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Estimating the economic impact of seismic activity in Kyrgyzstan

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Estimating the short and long-term economical impact of large-scale damaging events such as earthquakes, tsunamis or tropical storms is an important component of risk assessment, whose outcomes are routinely used to improve risk awareness, optimize investments in prevention and mitigation actions, as well as to customize insurance and reinsurance rates to specific geographical regions or single countries. Such estimations can be carried out by modeling the whole causal process, from hazard assessment to the estimation of loss for specific categories of assets. This approach allows a precise description of the various physical mechanisms contributing to direct seismic losses. However, it should reflect the underlying epistemic and random uncertainties in all involved components in a meaningful way.
Within a project sponsored by the World Bank, a seismic risk study for the Kyrgyz Republic has been conducted, focusing on the assessment of social and economical impacts assessed in terms of direct losses of the residential and public building stocks. Probabilistic estimates based on stochastic event catalogs have been computed and integrated with the simulation of specific earthquake scenarios. Although very few relevant data are available in the region on the economic consequences of past damaging events, the proposed approach sets a benchmark for decision makers and policy holders to better understand the short and long term consequences of earthquakes in the region. The presented results confirm the high level of seismic risk of the Kyrgyz Republic territory, outlining the most affected regions; thus advocating for significant Disaster Risk Reduction (DRR) measures to be implemented by local decision- and policy-makers.