Institute for Governance & Sustainable Development

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Runaway Warming Ahead, According to Ancient Climate Records

Fast-action Mitigation Can Provide Critical Insurance Against Repeating Past Warming

Washington, D.C., January 14, 2011 – What insurance can the world afford to prevent repeating the catastrophic temperature increase of the past? A package of fast mitigation measures is recommended by Nobel Laureate Mario Molina and colleagues Durwood Zaelke, K. Madhava Sarma, Stephen O. Andersen, V. Ramanathan, and Donald Kaniaru.

These fast-action mitigation measures can be implemented in two to three years and produce climate benefits in one to two decades. They complement efforts to cut CO_2 under any climate treaty.

As reported in *Science* today, ancient climate records show that the Earth warmed by 16˚C (29˚F) when concentrations of CO_2 were at the levels that will be reached by 2100 under business-as-usual trends.

Current emissions have warmed the Planet about 0.76˚C. There are signs that climate impacts are already wreaking havoc, including torrential rains and floods and uncontrollable fires and droughts. Increased warming of 16˚C would be catastrophic, and push the Planet past tipping points for irreversible changes, including the melting of the polar and glacial ice, which would cause tens of meters of sea level rise.

Yet world leaders have not been able to agree to a strong climate treaty and are not likely to do so before 2012. Nor is the United States able to agree on a strong domestic climate law.

Molina's fast-action strategies recognize that climate change is not one problem but a package of related problems, caused by a variety of factors. CO_2, for example, is causing 50 to 60% of warming, while four other pollutants are causing the other 40 to 50%.

"The fast-action approach recognizes the need for speed to slow climate change," said Durwood Zaelke, President of the Institute for Governance & Sustainable Development. "We can start immediately," Zaelke continued, "and cut non-CO_2 pollutants using existing technologies and existing laws and institutions."

First on Molina's list of fast-action strategies is strengthening the Montreal Protocol, by amending the treaty to phase out the upstream production and use of hydrofluorocarbons, or

HFCs, super greenhouse gases. These chemicals are man-made and used for refrigeration and making insulating foams. (Downstream emissions of HFCs are included in the Kyoto Protocol.)

According to Zaelke, "Phasing out HFCs could produce 100 or more billion tonnes of CO_2-equivalent in climate mitigation, at a cost between $0.10 and $0.20 per tonne." He added, "This is the cheapest climate insurance available anywhere in the world, and delivered by an existing treaty that has already phased out nearly 100 similar chemicals."

Other fast-action mitigation strategies on Molina's list include reducing black carbon soot, tropospheric ozone, known as urban smog, and methane. Technologies exist that can be deployed today to make these cuts. And the cuts create strong collateral benefits for public health, ecosystem protection, and agriculture productivity.

Molina also calls for carbon-negative strategies that can draw down existing excess CO_2 from the atmosphere. Photosynthesis is a key technology for doing this, turning CO_2 into biomass in forests, grasslands, and other plants. This biomass can be turned into a permanent and stable form of carbon called biochar by cooking it with limited oxygen.

Zaelke emphasized that CO_2 is the priority long-term pollutant that must be cut to stabilize the climate system. "But cutting CO_2 is not enough. We also need to cut the pollutants causing the other 50% of climate change," he added.

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