

A new challenge on climate change

On June 29, the U.S. House of Representatives approved the American Clean Energy and Security Act by the narrow margin of 219 to 212. This comprehensive bill, which now moves on to the Senate, seeks to create clean energy jobs, achieve energy independence, and reduce global warming pollution. Its passage in the House is a historic milestone, as it is the first time the United States has seriously considered legislation at the federal level to address the multi-dimensional challenge of climate change.

The legislation, known as Waxman-Markey after its sponsors, is long and complicated. Among other things, the bill: (1) designates carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, perfluorocarbons, nitrogen trifluoride, and hydrofluorocarbons as greenhouse gases; (2) requires electric utilities to meet 20 percent of their electricity demand through renewable energy sources and energy efficiency by 2020; (3) promotes investment in renewable energy technologies, carbon capture and sequestration, electric and other advanced technology vehicles, and basic scientific research and development; (4) mandates new energy-saving standards for buildings and appliances, as well as promoting efficiency in the industrial sector; and (5) reduces carbon emissions from major U.S. sources by 17 percent by 2020 and more than 80 percent by 2050 compared to 2005 levels.

At the heart of the bill is a cap-and-trade program, a market-based system that caps emissions of greenhouse gases at a certain level and requires large polluters to limit their emissions by reducing their emissions; by holding allowances, or permits, for each met-



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ric ton of greenhouse gases that they emit; or by acquiring offset credits for their emissions. In practice, establishing a market price for greenhouse gases will increase the cost of using carbon-based energy, which will in turn reduce demand. The overall cap will decrease over time, forcing emitters to drastically cut back on their emissions or to acquire ever more expensive permits; for example, the Congressional Budget Office estimates the price of allowances to emit one metric ton of greenhouse gases will increase from \$15 in 2011 to \$26 in 2019.

The bill as enacted in the House is far from perfect, but it provides enough incentives to effectively reduce emissions of greenhouse gases over the long-term. By implementing a market mechanism with a decreasing emissions cap the bill would induce behavior shifts not only to avoid the cost of emissions, but to achieve additional reductions below the required level, which then can be sold to other less efficient carbon users. The system, thus, directly engages the powerful profit motive in the pursuit of an environmental goal.

Unfortunately, we have not been paying enough attention to developments on the cli-

mate change front. This ignorance is dangerous because according to a recent report by the U.S. Global Change Research Program, small islands, such as Puerto Rico, are considered among the most vulnerable to climate change. The report goes on to state that "changes in weather patterns and the frequency and intensity of extreme events, sea-level rise, coastal erosion, coral reef bleaching, ocean acidification, and contamination of freshwater resources by salt water" are among the impacts small islands can expect over next few decades.

In addition, Puerto Rico is a carbon-intensive society so any limits on emissions imposed at the international or federal level would have a significant impact on our economy and way of life. To give you an idea of Puerto Rico's carbon footprint we have analyzed greenhouse gas emissions from electricity production and the use of passenger vehicles in the island. In 2007 PREPA, AES, and Eco-Eléctrica collectively generated 25.08 billion kWh of electricity. If we apply the EPA conversion factor of 0.000718 metric tons of CO₂ per kWh generated, Puerto Rico's electricity production generated emissions of 18.01 million metric tons of CO₂.

With respect to transportation, we find that according to the Federal Highway Administration there were 2,341,820 passenger vehicles registered in Puerto Rico. If we use the EPA conversion factor of 5.46 metric tons of CO₂ equivalent per vehicle per year, passenger transportation emissions add up to 12.78 million metric tons of CO₂. Thus, these two sectors alone account for emissions of 30.79 million metric tons of CO₂ per year, which translates to per capita emissions of 7.7 metric tons per person per year in Puer-

to Rico. In contrast, the World Bank estimates global per capita emissions at 4.5 metric tons per person. So, our per capita emissions, from electricity and transportation alone, are 1.71 times greater than the world average.

In our view, Puerto Rico has three options to deal with these issues. The first is to do nothing now and then run around like headless chickens when we realize that time is winding down to comply with federal or international standards. That is what we usually do. Second, Puerto Rico can seek an exemption because it is a "special case." This would be an acknowledgement of our collective ineptitude to deal with our problems. We should also bear in mind that nature will not spare us just because we are unable to get our act together. Finally, we could convert the climate change challenge into an opportunity. According to the International Energy Agency an estimated \$1.5 trillion will be invested in energy infrastructure in the United States over the next 21 years. If Puerto Rico captured just 0.5 percent of that amount, it would add up to \$7.5 billion in new money — equivalent to 12 percent of our GNP today — to help us create thousands of jobs and build assets to sustain economic growth over the long term. However, for that to happen we need policymakers with accurate foresight, strong leadership and superior execution skills. Three things that have been in short supply in Puerto Rico for decades now.

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