

The case for sharing carbon storage risk

May 15 2024



Credit: Pixabay/CC0 Public Domain

Even the most optimistic projections for the rapid build-out of solar, wind, and other low-carbon resources acknowledge that coal, natural gas, and other fossil fuels will dominate the world's energy mix for decades to come. If the vast greenhouse gas emissions from burning these fossil fuels continue to enter the planet's atmosphere, global warming will not

be limited to sustainable levels. The capture and geologic sequestration of carbon emissions (CCS) offer a promising solution to the world's carbon conundrum.

Even with growing technological maturity and generous public policy support, however, the necessary CCS rush is lagging due to inefficient and oft-stifling [liability](#) regimes in the United States and elsewhere.

A [Nature Sustainability](#) comment by Felix Mormann, a professor at Texas A&M University School of Law, reveals critical shortcomings in CCS liability management and proposes a multi-tiered framework, modeled after [nuclear power](#) plant liability, to reconcile the global interest in CCS deployment with developers' limited risk-bearing capacity and the need for adequate compensation in the event of an accident.

Jurisdictions with dedicated liability regimes for sequestered carbon generally fall into one of two camps. The first camp holds developers liable for carbon stored underground over extended timeframes, such as the 50-year liability imposed by U.S. federal law, which doubles to 100 years for projects tapping into the lucrative incentives offered under California law.

The second camp, including Australia, the Canadian province of Alberta as well as certain E.U. members and U.S. states among other jurisdictions, allows CCS operators to transfer liability for their sequestration sites shortly after carbon injections end.

"Neither of these approaches is likely to deliver the CCS projects we need to put a serious dent in the world's carbon emissions," Mormann said. "Strict long-term liability can have a stifling effect on deployment. The 'get-out-of-jail-free-card' of liability transfer, meanwhile, diminishes a developer's incentives to apply the requisite care in the

selection, development, and operation of their [carbon](#) sequestration site."

Thinking through the challenges of managing CCS liability, Mormann was reminded of another sustainable energy technology—nuclear power—that struggled to enter the mainstream some seventy years ago.

"The parallels between CCS and nuclear power are far from obvious at first glance. After all, nuclear produces a desirable commodity in the form of electricity, while CCS removes an unwanted by-product of generating that same commodity using [fossil fuels](#)," emphasizes Mormann.

"But the more I studied it, the more I realized that CCS projects today engender many of the same competing interests that nuclear power evoked back in the 1950s: strong societal interest in more sustainable energy technology, private industry's fear of possibly crushing liability, and the public's need for protection against unlikely but potentially devastating accidents."

Based on this nuclear-CCS analogy, Mormann's comment proposes a multi-tiered framework for managing CCS liability modeled after the 1957 Price-Anderson Act that jumpstarted the U.S. nuclear power industry. The proposed framework would hold individual sequestration sites liable up to the maximum of commercially available liability insurance. For damages beyond these limits, all sequestration sites in the jurisdiction would pitch in via a form of pooled industry self-insurance, again up to a specified limit.

"If the nuclear experience is any indication," explains Mormann, "this secondary layer of industry-shared liability is likely to encourage knowledge sharing and communitarian self-regulation among CCS operators that further reduces the risk of accidents."

Only once these first two layers have been exhausted, would government step in to provide additional funds, in recognition of the societal interest in the safe and timely deployment of this crucial decarbonization technology.

More information: Felix Mormann, Public–private sharing of carbon sequestration risk, *Nature Sustainability* (2024). [DOI: 10.1038/s41893-024-01337-3](https://doi.org/10.1038/s41893-024-01337-3)

Provided by Texas A&M University

Citation: The case for sharing carbon storage risk (2024, May 15) retrieved 22 June 2024 from <https://phys.org/news/2024-05-case-carbon-storage.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.