Basic Design Elements of Cap and Trade Systems

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A cap and trade system is a means by which reductions in greenhouse gas (GHG) emissions can be implemented. It involves creating a market where GHG emission allowances can be bought and sold by entities, better facilitating the reduction of GHGs in a way that prevents inflexible limitations on economic activity. When designing a cap and trade system there are several important elements that must be considered and employed properly in order for the system to fulfil its task of reducing emissions. These elements include realistic yet challenging target setting, fair allocation of carbon emissions allowances, reliable access to offsets, and suitable measurement and monitoring of the reduction programme. In addition to such elements, there are many technical issues such as registry operations and legal matters that must be handled correctly for the smooth operation of a cap and trade system.

Target Setting

Target setting is part of what creates the "cap" in a cap and trade system, and is fundamental to its function.

A successful cap and trade system must set targets for emission reductions if the system is to reduce emissions and discover a value for carbon over a defined period. Voluntary or unilateral emission reductions will always be less effective than targeted reductions in a cap and trade system. Well-designed cap and trade systems encourage greater emission reduction measures by offering a means to incentivise emission reductions beyond the targeted individual cap through profitable trading. Targets for a cap and trade system can be set by a governmental or inter-governmental body, but sometimes the target setting entity can be a group of private sector constituents cooperating of their own preference or in anticipation of government regulation.

Targets for emissions reduction are usually set in relation to the total of GHG emissions by the "covered" entity in a base year, and relative to other factors such as the compliance dates of the cap and trade system, and the final date for target achievement. An ideal target would reduce emissions as much as possible, while still allowing participating emitters to remain competitive in their respective markets.

The target should be reasonable and achievable, but beyond "business as usual" practices. Some difficulty in achieving the target is vital to encouraging innovative thinking on how to further reduce emissions within the confines of the cap.

Allocation

Allocation is the process by which the regulating entity, usually a government body or agency, distributes to individual covered entities the total GHG emission allowances consistent with the overall target. Allowances in a trading system will have a commercial value. However they can be distributed free to some or all covered entities or auctioned to highest bidders within a competitive bidding process. Each emission unit usually represents one tonne of GHG allowed to be emitted within the period concerned.

If an emitter cannot reduce their GHG emissions below the number of allowances they obtain, then they must buy enough permits to "cover" their business practices, incurring a cost. On the other

hand, if an emitter is able to reduce its total emissions below the number of permits that it possesses, then it may sell its excess allowances for a price, providing an incentive for increased performance.

Offsets

Offsets are an optional part of a cap and trade system, but can provide an inexpensive alternative to creating additional supply in the market, i.e. issuing more emission allowances, while still allowing for the achievement of the pre-agreed target. Typical international offsets are projects, including the implementation of clean energy solutions, improving energy efficiency and reforestation of land previously deforested.

Emission reduction achieved through such projects can be evaluated and converted into units of equivalent compliance value to emission allowances. For an emission reduction to be considered an offset it must not be subject to a cap and trade emissions market.

All economic theory and modelling shows that emissions can be produced more cheaply the wider the market, and offsets are a means of widening the market in advance of, or in default of, a universal global cap.

Data Collection and Monitoring

Establishing, operating, and evaluating a cap and trade system requires a vast amount of data collection and analysis. To manage all the data, an emissions registry must be created whose primary task is to operate a database for collecting, verifying, and tracking emissions data from emitters. It is important for the registry to collect emissions data from each emitter in the cap and trade system, since the individual's emissions data will be vital for tracking allowances and progress towards reaching the target emissions level. An indirect function of a registry is to build public confidence in the cap and trade system. It will allow individuals and the emitters themselves to evaluate progress of the system as a whole and verify that it treats each emitter justly.

In order for the data gathered and collected in the registry to be considered accurate, a process of GHG accounting takes place in cap and trade systems. Independent third parties are often given responsibility for verifying that data collected by the registry is accurate. This verification covers both the emitter's overall emissions levels and the validity of offsets.

Market Oversight

Controls over the registry and GHG accounting processes by which data is verified are both important components in providing appropriate market oversight to the entire cap and trade system. Effective oversight of both the environmental impact of emissions and the market is absolutely vital to achieve the trust necessary for markets to be effective. Emission levels must be checked regularly, and emission trading should be monitored. If there are rewards for "early action" by an entity before the cap and trade system was implemented, the impact of these actions must also be measured rigorously.