



Canada's
National
Climate
Change
Process

Processus
national sur le
changement
climatique
du Canada

CANADA

OPTIONS

For

DOMESTIC EMISSIONS TRADING

With

MANDATORY COVERGE

Tradeable Permits Working Group

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CANADIAN GREENHOUSE GAS REDUCTION TO MEET KYOTO TARGET

Estimate require 20-25% reduction from business as usual projection

“NATIONAL PROCESS”

April 1998: Federal and provincial government ministers of Energy and of the Environment organized a consultative process, with participation from all governments and major stakeholders,

to examine the consequences of the Protocol and options open to Canada for implementing the Protocol in advance of Canada’s ratification.

**Sixteen “Issue Tables” and working groups established
(Some sectoral, e.g. Agri-Food, Electricity, Transportation)
some topic oriented, e.g. Kyoto mechanisms, sinks, technology)**

Issue Tables have produced initial survey papers, and will complete “Options papers” by May/June 1999.

Summer 1999: Federal/provincial officials “roll-up” and analyze options

Late 1999: Federal and provincial ministers meet to consider a proposed “National implementation strategy”

2000: Ongoing elaboration of strategy, broader consultation, government decisions

WITHIN THIS PROCESS:

“TRADEABLE PERMITS WORKING GROUP” established to develop and analyze options for DOMESTIC EMISSIONS TRADING starting from a position of MANDATORY COVERAGE of a significant portion of GHG emissions.

COMPOSITION:

- 4 members from federal government departments

-6 members from provincial government departments

-2 members from large private-sector, emissions-intensive firms (petroleum, aluminum)

-2 members from environmental groups

– -1 member – provincial-government owned electric utility

-1 member - academic

-1 member – National Climate Change Secretariat

WHAT WE START WITH:

- **Three decades of academic analysis: general issues re emissions trading, recent application to climate change**
- **Two + decades of experience in the U.S. in non-GHG areas– introducing progressively greater flexibility in regulation – ending with full tradeable permits (SO₂)**
- **O.E.C.D. + I.P.C.C. + U.S. and other research institutes – applied research and policy development, including both general and climate change oriented.**
- **Some government-sponsored basic exploration of “economic instruments” in Canada - early and mid-‘90s**
- **Very limited Canadian experience with tradeable permits (in non-GHG areas)**
- **Some Canadian experience with trading from a voluntary starting point: Pilot Emissions Reduction Trading (PERT), GHG Emissions Reduction Trading (GERT)**
- **National Round Table on the Environment and the Economy (of Canada): just completed reports on domestic GHG emissions trading options (<http://www.nrtee-trnee.ca>)**

WHY CONSIDER TRADEABLE PERMITS:

- **“Cap, allocate and trade” approach:**
 - gives firms facing relatively high emissions reduction costs an alternative to making the full required reduction in their own operations,
 - tends to lower the overall economic cost of achieving emissions target.
- **If trading becomes widespread –**
 - puts a **PRICE** on emissions (permits become like a “commodity”).
- **Government(s) set the overall cap, and determine initial allocation of permits**
 - but
- **Emitters react to the price signal (rather than a quantity target),**
Market forces determine where and how emissions reductions actually occur.
- **Should push economy in direction of achieving given emissions target at lowest overall economic cost within covered sectors.**
- **In principle, provides certainty as to overall emissions in covered sectors,**
but permit price uncertain.

MAJOR DESIGN CHOICES:

- **COVERAGE**

- Sources of GHG emissions effectively subject to permit requirement

- **POINT OF IMPOSITION**

- Final emitter (“downstream”)

- Upstream of final emitter (generally “substance based”).
“Upstream” (e.g. fossil fuel extraction, fertilizer producers)
or “Mid-stream “ (e.g. refiners)

- Mixed systems (point of imposition depends on source of GHG)

- **INITIAL DISTRIBUTION OF PERMITS**

- Gratis (using “grandfather”, or “performance standard” approaches)

- Auction (with revenue recycling)

- Combination of above

TPWG LOOKING AT TWO BASIC COVERAGE/POINT OF IMPOSITION OPTIONS:

- **“LARGE FINAL EMITTER”**

Would include: - electricity generation

- **major industrial emitters (including some direct emissions at upstream stages of oil and gas production)**

- **possibly large transportation carriers (on basis of fuel consumed)**

Coverage: likely 40%-50% of total GHG emissions

- **“AS BROAD AS POSSIBLE”**

- CO₂ from fossil fuel combustion covered midstream or upstream (substance basis)**

- Note: imports of fossil fuels subject to permit requirement, exports effectively exempt from substance permit requirement.**

- Non-combustion CO₂ and most other GHGs covered at final emitter**

- Could cover 80% + of total Canadian GHG emissions**

Note: Under either option, could also provide for opting in by entities in uncovered sectors (credits)

**Potential Percent of Emissions Captured in
a Tradeable Permits System
(by GHG and Point of Imposition)**

Emissions Category	Percent of Total Emissions in Canada (1995) ¹	Percent of Emissions Captured in Category ²	
		Final Emitter	Upstream of Emitter (Substance)
Combustion CO ₂	74.5	45	100
Other CO ₂	6.3	38-65	-
Total CO₂	80.6	45-47	92
Methane (CH ₄)	12.6	34	-
Nitrous Oxide (N ₂ O)	5.4	36	12
Other GHGs: (SF ₆ , HFCs, PFCs)	1.4	93	-
Total GHGs	100	45-47	75
Number of Firms ³		700-900	200-250 (midstream) or 600-800 (upstream)

Notes:

1. Source: Jaques, A., *Trends in Canada's Greenhouse Gas Emissions 1990-1995*, Environment Canada, 1997.
2. All numbers are approximations. Potential percent coverage of non-combustion emissions of greenhouse gases obtained from CHEMinfo Services Inc., *Potential of Including Non Combustion Sources of GHG Emissions in a Domestic Emissions Trading Program*, draft paper for National Round Table on the Environment and the Economy, Multistakeholder Expert Group on Domestic Emissions Trading, August 1998.
3. This figure represents the number of firms which may be potential participants. The number of individual sites requiring monitoring is much greater.

EITHER BASIC COVERAGE OPTION COULD BE COMBINED WITH ONE OR MORE OF THE THREE APPROACHES TO INITIAL PERMIT ALLOCATION

Note: Main “incidence” of permit requirement may not be on entity required to hold permit (especially where permit requirement imposed upstream of final emissions).

Likely impractical to give permits to individual consumers of home heating fuels and gasoline.

Thus, under broad coverage option, gratis permit allocations likely only considered for “large final emitter” portion of system plus large fossil fuel users.

- **GRANDFATHERING**

- **uses historical entity emissions levels, possibly with some adjustments,**
- **a rough and ready way of “dampening the shock” imposed by a permits requirement, but not necessarily closely linked to “burden” of requirement,**
- **may be more suited to transitional assistance, than permanent basis for gratis allocation of permits.**

INITIAL ALLOCATION OF PERMITS cont'd

- **PERFORMANCE STANDARDS**

- based on target emissions per unit of output (industry average, best practice, ...)

- major practical issue: how many different standards would have to be developed?

- (standards that vary with process, and possibly region, as well as product?)

- since permit allocation varies with output:

- deals with “new entrants”, exits, and growth

- lowers impact of permits requirement on cost of producing an additional unit of output.

- This weakens price signals to consumers to shift towards less GHG-intensive products.

- a possible means of addressing “leakage” of emissions-intensive activities to countries imposing less strict/noGHG limits.

INITIAL ALLOCATION OF PERMITS concl'd

- **AUCTION PLUS REVENUE RECYCLING**

- how closely to tie use of revenues to:

- expenditure programs associated with GHG reduction/adaptation?

- perceived burdens/adjustment resulting from permits requirement?

- (try to make any link in a way that doesn't weaken incentives for all types of adjustment)

Note: Using auction revenues for reduction in general taxes offers potential economic gain, from reducing adverse incentive effects of these other taxes.

This economic gain could help offset economic costs of GHG reduction.

FURTHER SPECIFIC DESIGN ISSUES:

- **PERMIT SPECIFICATIONS**

- units (one tonne CO₂ E), bankable? vintaged?

- frequency of issue

- link to International Emissions Trading regime

- **ADMINISTRATION/ENFORCEMENT**

- approaches to measurement and monitoring of emissions/substance flows (determining permits needed)

- matching permits against permits required (“paying for your emissions with permits”) – frequency, etc.

- enforcement provisions (penalties, etc.)

- **TRADING REGIME**

- central registry? Linked to monitoring/clearing institution?

- special rules for trading/ownership?

OTHER ISSUES IN DEVELOPING A TRADEABLE PERMITS APPROACH

- **INTERNATIONAL TRADE CONTEXT**

- do you expect “prevailing world (Annex I) price of emissions permits”?

- merits of harmonization of tradeable permits regime with regimes of major trading partners?

- especially for **COVERAGE**

- any response to **LEAKAGE** of activity and emissions to non-covered countries?

INDUSTRIES WITH THE HIGHEST GREENHOUSE GAS EMISSIONS* INTENSITIES

(1992, by industry)

(corrected: 18/3/99)

Industry	Intensity (t CO ₂ E/\$1000) Production ¹	International Trade Important ?	Competition from Non-Annex I Countries Important ?
Cement	12.865		
Electric power systems²	7.037	✓	
Industrial chemicals nec	4.468	✓	✓
Coal mines	3.950	✓	✓
Refined petroleum and coal products	3.751	✓	✓
Ready-mix concrete	3.725		
Crude petroleum and natural gas	3.593	✓	✓
Pipeline transport	3.584		
Primary Steel	3.453	✓	✓
Iron mines	3.293	✓	✓

¹ Source: Statistics Canada, *Econnections: Linking the Environment and the Economy. Indicators and Statistics 1997*.

Emissions intensity is the amount of direct and indirect greenhouse gas emissions associated with every \$1000 of production (measured in 1986 dollars). Direct emissions are those associated with the industry's own production. Indirect emissions are those associated with the production of the goods and services used by the industry.

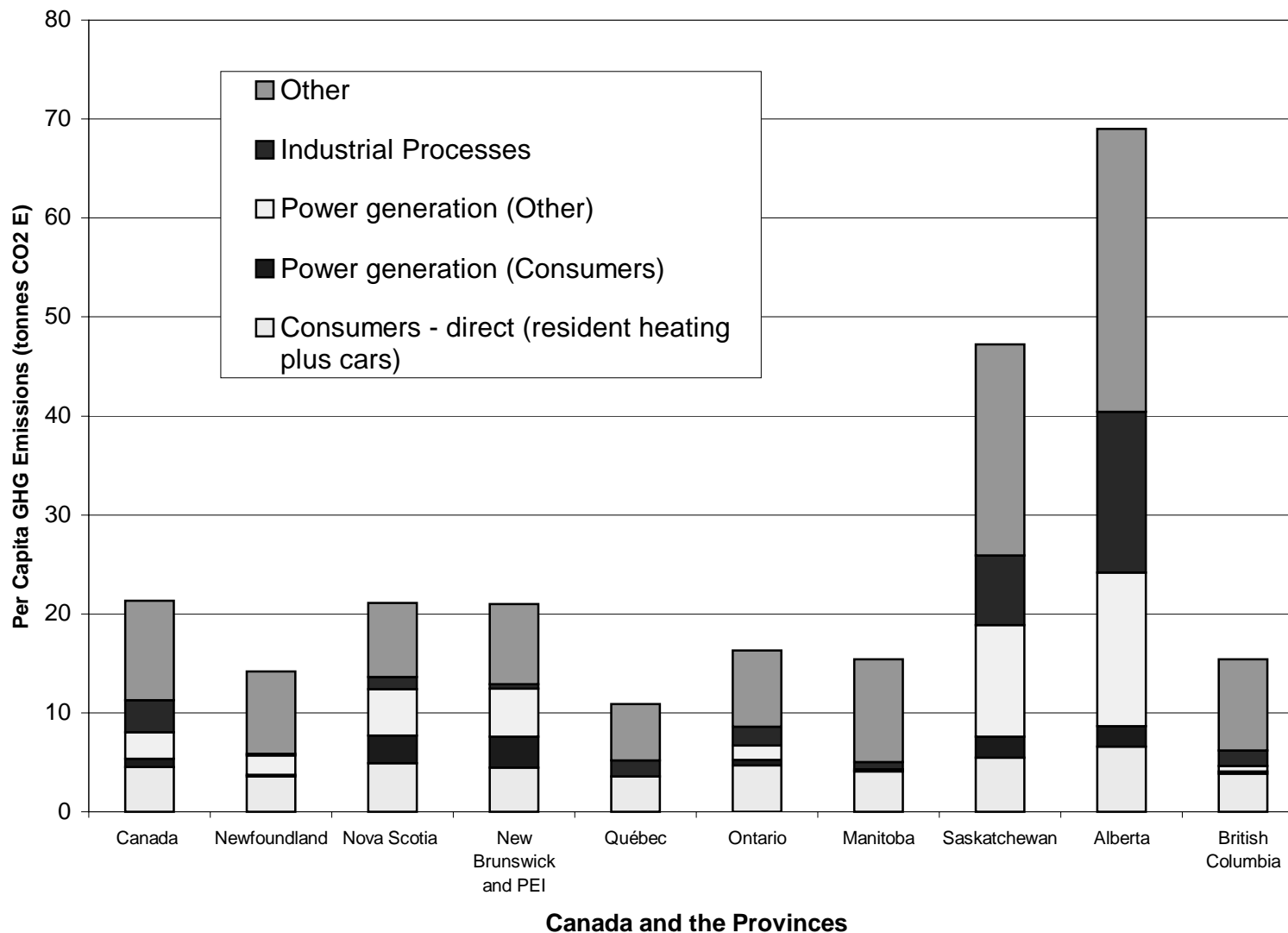
² The electric power systems emissions intensity estimate is an average for all electric power systems in Canada, including hydroelectric and nuclear systems. The average for thermal generation would be roughly four times the estimate shown here for all systems.

* Emissions include only carbon dioxide, methane and nitrous oxide.

OTHER ISSUES IN DEVELOPING A TRADEABLE PERMITS APPROACH cont'd

- **REGIONAL BALANCE, AND FEDERAL/PROVINCIAL DIVISION OF RESPONSIBILITY**

Per Capita GHG Emissions for Canada and the Provinces, 1995



Source: GHG emissions by source and province from Jaques, A., *Trends in Canada's Greenhouse Gas Emissions 1990-1995*, Environment Canada, 1997.

OTHER ISSUES IN DEVELOPING A TRADEABLE PERMITS APPROACH concl'd

- **TRANSITION**

- Lead time to put in place administrative infrastructure?

- Desirable lead time for parties facing permit requirements?

- Start/facilitate trading in advance of “requirement period”?

- Links to “early actions” in pre-commitment period?

FOR FURTHER INFORMATION:

on the Canadian

NATIONAL CLIMATE CHANGE PROCESS

(including mandates, membership and initial survey “Foundation Papers” of each of the Issue Tables and the Tradeable Permits Working Group)

refer to:

<http://www.nccp.ca>