Flood insurance: new models have become a game changer

Fifty years ago, Swiss Re published the first issue of its flagship report *sigma*. The publication has since become a must-read source of information on natural catastrophe risk for the insurance industry. The initial idea behind *sigma* was borne in the wake of the 1965 Hurricane Betsy, which caused extensive flooding across the state of Florida and the US Gulf Coast. The resulting damage exceeded USD 1 billion – at the time an unprecedented loss from a single storm event. The insurance industry was caught off guard. This motivated Swiss Re to address, in the company's own words, "the lack of useful statistical data" which made it "either very difficult or altogether impossible to provide insurance for the power of nature risks".

The risk from flooding кeeps on rising

The insurance industry has come a long way since the first *sigma* in 1968. But the threat from flooding remains formidable. Floods continue to affect more people worldwide than any other type of natural disaster. An average half a billion people are impacted by river flooding, storm surge or flash floods every year. With USD 50 billion in annual global losses, the economic damage caused by floods is staggering. These costs are set to rise even further, as more people and businesses move to densely populated urban areas. Some of the world's major economic centres face the greatest risk of flooding, particularly in the US, China and India. In Europe, the metropolitan regions of Amsterdam-Rotterdam, Paris, London, Milan and Hamburg are among those most exposed to coastal or river flood risk.

What is worrying is that less than a third of global flood losses are insured. In many countries, insurance rates are substantially lower. In the United States, for example, just 1 in 10 households are insured against flood. It's a similar picture in Italy, where less than 10% of the population has flood insurance. Such low insurance rates leave many local communities faced with a serious protection gap. For those without insurance, damage from flooding can have catastrophic consequences. High premiums, an overreliance on state relief and inadequate risk awareness may all be reasons for the general reluctance to buy insurance.

Advances in flood modelling offer more options for insurance

The good news, however, is that flood insurance is becoming more widely available and affordable. While for a long time flood risk was deemed uninsurable, recent breakthroughs in flood modelling have become a game changer. Satellites, digital elevation models and historical flood data help us to better understand the risk. Flood models have now reached a level of sophistication that gives us the confidence to price flood risk adequately. Swiss Re's own global flood and storm surge model is part of our CatNet® platform, so that all relevant information to assess flood risk exposure is only a click away.

Flood resilience means a combination of insurance and preventive measures

Insuring those currently uninsured is a key step towards making communities more resilient to flood risk. It enables property owners to rebuild their homes quickly as soon as the waters recede and gives businesses the means to get their trade up and running again following a disaster. But true resilience requires a broader approach to flood risk management that focuses on saving lives and preventing damage in the first place. Such an approach seamlessly combines risk assessment, prevention, response and recovery in a cost effective way.

The Economics of Climate Adaptation (ECA) methodology was designed with this in mind. Developed by a research consortium including Swiss Re, the approach gives practical guidance on the type of flood protection measures that offer the best return on investment. As many ECA studies show, local planning and engineering measures help to mitigate and prevent a significant part of the flood risk in most

locations. After implementing preventive measures and risk controls, financial instruments such as insurance effectively address the remaining risk. With our modelling capabilities and ECA methods, Swiss Re has been helping clients design a flood insurance programme that supports reconstruction while being affordable for all.

The time to act is now, the way to do it is together

Much is already at stake. Climate change and sea level rise could make things even worse. An estimated 650 million people will be living below sea level or in areas affected by regular flooding by the end of this century. If we do not take action to prevent damage from the increasingly common and heavy floods and storms we expect to see in the future, the protection gap is likely to widen even further.

To tackle this challenge, the insurance industry should work more closely together with governments, the financial sector, local planners and civil protection experts. Because only together can we address the specific needs of various sections of the economy and society and deliver bespoke, need-specific, and affordable insurance products. One such collaboration is Flood Re, a consortium comprising the UK government and several insurers and reinsurers. Flood Re provides affordable cover for floods to over 170 000 UK homeowners and is a good example of how the public and private sectors can effectively join forces to close the flood protection gap.

With floods affecting populations practically everywhere, there are plenty of opportunities – and great demand – for similar solutions in many more markets around the world. Clearly, insurance cannot prevent floods. But it can help residents and businesses recover from the havoc they wreak. We have the knowledge, the data and the solutions to offer flood protection to many more communities. What is needed now is the collective will to do so. Together we can make it happen.