

Moving climate change regulation forward

April 25 2011, By Jennifer Chu



U.S. State Department Special Envoy for Climate Change Todd Stern

Signing a legally binding treaty that would force emissions reductions throughout the world is not likely in the near future, according to U.S. State Department Special Envoy for Climate Change Todd Stern, who visited MIT last week. But that shouldn't stop the United States from moving forward in addressing climate change issues, he said.

Stern's talk on Thursday, April 22, was part of the Earth Week Colloquium sponsored by the MIT Energy Initiative (MITEI) and the Joint Program on the Science and Policy of Global Change.

In his speech, Stern said work on an international treaty would inevitably hit a “dead end,” primarily because of a flaw in the first major global climate treaty signed nearly two decades ago. In 1992, 194 parties signed

the United Nations Framework Convention on Climate Change, a non-binding agreement between countries to reduce greenhouse gas [emissions](#). The treaty set no mandatory limits, but it did draw a distinction between developed and developing countries. Ever since, Stern said, there has been a “firewall” at the negotiating table, with developing countries such as China arguing that the United States and other developed nations should bear the brunt of greenhouse gas reductions.

However, Stern argued that any large greenhouse gas emitter, regardless of industrial status, should be subject to emissions-reducing standards. “You cannot build a system that treats China like Chad when China is the world’s second largest economy, largest emitter ... and has even surpassed France in per capita emissions,” he said.

At the moment, China and other developing countries are not prepared to accept such terms. But Stern doesn’t see this as “cause for despair.” Instead, he says, the United States can make major progress toward climate change mitigation by working within its own borders, setting national policies and standards, and investing in emissions-reducing technology.

Stern pointed to government action already underway to reduce greenhouse gas emissions, including provisions in the American Recovery and Reinvestment Act that have allotted \$90 billion toward clean-energy projects such as new electric-vehicle charging stations, factories for advanced vehicle batteries, and investments in solar, wind and alternative energy technology.

“This is high-stakes stuff and it should not be ideological or partisan,” Stern said. “No one should want the U.S. on the sidelines as our competitors race for global economic leadership.”

Climate change, from past to future

Following Stern's talk, a panel of MIT experts discussed scientific developments in climate change over the past 150 years, and made projections for the next 100 years, based on climate models and on-the-ground action to address global warming effects.

The panel was moderated by John M. Reilly, co-director of the MIT Joint Program on the Science and Policy of Global Change. Participants included Kerry Emanuel, the Breene M. Kerr Professor of Atmospheric Science; Christopher Knittel, the William Barton Rogers Professor of Energy Economics; MITEI Director Ernest Moniz, the Cecil and Ida Green Professor of Physics and Engineering Systems; Ronald Prinn, the TEPCO Professor of Atmospheric Science; and Sarah Slaughter, MITEI's associate director for buildings and infrastructure.

Emanuel looked back at the history of climate change, noting that hundreds of thousands of years ago, the very site where the panel was held — Wong Auditorium — would have been buried under a massive sheet of ice. Emanuel pointed out that volcanic activity and other natural phenomena may explain temperature spikes during the Earth's early history, but “there aren't any other culprits” aside from humans to explain the warming trends seen in the past 150 years.

Prinn, who discussed the next 100 years, described a “new dimension to climate science,” with climate modelers working with social and political scientists to examine patterns of human activity related to global warming. Prinn said science is already revealing alarming signs of climate change, including shrinking summer sea ice in the Arctic, a harmful rise in ocean acidity and increased destructiveness of hurricanes.

Knittel brought an economist's perspective to the panel, noting that

“what we really want is a global price on carbon dioxide.” Setting a fee for carbon-polluting technologies would serve as an incentive to develop alternative energy sources. While a carbon price is unlikely, Knittel pointed to actions by some U.S. states, including California, to set emissions standards for state transportation and electricity sectors.

Following Knittel’s talk, Moniz outlined existing low-carbon technologies and their challenges. He said, “De-carbonizing ... really is the big game-changer ... but there’s enormous pressure to provide energy services for nine to 10 billion people by mid-century.” Moniz said setting emissions standards would eventually squeeze out high-carbon energy sources such as coal and natural gas, leaving a huge energy gap to fill. “We better have a bridge to somewhere,” Moniz said. “And that somewhere is ultimately zero-carbon sources like nuclear, carbon sequestration and renewable energy.”

Slaughter rounded out the panel with a look at action on the ground to address [climate change](#). She noted that “even if we could magically stop greenhouse gas emissions right now,” global temperatures would continue to rise. She and other faculty members at MIT have partnered with a number of organizations to identify ways to transform transportation and building infrastructure to be more energy efficient and environmental-disaster resilient.

But Slaughter ended the climate discussion on an optimistic note: “Rather than repaving or simply moving the things we have now ... we actually have an incredible opportunity to build the world we want to live in.”

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Provided by Massachusetts Institute of Technology

Citation: Moving climate change regulation forward (2011, April 25) retrieved 25 April 2024 from <https://phys.org/news/2011-04-climate.html>

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