Instituting a Municipal Government Emissions Trading Scheme in New York City: Applying the Model of Metropolitan and Internal Emissions Schemes

Anastasia Sagalovitch, MPA

Abstract

This article explores two cases of confined emissions trading schemes, one implemented by a private firm and another implemented by a municipality with the aim of applying this to New York City's municipal government. Emissions trading schemes can be used at a confined level, such as a city or firm, to implement greenhouse gas reductions. The process of measuring emissions, implementing a cap, and allocating permits all play key roles in determining the success of a scheme. When done well, the constraints imposed by an emissions cap and the opportunity to be compensated for emissions reductions projects catalyze the implementation of projects that may otherwise have been left undone. Supplementing such a scheme with a capital fund, such as a revolving loan fund, can defray the risks associated with up-front project costs.

Instituting a Municipal Government Emissions Trading Scheme in New York City: Applying the Model of Metropolitan and Internal Emissions Schemes

Reducing carbon dioxide emissions at the city level is a priority in New York City as evidenced by the city's commitment to reduce citywide emissions by 30% below the 2005 level by 2030, and with a specific reduction of 30% below the 2006 level by 2017 within the city government (Dickinson and Desai 2010, 5). Implementing a municipal government-level emissions trading scheme would facilitate the process of achieving these goals. The metropolitan government of Tokyo has recently instituted a mandatory emissions trading scheme, which includes both private and public participants, after a voluntary attempt to elicit emissions reductions (Padeco 2010). Precedent already exists for the effect of internal emissions trading schemes as evidenced by BP's experiment between 1997 and 2002 (Victor and House 2006). The lessons learned in Tokyo's attempts to garner reductions and BP's experience in achieving emissions reductions eight years ahead of schedule without negatively affecting the firm's financial position are examined below as a potential model for New York City to adopt.

Precedent: Metropolitan and Internal Emissions Schemes

The following section provides an overview of a municipality-instituted emissions trading scheme that affects both private and public institutions and an overview of a private firm's implementation of an internal emissions scheme.

Tokyo's Metropolitan Emissions Trading Scheme

The Tokyo Metropolitan Government (TMG) instituted a citywide emissions trading scheme (ETS) in 2008 by focusing on carbon dioxide emissions from energy use in office buildings, commercial spaces, and industrial facilities (among others) that had the largest emissions within the metropolitan region (Padeco 2010, 2-4). The emissions cap applies to both private and public institutions. The scheme went into effect in April of 2010, with the first trades anticipated for the spring of 2011. The scheme is being implemented to achieve a broader goal set by TMG of reducing carbon dioxide emissions by 25% below 2000 levels by 2020 (Padeco 2010, i).

The criteria for inclusion in the scheme are based on crude oil equivalent use per year (Padeco 2010, 2-4–2-6). For single, large-scale facilities, the use of more than 1,500 kiloliters (kL) of crude oil, equivalent for one building, meets eligibility for the cap. Medium- and small-sized firms with a combined use of over 3,000 kL of crude oil, equivalent per year across multiple buildings but no more than 1,500 kL of crude oil per building, on the other hand, do not qualify for a cap on emissions but must submit a yearly energy efficiency report, which is made publicly available. For firms consuming less than 1,500 kL of crude oil equivalent per year, the report is voluntary.

The baseline for emissions reductions for the largest firms was calculated based on an institution's average emissions during three years (chosen by the firm) between 2002–2007. The first phase for reductions is from 2010–2015. Institutions that do not source more than 20% of their heating and cooling from district plants must reduce their emissions by 8% below their respective baseline during this phase Institutions that procure more than 20% of their cooling and heating from district plants must reduce their emissions by 6%. Factories are also required to reduce emissions by 6%. (Padeco 2010, 2-6).

All participants are required to reduce emissions by 17% during the second phase, 2015–2019 (Lee and Colopinto 2010, 4). In compliance with the cap, participants submit yearly reports detailing emissions. The reports are audited at the participants' expense (ibid., 5).

Emissions permits are awarded based on the following formula:

[Base Year Emissions - Required Reduction (6% or 8%)] x Compliance Period (5 years) (Lee and Colopinto 2010, 4).

This means that firms that do not reduce their emissions by the required amount during this period will need to purchase additional permits via the trading scheme from other participants. If a participant does not purchase the requisite permits, it would be fined approximately USD 5,500 and required to pursue additional reductions beyond their gap (ibid.). The idea is, as in all emissions trading schemes, participants who are able to reduce their emissions more efficiently (less costly) will do so. Those who do not find it economically feasible at that point to reduce their own emissions will enable other firms and or participants to reduce their emissions further by buying permits from them. In this way, emissions reductions are incentivized. Because of this incentive, participants who otherwise might not have thought about reductions can dedicate time and capital to this cause. Although only large-scale energy users are required to comply with the cap, any institution can undertake reductions and sell its emissions credits (Padeco 2010, 2-9). In addition, participants may buy up to one third of their credits from sellers outside Tokyo (Lee and Colopinto 2010, 5). Another option is to buy renewable energy credits associated with two other programs run by the Tokyo Metropolitan Region, one that gives credits to commercial clients for installing renewable energy options and another that gives credits to residential installation or upgrades of renewable energy projects (ibid.).

Trades take place over a website set up by the municipal government but funds are transferred directly between buyer and seller (Padeco, 2010, 2–9). The website lists contact information for those firms that wish to buy or sell emissions permits, similar to a bulletin board. Banking, or carrying emissions permits from one year into the next, is allowed in this scheme; borrowing, or covering gaps in hindsight, is not allowed (Lee and Colopinto 2010, 5).

A case study compiled by the World Bank identifies key areas that made this emissions scheme possible (Lee and Colopinto 2010, 5–6). One is that the municipality had already required emissions reporting several years prior. Additionally, the region had experimented with a voluntary emissions reductions program. As a result, the municipality was already aware of the scale of emissions and the reduction potential. Finally, the municipality saw the involvement of stakeholders as key to implementing the mandatory initiative.

BP's Internal Emissions Cap and Trade

In 1998, BP announced that it would reduce its own emissions by 10% below 1990 levels by 2010 through the use of an internal emissions trading scheme. Preparations began as early as 1997 as the firm conducted its own greenhouse gas emissions inventory for several years past (1990, 1994–96, 1998). BP also polled its business units and determined that these reductions could be largely achieved without cost to the firm. Firm-wide trading, with the exception of a small number of units, began in 2000. (Victor and House 2006, 2102).

The initial cap was designed to cut 1% of projected emissions in each upcoming year. Permits were allocated based on each unit's emissions volume in 1998 (ibid.). The first year's emissions cap projected more emissions growth than actually occurred, so the cap did not provide an effective restraint (ibid., 2103). During the second year, management revised the permit allocation to 91% of each unit's 1998 baseline emissions (ibid., 2104). The entire 10% reduction goal was achieved at the end of that year (2002)—eight years ahead of schedule.

Business units traded emissions permits with each other through an internal website; however, no physical funds were exchanged. Instead, a side accounting system was set up to keep track of the transactions. Participants were allowed to communicate with one another about permit availability and demand. Business units also had access to a capital fund for the purpose of implementing qualifying emissions reductions projects. The fund was initially capitalized at $50 million; however, it was reduced to $25 million (ibid., 2103). Of the 112 total business units at BP, only 18 units were excluded from trading based on their impact (small), and 26 units that were part of the scheme never traded (ibid., 2105).

Several notable things happened during this process. First, the business units undertook only cost-neutral upgrades or initiatives. The significance of this is that the firm achieved its goal without having to take any financial losses or costs because the projects paid for themselves. This also means that if the firm was willing to take on financial costs, the scheme could have had a significantly greater potential to reduce emissions. Second, the firm decided to stop the scheme once the 10% goal was achieved. At that point, business units reported that the permit price in the market was higher than the marginal cost of emission reduction projects (Victor and House 2006, 2108), meaning that the cost per permit was higher than managers' calculations of the cost of eliminating the same unit of emissions in their operation. Managers thought that this occurred because efficient business units that had extra allowances to sell were withholding them from the market (ibid.). It is unfortunate that the experiment ended at this point, for the elevated price point might have prompted business units to take on more significant reductions beyond the proverbial low-hanging fruit. Third, as per the theory behind setting up an emissions trading scheme, less efficient units bought credits from more efficient units. In this way, units undertook reductions in which those actions made the most economic sense. Therefore, the firm was able to achieve its goals while minimizing costs. Given the current economic climate, this kind of approach could be greatly appreciated by the public sector.

New York City: Potential for Municipal Government-Level Emissions Trading Scheme

New York City plans on reducing its municipal government emissions by 30% below current levels by 2017 (Dickinson and Desai 2010, 5). New York City measures citywide and municipal emissions each year. According to the latest inventory, close to 78% of carbon dioxide equivalent emissions in New York City are from buildings (ibid., 23). Similarly, buildings comprise 64% of carbon dioxide equivalent emissions at the municipal level (ibid., 29). This means that, as in the Tokyo example, emissions from buildings would be a relevant focal point for a municipal government-level emissions trading scheme in New York City. New York City has a broader plan, PlaNYC, to institute sustainability initiatives across the city, as well as a specific plan tailored towards reducing energy use and emissions in municipal buildings (Dickinson and Desai 2010).

With the advent of a trading scheme, agencies would have an added incentive to dedicate time to emissions reductions projects because of the opportunity to receive capital. As in the case of BP's internal scheme, existing staff could be trained to administer each agency's accounts. Because of the mandatory cap, agencies that would otherwise pass up the opportunity to implement emissions reductions projects would be able to leverage their internal efficiencies for the benefit of the entire city government.

Incorporating a Green Revolving Loan Fund

However, given that initial projects would need upfront capital, the city could reduce the burden on agencies by making a revolving loan fund available to them expressly for emissions reductions projects. Much as BP made a capital fund available to its business units, this fund would allow agencies to actually implement projects, thus de-risking (to some extent) their upfront investments.

A revolving loan fund would allow various agencies to borrow funds and then replenish the fund by repaying their loans so that other agencies could follow suit. A revolving loan fund in combination with the emissions trading scheme would function as a hedge to the common "unfunded mandate" dilemma of achieving programmatic results in government.

One successful example is the Texas LoanSTAR fund, or "Loans to Save Taxes and Resources" (Sifuentes 2009). In operation since 1988, the fund targets state and local governmental buildings, including public schools. Initially funded with $98.6 million, the program has lent out more than $223 million for financing more than 182 projects in the first twenty years. This represents "revolving" or re-using the initial funds 2.3 times (ibid.). The main target is energy efficiency, although funds can be used for projects including: energy efficient lighting, water conservation, insulation and window film improvements, energy efficient lighting, high efficiency heating, ventilation and air conditioning (HVAC) systems, and energy management systems. Past recipients include UT-Austin, Texas A & M, the University of Texas at Arlington, the Fort Worth and Victoria Independent School Districts, the Ward Memorial Hospital in Monahans, the University of Texas-Pan American and the Texas State Technical College in Harlingen as well as state-owned buildings at the Texas Capitol Complex, in Houston, Midland, and Nacogdoches (Reed 2009, 38). As of 2004, the projects in the fund's portfolio have saved more than $152 million in energy bills, and are projected to save $250 million in the next 20 years (Sifuentes 2009). In the fourteen years since 1990, projects have reduced more than 1.6 million tons of carbon dioxide (CO_2), 3,700 tons of sodium dioxide (SO_2), and 5,700 tons of nitrogen oxide (NO_X) emissions (ibid.).

References

Dickinson, Jonathan, and Rishi Desai. 2010. *Inventory of New York City Greenhouse Gas Emissions, September 2010.* City of New York: Mayor's Office of Long-Term Planning and Sustainability. Accessed April 2011. Available from www.nyc.gov/html/om/pdf/2010/pr412-10_report.pdf

PADECO and Kyle Dupont. 2010. "Cities and Climate Change Mitigation: Case Study on Tokyo's Emissions Trading System." Commissioned by Urban Development and Local Government Unit, World Bank. Accessed April 2011. Available from http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTURBANDEVELOPMENT/EXTUWM/0,,contentMDK:22447034~menuPK:6722836~pagePK:210058~piPK:210062~theSitePK:341511,00.html

Lee, Marcus, and Kimberly Colopinto. 2010. "Tokyo's Emissions Trading System: A Case Study." June. *Directions in Urban Development.* World Bank Urban Development and Local Government Unit. Accessed April 2011. Available from http://siteresources.worldbank.org/INTURBANDEVELOPMENT/Resources/336387-1226422021646/Directions5.pdf?resourceurlname=Directions5.pdf

Reed, Cyrus. 2009. Texas Center for Policy Studies and the Lone Star Chapter, Sierra Club. 2009. Cool Texas: A 12-Step Plan For Meeting Our Electricity Needs That Is Good For Texas . . . and the Climate. January. Available from http://lonestar.sierraclub.org/conservation/coolTexasreport.pdf

Sifuentes, Theresa. 2005. "Texas Revolving LoanSTAR." *Conservation Update*. U.S. Department of Energy State Energy Program's Newsletter. Available from the U.S. Department of Energy (DOE) Weatherization and Intergovernmental Program: http://www1.eere.energy.gov/wip/update/2005-02_texas_loanstar.html

Valle, B. 2009. State Revolving Loan Funds. Memo to MIT Community Innovators Lab re: "Financing Tools for Neighborhood-Scale Retrofit Projects." December 17. Available from http://www.emeraldcities.org/images/resources/CoLab_Energy_Efficiency_Financing_Memo.pdf

Victor, David G., and Joshua C. House. 2006. "BP's Emissions Trading System." *Energy Policy* 34 (15): 2100–2112. Accessed April 2011. Available from http://www.sciencedirect.com/science/article/pii/S0301421505000820

Biography

Anastasia Sagalovitch recently graduated from the Public Service Management program with a Masters of Public Administration and a concentration in environmental policy at the City College of New York. She hopes to help deploy renewable energy technology and further develop sustainable markets in this field by working at the intersection of the public and private sectors. She has investigated the use of feed-in-tariffs in promoting renewable energy deployment and has completed an internship at a New York City commissioned incubator with a dual mission of supporting clean technology start-ups and developing a clean-technology entrepreneurial community in New York City. She received a graduate fellowship from the Colin Powell Center for Policy Studies, where she investigated the use of revolving loan funds to implement clean technology projects at the municipal governmental level.