To construct a post-Kyoto international framework

International Symposium on Post-Kyoto International Climate Change Framework and Sectoral Approaches

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A Perspective From North America

- **Choice of an international framework is affected by:**
  - Current economic conditions
  - Domestic policies adopted in key countries
- **Many Annex 1 countries are retreating from comprehensive cap and trade systems**
  - Costs and competitive impacts under current economic conditions
  - Adoption of regulatory measures and technology policies
- **The United States is moving forward with regulatory measures and financial assistance for specific industries and technologies**
- **Canada's proposals include intensity-based limits differentiated by sector and mandates for renewable electricity generation**
- **Australia has announced a cap and trade system but it is under attack because of concern about exports and costs**
- **EU remains committed to ETS but industry is becoming increasingly concerned about its impacts**

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Elections Were Expected To Clarify Policy Direction

- **Democrat sweep in United States raised expectations**
  - Re-engagement internationally
  - Comprehensive climate legislation with mandatory caps
- **Conservative Party victory in Canada expected to reaffirm cap and trade approach**
  - Announce regulations implementing “Turning the Corner” – a set of intensity-based sectoral targets
  - Move to a North American cap and trade system
- **Recession intervened**
  - Stimulus package and federally directed financing and funding for low carbon energy and conservation
  - Market-based measures losing out to command and control regulation
- **Meeting between President Obama and Prime Minister Harper suggests a different course is developing**

Uncertainty About the Future Direction of Climate Policy

Previously: State and Provincial action, endorsement of cap and trade by political leaders, United States holding up action

Canada

- **Intensity-based caps for major sources of emissions to be followed by hard caps**
  - Heavy reliance on carbon capture and storage
- **Provincial action**
- **Unclear Federal policy direction**
  - Missed deadlines in 2008
  - Lack of clarity on major issues
  - Major issue about how to allow development of oil sands
- **Interest in clean technology, particularly for electricity**

United States

- **Cap and trade legislation stymied by recession and disputes over**
  - Who to compensate
  - How to divide revenues
  - How to protect vulnerable industries
- **State and regional action**
- **Regulatory measures moving ahead**
  - More direct threat to oil sands than cap and trade
- **Federally financed "clean technology investment" in the stimulus package**

Presently: Both leaders agree implementation of any new regulations including a carbon-trading system is at this point unrealistic. Meanwhile, the Conservatives are reported to put off any domestic regulations in order to harmonize regulations. Clean Energy Dialogue focusing on CCS technology.

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What Might A "Harmonized System" for North American Mean?

- **A comprehensive North American cap and trade system?**
  - Seems unlikely for the foreseeable future
- **Joint R&D and technology development with emphasis on CCS?**
  - Agreed by the heads of state
- **Harmonized sectoral intensity targets?**
  - Could be attractive to much of U.S. industry
- **Continued more or less independent development of regulatory policies, technology standards, and subsidies for "clean energy"?**
  - Very likely

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Likely Sequence of U.S. Policy Development

2009 - 2010

2010 - 2012

Stimulus Package	Introduction of Climate Bill	Participation in COP 14	"Energy" Legislation	Wild Cards	Cap and trade established
Financing and direct spending for efficiency programs, subsidies for uneconomic technologies and some R&D	A climate bill, likely including cap and trade and regulatory measures, will be introduced but not passed before COP14	U.S. and Canada will be under severe pressure, developing countries will make no commitments, action will be deferred	Congress will pass piecemeal "energy legislation" containing LCFS, RPS and other regulatory measures and technology standards	Proliferation of state programs following California EPA decides to regulate CO2 emissions under the Clean Air Act	National cap and trade program may be created, but with low carbon prices and little incremental effect due to pre-existing regulatory programs

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Canada Combines Regulatory Standards With Intensity Targets in Sectoral Policies

Industrial Sectors Given Individual Intensity Targets

Sector	Target Application		
	Facility-based	Sector-wide	Corporate
Iron Ore Pelletizing	X		
Lime		X	
Potash	X		
Base Metal Smelting	X		
Chemicals	X		
Fertilizers[1]	X		
Iron & Steel, Titanium	X		
Oil Sands	X		
Pulp & Paper		X	
Petroleum Refining	X		
Aluminium & Alumina		X	
Cement		X	
Natural Gas Pipelines	X		
Upstream Oil & Gas	X		
Electricity			X

1) Indicative until decisions are made post Task Force

Standards and technology mandates for buildings and transportation

- **Mandatory renewable fuel content in gasoline, diesel and heating oil;**
- **New fuel consumption standards for cars, light trucks and sport utility vehicles;**
- **New energy efficiency requirements for a wide range of commercial and consumer products, such as dishwashers and commercial boilers; and**
- **New national performance standards that will ban inefficient incandescent lightbulbs.**

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A Complex Regulatory Regime Would Be Created

Different targets of regulation

Sector	Target Application		
	Facility-based	Sector-wide	Corporate
Iron Ore Pelletizing	X		
Lime		X	
Potash	X		
Base Metal Smelting	X		
Chemicals	X		
Fertilizers[1]	X		
Iron & Steel, Titanium	X		
Oil Sands	X		
Pulp & Paper		X	
Petroleum Refining	X		
Aluminium & Alumina		X	
Cement		X	
Natural Gas Pipelines	X		
Upstream Oil & Gas	X		
Electricity			X

1) Indicative until decisions are made post Task Force

Exemptions for uncontrollable process emissions

Sector	Estimate of percent fixed process emissions	Example of certain sources of fixed process emissions
Iron Ore Pelletizing	25%	Limestone and dolomite fluxes
Lime	66%	Calcination of limestone
Potash	0%	
Base Metal Smelters	10%	Fluxing agents, lead smelting, coke used as reducing agent in electric furnace, carbonate contained in ores, substances such as propane used as O_2 scavenger
Chemicals	16%	Gypsum manufacture, titanium dioxide manufacture using the chloride process, ethylene oxide manufacture, PT acid
Fertilizer[1]	40%	Steam methane reforming
Iron & Steel, Ilmenite	62%	Carbon used for reduction of metal oxides in iron ore and ilmenite, limestone and other minerals used as fluxes, decarburization of pig iron and direct reduced iron
Oil Sands	6%	Steam methane reforming
Pulp & Paper	1%	Addition of $CaCO_3$ or Na_2CO_3 in lime kiln of chemical mills
Petroleum Refining	9%	Steam methane reforming
Aluminum & Alumina	48%	Electrolysis of alumina to aluminum
Cement	61%	Calcination of limestone
Natural Gas Pipelines	0%	
Upstream Oil & Gas	0%	
Electricity	0%	

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Minimum thresholds

Sector	Proposed threshold
Chemicals	50 kt CO_2e
Fertilizers (Nitrogen-based)[1]	50 kt CO_2 e
Natural Gas Pipelines	50 kt CO_2e
Upstream Oil & Gas	10,000 barrels / day (per company) and 3 kt CO_2e per facility
Electricity	10 MW

1) Indicative until decisions are made post Task Force

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A Comprehensive Set of Global Commitments to Hard Caps Appears Increasingly Unlikely

- **Bringing China into an agreement is even less likely given current economic hardship**
  - Retreat to greater government direction of economy
  - Abandonment of environmental and clean energy investments in favor of employment
- **An international system with hard caps and carbon trading is impossible without consistent domestic policies in Annex 1 countries**
  - Sentiments for trade protection lead to support for policies that allow flexible treatment of domestic businesses
  - Failure to agree on how to design an cap and trade system allows regulatory approaches to be put in place first
  - Stimulus packages in many countries are funding clean energy technologies and energy efficiency
  - A carbon tax may even gain favor

Measures Likely to Be Adopted in the U.S. in 2009

- **Low Carbon Fuel Standard for motor fuels**
  - Life cycle calculation of CO2 emissions
  - Possibly designed to reward improved fuel economy or plug-in hybrid electric vehicles
  - Purpose largely to discourage development of Canadian oil sands and unsustainable biofuels production
- **Renewable Portfolio Standard for electric utilities**
  - Federal strengthening of state programs
  - Consistent national definition, target, and market
- **Generation Efficiency Standard for power generation**
  - Force improved technology for power generation
  - Compliance possible through end use efficiency programs
- **Tightened fuel economy standards for new vehicles**
  - Implementing provisions of 2007 Energy Independence and Security Act

Dept of Energy Funding in the Stimulus Package

American Recovery and Reinvestment Act (2.17.09)						
	Pgm Office	Activity/Initiative	House Amount (billion)	Senate Amount	Conf	Comment
1	EE	Weatherization Assistance Program	$ 6.2	$ 2.9	$ 5.0	
2	EE	Energy Efficiency and Conservation Block Grants	$ 3.5	$ 4.2	$ 3.2	Section 524 of EISA
3	EE	State Energy Program	$ 3.4	$ 0.5	$ 3.1	
4	EE	Research, Development, Demonstration and Deployment	$ 2.0	$ 2.6	$ 2.5	
5	EE	Grants and Loans for Institutional Entities for Energy Sustainability and Efficiency	$ 1.0	$ 1.6	$ -	Section 399A of EPCA
6	EE	Advanced Battery Manufacturing	$ 1.0	$ 2.0	$ 2.0	Section 136 of EISA
7	EE	Industrial Energy Efficiency	$ 0.5	$ -	$ -	
8	EE	Alternative Fueled-vehicles pilot grant program	$ 0.4	$ 0.3	$ -	
9	EE	Energy Efficient Appliance Rebate Program/EnergyStar	$ 0.3	$ -	$ -	
10	EE	Efficiency, Alternative Fuel Trucks, Efficient Appliances	$ -	$ -	$ 1.0	
11	EE	Transportation Electrification	$ 0.2	$ 0.2	$ -	
12	OE	Smart Grid Investment Program	$ 4.5	$ 4.5	$ 4.5	
13	LGPO	Renewable Energy and Transmission Loan Guarantees	$ 8.0	$ 9.5	$ 6.0	
14	LGPO	Advanced Battery Loan Guarantee Program	$ 1.0	$ -	$ -	
15	LGPO	Institutional Loan Guarantee Program	$ 0.5	$ -	$ -	
16	FE	Carbon Capture and Sequestration	$ 2.4	$ 4.6	$ 3.4	
17	SC	Science	$ 2.0	$ 0.4	$ 2.0	$400M for ARPA-E
18	EM	Environmental Management	$ 0.5	$ 6.4	$ 6.0	
19	IG	Oversight and audit	$ 0.015	$ 0.005	$ 0.015	
19	NNSA	Weapons Activities	0	$ 1.0	$ -	
20	WAPA	Additional Borrowing Authority				$3.25B for new or upgraded electric power transmission lines
21	BPA	Additional Borrowing Authority				$3.25B for transmission system
		Total, DOE	**$ 37.4**	**$ 40.7**	**$ 38.7**	

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Domestic Policies Are Becoming More Sectoral and Less Effective

- **Intensity-based regulations are inherently sectoral**
  - Removes limits on growth by sectors as long as technology advances
  - Incorporating in a comprehensive trading scheme is very difficult
- **Financing in stimulus packages is designed as a sectoral and industrial policy**
  - Spending distributed based on political influence
  - Specific technologies and industries are promoted
  - Generally little thought to creating long term and stable incentives for private investment
  - Relatively small increments to real research and development for new technologies
- **Conflicts between energy security and climate objectives are already appearing**
  - Oil sands in Canada versus Low Carbon Fuel Standards
- **Outcome is likely to be slower progress and higher costs than predicted for a comprehensive Kyoto-like regime of global emission trading**

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Similarities, Interests and Potential Areas of Cooperation

Concentrating on near term emission limits and carbon prices will not achieve technology breakthroughs required to stabilize global temperatures

U.S. and Japan both

- For different reasons, are adopting sectorally differentiated regulatory programs and standards
- Are concerned about competitive impacts on vulnerable industries
- Perceive the importance of technology development to make effective climate policy economically and politically feasible
- Participate in some promising international ventures
  - Asia Pacific Partnership
  - Major Economies Initiative
  - Bali Action Plan

Key technology development needs

- Stable, credible, long term policies to put a price on carbon and to support R&D
- Building human capital and global research networks capable of producing fundamental breakthroughs and new technology applications
- Coordinated research and funding for key identified technologies like CCS
- New approaches to incentives for private sector R&D and technology transfer

Co-ordinated government and private sector investments in R&D and technology development and a common approach to developing countries could greatly increase the chances of global success in controlling warming

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Prospects for International Action on Mitigation

- **Since few countries are committed to cap and trade, the goal of a global emission trading system is impossible**
- **Unwillingness of non-Annex 1 countries to discuss hard caps makes a system of graduation unlikely to succeed**
- **To make progress, negotiations must accept that**
  - Different countries will take different policy approaches
  - Progress must be measured by actions not commitments
  - Return to “Policies and Measures” and “Pledge and Review”
- **US – Canada dynamic puts technology cooperation first**
  - Recognizes two key sectoral issues – Canadian oil sands and U.S. coal-fired power generation
  - Defers regulatory action (i.e. overall caps) in favor of joint R&D
  - Appropriate model for developing country involvement

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International Framework Must Emphasize Adaptation If Strong Global Mitigation Efforts Are Not Likely

- **Expectations for international action become more modest in light of the recession**
  - Reduced global economic growth buys only a little time for mitigation to be effective
- **Parallel development of national systems based on regulatory policies and government funding and financing of domestic clean energy techologies is likely**
- **Developing countries can only be brought in slowly through programs like APP**
- **Dangers of climate change require**
  - Greater analysis and funding of adaptation measures in all countries
  - Research on geoengineering as a potential safeguard against rapid, catastrophic change

THANK YOU!

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