Stanford SOCIAL INNOVATION Review
Informing and inspiring leaders of social change

Environment

Measuring Climate Risk

Climate Risk Labs (CRL), one of the emerging nonprofits tackling the climate crisis, aims to accelerate climate science research and build partnerships that utilize CRL's data sets to shape future clean energy solutions.

By Gordon Feller | Fall 2021

Climate Risk Labs' researchers are now trying to assess the financial impacts of climate change, including the ramifications on home insurance markets. (Photo by Leonard Zhukovsky/Shutterstock)

Financial institutions have grown increasingly worried about climate change. In March, the US Federal Reserve created the Supervision Climate Committee to identify financial risks associated with climate change, from disruptions in local economies to destabilizations in insurance markets. Measuring such risks has become more urgent as extreme weather events become more common.

National governments and private banks have turned to nonprofits and universities for help with this challenge. One of the emerging nonprofits answering the call is Climate Risk Labs (CRL), whose mission is to accelerate climate science research and build partnerships that utilize CRL's data sets to shape future clean energy solutions.

CRL was created in February 2021 by Riskthinking.AI (RT) founder and CEO Ron Dembo and his CTO, Brendan Reilly. RT is a Toronto-based climate risk data provider. CRL's research method relies on RT's Climate Risk Classification Standard, a measurement tool for assessing climate financial risk that has become the industry standard.

In addition to seed funding from RT, CRL's financing has been provided by the investment company Black Bean Capital and by solar panels manufacturer First Solar. CRL also received grants from the National Aeronautics and Space Administration (NASA), clean energy company 9H Energy, and the University of Wyoming, in addition to individual donations.

CRL's climate risk data sets and analytics are stored in an application programming interface called CLIMATEWISDOM, which has been built with machine-learning algorithms that allow new data to be continuously integrated with the existing data. The algorithms are used to determine the range of risk for a variety of climate change factors, such as sea-level rise, temperature, and freeze/thaw cycles.

Every new piece of data added to CLIMATEWISDOM is connected to historical data points that enable researchers to track how local climate has changed over time—with data available from as far back as 1850. Researchers then can better determine the potential climate future of specific geographic locations.

Dembo and Reilly have built a partner network that expands its reservoir of climate risk data. The network also helps to sustain the nonprofit financially through partner contributions—some share research costs, some contribute advanced technology, and others provide staffing and expertise or in-kind resources.

According to Reilly, this network is "a collaborative environment for independent researchers that connects disparate communities of like-minded scientists, industry experts, and evidence-based decision makers." The goal is to attract research institutions to become part of their network of labs that cooperate on climate change, risk valuation, and mitigation. Having the same data platform, using the same standards, and extending these standards via an oversight committee facilitates the sharing of data, which in turn advances climate research.

Among the lead partner organizations are 9H Energy's research arm, 9H Research, at the University of Wyoming; the Fields Institute for Research in Mathematical Sciences; and the Vector Institute. CRL also collaborates with regulators, multinationals, financials, and small businesses. Reilly

considers partnering with a range of different institutions to be "an essential element of their strategy" to accelerate climate research through collaboration and data sharing.

CRL unites science and advocacy through its sponsorship program, which grants open access to its research and data, including CLIMATEWISDOM, to labs dedicated to climate change solutions. CRL is advocating for change at two levels: better systems and methods for accurately measuring current and future risk; and better coordination between and among those smarter systems and methods, whether or not they're commercial, academic, governmental, or from another source.

CRL's agenda for 2022 and beyond is to focus its research on climate change's local impacts, particularly as they hit specific industries. Its work with the US Department of Energy's Argonne National Laboratory and the University of Wyoming, for example, is already making headway on expanding climate risk research in geographies that are experiencing direct effects on regional business interests—including mining, farming, and ranching.

This November, CRL will participate as an expert advisor at the United Nations Climate Change Conference in Glasgow, where more than 200 national governments will convene to negotiate a new round of climate agreements, with a special focus on measuring financial risks. CRL is more than a research hub. By measuring risk and uncertainty, it is creating the benchmarks essential for evidence-based decisions about the future of the environment and global economy.

Read more stories by Gordon Feller.

Gordon Feller has spent nearly 40 years in Silicon Valley focusing on technology's impacts. He's served in various roles, including as a global fellow at the Smithsonian, an executive with private companies, and a board member of numerous nonprofits.

If you like this article enough to print it, be sure to subscribe to SSIR!