buy back permits to tighten targets

# Proposal #4: “National Cap-and-Trade”

## How this proposal is like

### Kyoto:

- Focus on quantitative emission caps.
- Free permit allocation to firms parallels Kyoto’s free allowance allocation to countries.
- Industrialized countries expected to take on more ambitious commitments than developing countries.

## How this proposal is

### different from Kyoto:

- No international emission trading, CDM.
- Sale of annual permits functions as a safety valve, relaxes targets.
- Allows for voluntary accession by developing countries.
- All countries must employ same domestic policy.

# Proposal #4: “National Cap-and-Trade”

## Potential Pros:

- Free permits are a wealth transfer to private firms that creates a constituency to maintain cap-and-trade.
- Mimics the cost-effectiveness of a harmonized emission tax.
- Ensures that costs do not become unexpectedly high.

## Potential Cons:

- Some countries may not have institutions to support cap-and-trade.
- Countries may allocate too many permits to private sector and undertake insufficient mitigation.
- May not provide sufficient incentive for developing country participation.

# Proposal #5: “Multi-Track Approach”

- **Author:** Scott Barrett, Johns Hopkins University
- **Details:** Countries should take “appropriate measures” to address climate change risks, focusing on pledges of emission mitigation *actions* instead of *outcomes*.
- Coordinated multilateral R&D program.
- Set international technology standards (to promote diffusion of climate-friendly technologies)
- Assistance to developing countries to help them adapt to climate change, especially promoting development in countries with the least resilience to changing climate.
- Explore geo-engineering responses to climate change.

# Proposal #5: “Multi-Track Approach”

## How this proposal is like

### Kyoto:

- Differentiation in responsibilities: industrialized countries expected to lead.
- Promotes technology transfer to developing countries.
- Industrialized countries should provide assistance for adaptation in developing countries.

## How this proposal is

### different from Kyoto:

- Bottom-up pledges of emission mitigation actions.
- R&D coordination and multilateral agreements on technology mandates.
- Greater emphasis on adaptation, geo-engineering.
- No formal penalties for non-compliance – relies on “naming and shaming.”

# Proposal #5: “Multi-Track Approach”

## Potential Pros:

- More comprehensive approach through mitigation, adaptation, R&D, geo-engineering.
- Could address problems with participation and compliance by creating system in which new technologies become de facto world standard.
- Geo-engineering could serve as insurance policy.

## Potential Cons:

- Pledge and review of emission mitigation actions may be insufficient.
- Mandating technology standards through international agreement may be difficult, expensive.
- Industrialized countries may not have sufficient incentives to finance R&D, adaptation, technology transfer.

# Proposal #6: “Pledge and Review”

- **Author:** William Pizer, Resources for the Future
- **Details:** Pragmatic approach: What climate policy can be (positive), rather than what it should be (normative).
- Emphasis on national action based on domestic interests and priorities is the centerpiece, *not* international coordination based on negotiated agreements.
- Non-binding international pledge and review process: Venue for countries to review others’ commitments and lobby one another.
  - Periodic reviews focus on: emission mitigation, climate-friendly technology innovation and deployment, and engaging developing countries.
- Countries could link their domestic actions, including integration of an emission trading program.

# Proposal #6: “Pledge and Review”

## How this proposal is like

### Kyoto:

- Differentiation in responsibilities: industrialized countries expected to lead.
- International coordination on a CDM-like approach in developing countries.

## How this proposal is different from Kyoto:

- Countries voluntarily pledge commitments, with 5-year reviews of national actions.
- Sector-based approaches and avoided deforestation for developing countries.
- Emphasizes need for better R&D policies.
- No formal penalties for non-compliance – relies on “naming and shaming.”

# Proposal #6: “Pledge and Review”

## Potential Pros:

- Promotes commitments consistent with domestic politics and preferences.
- Could evolve into more structured, centralized system of commitments.
- Cost-effectiveness possible through linkage of domestic policies and countries mimicking each other's stringency.

## Potential Cons:

- May not elicit sufficient pledges of action: countries may continue to free-ride on the efforts of others.
- May not provide sufficient incentive for developing countries to take action.
- Cost-effective mitigation may not occur if countries do not link policies.

# Conclusions

- Broad range of ideas about successor to Kyoto
  - Attempt to address the major failings of Kyoto
- Need a suite of policies – go beyond emission controls
  - Other climate policies – adaptation, geo-engineering
  - Other policies – trade, development
- Challenge in designing a system that can promote participation and cost-effectiveness
- Near-term success may require different venue, such as G8+5, L20, or similar process

# Contact the Project

Robert N. Stavins  
John F. Kennedy School of Government  
[robert\\_stavins@harvard.edu](mailto:robert_stavins@harvard.edu)  
<http://ksghome.harvard.edu/~rstavins/>

Joseph E. Aldy  
Resources for the Future  
[aldy@rff.org](mailto:aldy@rff.org)  
[www.rff.org/Aldy.cfm](http://www.rff.org/Aldy.cfm)