

Chapter 16: Designing a Greenhouse Gas Emission Market for Mexico

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In this presentation Jaime Sempere, professor at the Colegio de México, discussed “Designing a Greenhouse Gas Emission Market for Mexico,” a paper written with David Cantala and Stephen McKnight. A few years ago, the Felipe Calderón administration passed the *Programa Especial de Cambios Climáticos* (PECC), a special program to assess and mitigate climate change in Mexico. Among the many ideas discussed for this program was a proposal to create a cap-and-trade system, which allows “a cap on greenhouse gases emissions for a set of firms” to be divided into permits and then traded among firms. Moreover, the plan discusses the potential integration of this system with other similar North American programs. In addition to discussing these matters, Sempere spoke about how viable and visible this plan might be, as well as addressed some of the potential challenges that the cap-and-trade system might encounter.

The main conclusion of this paper is that while cap-and-trade systems are effective in reducing greenhouse gas emissions, they are complicated to design. In the case of Mexico, the government should work with other NAFTA members to agree on homogeneous environmental regulations and proper regional integration to foster efficient design, proper implementation, and ultimately effective greenhouse gas reduction.

Sempere asserted that there is no relationship between trade creation and pollution. It is true that some academics argue foreign trade possibilities can lead governments to relax environmental standards to make themselves more acceptable to their trading partners. According to Sempere, however, it is unfair to compare no-trade situations with free trade circumstances. Sempere attested that under cap-and-trade conditions, “firms would face greater product competition in the domestic market and would enjoy a better competitive position in the foreign market, resulting in stronger environmental protection.” This idea prompted Sempere to focus the discussion on the need to create a viable plan for Mexico’s cap and trade.

To expand on this idea, table 1 reports data on greenhouse gas emissions from countries belonging to the Organization for Economic Cooperation and Development (OECD) for the latest year available to each country. Mexico shows 748 GHG emissions for 2010; and according to Sempere’s statements at the NAFTA conference in Dallas, during the stated period, Mexico faced yearly increases of 33 percent—a significant increase compared to the numbers for the European Union (-18 percent) and major European

countries (Germany, -36 percent; the UK, -27 percent; and France,-12 percent). Sempere stated that these data, along with the Copenhagen Accord, where these countries agreed to reduce gas emissions, showed progress: Mexico planned to reduce its emissions 30 percent, and the United States and Canada 17 percent by 2020. To achieve Mexico’s goal, PECC proposed to devise a cap-and-trade plan that would initially include state-owned energy producers only, and then extend the program to other industrial sectors until all North American greenhouse gas emissions are eliminated. This plan requires experienced design and implementation.

Table 1.Total Greenhouse Gas Emissions: Rankings in the OECD

Country	Latest Year Available	Total GHG Emissions ¹ :
United States	2011	6665.7
Japan	2011	1307.72
Germany	2011	943.51
Mexico	2010	748.25
Canada	2011	701.79
United Kingdom	2011	556.45
Australia	2011	552.28
France	2011	491.49
Italy	2011	488.79
Turkey	2011	422.41

¹ Million tonnes of CO2 equivalent

Source: Cantala, McKnight, and Sempere 2013.

According to Sempere, cap-and-trade systems are not new to Mexicans: In 2001, Petróleos Mexicanos (PEMEX) established a viable system that worked in Mexico until 2005. The PEMEX system was the first in Mexico to have an internal emissions market aiming on carbon trade. This scheme worked like a standard capital trade system; there were 25 business units of firms participating. Prices were negotiated through an automated structured plan and transactions were carried out anonymously to prevent price manipulation. But the system needed improvement.

For Mexicans to successfully implement the proposed PECC plan, there needs to be a transparent, uncorrupt, and efficient system to administer the law—a system that measures the emissions and enforces firms to comply with regulations. Permits would need to allow trade, especially trade that allows two-sided exchanges in the exchange market. The blueprint for this plan would need to include specific directions for the initial allocation of permits, for setting a timeline, and for identifying potential participants, as well as specifying the type of permit exchange allowed.

In theory, the design of this system includes two elements: institutional and market design. Governments establish the cap, and officials ensure that firms abide by it. There are two ways in which permits can be initially distributed: grandfathering and auctioning permits. Both approaches have a significant number of tradeoffs. Grandfathered permits are first given and distributed for free through a regulated process, but there are political costs and no tax revenue. Auctioning permits, on the other hand, provides tax revenue; however, it imposes a cost on the firms and increases political costs. In terms of value, Sempere noted that the value of a cap or permit is related to abatement costs, and these costs depend on the “placement of the cost function—meaning where one is producing, political influences affecting institutional settings, the implementation of the law, how governments enforce compliance, and also on the specific industries responsible for the emissions.” Not all industries have the same abatement-costs function, and these costs can depend on how restrictive the cap on gas emissions is.

In Sempere’s opinion, for any emission market in Mexico to succeed, it would need to be integrated into a larger system, because it would need more participants to be competitive. Sempere noted that “the market has to be competitive; otherwise, the price will not be the right signal and then we will not get the efficiency. The initial market should be open to many participants, making the market structure competitive.” Exchange markets are essential because they can signal proper prices. For example, although in the European cap-and-trade system most trade is bilateral, there are centralized exchange markets; this allows the market to signal the correct price and lower the costs. The latter point is a vital one, because if it is too costly to comply with Mexico’s cap-and-trade regulations, countries can look for alternatives, costing Mexico’s system potential participants. With enough participants, it would be cost-effective to incorporate exchange markets that can ease bilateral transactions.

On the other hand, there are challenges to having a large number of participants and the larger the number of participants, the greater amount of challenges that can arise. One challenge for the design of this North American market is that the three countries participating may have many diverse regulations that can create distortions. Each country can choose how each sector is regulated and can choose how the cap that is enforced in each industry. In each country, the value of the cost of abatement and the marginal cost of abatement differs, meaning that each country can be trading permits that are not the same or that do not cost the same. For instance, as Sempere said, if one country imposes a very strict cap, that country’s permit is not the same as the permit of other countries where the cap is less strict. To at least partly avoid this challenge, there needs to be a comprehensive agreement on environmental regulations that would ensure compliance with the standards in all regions involved.

Furthermore, besides unanimous policy agreement, there is also the challenge of the uncertainty of the cost: one does not know what the market equilibrium price will be. It is clear that it is a volatile market. Unless, as Sempere notes, one country “is grandfathering 100 percent of permits to every firm and will not be receiving any tax revenue from these schemes,” this plan has unpredictable costs and is of uncertain value. Also, to function well, the cap-and-trade scheme would have to use a common currency.

Other challenges must also be considered. One is that the United States is a large country with a large energy market. This might cause a problem because the United States might have an advantage when distributing permits. Also, in Mexico, the program includes state-owned industries, and this might also cause distortions. Finally, keeping environmental policies the same in all countries involved is important for cap free-trade agreements because a difference in regulations could become an incentive to relax regulation standards. For example, a country might distribute too many permits in order to increase the competitive advantage of the firms. Sempere said that in a regional emissions market, such incentive could be stronger, because firms are able to transfer caps to other firms due to lower marginal abatement costs. If firms in one country are able to sell these permits to foreign firms, the firms which are able to sell the permits will have a competitive advantage. Conversely, integrating Mexican plans with well-functioning regional initiatives already implemented in the United States and Canada could ensure greater success in implementing these ideas in Mexico.

Finally, the cap-and-trade scheme should be thought of as a complement to a carbon tax. According to Sempere, “The carbon tax can be used to regulate the economy as a whole, which can be a way of liberating the energy sectors.” A comprehensive system with a cap-and-trade method and a carbon tax is more enticing because one can have more control over the regulations pertaining to greenhouse gas emissions. The cap-and-trade establishes the cap, and then the carbon tax controls emissions, creating complementary value. This was a clear advantage in the successful regional initiatives that took off in California and British Columbia, which both combined cap-and-trade with a carbon tax. And, said Sempere, with successful “regional integration,” perhaps it “can expand to a national framework.” Nonetheless, designing and implementing a cap-and-trade system still requires considering a large number of elements and confronting numerous challenges.

References

David Cantala, Stephen McKnight, and Jaime Sempere. 2013. “Designing a Greenhouse Gas Emission Market for Mexico.” *Environment and Ecology Research* 1(3):135–41. <http://www.hrpub.org>.