Study maps out ways to pay for climate-related loss and damage

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Credit: Brown University

Climate-related catastrophes are expensive, whether they come on suddenly, like the thousand-year flood in Louisiana in August 2016, or move slowly and inexorably, like desertification in Turkey. A new paper by researchers at Brown University's Climate and Development Lab outlines financial instruments that could help countries pay for the irreversible losses climate change can cause, such as loss of life, species or land due to rising seas, and damages like the destruction of infrastructure and property by hurricanes and floods.

The study, "Financing options for loss and damage: a review and roadmap," aims to advance the discussion of loss and damage under the United Nations Framework Convention on Climate Change (UNFCCC) and appears just as the 2015 Paris Agreement goes into effect and the UNFCCC Conference of the Parties (COP22) gets underway in Marrakesh from November 7 to 18.

Finding ways to deliver financial assistance to communities that face damages or losses is necessary, the researchers wrote, because of the growing certainty that global efforts are insufficient to prevent significant climate-related damage.

"The basic formula in dealing with climate change is that it is best to sharply reduce our emissions of greenhouse gases," said study coauthor J. Timmons Roberts, Ittleson Professor of Environmental Studies and professor of sociology at Brown. "As a second line of defense, we can attempt to adapt to the impacts that come when we don't mitigate emissions quickly enough. Emissions reductions have come too slowly, and now some impacts cannot be adapted to. That's called 'loss and damage,' a reference to the common legal idea."

That term, however, "has not been officially defined under the UNFCCC," said Victoria Hoffmeister, a Brown undergraduate and paper coauthor, "and it remains unclear which specific mechanisms will be

used to raise financial support for loss and damage."

To remedy that lack of clarity, Saleemul Huq, director of the International Centre for Climate Change and Development in Bangladesh, asked Brown's Climate and Development Lab (CDL) to look into ways to pay for loss and damage.

Hoffmeister, Huq and Roberts and a team of researchers presented a draft of the study at a workshop held at the German Development Institute (DIE) in Germany during the UNFCCC's negotiations in May 2016. Experts from around the world participated in the workshop, Roberts said, and provided feedback that was incorporated to the final version of the paper, now available via DIE for use at COP22.

Means of paying for climate-related loss and damage

A key component of the Paris Agreement, a global climate change accord ratified by 97 parties in 2016, requires the enhancement of "understanding, action and support" for loss and damage associated with climate change. At particular risk are the "least developed countries," underdeveloped nations where more than 75 percent of the population lives in poverty, and small island developing states. Broadly, the financing mechanisms are intended to raise money from large nations that have historically emitted the most greenhouse gases to the poor and vulnerable, Hoffmeister said.

It is challenging to apply traditional financial tools to climate change loss and damage, the authors wrote in the study, because they do not adequately address slow-onset events like sea-level rise, non-economic loss and damage or high-frequency events, such as repeated highly destructive hurricanes.

The researchers looked at financial instruments suggested by the Warsaw

International Mechanism for Loss and Damage associated with Climate Change Impacts Executive Committee (WIM ExCom). They also considered innovative financial instruments, like levies on air travel and bunker fuels, and assessed the potential effectiveness of each.

The WIM ExCom's suggestions included catastrophe risk insurance, coverage for individuals and communities for low-probability, high-cost disasters. The insurance could be effective, the CDL researchers found, if contracts covered a large enough geographical area and incentivized risk-reduction activities.

The drawback, they noted, is that some countries might not be able to generate or afford the high-quality catastrophe risk models that would underpin the insurance. Founding catastrophe risk insurance instruments in Asia, where none currently exist, they wrote "has huge potential to energize the global climate risk insurance market."

Contingency finance, which involves setting aside funds for specified uses during emergencies, could enable quick responses after catastrophes, but posed tough planning challenges and limited flexibility, because it is difficult to predict how much money should be set aside and for which specific uses.

Two types of debt securities, climate-themed bonds and catastrophe bonds, earned mixed reviews. Climate-themed bonds, the authors wrote, are better suited to mitigation projects like wind or solar farms than to loss and damage funding, because bonds are typically sold to raise funds for projects that turn profits. On the other hand, catastrophe bonds protect the issuer from impacts of disasters, the researchers wrote, and investors might be attracted to them because they would allow diversification of risk.

Other tools

The CDL researchers considered three promising sources of funding pertaining to air travel and three broader-based taxes.

The international airline passenger levy would impose a modest fee to those traveling internationally. As originally proposed, its revenues would be paid directly into the Adaption Fund of the UNFCCC Kyoto Protocol, but these could instead be channeled into a specific "loss and damage fund," Hoffmeister said.

The solidarity levy, currently used by nine countries, is a fee on passengers departing from a single country, the authors wrote. The levy can earn substantial revenues and preserve national sovereignty because it does not require universal adoption, and countries can adjust their participation as economic conditions change.

A bunker fuels levy applies to both air and maritime transport. Airplane and ship fuels are not currently taxed, the authors wrote, but emissions from international aviation and maritime transport increased by 70 percent between 1990 and 2010, account for 3 to 4 percent of all greenhouse gas emissions and are projected to increase six-fold. A levy on these fuels "would exploit a tax base not naturally belonging to national governments," the authors wrote.

Beyond transportation-related levies, possible funding mechanisms include the financial transaction tax,
a small levy placed on monetary transactions or trades of financial instruments. While these can generate substantial revenues, a downside, the authors note, is that some countries may be unwilling or logistically unprepared to administer them.

A fossil fuel majors carbon levy is a global fossil fuel extraction tax that would be imposed on large oil, coal and gas producers. The authors pointed to the 2013 Carbon Majors Study, "which found that just 90

companies were responsible for 63 percent of anthropogenic greenhouse gas emissions." The levy would impose taxes on these and other large fossil fuel extractors on a global scale.

Finally, the authors considered a global carbon tax, a worldwide system of carbon pricing in the form of either a tax or auction revenues generated from a cap and trade system, in which a "cap," or upper limit, is set on the total amount of greenhouse gas emissions allowed by a system like a group of companies. If one company emits less than their share of that total amount, another company can buy the right to emit that amount of gases, going over their pre-set share but keeping the total system emissions within the limit. This tax would be levied on the carbon content of fossil fuels, rather than on energy content.

While the difficulty of this approach is that it would require worldwide consent and the cost of enforcement would be significant, the authors wrote, it is not a new or untested concept, and it could be "applied to financing loss and damage while simultaneously promoting substitution of cleaner energy sources."

More information: Financing options for loss and damage: a review and roadmap. www.die-gdi.de/en/discussion-p … -review-and-roadmap/

Richard Heede. Tracing anthropogenic carbon dioxide and methane emissions to fossil fuel and cement producers, 1854–2010, *Climatic Change* (2013). DOI: 10.1007/s10584-013-0986-y

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