Disaster resilience measurement: data for science and practice

Finn Laurien (1), Adriana Keating (1), and Michael Szoenyi (2)

(1) Risk and Resilience, IIASA, Laxenburg, Austria, (2) Zurich Insurance Group, Zurich

Given the increased attention put on strengthening disaster resilience, there is a growing need to invest in its measurement and the overall accountability of "resilience strengthening" initiatives. There is a major gap in evidence about what actually makes communities more resilient when an event occurs because there are no empirically validated measures of disaster resilience. Similarly, an effort to identify operational indicators has gained some traction only more recently. The Flood Resilience Measurement for Communities (FRMC) framework and fully operational, integrated tool takes a systems-thinking, holistic approach to serve the dual goals of generating data on the determinants of community flood resilience, and providing decision-support for on-the-ground investment. The FRMC has already been applied in over 100 communities worldwide; it has since been refined and application in a further cohort of communities has commenced.

We present findings from data analysis of more than 1.25 million data points using a mixed-method data collection approach at household and community levels. We find high interdependencies between different indicator groups (human, social, natural, financial, and physical capitals) and that dynamics between capitals play an important role for overall capacity of communities to withstand floods and build resilience over time. We identify different clusters of communities with similar resilience profiles, which can partially be attributed to various community characteristics.

With regard to disaster resilience practice, we present process-based insights from qualitative research on the benefits and challenges of undertaking resilience measurement with communities. We find that the process of implementing the FRMC tool facilitated in-depth discussions about communities and flood resilience, and that this had a capacity building effect within user organizations. The process enabled holistic and systems-oriented thinking, changing the mindset of key stakeholders including community members themselves. The quantitative results also proved to be a powerful tool for decision-support and advocacy