THE BOTTOM LINE ON...

Answers to frequently asked questions about climate and energy policy Issue 1

WORLD RESOURCES INSTITUTE

CLIMATE POLICY TERMINOLOGY

The following provides quick definitions for terms often used in climate policy debates. It is an introduction to the key climate change concepts and issues, which will be explained further in subsequent issues in WRI's "Bottom Line" series on climate and energy policy.

WHAT ARE *GREENHOUSE GASES* (GHGS)?

Greenhouse gases (GHGs) are naturally occurring and man-made gases in the Earth's atmosphere that absorb heat. As the Earth is warmed by the sun, the surface releases heat back out to space. GHGs trap some of this heat, warming the Earth—similar to the trapping of heat in a greenhouse. An increasing amount of man-made GHGs have resulted in higher concentrations of GHGs in the atmosphere and increased warming. Climate policies typically target the six GHGs, shown below:

Greenhouse Gas	Common Sources	% of Global Emissions
Carbon dioxide (CO_2)	Burning of fossil fuels (e.g., coal, oil) and deforestation	73.5%
Methane (CH_4)	Landfills, natural gas, animal waste, coal mines	16.8%
Nitrous Oxide (N_2O)	Agriculture/soils (fertilizers), cars, sewage	8.7%
Hydrofluorocarbons (HFCs)	Air conditioners, refrigerators	0.7%
Perfluorocarbons (PFCs)	Aluminum production, semiconductor manufacturing	0.2%
Sulfur hexafluoride (SF_6)	Electrical power systems, electronics manufacturing	0.1%

Different GHGs have different global warming potentials, which indicate the gases' impact on the atmosphere as compared to carbon dioxide (CO_2), the most prevalent GHG. GHGs are often measured in terms of carbon dioxide-equivalent, CO_2e. Data are from WRI's Climate Analysis Indicators Tool (cait.wri.org).

WHAT IS A *CARBON PRICE*?

Many climate policy proposals focus on market-based options that place a cost on GHG emissions, commonly referred to as a *carbon price*. The goal is to discourage emissions by placing a cost on releasing GHGs into the atmosphere and making it expensive to emit large amounts of GHGs.

WHAT IS A *CARBON TAX*?

One approach for creating a carbon price is to implement a *carbon tax*, which would impose a direct fee for GHG emissions (for example, a tax of $25 per tonne of CO_2e). With this approach the carbon price is certain, but the overall effect on total GHG emissions is not known in advance.

WHAT IS A *CAP-AND-TRADE PROGRAM*?

A *cap-and-trade program* is another approach for creating a price for GHG emissions. With this approach, a maximum limit (or cap) is placed on GHG emissions and those sources covered by the law have the opportunity to buy and sell allowances (see below), which represent the right to emit GHGs (the limit on the total amount of available allowances creates a market price for the right to emit GHGs). Under a cap-and-trade program, companies that can cheaply or easily reduce emissions can sell allowances to other companies for which such reductions are more difficult or expensive. With this approach, the effect on total emissions is certain (based on the level of the emissions cap), but the resulting market price is not known in advance.

WHAT IS AN *EMISSIONS ALLOWANCE*?

An *emissions allowance* entitles the holder to emit a certain amount of GHGs under a cap-and-trade program. To comply with their obligations under a cap-and-trade program, regulated sources must show that they hold allowances equal to their GHG emissions over a set period of time.

WHAT IS *ALLOCATION*?

Allocation refers to the distribution of allowances under a cap-and-trade program to specific sources, sectors, and/or non-regulated parties. A law may specify that a certain amount of allowances be given directly to companies in sectors that are covered by the emissions cap, such as electric utilities or oil refineries. Non-regulated parties, such as states, farmers, low-income households, or even research programs, may also receive allowances (commonly referred to as set-asides), with which they can generate revenue by then selling the allowances to regulated sources.

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What is an *auction*?

An *auction* is another means of distributing allowances under a cap-and-trade program. With this approach, a regulatory authority conducts periodic auctions and allowances are granted to the highest bidders. Some policy approaches propose to distribute allowances through a combination of specific allocations and periodic auctions. Depending on the amount of allowances auctioned, this process can generate significant revenues that could go to specific funds or programs, such as those established to mitigate economic impacts to lower-income consumers or help communities adapt to climate changes.

What is *point of regulation*?

Point of regulation refers to the sectors or sources that must comply with regulations set in place to reduce GHG emissions. Some policy approaches focus on regulating upstream, such as oil refiners or natural gas processors, based on the emissions that are eventually released when the upstream sources' products (e.g., fossil fuels) are used. Other approaches establish the point of regulation downstream, at sources that emit large amounts of GHGs, such as coal-fired power plants or large industrial facilities. Hybrid approaches refer to those policies that regulate some GHG emissions upstream and others downstream, depending on the sector or activity.

What is an *offset*?

An *offset* is a reduction in GHG emissions—resulting from a specific activity or set of activities—that compensates for, or "offsets," GHG emissions occurring elsewhere. Emission reductions that are real, additional, measurable, permanent, and verified can generate offset credits, tradable certificates that can be purchased to help meet voluntary emission reduction goals or, under certain climate policy approaches, to meet mandatory emission reduction requirements. For example, a company seeking to reduce its GHG emissions may wish to purchase offset credits from a project that is capturing methane emissions from a landfill. Similarly, if a company is covered under a mandatory cap-and-trade program, it may choose to purchase offset credits created by a project that reduces GHG emissions at a chemical plant (if the plant is not covered under the cap). Mandatory GHG reduction policies often specify which types of offsets are eligible as well as what portion of required emission reductions can be met by purchasing offsets.

What is *early action*?

Early action refers to emission reductions that occur before such reductions are required by law. Some policy approaches provide incentives to encourage early action, such as additional allocation of emission allowances to sources that can demonstrate they reduced emissions before the law came into force.

What is a *cost-containment mechanism*?

Cost containment mechanisms are rules, restrictions, or other provisions that limit or otherwise temper the market price of GHG emission allowances to reduce volatility in the market and thus impacts on the economy. Approaches can vary from mechanisms that create an oversight group responsible for evaluating market conditions and adapting the supply of allowances in order to avoid economic distress, to mechanisms that impose a specific price ceiling (also commonly referred to as a safety valve) to ensure that prices for emission allowances do not exceed a certain level. Other options provide additional flexibility that can help lower the carbon price, such as allowing sources to "bank" unused allowances for compliance in future years or allowing some amount of offsets to be used for compliance.

What is a *complementary policy*?

Complementary policies are regulations or standards that encourage or reinforce GHG emission reductions in certain key sectors. For example, a renewable electricity standard (or RES), which requires electric generators to produce a specified percentage of their electricity from clean, renewable power sources, is a complementary policy that encourages GHG emission reductions in the power sector (or reinforces GHG reductions in this sector if it is covered under a broader GHG reduction policy, such as a carbon tax or a cap-and-trade program).

What is *adaptation*?

Adaptation refers to how humans and natural systems adjust to actual or expected changes in the climate to minimize harmful impacts and/or take advantage of beneficial opportunities. This term is sometimes confused with mitigation, which refers to efforts to minimize human impacts to the climate system by reducing GHG emissions.

Additional References

- Pew Center on Global Climate Change: http://www.pewclimate.org/global-warming-basics/full_glossary/glossary.php
- Resources for the Future's Weathervane: http://www.weathervane.rff.org/glossary.cfm
- UN Framework Convention on Climate Change: http://unfccc.int/resource/cd_roms/na1/ghg_inventories/english/8_glossary/Glossary.htm
- US Environmental Protection Agency: http://www.epa.gov/climatechange/glossary.html
- WRI's US Climate Policy Resources: http://www.wri.org/climate/usclimate

This series is a product of WRI's climate and business engagement projects including the Green Power Market Development Group and the U.S. Climate Business Group. Through these projects, WRI works with leading companies to pioneer low-carbon business strategies and advance markets for renewable energy.