Emissions Trading: Glossary

National Round Table
on the Environment
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Table ronde nationale
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et l'économie

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Acid Rain

Rain containing acidic substances that causes damage to plant life, lakes and aquatic life, crops, buildings and human health. Rain becomes acidified when it absorbs sulphur dioxide and nitrogen oxide particles emitted by fossil-fuelled sources such as power plants. To respond to increasingly tough limits on emissions since 1990, U.S. companies in northeastern states operate a successful system of trading sulphur and nitrogen oxides between emitters. The system has delivered large emissions reductions for a fraction of the originally predicted cost and has reduced the intensity of acid rainfall in the region.

Allowances

See permits.

Anthropogenic

Emissions caused by human activity as opposed to natural processes. For example, tailpipe emissions from automobiles are an anthropogenic source of air pollution. Volcanoes are a natural source.

Bubble

An imaginary dome or zone enclosing one or more emitters or a region of emitters. A cap is placed on the total amount of emissions permitted from all sources in the bubble, but individual emitters within the bubble can have different caps on their emissions. In the United States, a bubble zone comprising 21 northeastern and mid-western U.S. states was set up in the 1990s to focus on acid rain-causing emissions. Companies inside the bubble conducted emissions trading to reduce their emissions affordably. In the European Union, an "EU bubble" was established under the Kyoto Protocol with the goal of reducing greenhouse gas emissions by 8 per cent below 1990 levels by 2012. EU member states agreed to divide up this target among themselves, with some countries having to reduce emissions by more than 8 per cent and some by less.

Cap or limit

The maximum amount of greenhouse gas emissions permitted from a source or sources. A cap is designed to reduce the greenhouse effect by setting the maximum at a lower level than historical emissions. A source that is not emitting to its individual cap or full amount may sell some or all of its permitted emissions allowance. Governments can establish a cap for a group of sources by allocating or auctioning a total number of emissions permits that equal the cap.

Carbon dioxide (CO_2)

The combustion of carbon-based fuels such as oil, natural gas and coal releases a gas called carbon dioxide into the atmosphere. Deforestation and certain agricultural activities also liberate carbon dioxide into the atmosphere, since trees and other plants naturally absorb and store carbon. Carbon dioxide is the largest anthropogenic contributor—about 60 per cent—to the global greenhouse effect and thus to climate change. Carbon dioxide has a lifetime in the atmosphere of 5 to 200 years. Canada has emitted almost 15 billion tonnes of carbon dioxide since 1950; the U.S. by comparison has emitted 186 billion tonnes, Russia 68 and Japan 31. Almost 80 per cent of Canada's carbon dioxide emissions come from the production and use of energy.

Climate change

There is general consensus within the scientific community that global increases in greenhouse gas emissions are trapping additional heat within our planet's atmosphere, leading to rising temperatures and changing the climate

irreversibly. Studies indicate that Canada has warmed by an estimated 0.5 to 1.0 degree Celsius in the last century. Some Canadians, especially those in the Arctic, are noticing climate changes already; scientists expect these changes will intensify if no worldwide action is taken quickly to control the emissions that cause the problem.

It is predicted that the changing climate will mean more frequent and more severe storms, droughts, floods and heat waves in many areas. Around the world, within a century, once-dry regions may become rain-soaked and vice versa, with devastating impacts on agriculture, forestry and natural ecosystems that could cause food shortages in some areas. Rising ocean levels due to icecap melting and ocean expansions are likely to displace millions of coastal-dwelling people and inundate entire island nations. Increases in average temperatures will likely exacerbate air pollution, particularly in urban areas. As well, the incidence of insect-borne and heat-related diseases is likely to increase.

CO_2 equivalent

A handy way of stating the impact of different greenhouse gases compared with that of carbon dioxide. CO_2 equivalent is a unit used to standardize measurements and facilitate emissions trading. For example, tonne for tonne, methane is a greenhouse gas that is 21 times more powerful than carbon dioxide in causing the global greenhouse effect. Therefore one tonne of methane represents 21 tonnes of CO_2 equivalent.

Credits

Emitters that successfully reduce their annual emissions below their voluntary or imposed limit can receive credit for the amount of pollution not emitted. That credit can be saved or banked and then used to compensate for additional emissions, or can be sold to some other emitter for cash or other considerations.

Emissions

Fumes or gases that come out of smokestacks and tailpipes, seep from inside factories or enter the atmosphere directly from oil well flares, garbage dumps, rotting vegetation and decaying trees and other sources. They include carbon dioxide, methane and nitrous oxide, which cause most of the global greenhouse effect.

Emissions trading

A tool to help governments and industry meet defined environmental goals for reducing pollution in the most cost-effective ways possible. The term “emissions trading” refers to a market where, for specified pollutants, parties can buy or sell allowances or permits for emissions, or credits for reductions in emissions. Emissions trading can work within a region or country or on a global basis.

In one version of trading, a source that has successfully reduced emissions below its limit, and has thus accumulated surplus credits, can profit by selling surplus credits to companies seeking the least costly way of meeting their limits. As emission limits are tightened, the supply of credits declines, their price goes up and emitters eventually find it less costly to invest in cleaner technology than to buy credits.

There are other versions of emission trading. For example, the system may allow sources to sell their original allocations or pollution permits if they do not need them, or it may require polluters to first buy their allocations. Other systems may be linked to measures such as taxes on energy consumption. The different trading systems can have widely varying implications in terms of cost, convenience and climate change.

Fossil fuels

The collective term for carbon-based fuels—coal, oil products and natural gas—that are burned to produce energy. These fuels are composed of the fossilized remains of plants and animals, which decayed over millions of years and are extracted from the earth’s crust. Burning these fuels releases carbon dioxide and other greenhouse gases.

Global warming

See climate change.

Grandfathering

An allowance that permits emitters that existed before new limits took effect to continue their previous levels of emissions while start-up sources must meet new standards.

Greenhouse gases

Gases that promote warming of the earth's atmosphere and are created largely by the burning of fossil fuels. The six greenhouse gases covered by the Kyoto Protocol are carbon dioxide, methane, nitrous oxide and the less common perfluorocarbons (PFCs), sulphur hexafluoride and hydrofluorocarbons (HFCs). The latter two gases are anthropogenic chemicals used in refrigeration and industrial processes, while PFCs are emitted in aluminum production. Methane is an odourless, tasteless gas produced when organic matter decays and is the major component (97 per cent) of natural gas.

Intergovernmental Panel on Climate Change

The world's foremost authority on climate change science and impacts, this large conference of international scientists concluded in 1995 that human activities, such as burning fossil fuels, are affecting the global climate. In 2001, it stepped up the warning, pointing to evidence that most of the global warming of the last 50 years was due to human activities. The Kyoto Protocol was the first concerted response to these findings with legally binding commitments.

Kyoto Protocol

In an accord reached at a United Nations meeting in Kyoto, Japan, in December 1997, 84 countries agreed on the need for an average 5.2 per cent reduction in industrialized countries' 1990 emissions by the year 2012, to slow global warming due to the greenhouse effect. The reductions are not the same for all countries but depend on the degree of economic development, population, climate and size. Canada committed to cut its 1990 emissions by 6 per cent, Britain by 12.5 per cent, Germany by 21 per cent and the United States by 7 per cent. Developing countries face no immediate reduction target. The Protocol will become international law when governments representing 55 countries emitting 55 per cent of the industrialized world's emissions ratify it. The Kyoto Protocol's guiding principles are economic efficiency, environmental integrity and support for sustainable development.

To give industrialized countries flexibility in meeting their targets and promote investment in clean technologies in developing countries, the Protocol provides for the use of three market-based emissions trading mechanisms: international emissions trading (IET), joint implementation (JI) and the clean development mechanism (CDM). IET allows industrialized countries to trade emissions permits. JI allows the transfer of project-based emissions reduction credits between industrialized countries. CDM involves the generation of certified emissions reduction credits from projects in developing countries, which can be used by industrialized countries to meet their reduction targets.

Mandatory

Legally binding actions with penalties for failing that are enforced by domestic or international courts.

Mitigation

Measures taken to avoid or reduce the release of greenhouse gases into the atmosphere in order to delay global warming and the effects of climate change. Examples of mitigation efforts include increasing the use of renewable energy resources while decreasing reliance on carbon-intensive fuels, such as coal, and converting agricultural land to forests.

Offsets

Reductions in emissions that are caused by an activity not directly related to the source creating the emissions. For example, a company that buys and uses wind-powered electricity has acquired an offset equal to the amount of fossil-fuelled energy and carbon dioxide emissions it would have taken to produce the same amount of electricity. Similarly, planting millions of trees to absorb carbon dioxide creates an offset for whoever plants the trees. The carbon dioxide

offsets can be used like emissions credits and traded on the emissions market.

Permits

A permit is used in emissions trading to enable an emitter to produce a set amount of emissions. The total number of permits held by a polluter governs the maximum annual emissions it can emit. When an emissions trading system is initiated, the regulator may allocate the permits for free or auction them; it can also hold some back for later allocation to newcomers.

Sinks

Natural systems such as forests, wetlands, soils and oceans that absorb and store greenhouse gases. Also see sequestration.

Sequestration

The carbon in carbon dioxide can be naturally absorbed back into trees and other vegetation. Huge amounts of carbon are also absorbed into soils and the oceans. Carbon can also be pumped back underground and stored in porous rocks. This process of storing carbon in nature is called sequestration. One hectare of forest can soak up 12 tonnes of carbon dioxide per year. Planting huge numbers of trees could be a major act of sequestration, although eventually the trees die and emit the carbon as carbon dioxide again (see emissions).

Retire

Permanently remove a portion of emissions permits from the market. This accelerates the increase in the price of remaining permits, which makes it increasingly attractive to emitters to clean up their emissions instead of buying other permits or credits.