

Andrew Revkin of the New York Times has posted an [important essay discussing implications of the recent report by Dr. Susan Solomon and others](#) documenting the profoundly serious impacts that will result from letting GHG concentrations in the atmosphere get too high before they are stabilized (the subject of [this post below by Dan](#) and [this one by Holly](#)). The conclusion: we have to act big, and act now, to reduce our impacts on the climate. What is less obvious is what this means for efforts to build resilience to whatever climate impacts are likely (or even inevitable) as we work to reduce GHG emissions dramatically. Some seem to pose this as an either/or choice, but I don't think that's a useful way to frame the issue.

Revkin's piece starts this way:

A new paper in the Proceedings of the National Academy of Sciences, concluding that the buildup of human-generated greenhouse gases could leave [a profound millenniums-long imprint on climate and sea levels](#), focuses on a characteristic of global warming that the public, and many policymakers, have not absorbed — at least according to [John Sterman at M.I.T.](#)

That characteristic is the “bathtub effect” behind the human-amplified greenhouse effect. Dr. Sterman, a [prominent analyst of risk perception](#) and management at the Sloan School, has devised various [tools akin to flight simulators](#) to help corporate leaders understand the nature of a variety of problems and choose among various remedies. He recently turned this approach to climate, which he says bears much more resemblance to deficit spending and the national debt than it does to 20th-century-style pollution problems like acid rain.

Basically, the atmosphere is like a bathtub with a partially opened drain. Carbon dioxide from burning fuels and forests is flowing in twice as fast as it is being absorbed by plants and the ocean, and some of those [“sinks” are in fact getting saturated](#), it appears, meaning that the “drain” is clogging a bit. (More on [“CO2's Long Goodbye”](#).) **[UPDATE, 1/29:** Inspired by this piece, Marc Roberts, perhaps the world's best — and only — climate cartoonist, reposted a [hilarious take on the bathtub effect](#).]

In a tub, this is a recipe for a flood. In the climate system, Dr. Sterman says — echoing many climate scientists — it is a loud message that a prompt start is needed in curbing and then cutting emissions if you want to cut the chances of

passing dangerous thresholds. He recently wrote a Policy Forum paper in Science reviewing his and other research on widespread misunderstanding of this kind of risk, including a 2007 study he was a co-author of in which 84 percent of 212 M.I.T. participating grad students drew curves for proposed emission trends that would result in concentrations continuing to climb.

Revkin goes on to reprint a lengthy and insightful note from Dr. Sterman detailing his thoughts. After explaining the dire significance of The Solomon study in light of his own ideas, Dr. Sterman says:

One more critical point: it's important that people not react to Solomon's work with despair. Yes, a certain amount of climate change, due to past emissions, is inevitable, and will not be reversible. But it would be tragic if people concluded that therefore there is nothing we can do, that it is futile to reduce emissions, and that therefore all efforts should shift to adaptation. To the contrary: if nothing is done to cut emissions, and soon, the climate our children and grandchildren will face will almost certainly be far less hospitable, and there will be no turning back. By the time we know for certain how bad it will be it will be too late to take any corrective action. The Solomon paper should finally bury the idea that we can wait and see.

I agree with this assessment. It is critically important to reduce emissions now, and surely "all efforts" should not shift to adaptation. Nonetheless, I believe this work underscores how important it is that we simultaneously pursue resilience-building strategies that will help us - especially the poor and most vulnerable among us - to build adaptive capacity to deal with the climate change impacts likely to arise in our future despite all our efforts. Mitigation of GHGs is essential, since the impacts will be catastrophic, and likely impossible to adapt effectively to, if GHG concentrations rise too high. But failure to build resilience to climate change's impacts will have serious consequences even if we are able to stabilize GHG concentrations at a relatively low level. And expensive efforts to deal with the impacts reactively will distract us, and divert resources, from more systematic efforts at both mitigating GHG concentrations and building resilience.