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Cap and Trade Market

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1. What is/are cap and trade markets?

Cap and Trade is the emissions trading (or emission trading), which is an administrative approach used to control pollution by providing economic incentives for achieving reductions in the emissions of pollutants.

In cap-and-trade, the government sets an overall environmental target by imposing a limit on the total amount of emissions that can be released from the power industry. Companies or other groups are issued emission permits and are required to hold an equivalent number of allowances (or credits) which represent the right to emit a specific amount. The total amount of allowances and credits cannot exceed the cap, limiting total emissions to that level. Companies that need to increase their emission allowance must buy credits from those who pollute less. The transfer of allowances is referred to as a trade. In effect, the buyer is paying a charge for polluting, while the seller is being rewarded for having reduced emissions by more than was needed. Thus, in theory, those who can easily reduce emissions most cheaply will do so, achieving the pollution reduction at the lowest possible cost to society.

Cap-and-trade was originally introduced in the United States in response to the acid rain problem that was threatening the Great Lakes as well as number of other North American lakes and waterways in the 1970s. The systems proved remarkably successful in bringing about significant absolute reductions in the levels of Nitrogen oxide (NO_x) and sulfur dioxide (SO₂) that were emitted by utilities.

There are active trading programs in several pollutants. For greenhouse gases the largest is the European Union Emission Trading Scheme. In the United States there is a national market to reduce acid rain and several regional markets in nitrogen oxides. Markets for other pollutants tend to be smaller and more localized.

The overall goal of an emissions trading plan is to reduce emissions. The cap is usually lowered over time - aiming towards a national emissions reduction target. In other systems a portion of all traded credits must be retired, causing a net reduction in emissions each time a trade occurs. In many cap and trade systems, organizations which do not pollute may also participate, thus environmental groups can purchase and retire allowances or credits and hence drive up the price of the remainder according to the law of demand. Corporations can also prematurely retire allowances by donating them to a nonprofit entity and then be eligible for a tax deduction.

Because emissions trading uses markets to determine how to deal with the problem of pollution, it is often touted as an example of effective free market environmentalism. However, emissions trading requires a cap to effectively reduce emissions, and the cap is a government regulatory mechanism, so it is somewhat of a misnomer to describe it as "free market" environmentalism. The entire procedure is premised on government intervention in the form of a cap. After a cap has been set by a government political process, individual companies are free to choose how or if they will reduce their emissions. Failure to reduce emissions is often punishable by a further government regulatory mechanism, a fine that increases costs of production. In theory, firms will choose the least-costly way to comply with the pollution regulation, which will lead to reductions where the least expensive solutions exist, while allowing emissions that are more expensive to reduce.

CAP	TRADE
The cap is what ensures the environmental goals of the	Trading is the key to keeping costs down. It lets the market,

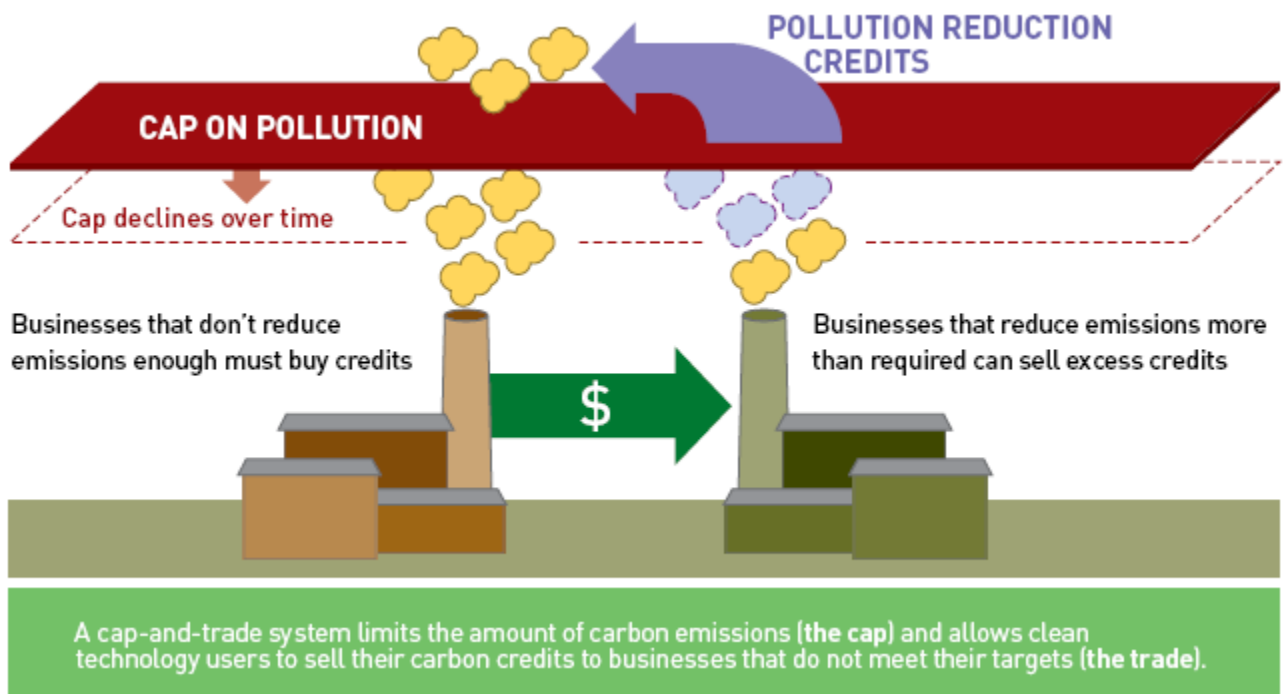


program are met. It establishes a mandatory limit on total greenhouse gases released into the atmosphere.

In the first few years of a cap-and-trade program, the cap could be set just below where emissions are today. Over time, the cap would be lowered, allowing for low-carbon infrastructure to be put in place. The near-term targets ensure that we start reducing emissions right away.

not the government, figure out where and when to cut emissions and who can do it most cheaply. Since the overall cap is in place, we can be sure that total emissions are reduced. Cap-and-trade programs also allow firms to bank and even borrow allowances—essentially permitting firms to trade among themselves. This system keeps costs down by letting firms determine the timing of emissions reductions that makes the most sense for them.

How Cap-and-trade works



2. Why a cap and trade market for Canada?

RATIONALE: To protect the health, economy, and future of Canadians, the federal government should take action to reduce greenhouse gas emissions that lead to global warming. A strong concerted response will spur innovation, investment, and jobs in the rapidly growing clean energy sector. Most importantly, it will help get clean, renewable energy technologies into use and effectively reduce Canada's emissions.

BACKGROUND:

One of the fundamental problems fuelling Canada's contribution to global warming is that the atmosphere is treated as a free dumping ground for harmful, heat-trapping emissions. Canada's poor record on reducing greenhouse gas emissions has largely been the result of relying on voluntary measures and failing to account for the environmental and health costs of carbon pollution through government policy (i.e., regulations or price signals). These weaknesses in Canada's economic system have been highlighted by the Organization for Economic Cooperation and Development (OECD). Canada's emissions are now 22 per cent above 1990 levels, and 30 per cent above Canada's Kyoto commitments. The majority of Canada's emissions are associated with the burning, extraction, and production of fossil fuels (e.g. coal, gasoline, sand oils and natural gas). These emissions have significant environmental, social, and human health costs.



Pricing carbon emissions through a carbon tax or a cap-and-trade system is supported by the world's leading climate change policy experts and endorsed by several international working groups including the United Nation's Intergovernmental Panel on Climate Change. A higher price for higher-carbon choices makes greener options more commercially viable, thereby encouraging businesses and entrepreneurs to develop innovative solutions that offer consumers and businesses affordable, low carbon alternatives. These leading experts agree: seeing that cost, and making it real, will give us new incentives to change the technologies and habits that created global warming in the first place. Many industrialized countries and jurisdictions are now putting a price on carbon emissions to account for their full environmental and economic costs.

For example, Sweden has used a carbon tax to reduce greenhouse gas emissions since 1991. Although a suite of other policies has been used to reduce emissions, the Swedish Ministry of Environment estimated the carbon tax has cut emissions by an additional 20 percent (as opposed to solely relying on regulations). Carbon emissions have decreased more than seven percent since 1990. Sweden's carbon tax has been credited as the economic tool that has spurred the innovation and deployment of new low-carbon energy technologies such as green heating technologies which have significantly phased out the burning of oil for heating. Sweden's carbon tax has also been credited in part to putting the country on target to achieve and honour its commitment under the Kyoto Protocol.

The European Union as a region has chosen a cap-and-trade system as the instrument to give the same incentive as a carbon tax. The cap-and-trade system is expected to be the main policy tool to achieve the E.U.'s goal to reduce emissions by 20 per cent below 1990 levels by 2020.

Carbon pricing is accepted by many Canadian business leaders as it offers a flexible and least-cost approach to reducing emissions. Canada's leading economists have concluded that a carbon price would result in a very minor effect on the economy. For example, a report conducted in 2007 for the federal government concluded that a \$50 dollar carbon price per tonne of GHG emissions implemented in 2006 would trim about 0.090 per cent of economic GDP in 2010, and then boost the economy by 0.004 percent GDP in 2020.

Economic studies show a carbon price will spur innovation, investment and jobs in Canada. Huge economic opportunities are being created in the low-carbon, clean energy industry as more countries and jurisdictions with large economies move forward with laws and policies to reduce global warming. Globally, future energy needs are expected to total over US\$20 trillion between now and 2030. The most comprehensive economic study on climate change, authored by the former chief economist of the World Bank, projects the global market for low-carbon energy technologies will be worth at least US\$500 billion annually and perhaps much more by 2050. Canada could establish a competitive advantage in North America as an innovator and developer of clean, renewable energy and transportation technologies if we act now. But a delay in implementing a carbon price signal on emissions creates many risks including higher cumulative emissions, increased economic costs, and a stronger likelihood that Canada will fall behind other jurisdictions and become less innovative and competitive in the clean energy economy.

3. When? Time Frame

On July 15, 2009, the Western Climate Initiative (WCI) issued the first version of its Final Essential Requirements of Mandatory Reporting (ERMR). The WCI is a collaboration of seven U.S. states and four Canadian provinces including British Columbia (B.C.), Manitoba, Ontario and Quebec participating as partners, along with Saskatchewan as an observer. The ERMR establishes general provisions for



greenhouse gas (GHG) reporting, requirements for third-party verification and quantification methodologies for the following source categories: general stationary combustion; Refinery fuel gas combustion; electricity generation; electricity imports; primary aluminum manufacturing; cement manufacturing; coal storage; hydrogen production; iron and steel manufacturing; lime manufacturing; petroleum refining; pulp and paper manufacturing; soda ash production; petrochemical production; and adipic acid manufacturing.

Reportable GHGs include carbon dioxide, methane, nitrous oxide, hydro fluorocarbons, perfluorocarbons and sulfur hexafluoride. The WCI continues to work on the development of additional quantification methodologies for other source categories including zinc production, lead production, copper and nickel production, glass production, electronics manufacturing, coal mine fugitive emissions, gas processing plants, transportation fuel suppliers, residential/commercial/industrial fuel suppliers, upstream oil and gas production, and natural gas distribution. The WCI plans to issue draft methodologies for these categories later this year.

Continued Progress

The Canadian and federal U.S. governments continue to make progress on the climate change front. In June 2009, the Canadian Minister of Environment announced that the federal government is moving forward with its offset credit program for GHGs. Two draft guides were published in the Canada Gazette on June 12, 2009 which set out the proposed offset program rules and guidance for both offset project proponents and verification bodies. The final version of these proposed rules and guidance, together with the Guide for Protocol Developers (a draft of which was published in the Canada Gazette on August 9, 2008), are expected to be published in fall 2009. For more information on these guides, please see our June 2009 Blakes Bulletin on Environmental/CleanTech: Draft Federal Greenhouse Gas Offset Rules Issued – Subject to Comment Until August 12, 2009.

The federal government has indicated that Canadian offset program rules, federal regulations and enforcement mechanisms will be reviewed to ensure they are comparable with any U.S. climate change legislation that is eventually implemented. On June 26, 2009, the *American Clean Energy and Security Act of 2009* (ACES) was passed by the U.S. House of Representatives. The ACES establishes the framework for a U.S. cap-and-trade system as well as energy efficiency initiatives and incentives for the development of clean energy technologies. The vote on the ACES in the U.S. House of Representatives is the first step in a two-stage process. In order for the ACES to become law, it must next pass the U.S. Senate. It is anticipated that the Senate debate on the ACES will take place in late summer and fall 2009. If passed, the U.S. will be required to reduce its GHG emissions by 17% below 2005 levels by 2020.

4. Where?

4.1 In Canada? US?

The first cap-and-trade scheme was successfully implemented in the USA at the federal level to reduce acid rain. Markets for GHG in North America have tendency to be smaller and regional.

Twenty three states of the USA and four Canadian provinces have come together in four regional GHG emission reduction programs.

In summer 2009 the United States has agreed to work with Canada and Mexico to develop a North American carbon market through purchasing credits in the vast NAFTA marketplace.



The table below highlights local GHG programs in North America in order of their emergence:

Where	Program
USA: State Illinois Over 100 major in 8 out of 102 counties started trading the VOM credits in 2000.	Emissions Reduction market System <ul style="list-style-type: none"> was adopted by the state of Illinois in 1997 as a response to federal governments requirement to cut volatile organic material emissions.
USA, 10 member States: Connecticut New Hampshire Delaware New Jersey Maine New York Maryland Rhode Island Massachusetts Vermont <i>Observers:</i> USA Pensilvania, District of Columbia Canada Quebec, New Brunswick, Ontario	Regional Greenhouse Gas Initiative (RGGI) <ul style="list-style-type: none"> to implement a cap and trade system for CO2 emissions from power plants in the member states. A regional initiative by states and provinces to reduce the carbon “budget” of electricity generation sector to 10% below of their 2009 allowances by 2018
<ul style="list-style-type: none"> USA: Chicago Climate Exchange (CCX) More than 350 participants including: Companies: Ford, Motorola, Du Pont, Universities: Tufts U, Michigan State U, U of Minnesota National Farmers Union 	<ul style="list-style-type: none"> Employs independent verification, includes 6 GHG, has been trading since 2003 joining corporations to reduce their emissions by 6% by 2010
USA: State California	California Global Warming solution act <ul style="list-style-type: none"> an environmental bill in California since 2003 establishes a timetable to bring California into near compliance with the provisions of the Kyoto Protocol includes 6 Kyoto gases to reduce GHG emissions to 1990 levels by 2020
USA Arizona, California, Montana, New Mexico, Oregon, Utah, Washington Canada 4 provinces represent 75% of Canadians: British Columbia, Manitoba, Ontario, Quebec <i>Observers:</i> USA Alaska, Colorado, Idaho Kansas, Nevada, Wyoming Canada Saskatchewan (objects to WCI plans for a cap and trade system) Mexico Baja California, Chihuahua, Coahuila, Nuevo Leon, Sonora Tamaulipas	Western Climate Initiative (WCI) <ul style="list-style-type: none"> the first transcontinental cap-and-trade program in August 2007, set a goal to reduce GHG emissions by 15% from 2005 levels by 2020 the implementation plan released in September 2008 the first pace of the plan would be implemented in 2012 to lay foundation for cap and trade program in the US and Canada



<p>USA Minnesota, Wisconsin, Illinois, Iowa, Michigan, Kansas</p> <p>Canada Manitoba</p> <p>Observers: USA Indiana, Ohio, South Dakota</p>	<p>Midwestern Greenhouse Gas Accord</p> <ul style="list-style-type: none"> • was signed in November 2007 • The GHG registry will be managed by The Climate Change Registry • In summer 2008, start was given for data collection and computer simulations to help creating the rules, GHG reduction targets, time frame and costs the scheme will require • to develop cap and trade scheme • establish a management system to monitor the success
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4.2 In other countries?

<p>New Zealand</p>	<p>New Zealand Emissions Trading Scheme (NZETS)</p> <ul style="list-style-type: none"> • Passed into law on September 10, 2008 • Covers all economy sectors and includes all six Kyoto gases • In September 2009, New Zealand forestry company earned carbon credits and sold 500,000 carbon credits to the Norwegian Government.
<p>Australia</p>	<p>New South GHG Abatement Scheme, 2003</p> <ul style="list-style-type: none"> • Required electricity generators and large consumers to buy GHG Abatement certificate. • Credits were used to fund distribution of free energy-efficient fluorescent light bulbs and other energy – efficiency projects. <p>Carbon Pollution Reduction Scheme</p> <ul style="list-style-type: none"> • A final version of the scheme was printed on 15 December 2008. The draft legislation is the next step. It is expected to be in effect from 2010.
<p>Denmark</p>	<p>Pilot GHG Trading Scheme, 2001-2003</p> <ul style="list-style-type: none"> • First multi-industry carbon trading scheme • involved eight electricity companies
<p>UK</p>	<p>Pilot GHG Trading Scheme, 2002-2006</p> <ul style="list-style-type: none"> • Kyoto protocol had not been ratified yet • Involved 34 companies and organizations • Department for Environment, Food and Rural Affairs ran an auction of emission allowances to perform allocations to participants.
<p>European Union</p>	<p>EU Emission Trading Scheme (EU ETS)</p> <ul style="list-style-type: none"> • The largest multi-national GHG trading scheme in the world. • Created in conjunction with the Kyoto Protocol • Phase I established a strong carbon market. Compliance was high in 2006 but value of



	<p>allowances went down when national caps were met.</p> <ul style="list-style-type: none">• Phase II is to support Kyoto mechanisms and time frame.
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5. Who are the key players in a cap and trade market?

As cap and trade is an administrative tool, the key players are carbon-intensive industries, Governments and investors.

The carbon-intensive industries are electric power, coal, oil, gas, cement, aluminum and others. Nevertheless, the cap and trade system will affect all sectors of economy as the carbon emission more or less is presented in every supply chain. The dirtiest and cheapest energy source is a coal. The developing countries with huge population are extremely dependent on this energy source. In the world of carbon tariff, this industry will face the highest compliance costs and lack of competitive advantage in compare with other industries. This dilemma is requiring the international communities attention.

The European Union is the key player of the market in that that the first pilot projects were taken place in member states (UK and Denmark) and the largest multinational carbon market have been functioning in this part of the world. EU is determined in continuing the path the Kyoto protocol proposes.

The fact that the US is a largest country in terms of GDP, one of the largest polluters itself and one of the largest partners of the other large polluting country, China, makes it one of the most important key players of the cap and trade market. The US have signed the Kyoto Protocol but it haven't not ratify it yet. The Senate will make the decision whether the US will be part of the carbon market or not. The US's concern is that without India's and China's participating in the cap-and-trade, the whole idea of carbon market might be an economic suicide as it would artificially pass the competitive advantage to the highest carbon emitters. Failure to reduce emissions or offset them may cause companies not only loosing not only customers but also investors.

Another very important key players of cap and trade market are investors. Investors are requiring the world economy to reduce emissions and introduce climate change initiatives to their practices. 475 global institutional investors/pension funds with \$55 trillion US in investments, are represented by CDP, an independent non-for-profit organization. CDP is a very influential organization. The investors may cause the share value to fall if companies do not comply with CDP regulations. In 2005, CDP influenced the US Securities and Exchange Commission to ask public corporations for better climate change risks. In 2008, Ontario Securities Exchange have issued OSC Staff Notice 51-716-Environmental Reporting that also asks public corporations to disclosure their climate change information.

Leading brands Tesco and Walmart are also contributing to the carbon market by asking their suppliers to provide information about their carbon emission and creating the awareness among their customers.

It is expected that the UN Copenhagen Climate Conference will bring some clarity on questions such as:

- How much are the industrialized countries willing to reduce their emissions of GHG?
- How much are major developing countries such as China and India willing to do to limit the growth of their emissions?
- How is the help needed by developing countries to engage in reducing their emissions and adapting to the impacts of climate change going to be financed?



- How is that money going to be managed?

6. Three advantages and three disadvantages of a carbon cap and trade scheme.

Advantages

- 1) Cap and trade schemes provide all sectors of economy with incentive to compete in finding the best ways to cut their emissions. Companies can profit from polluting below the provided limit or from introducing carbon-efficient innovative technologies and selling the extra credits. Farmers can earn profits by planting trees and selling extra credits. Municipalities can profit from selling carbon credits earned by switching from landfills to incinerations.
- 2) New carbon-efficient technologies will emerge. More widely will be used the renewable energy sources. Higher technologies will be discovered for waste management. The economy will be less dependent from oil with its soaring prices causing recessions.
- 3) Cap and trade schemes are about gradually reducing the national caps for carbon emissions. The less will economy pollute the environment the better everybody will be off. Ice caps' meltdown will stop, drought danger that Asia faces because of melting down the ice cap of Himalayan mountain chain will hopefully stop. Air, water supply, human's health, flora and fauna – all will benefit if civilization will reduce the GHG emissions. This might be help in stopping the global warming.

Disadvantages

- 1) Compliance costs increase the cost of production which in return transferred on products and services. Cap and trade also will take additional investments in form of finance and time to educate people how to work with new technologies. All those costs will be transferred on the end product and he consumer will pay higher prices.
- 2) Innovations in technologies will require new skills from employees. If compliance costs are very high, this might force some unsuccessful companies to close their business.
- 3) Depending on the scope, method of allocation, and other design elements, too many permits may be issued, and other market imperfections may arise. For example, the cap-and trade market to reduce acid rain was not cheaper and faster than the regulatory systems would be. In the EU ETS over-allocation of permits to selected companies resulted in unexpected gains for those companies and few emission reductions.

7. References:

1. "Why your world is about to get a whole lot smaller" Jeff Rubin.
2. NAFTA partners eye continental carbon scheme. Shawn McCarthy. Globe and Mail. Aug. 13,2009
3. <http://en.cop15.dk/news/view+news?newsid=876>
4. <http://en.wikipedia.org/wiki/Pennsylvania>
5. http://en.wikipedia.org/wiki/New_Zealand_Emissions_Trading_Scheme
6. <http://en.wikipedia.org/wiki/Ontario>
7. http://en.wikipedia.org/wiki/The_Climate_Registry

