Climate Change and Trade:
The Challenges of International Cooperation

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Climate Change and Trade: Overview

• The Science
• The Economics
• Political Economy
• Trade and Climate Change
• International Cooperation
• WTO relevance
Some Background

• Early concerns about the environment – growth of the literature in the early 1970s
• The link to trade and resurgence of the debate in the early 1990s
• Localized environmental challenges versus concerns about the commons
• The geographical indivisibility of the climate change debate
The Science

The problem, its origins and likely consequences
Earth and Human Systems (IPCC, 2007)
Source: IPCC (2007)
Observed sea ice, September 1979

Observed sea ice, September 2005
Determinants of earth’s climate (1)

- Climate: average values of atmospheric conditions (atmosphere, land surface, snow, ice, oceans, rivers, lakes, living organisms)
- Climatic balance requires that heat exchange between the sun and earth is in equilibrium
- The sun radiates heat to the earth and some is reflected back
- But some radiation gets through and warms the earth
Determinants of earth’s climate (2)

- The earth re-radiates heat back to the sun but some is trapped on the way up by greenhouse gases (GHGs) in the atmosphere, including CO₂, methane, nitrous oxide, CFCs, ozone, water vapour.
- As GHGs become more concentrated, the earth heats up so that adequate infrared energy is passed to maintain equilibrium. This means average earth temperature rises because equilibrium requires a hotter earth.
- Anthropogenic influences ("forcings")
Determinants of Earth’s Climate (3)

• Earth gets energy from sun – 342 watts/sq.m/sec
• 107 w/sq.m/sec reflected back by clouds, aerosols, albedo effect
• 235 w/sq.m/sec gets through to warm the earth
• The earth re-radiates this warmth back into space
• Earth is quite transparent to sun’s short-wavelength radiation (0.2 to 4.0 micrometres)
Determinants of Earth’s Climate (4)

• Earth is less hot than the sun, so wavelength it radiates is longer (4.0 to 100.0 micrometres)
• GHGs opaque to energy of this wavelength so trap 180 w/sq.m/sec, and re-radiate it back to earth
• Temperature equilibrium requires that earth radiates back what the sun radiated down, i.e. 342 w/sq.m/sec, which means it has to radiate back 235 w/sq.m/sec + 180 w/sq.m/sec = 415 w/sq.m/sec e equivalent to an annual average global temperture of approx 15ºC
Determinants of Earth’s Climate (5)

• Thus, as the atmospheric concentration of GHGs rises, the proportion of the long wavelength energy radiated from Earth is re-radiated back down to Earth duly rises (above the current 180 w/sq.m/sec level)

• Correspondingly, the amount of earth-radiated energy that escapes to space via the atmosphere falls below the equilibrium value of around 235 w/m2/sec.
**The greenhouse mechanism** *(Cline W.R. 1992 & Lehman 2007)*

Solar radiation - 342w/m² Radiation from Earth (infrared)

Atmosphere absorbs infrared radiation from sun plus and reflects some from ice and mountains (albedo) - 107w/sq.m²

GHGs send back the radiation: 180w/m²

Total to return to the sun 235w/m² + 180w/m² = 415w/m²

Earth’s surface
Determinants of earth’s climate (6)

• Three fundamental ways to change earth’s radiation balance:
  – Changing incoming solar radiation (orbital change or changes in the sun)
  – Changing the fraction of solar radiation that is reflected (“albedo” effect)
  – Altering radiation back from the earth (changing GHG concentrations)
• Feedbacks and non-linear relationships
Policy Challenge in Emission Numbers and Temperature

• Pre-industrial emission levels: 280 parts per sq. Metre of carbon dioxide (ppmCO₂e)
• Current: 430 ppmCO₂e, rising 2 ppmCO₂e per annum (pre-industrial - never above 300 ppmCO₂e for last 650,000 years)
• Upper-limit target: 550 ppmCO₂e
• Temperature implications at upper limit: increase of 3 degrees C from pre-industrial
Policy Challenge in Emission Numbers and Temperature (cont.)

- Increase up to 5 degrees C would be equivalent to temperature difference between today and last ice age
- 5 degrees C considered socio-politically untenable (warming, precipitation, sea levels, freak climate events etc.)
- Relation between GHGs (emissions) and temperature is non-linear (significant uncertainty about feedback effects)
## Temperature projections at stabilization relative to pre-industrial levels, °C

<table>
<thead>
<tr>
<th>Stabilisation level (ppmv CO₂ equivalent)</th>
<th>IPCC TAR 2001</th>
<th>Hadley Centre</th>
<th>Eleven studies (Meinshausen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>400</td>
<td>0.8 – 2.4</td>
<td>1.3 – 2.8</td>
<td>0.6 – 4.9</td>
</tr>
<tr>
<td>450</td>
<td>1.0 – 3.1</td>
<td>1.7 – 3.7</td>
<td>0.8 – 6.4</td>
</tr>
<tr>
<td>500</td>
<td>1.3 – 3.8</td>
<td>2.0 – 4.5</td>
<td>1.0 – 7.9</td>
</tr>
<tr>
<td>550</td>
<td>1.5 – 4.4</td>
<td>2.4 – 5.3</td>
<td>1.2 – 9.1</td>
</tr>
<tr>
<td>650</td>
<td>1.8 – 5.5</td>
<td>2.9 – 6.6</td>
<td>1.5 – 11.4</td>
</tr>
<tr>
<td>750</td>
<td>2.2 – 6.4</td>
<td>3.4 – 7.7</td>
<td>1.7 – 13.3</td>
</tr>
<tr>
<td>1000</td>
<td>2.8 – 8.3</td>
<td>4.4 – 9.9</td>
<td>2.2 – 17.1</td>
</tr>
</tbody>
</table>

*Source: Stern, N. et al. (2006), ch.1.*
CO2 emissions and equilibrium temperature increases for a range of stabilization levels (IPCC 2007)
Main sources of anthropogenic GHGs

a) Graph showing the change in GtCO₂-eq/yr from 1970 to 2004 for different sources:
- CO₂ from fossil fuel use and other sources
- CO₂ from deforestation, decay and peat
- CH₄ from agriculture, waste and energy
- N₂O from agriculture and others
- F-gases

b) Pie chart showing the distribution of GHGs:
- CO₂ fossil fuel use: 56.6%
- CO₂ (other): 17.3%
- CH₄: 14.3%
- N₂O: 7.9%
- F-gases: 1.1%

Values:
- 1970: 28.7 GtCO₂-eq/yr
- 1980: 35.6 GtCO₂-eq/yr
- 1990: 39.4 GtCO₂-eq/yr
- 2000: 44.7 GtCO₂-eq/yr
- 2004: 49.0 GtCO₂-eq/yr
The Economics

Cost-benefit analysis
Discounting the future
Costs and benefits

• Stern: “business as usual” would imply a cost of between 5% and 20% of GDP by 2100

• Stern: costs of abatement (mitigation and adaptation) would be 1% of GDP if we acted effectively now

• To keep below 550 ppmCO2e we need emission reductions of 80% below 1990 levels by 2050
Economic analysis

• Climate change as an externality
• But:
  – Degree of uncertainty and risk
  – Role of marginal analysis over long time periods
  – Distributional issues
    • Historical overhang
    • Vulnerability as a function of location and activities
    • “Natural” distributional justice
Integrated Assessment Models

Elements to consider:

• Time path of emissions (population and technology)
• Land use
• Atmosphere and the oceans
• Ecological interactions
• Socio-economic impacts
• Uncertainty
• Discount rate
• Social price of carbon
• Policy stance
Integrated Assessment Models

Equations representing:

– Objective function (social welfare function, utility and discount rate)

Production function augmented with climate damage and emission reduction variables, and resource constraint variables (\( q = \alpha L^x K^y \))

Where: \( q \) = Output (GDP); \( L \) = Labour; \( K \) = Capital; \( \alpha \) = Productivity (efficiency and technology)

Geophysical equations (establishing the relationship between economic activity and GHG emissions)
The discount rate

The Ramsey equation:

\[ r = \delta + \eta g \]

Where:

- \( r \) = discount rate
- \( \delta \) = pure time preference
- \( \eta \) = Elasticity of marginal utility of consumption
- \( g \) = future growth rate without externalities

(\( \eta \) and \( \delta \) are referred to as the “ethical parameters”)
The Value of $\eta$

- The $\eta$ value is the elasticity of the marginal utility of consumption. Stern assigns a value of unity implying that given proportionate increments in consumption generate the same utility for the rich and poor.
- This means that $1$ is $10x$ more valuable at one-tenth of the income. If $\eta = 2$ then $1$ is $100x$ more valuable at one-tenth of the income.
- This ethical value involves a range of issues
\( \eta \) Embodies Different Dimensions

- A higher \( \eta \) means greater risk aversion because a consumption loss reduces utility more than an equivalent consumption gain, and it also means a more risk-averse climate policy, meaning more spending now.

- Since social welfare is the sum of utilities, \( \eta \) is also a measure of society’s aversion to inequality, so higher \( \eta \) also means more concern for the poor.

- When utilities are additive over time periods, \( \eta \) also governs attitudes to inequality in consumption over time. A high \( \eta \) implies less paid by current poor to future rich, so less \( C\Delta \) policy.
Reading $\eta$ in C$\Delta$ Policy

• $\eta$ simultaneously effects:
  – aversion to risk,
  – spatial inequality, and
  – inter-temporal inequality,

So it is not obvious whether a higher $\eta$ means an increase or decrease in the present value of climate impacts

• Many proposals have been made in the literature on the appropriate value of $\eta$
Views on the Value of $\eta$

- Cowell and Gardiner (1999) say 0.5 – 4 is reasonable
- Pearce (2003) argues for 0.5 – 1.2 on the grounds that higher values are inconsistent with social egalitarianism
- DasGupta (2006) thinks $\eta = 1$ is not egalitarian enough
- Gollier (2006) thinks $\eta$ should be 2 – 4, based on revealed preferences in gambling
- Weizman (2007) says $\eta = 2$ is consistent with thought experiments
- Nordhaus (2006) says with a low pure time preference ($\delta$), $\eta$ should be higher, at 2.25 in order to be consistent with observed rates of return on investment and savings rates
- Atkinson and Brandolini (2006) think that $\eta$ should not be constant through time, but should rise and then fall as income and consumption rise
The value of $\delta$

- Stern argues for a value of $\delta$ of 0.1. This value would have been zero, implying that we value the future equally to the present, with the exception of the risk of extinction of the human race, which adds 0.1. This implies a one in ten chance that we will be extinct in 100 years.

- Main criticism of Stern's zero discount rate relates to observed behaviour in the market, plus the issue of internal consistency.
Interest Rates or Social Discount Rates?

Stern’s discount rate estimate for the next century is 2.1%, arguably much less than a market rate of return

**BUT:** actual market rates are many, and they are distorted by taxes, imperfect competition, externalities, sub-optimal Y distribution and are not necessarily society’s “shadow price”

**AND:**
- social risk < individuals’ risk
- “citizen” versus individual attitudes to discounting
- markets express short-term preferences and expectations
- big differences in individual rates of time preference

So we have “revealed ethics” of the market place versus “philosopher king”, elitist pronouncements. Who is right?
Growth assumptions

• Stern’s growth assumptions for the next three centuries are 2.0%, 1.8% and 1.3 % (and henceforth)

So with \( s = r = \delta + \eta g \)

Where \( s \) is the social discount rate

And \( \delta = 0.1; \ \eta = 1, \) we have

\( s = 2.1 \) in century 1
\( s = 1.9 \) in century 2
\( s = 1.4 \) in century 3 onwards
The Political Economy

Policy Instruments
The Role of Uncertainty
Adaptation versus Abatement
Policy instruments

• Alternative approaches
  – Regulation
  – Price-based mechanisms
  – Quantity-based mechanisms

• Regulation: $C$ is the (differential) cost of a regulation and $R$ is the consequent (differential) reduction in emissions, so $C/R$ is the implicit price of carbon which can be compared with the social cost of carbon (see R.K. Eastwood here and elsewhere)

• Taxes versus quantitative mechanisms: efficiency, distribution

• Hybrid systems
## Varying costs of mitigation (Llewelyn)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Implicit cost of carbon ($)</th>
<th>Social cost of carbon ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity from land-based wind turbines</td>
<td>0.14 (negative)</td>
<td>30</td>
</tr>
<tr>
<td>Hydro electricity</td>
<td>Negative</td>
<td>30</td>
</tr>
<tr>
<td>Energy-efficient light bulbs</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>Draught-proofing insulation for a house</td>
<td>130</td>
<td>30</td>
</tr>
<tr>
<td>Reducing automobile emissions</td>
<td>700 – 2,300</td>
<td>30</td>
</tr>
<tr>
<td>Solar thermal electricity</td>
<td>500</td>
<td>30</td>
</tr>
<tr>
<td>Solar photo-voltaic cells</td>
<td>6,300</td>
<td>30</td>
</tr>
</tbody>
</table>
Taxes versus Permits Under Certainty
Efficient abatement: marginal abatement costs (MAC) = Social Cost of Carbon (SCC), with a carbon price applying across all sectors countries

Under certainty, no difference whether a price instrument or a quantity instrument is used

The optimum can be reached either by establishing a price of emissions $P_0$ or by creating enough tradable emissions permits to enforce abatement $Q_0$
Permits versus taxes under uncertainty

Now it matters. In the diagram, the ‘E’ subscripts refer to the predicted positions of the two curves. But now we allow uncertainty over MAC and illustrate the case where MAC is higher than estimated. The optimum is now Q(REAL). The efficiency cost with permits is much higher than the efficiency cost with taxes.
Now the relative slopes of the two curves are changed, so that a quantity-based solution looks preferable. How are we to choose? This analysis, on its own, seems to favour a price-based approach BUT with a system of revising the carbon price over time so as to achieve a relatively inflexible target for emissions on average.
How to reconcile the tax vs. permits quandary

• Possible solution in various hybrid schemes
e.g.
  – Tradable permits, cap and trade
  – Emissions tax at the margin for low-cost clean-up, but with flexibility in total abatement if costs high
  – Fixed no. of long-term tradeable permits with elastic supply of short-term permits, good for one year in case price goes too high
  – Combination of cap and tax
More on price-quantity issue

• Taxes on “bads” not “goods”
• Feasibility – transactions costs associated with taxes and permits differ according to circumstances: e.g. permits are easier for stationary, large emitters (power stations) than small mobile emitters (cars).
• Taxes mean revenue, but so would auctioned permits
• Less rent-seeking with taxes
• Less governance challenges with taxes
• More volatility with Q-limitations because of inelastic supply of permits and inelastic short-term demand – volatility costly and undesirable
• But maybe less chance of exemptions with permits
• Need for a quantitative “steer”
• Risk regarding feedbacks
• Distributional issues – cannot redistribute taxes without explicit transfers, but can do something with initial allocation of permits (pros and cons)
Adaptation versus Abatement

• Abatement refers to actions which affect atmospheric concentrations of GHGs over time

• Adaptation refers to actions which reduce costs given GHG concentrations

• Assuming that the marginal benefit from either adaptation or abatement is a declining function of expenditure in each case, then the balance between them should be chosen to equalize the marginal benefits.
Adaptation versus Abatement

• For a given amount of abatement, i.e. a given level of atmospheric GHGs, there will be an optimal level of adaptation: then the total climate change costs can be broken down into the adaptation costs and the residual costs.

• Llewellyn reports that the estimated share of adaptation costs for a doubling of atmospheric GHGs is 7-25% (i.e. residual costs are 75-93%). In other words the scope for adaptation is limited.

• In order to devise good public policy it is useful, for any particular type of adaptation activity, to judge to what extent it will occur autonomously.
Adaptation and Residual Costs (Stern)

Adaptation reduces negative impacts of climate change, but residual damage often occurs (can be large). The gross benefit of adaptation is damage avoided. Net benefit is damage avoided less adaptation costs. Residual costs of climate damage plus the cost of adaptation is the cost of climate change, after adaptation.

Note these relationships are not really linear
Autonomous versus policy-driven adaptation

• What kinds of adaptation can be left to private actions? Basic reasons why private actions will be insufficient:
  – Uncertainty and imperfect information; missing markets, including public goods; financial constraints, particularly those faced by the poor; bounded rationality - lack of cognitive power to make precise optimization decisions

• So policy intervention may be justified:
  – information provision; regulation (land-use planning and performance standards); public good provision; finance (filling gaps in credit availability)
Trade and Climate Change
Some Preliminaries (1): Local versus Global

• Some of the early ’90s debate was about local environmental challenges and local absorptive capacity, so talk of “environmental preferences” and appropriate “local” policy.

• But climate change is only about the global commons – a ton of carbon emitted anywhere has the same climate change impact.

• So we have one less degree of freedom in dealing with equity/distributional issues in relation to climate change policy.
Some Preliminaries (2): Trade, Output and Climate

• Trade is but one component of economic activity
• If environmental externality (carbon in this case) is properly priced, producers and households respond to resulting relative prices regardless of activity
• We should bear this in mind when we separate out trade as our analytical focus
Effects of Trade and Trade Liberalization on Climate

• **Scale effect:**
  – expanding trade under unemployment means increased (CO$_2$) output
  – Expanding trade under full employment translates into composition effect, with uncertain CO$_2$ effects

• **Composition effect:** resource allocation changes in many countries, uncertain outcome

• **Technique effect:** Positive if increased trade associated with improved technologies
More on the Technology Effects

• More open trade should allow more availability, lower cost of environment-friendly goods and services

• Transmission mechanisms for technology diffusion:
  – Imports of intermediate inputs not locally available
  – Communication fostering learning
  – Increased opportunities for technological adaptation
  – Reduced costs of future innovation/imitation
Trade, Income Growth and GHGs

• To the extent trade is linked to higher incomes, it contributes to higher demand for lower GHG emissions

• A non-linear relationship captured by the Kuznets inverted U-shaped curve

• But the relationship depends on accompanying emission reduction and adaptation policies
Trade and Transport

• Trade requires transport
  – Some 90 per cent of trade by volume is transported by sea
  – Some 90 percent of energy consumption in transport is oil products
  – Maritime transport accounts for about 4 per cent of global GHG emissions

• The fallacy of “food miles” and “consume local” campaigns: the relevance of product cycle carbon footprint analysis
International Cooperation

Kyoto Protocol
EU Emissions Trading Scheme
Some policy implications
The Kyoto protocol

1992 Rio, establishment of UN Framework Convention on Climate Change
Dec 1997: Kyoto Protocol adopted by the UNFCCC
May 2002: ratified by the EU
Non-ratifiers include United States

Establishes legally-binding emissions reductions in developed countries (DCs)
Averaging across the countries we have:
A cut of 5% relative to the defined 1990 baseline, to be attained on average over 2008-2012, which implies
A cut of 10% relative to 2000, and
A cut of 20% relative to BAU in 2008-2012

Emissions credits are tradable

Dec 2007 Bali conference to (begin to) establish post 2012 regime
Dec 2008 Poznan conference, half way between Bali and Copenhagen
Establishes the Clean Development Mechanism (CDM) and Joint Implementation (JI)

CDM allows a developed country to finance a UN-ratified project that cuts emissions in a developing country, and thereby earn emissions credits. JI is similar for countries within Annex 1 (countries with emission reduction obligations)

Additionality

Would the project have been done anyway?

If this question is not asked, then the system can be undermined by the creation of credits that do not correspond to reduced developing country emissions (e.g. existing hydroelectric scheme could apply for tradable credits).

Note that, in the absence of taxes or permits in developing countries, there is no automatic mechanism to promote non-emitting energy production.

Judging the additionality of a project may be very difficult.
The EU ETS (Emissions trading scheme)

Based around National Allocation Plans, which have to be approved by the EU Commission

Coverage is partial: large stationary targets – meaning the following sectors

- Energy generation
- Metal production
- Cement
- Bricks
- Pulp and paper

These amount to about 40% of GHG emissions

**Phase 1: 2005-07**

Virtually all permits grandfathered (although 5% could have been auctioned):

Too many were issued (SR) so that there was only a 1% reduction on BAU

**Phase 2: 2008-12**

10% of permits auctionable
Grandfathering versus auctions

Does it make any difference to production decisions?

In principle it makes no difference

Consider an enterprise with revenues R and costs C. Suppose that in order to operate it requires emissions permits with market value V

Under grandfathering, it has a choice between operating (profit R-C) and selling its permits (profit V)

Under auctioning, it has a choice between operating (profit R-C-V) and closing (profit 0)

Clearly, in each case, the decision rests on the sign of R-C-V

**Gaming strategies under grandfathering**

Behaviour is distorted by effects on future allocations: e.g. exit may be discouraged

**What about income distribution?**

It seems that use of auctions will make the enterprise worse off

But this depends on the assumption that R remains unchanged

Whether the cost of permits will be passed on depends on:

- Elasticity of demand
- Existence of foreign competition
Case A

Product demand inelastic: no foreign competition

Then the carbon cost is fully passed on, and $R$ rises by $V$

Grandfathering gives a windfall profit to the firm, auctioning leaves its profits unaffected (the revenue received by the government comes from consumers)

Case B

Product demand elastic, or strong foreign competition from untaxed producers

Then $R$ does not rise. So grandfathering leaves firm profits unaffected, while auctioning lowers them by $V$ (there is a transfer from the firms to the government)

In practice (Llewellyn2, chapter 10):

Cement: A major emitter, but little international competition: therefore pass through to consumers, with some sector contraction because of a fall in the demand for cement.

Aluminium: Heavily exposed to international competition: imports as a share of consumption around 35%

NB Note SR’s case for benchmarking: i.e. allocating quotas on the basis of best-practice carbon-intensities rather than actual intensities (SR Box 17.6)
The EU permit system: other issues

Credibility

Long-term investment in emissions-saving technologies (e.g. turbines) will only occur if agents believe that emissions will continue to be costly to them.

This applies also at the household level. To be induced to invest in (not previously worthwhile) home insulation, I must believe that higher energy prices are here to stay.

The inevitability that credibility is imperfect provides a justification for subsidies and/or compulsion (house-building standards; fuel economy in new cars).

Since changes in policy instrument settings are inevitable (new information), credibility will be enhanced if procedures for such changes are clearly defined and transparent.

Different instruments may vary inherently in their credibility (governments are unwilling to give up revenue streams, so that taxes are arguably inherently more credible than grandfathered permits).

Reducing emissions in the unregulated sectors

Is it enough to tax energy production?

In principle, no, because different users of energy may have different emissions/KWH. To this extent ‘upstream’ taxation will distort energy use across users (i.e. away from low emitters and towards high emitters).
Transactions costs

These are vital to the choice of policy instrument

Example 1: Transport

In this case, emissions are essentially proportional to fuel use.

Therefore a fuel tax is a far more efficient way of (indirectly) taxing emissions than an emissions permit scheme could be.

Inclusion of road, rail, aviation, maritime would raise coverage of EU ETS to 55% of GHG emissions

Aviation is 2-4 times worse for radiative forcing than just its CO2 emissions would suggest (high altitude water vapour).

Example 2: Farming

As with road transport, the fact of many small emitters suggests a tax solution

In this case, fertilizer taxation may correspond to fuel taxation in the transport case

Relevance of water pricing (water and fertilizer are complementary inputs in farming)
Beyond permits/taxes: constraints associated with behaviour, information and finance

Can we rely on pricing alone to produce socially optimal behaviour?

**Behaviour**

We cannot be sure that households and firms act as if they were optimizing in the way that economists often assume: the decision-taking process envisaged may simply be too complex, so that agents behave according to simple rules-of-thumb instead (e.g. do nothing)

**Example: energy efficiency**

Expected to account for 30%-50% of emissions under some reduction scenarios

Behaviour seems to indicate a good deal of inertia

**Information and finance**

Rational agents may display inertia either because they lack information (e.g. about future energy prices) or because they are unable to borrow to make desirable investments

**Policy implications**

In principle, these arguments can justify a degree of coercion (as discussed above) and/or information dissemination/subsidies to investments.
Trade Policy and WTO Issues

Challenges of international cooperation on investment and trade WTO issues
Challenges in International Cooperation

• Understanding the problem
• Where does trade fit policy in?
• Shared perceptions of necessary actions
• Who should do what?
  – Historical overhang
  – “Climate justice” in terms of future actions
  – Distributional fairness in terms of dealing with $C\Delta$ consequences
Trade and Investment Considerations

*Competitiveness considerations arise in the absence of harmonized (or at least agreed) policies at the international level.*

- Carbon leakage through investment decisions
- Production costs affecting competition through trade both in home markets and third markets
- Use of trade policy to “level the playing field”
- Coercion versus cooperation
Issues relating to WTO rules and climate change

• Liberalization of climate-friendly goods and services
• Subsidy rules
• Standards and Labeling
• Border tax adjustments
• Intellectual property rights
Trade Liberalization and Environmental Goods

- Doha Round negotiations for greater market opening on environmental goods and services
- Four proposals currently under negotiation:
  - a list approach (lower tariffs on environment-friendly goods);
  - a project approach (lower tariffs on goods imported by environment-related entities);
  - a request/offer approach;
  - A sectoral agreement for zero tariffs on about 40 products
Trade Liberalization and Environmental Services

• Environmental services (including services relating to sewage, sanitation, refuse and solid waste disposal, waste water management, soil remediation and clean-up, environmental laboratory services, advisory services and other services related to pollution abatement) subject to GATS negotiations

• Apparent willingness to expand sectoral coverage and the modal scope of commitments in order to reduce or eliminate restrictions in Doha Round
Subsidies

• Subsidy rules:
  • Production subsidies permitted but actionable
  • Export subsidies prohibited on manufactures but negotiated in agriculture
  • No subsidy rules in services – only affected potentially by national treatment restrictions if so scheduled

• Note previous Article 8 of Agreement on Subsidies and Countervailing Measures in relation to non-actionable subsidies

• Countervailability
Standards and labeling

• Provision of information
• Standards
  • Mandatory or voluntary
  • Harmonization, mutual recognition, minimum standards
  • The production and process method (PPM) issue
• Labeling, information and market segmentation
Climate Change Policy and Competitiveness

• In the absence of uniform carbon emission policies internationally, the more stringent a national policy
  – The greater the potential for carbon leakage (emission reductions in one country offset by increases in another)
  – The greater the likely effect on competitiveness and the clamour for countervailing policy action
Competitiveness and Border Tax Adjustment (BTAs) in WTO Context

• A BTA (i.e. tax) on imported products or inputs into those products to “equalize” the cost of abatement incurred by like domestic products

• A BTA on exports to neutralize abatement costs incurred in production
Competitiveness and BTAs: Some Issues

• Should BTAs be permitted on inputs not physically incorporated in the traded product?

• How should the “tax equivalent” be calculated (especially on inputs) and by whom?

• BTAs on exports reduce CO₂ emission reduction efforts, so risk of higher domestic emission standards and BTAs on imports
Other WTO-Related Issues

• Are traded permits a good, a service or a “licence”, and are they covered by the WTO?

• Can exports from countries without climate change policies be charged a countervailing or antidumping duty to neutralize a “hidden” subsidy or counter environmental “dumping”?

• Could a prohibition or tax on imports be imposed under the general exception provision of Article XX(g) to conserve a natural resource?
Intellectual property rights

• Need for dissemination of clean technology, rights of access, for abatement and adaptation

• The role of IPRs as guarantor of R&D

• IPR as a possible barrier to technology transfer

• Alternative ways of funding R&D
Some Sources

Inter-governmental Panel on Climate Change Reports (UNFCCC);

Stern Report (UK Government);

Llewellyn (Lehman Brothers);

R. K. Eastwood (Sussex University).