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Carbon Emission Trading its Effectiveness in Prudence and Environment

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1. INTRODUCTION

The necessity to limit the accumulation of greenhouse gases (GHGs) in the atmosphere to a level that will "prevent dangerous anthropogenic interference with the climate system" is called Carbon trading, sometimes called as emissions trading, is a market-based tool to limit GHG. Emissions trading is a legal limit on the quantity of a certain type of chemical an economy can emit each year , is a market-based approach used to control pollution by providing economic incentives for achieving reductions in the emissions of pollutants. Various countries, groups of companies, and states have adopted emission trading systems as one of the strategies for mitigating climate-change by addressing international greenhouse-gas emission.[1]

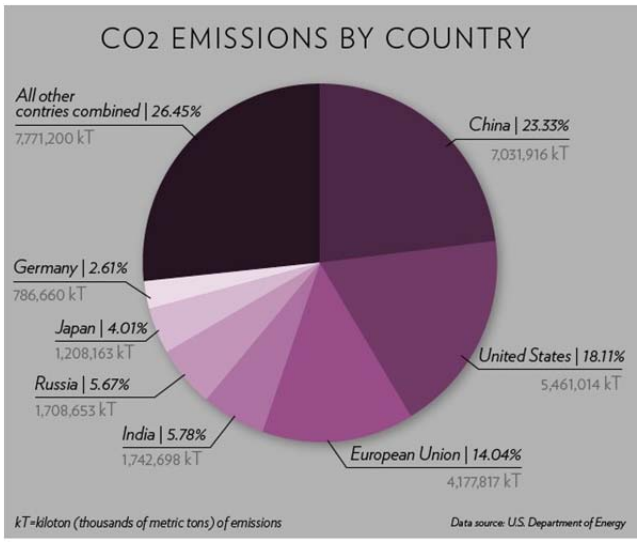


Fig. 1: Represents different GHG Emissions by country

The carbon market trades emissions under cap-and-trade schemes or with credits that pay for or offset GHG reductions. A governmental body sets a limit on the amount of a pollutant that may be emitted. The limit or is allocated and/or sold by the central authority to firms in the form of emissions permits which represent the right to emit or discharge a specific volume of the specified pollutant. Firms are required to hold a number of permits equivalent to their emissions. The total number of permits cannot exceed the cap,[2] limiting total emissions to that level. Firms that need to increase their volume of emissions must buy permits from those who require fewer permits. The transfer of permits is referred to as a "trade". In effect, the buyer is paying a charge for polluting, while the seller gains a reward for having reduced emissions. Thus, in theory, those who can reduce emissions most cheaply will do so, achieving the Pollution reduction at the lowest cost to society.

1.1 WHY WE NEED CARBON TRADING SYSTEM?

It remains the largest example of emissions trading in operation today, encompassing over 11,500 installations across 30 countries6 and covering approximately 40% of total EU emissions. Its environmental impact can be assessed against two specific primary objectives: [2]

i. To reduce GHG emissions efficiently, at a negotiated balance of cost and environmental gain.

ii. To promote corporate investment in low carbon technologies (both energy efficiency and low carbon energy sources).

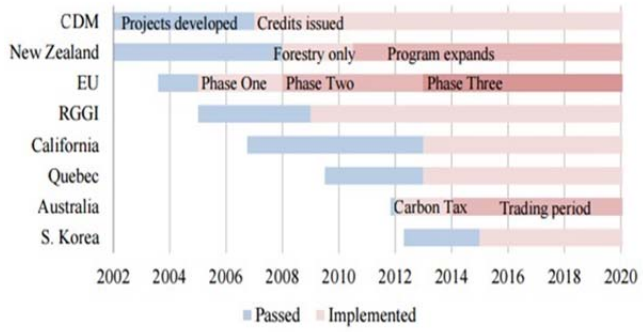
2. HISTORY

Emissions trading began emerging as a practical and increasingly popular policy tool to address pollution control, particularly with the successful phasedown of lead in gasoline and creation of the acid rain trading program in the United States (Tietenberg 1985; Stavins). On the international scene, the Montreal Protocol on Substances that Deplete the Ozone Layer, signed in 1987, laid clear groundwork for the idea of targets and timetables for emissions levels in different countries, and it included a limited amount of emissions trading. It is therefore not surprising that there was considerable enthusiasm for using this tool to address climate

change as countries grappled with how to design the 1992 UNFCCC and then meet its objectives in the 1990s. Indeed, advocacy for international GHG emissions trading began in the late 1980s and early 1990s: the United States initially promoted it in the UNFCCC treaty negotiations, and the idea of "joint implementation" as an informal version of emissions trading ultimately appeared in the UNFCCC (Wiener 2001).[1,2]

The trading price began at around 7 Euros per metric ton of carbon dioxide in early 2005, rose to a peak above 30 Euros in 2006, and subsequently collapsed to zero in early 2007 when it became clear that more permits had been issued than required to cover emissions during phase 1. (The excess issuance turned out to exceed five percent for the EU-15, and more than 20 percent for the ten new members of 2004.) [Ellerman and Joskow, 2008,]. The 2005-2007 pilot period provided valuable lessons for the phase 2 that was to follow – as well as the provision of accurate firm level data on emissions for the year 2005, which provided the basis for permit allocations (proposed in 2006, approved in 2007) for the period 2008-2012. The tradable permits were allocated to the electricity generating sector including some sources of power not connected to the electricity grid, such as emergency generators in hospitals, to the petroleum refining sector, and to selected energy-intensive industries including iron and steel, cement, glass making, bricks and ceramics, and pulp and paper making. Coverage of the system was focused almost entirely on emissions of 4 CO2 (plus some nitrous oxide emitted in the Netherlands), even though the Kyoto Protocol covers six greenhouse gases or classes of gases.

Table 1: Represents Phase I and Phase II of Carbon Trading System



3. KYOTO PROTOCOL

Kyoto Protocol The Kyoto Protocol, adopted in 1997, established the first non-voluntary carbon market, committing certain nations to meet GHG emissions reduction targets and establishing a framework for allowance trading across international borders. The protocol entered into force in February 2005. Thirty-seven industrialized signatories, known as Annex-I nations, are responsible for reducing emissions by specified targets (United Nations Framework Convention on Climate Change 2012b). If a nation cannot meet its target, it may either purchase allowances (called Assigned Amount Units, or AAUs) from a fellow Annex-I nation or purchase emissions offsets from projects that decrease emissions in other parts of the world.[2,3]

The Kyoto Protocol established two major mechanisms to offset emissions: the Clean Development Mechanism (CDM) and Joint Implementation (JI). CDM projects, which reduce emissions in developing nations, earn one Certified Emissions Reduction credit (CER) per metric ton of GHG emissions reduction, which may be purchased by nations or firms to meet their obligations under the protocol. JI projects also earn one credit per metric ton of emissions reduction (called Earned Reduction Units, or ERUs) and come primarily from projects in the former Soviet Union. Both project types seek to encourage clean energy investment and learning while allowing Annex-I nations flexibility in meeting their emissions targets

While these offset programs continue to function, the future of the Kyoto Protocol as a framework for reducing emissions is uncertain. Negotiations in Durban, South Africa, in late 2011 ended with nations agreeing to agree by 2015 on a comprehensive plan to reduce emissions that would take effect by 2020 under the broader UNFCCC. Australia has committed to modest emissions reductions by 2020, promising to enact deeper cuts if the world's other major emitters commit to an "ambitious global deal" (United Nations Framework Convention on Climate Change 2011). New Zealand has stated that it will not make any commitments under the second round of the Kyoto Protocol, though it remains committed to its overall emission reduction goals.

4. DIFFERENT PHASES OF CARBON TRADING SYSTEM

Phase III (2013–20), the European Commission has proposed a number of changes, including

- The setting of an overall EU cap, with allowances then allocated to EU members;
- Tighter limits on the use of offsets;
- Limiting banking of allowances between Phases II and III;
- A move from allowances to auctioning.

Ahead of its accession to the EU, Croatia joined the ETS at the start of Phase III on 1 January 2013. This took the number of countries in the EU ETS to 31. On 4 January 2013, European Union allowances for 2013 traded on London's ICE Futures Europe exchange for between 6.22 euros and 6.40 euros.[4]

Phase IV will commence on 1 January 2021 and finish on 31 December 2028.

The European Commission plans a full review of the Directive by 2026.On 22 January 2014, the European Commission proposed two structural reform amendments to the ETS directive (2003/87/EC) of the 2008 Climate Package to be agreed on in the Council Conclusions on 20–21 March 2014 by the Heads of EU Member States at the meeting of the European Council

a) The linear reduction factor, at which the overall emissions cap is reduced, from 1.74% (2013-2020) to 2,2% each year from 2021 to 2030 thus reducing 43% of EU CO2 emissions in the ETS sector as compared to 2005.

b) The creation of a 12% "automatic set-aside" reserve mechanism of verified annual emissions (at least a 100 mln CO2 permit reserve) in the fourth ETS period from 2021 to 2030, thus creating a quasi-carbon or carbon price floor with a price range set each year by the European Commission's Directorate General for Climate Change.

5. COST

Impact on product prices and profits When a firm faces an increase in input costs, they can choose between three options: (1) absorb the cost by reducing profit margins; (2) decrease costs by improving the efficiency of their operations; or (3) pass the additional costs onto the consumer. The extent to which firms pass through such CO2 opportunity costs under the EU ETS is a question at the core of the analysis on carbon leakage9 and windfall profits – the latter of which represents an unintended

5.1 Transaction costs and Tradeable permits

Based on the results, overall annual transaction costs for all German firms regulated under the EU ETS are estimated at 8.7 EUR million c.p. in average. In contrast to assumptions made by standard economic theory, marginal transaction costs also depend on annual emissions levels and annual trading volumes respectively. This implies that firms also take the costs of managing the EU ETS and costs for general administrative obligations into account when minimizing costs under the EU ETS. As a consequence, the firm's incentives for greenhouse gas abatement are different than in a 'first-best' case with zero transaction costs. In practice, firms with less than one million tons of annual emissions (which do not profit from economies of scale in the management) will emit less (abate more) than emitters with more than one million tons of annual emissions.

Although the changes are small and will not affect environmental effectiveness of the EU ETS, economic efficiency is decreased by transaction costs, resulting in a welfare loss. The average transaction costs (transaction costs divided by annual emissions) are highly different for firms of different sizes. Average transaction costs are relatively high for smaller emitters (up to EUR 1.00 per ton CO2), but trickle down with rising annual emissions of a firm. At low emissions levels, such as 5,000 or 10,000 tCO2 p.a., doubling emissions leads to a reduction of average transaction costs by almost 50 percent

5.2 Offsets

International emissions offsets offer a very large potential pool of mitigation opportunities, providing industrialized nations a lower-cost option for GHG reductions relative to reducing emissions within their own borders (Weyant & Hill 1999). Domestic or local offsets can also offer cost savings relative to opportunities within a given cap-and-trade program, but represent a smaller universe of activities compared to international offsets. Although specific provisions and restrictions vary, all programs to date employ offsets in some capacity

While international offsets have played by far the largest role to date, regional or local offset programs to reduce emissions exist in several established and emerging trading programs. The notion that offsets should take place within a program's borders, instead of from international CDM or JI projects, has taken hold in some cases. Offset projects based within a program's borders ensures that the associated investment stays close to home, to the benefit of local economies. On the other hand, local offset projects may cost more than offsets provided abroad, implying higher costs for locally regulated industries.

6. CONCLUSIONS

The design of carbon Trading is benefiting from experience. Experience with windfall profits from free allowance allocation has led to an increased use of auctions. Jurisdictions are learning to handle market-sensitive information in a more transparent and orderly manner, but there is still progress to be made. Efforts to moderate high and low prices are providing lessons on what works and what does not while also making the simple point that prices matter. Perhaps most importantly, we are seeing that carbon allowance trading can support emissions reductions and send market signals for future investment.[3,7] However, the strength of those signals for future investment hinge on confidence in the emissions market, the underlying regulatory framework and its stringency, and the broader investment climate.

The evolving nature of carbon markets and associated design changes imply that confidence in the market cannot be one hundred percent. Governments cannot provide certainty where it does not fundamentally exist. Looking forward, however, authorities need to be clearer and more orderly about policy revisions and recognize the consequent impacts on market price, market participants, and future market confidence. Among the many issues facing markets in the future, the emergence of multiple emissions trading programs has put front and center the question of how, whether, and when these programs will be linked together.

While a variety of motivations drive interest in linking, and there are a variety of ways to create links, three key concerns

have limited linking so far. Buyers tend to be concerned about environmental integrity, as the buying system is establishing that purchased allowances are valid for compliance in their system. The necessary harmonization of certain design features also means that one or the other system is giving up some sovereign control. Thus carbon trading system plays predominant role in economy and climatic change.

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