An organizing protocol for society's approach at responding to climate change

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Huffington Foundation Professor of Economics and Environmental Studies, Emeritus Gary Yohe argues that adopting an iterative risk management approach is the most effective way when responding to climate change uncertainties

The issue at hand is easily expressed: How might society effectively organize its thinking as it ponders how to respond to climate change impacts and their consequences in the face of enormous uncertainty? That is, what thought protocol would be best, not only because it would provide the '30,000-foot' perspective to inform response decisions but also because it would inform researchers and implementers who work 'in the weeds' of project-specific details on how to fit their work into the broader national and global strategies for action.

Policy options, as seen from the top

When he spoke about climate change during his eight-year tenure as Science Advisor to President Obama and Director of the White House Office of Science Technology Policy, John Holdren offered a simple framing of the climate problem: "When it comes to responding to climate change, we have three choices – abate, adapt, or suffer." (1)

Abatement (mitigation) involves taking actions designed to reduce greenhouse gas emissions. Adaptation involves investing in projects and procedures designed to alleviate some of the consequences of impacts that will persist along any feasible mitigation pathway. Suffering will continue because humanity cannot eliminate 100% of the consequences of human-induced global warming.

Risk as a unifying construct

The Intergovernmental Panel on Climate Change (IPCC) achieved consensus for a finding in 2007 that fundamentally changed the way decision-makers around the world viewed the challenges posed by climate change: "Responding to climate change involves an iterative risk management process that includes both adaptation and mitigation and takes account of climate change damages, co-benefits, sustainability, equity, and attitudes to risk" (my emphasis). (2) These worlds focus everyone's attention on risk, which is not necessarily expressed entirely in terms of the expected costs and benefits of proposed actions.

At its core, risk is simply the product of likelihood and consequence. [3] Mitigation holds the potential to reduce the likelihood of damaging events. Well-informed adaptation can reduce the consequences of the remaining warming while abatement is doing what it can. Investments in resilience and recovery programs can alleviate some of the inevitable residual consequences of the extreme events that have already appeared as hallmark signatures of accelerating climate risk.

Iterative risk management

The IPCC authors included 'iterative' in their finding because nobody can construct a policy response in 2024 that will be the best response for whatever happens between now and 2100. Policies devised today must, therefore, include protocols for making 'mid-course corrections' as the future unfolds – iterations hopefully triggered when new science warrants it (as opposed to according to a prescribed fixed schedule that may be too restrictive too soon or too lax too late).

The IPCC language also revealed a challenge – science may be able to provide credible distributions of projections of climate impacts. Still, that work must also be cast regarding important consequences to the public welfare. How could practitioners apply risk management techniques without access to measurable factors that matter to humans' personal and societal security regarding life, limb, and treasure?

Tolerable risk

The key to answering that question lies with a concept that depicts levels of risk that individuals and their institutions accept as tolerable. Tolerable risk? We learn about that by observing human behavior. When insurance policies allow owners to specify deductibles; for example, they usually take advantage of that opportunity in exchange for lower premiums, which means that owners of these policies are willing to pay for the small stuff even when they don't want to suffer something catastrophic without help. Societies set building codes, speed limits, and the like for the opposite reason – they find it uneconomical to protect against all possibilities like building collapse [4] and fatal car crashes [5] – evidence that US society is willing to accept even catastrophic residual suffering from an unlikely event because doing more would be inconvenient for the public at large. The United States is even willing to accept upwards of 20,000 deaths from every annual flu season because public health officials know that citizens do not want to live permanently with COVID-like restrictions like masking and self-imposed periods of isolation even though their enforcement in 2022 helped control the pandemic and reduced deaths from the ordinary flu to less than 4,000.

Working effectively within this framework

Armed with characterizations of what is tolerable, analysts and practitioners can work to maintain risk below the limit of tolerability by recognizing targets for either the likelihood of extreme impacts or their extreme consequences.

For example, a January 2024 report from the US Army Corps of Engineers to the City of San Francisco spoke to how best to protect politically designated property from sea level rise (SLR) totaling 2.0, 3.5, or 7.0 feet by 2100. [(6)] Even without including non-economic human losses, their preferred response strategy recommended investing against the seven-foot trajectory in the short run while committing to rigorous consideration of mid-course corrections based on new knowledge in the 2050s. It was less expensive to slow down from an aggressive response in mid-century than to accelerate an alternative that proved to be too modest.

The iterative risk management approach is the most efficient way to cope with the cascading uncertainties of climate change because it illuminates a rigorous protocol within which scientists, analysts, and decision-makers can organize their economic assessments of alternative means to abate emissions, adapt to impacts or limit residual suffering.

References

1. See https://theglobepost.com/2019/10/22/lessons-hurricane-dorian/.
2. See: Yohe, G., 2021 and 2024. “How to think about climate change responses: on organizing one’s thoughts” in M. Lackner et al (eds), Handbook of climate change mitigation and adaptation (third and fourth editions), Springer Nature, Springer Science+Business Media, LLC, https://link.springer.com/content/pdf/10.1007%2F978-1-4614-6431-0_102-1.pdf and https://doi.org/10.1007/978-1-4614-6431-0_102-1
3. For a brief introduction to this definition of risk, see https://ehealthresearch.no/files/documents/Appendix-Definitions.pdf
4. https://en.wikipedia.org/wiki/Surfside_condominium_collapse
5. https://en.wikipedia.org/wiki/Motor_vehicle_fatality_rate_in_U.S._by_year
6. For the details of what is vulnerable and what the CORPS has in mind, see Figure 1 and the text in https://www.swt.usace.army.mil/Portals/41/SFWCFS_DIFR_EIS_Main%20Report_1.pdf

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