

Catastrophe risk, climate and modelling

*Dr Alexander Ressos, TEP
Attorney-at-Law (Switzerland), Solicitor (Hong Kong),
Solicitor (England & Wales)*

Catastrophe risk is where reinsurance is indispensable. The losses from a major earthquake or hurricane can exceed the capital of all insurers in the affected region, so that only the global diversification of reinsurers and the capital markets can absorb them. The pricing of such risks has changed fundamentally since the 1980s. For most of the twentieth century, reinsurers relied on historical loss experience, adjusted by judgment. After Hurricane Andrew had shown that historical data underestimated the potential losses from modern concentrations of insured values, the industry turned to probabilistic catastrophe models, which combine scientific models of hazards with engineering models of vulnerability and financial models of insurance conditions. Swiss Re's own history records that Hurricane Katrina in 2005 led to a reassessment of the industry's risk-absorbing capacity and to adjustments in disaster modelling.¹

Large reinsurers develop proprietary catastrophe models alongside those of commercial vendors. The expertise this requires has made Zurich a centre for a specialised profession that combines meteorology, seismology, hydrology, structural engineering, statistics and actuarial science. The ETH Zurich, with its departments of earth sciences and civil engineering and its Risk Center, is part of the same ecosystem. The fact that the *sigma* analyses of 2025 attributed a record share of insured losses to secondary perils such as hail, wildfires and floods is significant for modellers, because these perils are more local and harder to model than the classic peak perils of hurricane and earthquake.²

Climate change affects reinsurers in several ways. It changes the frequency and severity of weather-related perils, it increases the uncertainty of models calibrated on past data and it raises questions about the insurability of certain regions in the long term. Swiss Re published research on ecological perils as early as 1979 and has since made climate risk one of the main themes of its public research. Supervisors have followed. FINMA's

requirements on nature-related financial risks now form part of the supervisory framework for insurers. The reliefs for smaller reinsurers discussed above expressly include exemptions from certain obligations under FINMA Circular 2026/1 on this subject.³

Switzerland itself illustrates how societies organise the insurance of natural catastrophes through pools, a solution that stands between the market and the state. Two systems coexist. In nineteen cantons, among them Zurich, Bern, Glarus and Vaud, public cantonal building insurers hold a monopoly on the insurance of buildings against fire and natural hazards. The other seven cantons, often called the “GUSTAVO” cantons after their initials, leave building insurance to private insurers and together account for only about 17 per cent of the total insured building value. The cantonal insurers reinsure each other through the Interkantonaler Rückversicherungsverband, the institution whose origins in 1910 were mentioned at the beginning of this chapter. The private insurers, for their part, have pooled natural hazard risks since 1936 in the Elementarschaden-Pool, a voluntary association in which twelve insurers representing more than 90 per cent of the private market share losses in proportion to their market shares. Cover for floods, storms, hail, avalanches, snow pressure, rockfall and landslides is included by law in every fire policy for buildings and contents, on the basis of Article 171 AVO, and at a uniform tariff that is the same for a chalet in an avalanche zone as for a flat in the city.⁴

Earthquake remains the great gap. Neither the private natural hazards insurance nor most cantonal building insurers cover earthquake damage as a matter of course. The cantonal insurers maintain the Schweizerischer Pool für Erdbebendeckung, which can pay up to two billion francs per event and four billion per year, with a maximum of 100,000 francs per building, but its payments are voluntary and give property owners no legal claim. On 13 December 2024 the Federal Council adopted a message to Parliament on the financing of the repair of building damage after earthquakes, under which property owners would contribute to the costs after a severe event. The proposal, known as a contingent liability (Eventualverpflichtung), would be premium-free until an earthquake occurs. It remained under discussion in Parliament in September 2026. The debate concerns reinsurers directly: a solution financed ex post by property owners transfers little risk to the reinsurance market, whereas a conventional insurance solution would create a considerable demand for earthquake reinsurance, some of which would be placed in Zurich.⁵

1 Notes

1. Swiss Re, “The Swiss Re Journey”, <https://www.swissre.com/about-us/history.html>. ↩
2. Swiss Re Institute, “Global natural catastrophe losses in 2025”, sigma 1/2026, <https://www.swissre.com/institute/research/sigma-research/sigma-2026-01-natcat-2025-wildfire-storm-risk/global-natcat-losses-2025.html>. ↩
3. Swiss Re, “The Swiss Re Journey”, <https://www.swissre.com/about-us/history.html>. FINMA, “Relief for reinsurers”, <https://www.finma.ch/en/supervision/insurers/small-insurers-regime-and-relief-for-insurers/relief-for-reinsurers/>. ↩
4. Reich, “Gebäudeversicherung und «negativ nachgeführte» Bundesverfassung”, AJP/PJA 9/2013, https://www.ius.uzh.ch/dam/jcr:000000000-5fa1-333b-ffff-ffffe67b56f6/Johannes_Reich_Gebaeudeversicherung_AJP_2013_1399ff.pdf. Schweizerischer Versicherungsverband (SVV), “Affordable natural perils insurance thanks to the ES pool”, <https://www.svv.ch/en/insurance/property-and-casualty-insurance/natural-perils-insurance/affordable-natural-perils>. ↩
5. Swiss Federal Council, “Bundesrat verabschiedet Botschaft zur Finanzierung der Behebung von Gebäudeschäden bei Erdbeben”, media release, 13 December 2024, <https://www.admin.ch/gov/de/start/dokumentation/medienmitteilungen/bundesrat.msg-id-103567.html>. VKG, “Erdbeben”, <https://www.vkg.ch/de/versicherung/erdbeben>, which refers to the proposals and to position papers of 2026. ↩

For general information only. This article does not constitute legal or tax advice, does not replace advice on an individual case and creates no lawyer-client relationship. It reflects the legal position as of September 2026.

Online version: helveticaregister.com/zurich-catastrophe-risk-climate-and-modelling