

Overcoming the Problems Inherent in Cap & Trade Programs: Proposals for a New Emissions Trading System Based on the Experience of the Reitaku University Model¹⁾

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As a contribution at the national level to the slowing, arrest and eventual reversal of global warming, several U.S. states and the European Union have introduced and trialed Cap and Trade (C&T) programs²⁾. Under such schemes, all participating companies or business units (participants) have an initial upper limit (allowance) of permits for their emissions of greenhouse gases, and those participants who exceed their allowance have to purchase additional emission credits (permits) from others who have not fully utilized their own allocation. If the total demand for emission credits in a country exceeds the supply, their price goes up, thereby causing participants to make extra efforts to reduce greenhouse gas emissions.

While, at first glance, such C&T schemes may seem rational and attractive, they do create one extremely difficult problem; namely, how to determine a fair and acceptable initial allowance for each participant. Three ways of solving this issue have been proposed: (i) the grandfathering approach; (ii) the benchmark approach; and (iii) the auction approach. With the first two of these, the initial allowance of credits is given to participants free of charge. Under the grandfathering approach, which has been the one most widely adopted, participants' allowances are determined by their past emissions level. The benchmark approach, on the

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- 1) The main points of this article have already been outlined in Japanese in the following two papers: Iwao Taka and Hiroya Ono, "Emission Credits Should Expire Three Years After Allocation," *Nikkei Shinbun (Japan's Financial Times)*, August 13, 2009, p. 23; Iwao Taka, Hiroya Ono, and Kazuhiro Bai, "Seeking a New Greenhouse Gas Emissions Trading System (based on the Reitaku Model) from the Viewpoint of the Industrial Community: A Proposal for a Non-Cap Approach," R-pec Working Paper No. 4, July 28, 2009. Reitaku University has developed and is still revising its Most Advanced Educational Program (a five stage business game) for its undergraduates. Here, students, as CEOs in charge of (virtual) companies, have to make effective use of managerial resources such as employees, materials and goods, capital, information, and emission credits. At the end of each accounting year, they must produce financial statements. They are expected to work their way through all five stages of the game. At the most difficult level (stage 5), they must run their businesses within the framework of the Emissions Trading System. Although Reitaku University is still in the process of developing the infrastructure for stage 5, some interesting ideas regarding emissions trading systems have already emerged from the use of a tentative model. Three of these ideas are outlined as proposals below.
- 2) The United States began a program to reduce SO₂ emissions from electric utilities in 1995. Existing C&T programs make use of the experience of this SO₂ reduction program. The European Union started its European-wide Emission Trading Scheme (the EU-ETS) in January 2005.

other hand, assumes that, by their nature, some industrial sectors emit more greenhouse gases than others, and it therefore varies the allowance according to the sector to which the participant belongs. With the auction approach, there is no free or predetermined initial allocation; rather, the first step is for participants to buy as many credits as they wish by bidding for them at auction.

None of these three solutions has proved fully satisfying or convincing to date. One perceived inequity of the grandfathering approach is that participants who have already been working to reduce emissions might get a lower allowance than those who have made no effort at all in the past. So in Japan, for example, in order to mitigate this unfairness, the Tokyo Metropolitan Government has proposed a modification under which participants choose several consecutive past years and use the average of these to determine their initial allowance. Yet even this approach does not solve the fundamental problem posed by C&T and so the Japan's central government is still in fact groping for a new greenhouse gas emissions trading system, while trialing the voluntary and tentative C&T launched by the Ministry of Environment. The auction approach has not proved a compelling alternative here either, because a different kind of unfairness is seen to be inherent in it, in that richer participants can afford to drive up the price of credits at auction at the outset and so disadvantage companies with smaller financial resources.

To solve this problem of how to determine a fair initial allowance for all participants, and to strengthen the incentive for them to sustain their drive to reduce their emissions, three proposals are made below. They are based on the assumption that participants are either manufacturers who consume electricity and fossil fuels during the production process, or power companies who generate electricity for supply to others. These participants will be referred to henceforth as manufacturers or consuming participants, so as to differentiate them from other players (such as brokers and financial institutions) whose purpose is to make and sell emission credits. It should also be noted that the greenhouse gas emissions of consuming participants like power companies are calculated only in respect of the electricity consumed during their own operations and the losses of it sustained during transmission; the electricity they actually supply for the consumption of households and other institutions is not set against the account of the power companies themselves.

<Proposal 1>

The first proposal is that every year the central government allocates a year's worth of emission credits to each participant at a fixed price. The price of each credit is determined in the light of the CER (Certified Emissions Reduction) price. Since the CER contains within itself default risks, emission credits offered by the government are usually more expensive than CER's.

If emission credits were to be allocated for free, it can easily be imagined that all manufacturers or consuming participants would, before entering into the C&T scheme, seek to emit the greatest volume of greenhouse gases they could in order to claim the highest upper limits, in the expectation of thereby getting more credits. They might even use any political

influence they possessed in pursuit of this goal. To avoid this absurdity, therefore, the first point is that the emission credits offered by the government must be paid for.

Nonetheless, if the government suddenly charged companies for what they have long been using for free, most of them would go out of business. To prevent this, it is suggested here that the government should provide emission credit reimbursements to all participants depending upon how many credits (both domestic credits and CER's) they have actually used during their activities³⁾.

Although at a later stage the reimbursement rate would be lowered, for the time being it would be fixed at a high level.

Another point that the government needs to note when putting this proposal into practice is that since some participants might report lower gas emissions than their actual ones, the government must impose strict conditions on them to establish effective emissions calculating procedures and internal control systems.

<Proposal 2>

The second proposal is to define the accounting procedures to be used by manufacturers or consuming participants in a way that enables them to trace the close relationship between the level of greenhouse gas emissions and the costs accrued by manufacturing, marketing, managerial operations and the like, thus promoting a clear understanding of this relationship.

Players like brokers and financial institutions treat emission credits (such as CER's) as products (i.e. inventory articles for sale). But when manufacturers or consuming participants purchase emission credits from the government for their operations, it is more rational to treat such credits as materials/parts or stored items (i.e. inventory articles for consumption), because this enables manufacturers or consuming participants to trace in detail the dynamic relationship between business activities, gas emissions, and accrued costs.

On the basis of the experience of the EU-ETS, the International Financial Reporting Interpretations Committee (IFRIC)⁴⁾ issued guidance in 2003 on how emission credits are to be treated financially within the framework of the IFRS (International Financial Reporting Standards). Soon after doing so, however, the IFRIC withdrew this guidance, since some members had pointed out inconsistencies in it⁵⁾. In Japan, in response to the voluntary and tentative C&T scheme launched by the Ministry of Environment, the Accounting Standards Board of Japan (ASBJ) revised the practical standards on emission credits in June 2009. But

3) Prof. Tatsuyoshi Saijo of Osaka University has suggested the government should offer reimbursements to participants depending on how many credits they have purchased. Tatsuyoshi Saijo et al., *Policies for Global Warming: How to Design An Emissions Trading System* (in Japanese), Nikkei Shinbun, 2006. The proposal above differs from this in arguing that reimbursement should be made in proportion not to the total volume of credits purchased by participants, but to the volume of their actual consumption.

4) The mission of the IFRIC is to reach consensus and to provide authoritative guidance on accounting practices.

5) According to its Agenda Papers (5B and 5Bi in December 2007), the IFRIC decided in 2002 to develop guidance on how to apply IFRS to cap and trade schemes like the EU-ETS, and in May 2003 it issued a draft interpretation entitled *Emission Rights*. Yet since emission trading schemes were not yet well established at that time, this draft (IFRIC 3 Emission Rights) was withdrawn in 2005. At the IASB Meeting held in December 2007, the Board decided to activate work on its Emissions Trading Schemes project. But in the absence of any authoritative guidance, several different accounting approaches have made their appearance.

because this voluntary C&T scheme is neither well established yet, nor fully supported by Japanese industry, those standards could easily be changed and revised in the near future⁶⁾.

It is true that credits could be treated as intangible fixed assets, but the emission credits purchased by manufacturers or consuming participants are basically consumed (turned into costs) within a single year. It is therefore reasonable to treat them as materials/parts or stored items, which have higher liquidity than fixed assets. There are various other reasons why it might be better for manufacturers or consuming participants to consider emission credits as inventory assets.

Manufacturing cars, for example, requires a variety of materials and parts, without any one of which the final product cannot be made. The same goes for emission credits. Manufacturing products consumes a certain amount of electricity and fossil fuels. So without emission credits, no final product can be made. In this sense, emission credits are to be considered as inventory assets for use in the manufacturing process, i.e. the assumption is that they are materials/parts to be turned into manufacturing costs.

Emission credits are also bound to decrease in the process of marketing and administrative activities. Take the situation where a company's sales department purchases a certain amount of engine oil as a stored item. Since its vehicles usually run on gasoline and need periodic oil changes, engine oil is also consumed in the course of the company's business activities. Exactly the same is true for emission credits. Selling products or managing a business requires the consumption of a certain amount of electricity and the like. For this reason, emission credits are to be considered as inventory assets for use in the course of marketing and administrative activities in proportion to total greenhouse gas emissions. In other words, they are treated as stored items to be turned into selling, general and administrative expenses.

Once this way of thinking is accepted, cost accruing processes can be traced using ordinary common sense. This traceability is extremely important if manufacturers or consuming participants are to be able to reduce greenhouse gas emissions in an accountable and rational manner.

<Proposal 3>

The third proposal is to make the emission credits allocated by the government subject to expiry within a period of several years (the experience of the Reitaku Model suggests that a three year time period is reasonable and effective). This forces manufacturers or consuming participants to classify and manage emission credits based on the year in which they got them from the government.

With the EU-ETS, emission credits tend to be treated as financial products so that, within the commitment period during which the status of credits is kept consistent, participants can

6) On 23 June, 2009, the ASBJ issued its revised "A Practical Solution for the Tentative Treatment of Accounting Practices for Emission Trades" (PITF No.15). The purpose of this revision was to clarify accounting practices related to the voluntary and tentative Emissions Trading Scheme, but its emphasis was still on the Baseline and Credit approach rather than C&T.

stock them in a similar way to depositing money in a bank. Yet from the viewpoint of the reduction of greenhouse gas emissions, this way of handling the matter has a serious flaw.

Setting a commitment period (say, of 5 years) from the year X to Y could, in fact, damage the motivation to reduce emissions. As noted above, any system that determines the upper limit (allocation) based upon the past levels of emissions runs into the problem that manufacturers or consuming participants who substantially reduce the level of their emissions in one commitment period risk being given a lower allocation in the next. Disadvantaging participants in this way would probably discourage them from making extra efforts to reduce emissions in the current period.

On the other hand, if the status of credits is fixed in perpetuity without any commitment period, credits become unlimitedly stockable assets with stable value in use. While this protects the motivation to reduce emissions, it also encourages manufacturers or consuming participants to get aggressively involved in trading emission credits like other players such as brokers do. As more manufacturers or consuming participants participate in such trade for profit, speculative financial activities like arbitrage dealings could spring up, and they, in extreme cases, might go beyond the bounds of what is acceptable.

Nonetheless, if emission credits are defined as depreciable assets that lose all value after three years, there is no need to discuss whether the status of credits should be fixed or whether the commitment periods should be extended. The advantages of making emission credits the target of speculative financial practices would also disappear.

It has already been proposed that credits should be treated like materials/parts or stored items (i.e. inventory articles for consumption). If this is accepted, the premise that emission credits should have indefinite validity cannot be sustained. In the case of fishery or water rights, one is not permitted to carry over shortfalls to the following year or years. This is because if those rights are considered stockable assets with indefinite validity, the intensive use of accumulated shortfalls could affect interests of other stakeholders and even destroy the delicate balance of the eco-system. Although such rights are not the same as emission credits, it is still possible for the government to abrogate the use and validity of credits, to the extent that the period does not disrupt the ordinary operations of manufacturers or consuming participants.

If the government adopts all the three proposals outlined above as a set (i.e. making credits paid inventory assets whose value expires within three years), a major problem inherent in C&T schemes can be easily solved. Once these proposals are adopted, manufacturers or consuming participants acting rationally will eventually discover their possible limits and will continue to lower them so as to reduce costs, so that the government will neither need to impose enforced limits on participants, nor need to set the commitment period (Therefore, it does not need to change conditions of the period).

In other words, unlike a system in which credits are allocated for free and participants are therefore likely to decide to acquire as many of them as possible, if credits must be bought and their validity expires after a certain period, participants will try to reduce the volume they purchase and in the normal course of events they will find the appropriate level of inventory,

At the start of year 3, since its inventory has increased from 150,000 tons to 220,000 tons, the manufacturer or consuming participant might reduce the volume of credits it purchases to 450,000 tons. Thus in year 1 it bought 600,000 tons; in year 2, 550,000 tons; but now it buys only 450,000 tons. This suggests that if emission credits are sold at a fixed price, are treated as inventory items in a participant's business operations, and are designed to lose all validity after three years, a manufacturer or consuming participant will naturally seek the proper level of inventory.

What is more, since credits are charged at a fixed price and the reimbursement rate will be lowered step by step, it continuously reduces emissions in an economically rational manner, without any need for external compulsion.

Conclusion

In this way, regardless of the commitment period, this New Emissions Trading System makes it possible for participants to reduce emissions voluntarily and continuously. This system also makes it achievable for governments to reduce emissions systematically and substantially. This is why such a system is much better than existing C&T programs, and why governments everywhere should take the three proposals outlined above very seriously.

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