Risk

The risk formula

The intensity and frequency of a natural phenomenon (Hazard) is only one of three factors which determine the overall risk. The amount of values present in the area concerned (Exposure) as well as their loss susceptibility (Vulnerability) are crucial for the resulting risk. Hence, the risk formula can be written as a function of these three quantities. With regard to the insured risk, a fourth factor, insurance penetration, also plays a role.

All factors that determine the risk are variable. While we cannot influence occurrence and intensity of a natural phenomenon, we may control the exposure by avoiding hazard-prone areas. Vulnerability can be reduced by increasing the structural resistance of objects, with measures depending on specific hazards. A higher insurance penetration generally increases the geographical spread of risks, but may also increase the probability of higher accumulation losses.

\[ R = [H] \times [E] \times [V] \times [I] \]

Hazard

The degree of hazard, i.e. the full range of intensities of threatening natural phenomena, including their probabilities of occurrence.

Exclusive online content

An interactive version of our infographic:
www.munichre.com/ausnz/understanding-risk
**Exposure**

The total exposed values or values at risk – real/personal property – present at the location affected/threatened.

**Insurance penetration**

The proportion of insured values at risk.

**Vulnerability**

The degree of vulnerability, i.e. the lack of resistance to damaging forces, or the ratio of exposure that can potentially be damaged.