



(Re)insurers move for quake cover

Seismic risk in developing countries can become more insurable through microinsurance schemes

The disaster in Haiti has highlighted the stark fact that the most deadly earthquakes occur in developing countries – with the death tolls a result of poor building quality as much as geography.

And when catastrophe strikes in these impoverished, earthquake-prone regions, risk models and they are often not readily accessible. Consequently, there is little or no insurance for reconstruction, nor a market for insurance-linked securities.

The lack of available insurance cover is not an isolated occurrence. In October 2009, for example, a 7.6 magnitude earthquake destroyed 250,000 building in Indonesia, which Aon Benfield reports amounted to a \$2.2bn estimated economic loss, while insurance recoveries stood at only \$40mn.

The (re)insurance industry is making efforts to redress this imbalance, including through a cross-industry Global Earthquake Model (GEM) initiative and a pilot project from catastrophe modeller Risk Management Solutions (RMS) for rural China.

GEM has been created to establish an independent, uniform standard for calculating and communicating earthquake hazard and risk, which has support from AIR Worldwide, Munich Re, Willis and Zurich Insurance.

GEM's secretary general, Dr Rui Pinho, says the scheme is a critical instrument to support decisions and actions to reduce earthquake risk worldwide, partly through insurance.

Pinho comments: "GEM will facilitate the

work of organisations initiating catastrophe microinsurance, and the development of traditional insurance and reinsurance capacity in the developing world."

The first version of GEM will take another three years to appear, but catastrophe modeller RMS has concluded in the meantime that a microinsurance system is technically and commercially viable to provide cover against catastrophic earthquake risk in rural China.

RMS believes that with appropriate support microinsurance could for the first time help protect low-income households against major earthquakes through a framework of risk sharing and risk transfer involving (re)insurers and government.

This analysis stems from an initiative by RMS and Singapore's Nanyang Technological University, which together established the Microinsurance Roundtable Forum in 2007 to create sustainable catastrophe risks solutions for disadvantaged people in Asia.

As the 2008 Wenchuan earthquake demonstrated, China is one of the world's most seismically active areas, with almost half of its population located in moderate to highly hazardous areas.

"Yet there is still very little insurance penetration," said RMS China head Dr Zifa Wang. "A microinsurance system with simple products that provide quick disbursement of funds would provide a financial buffer against the impact of these high severity events and facilitate recovery efforts in rural areas."

GEM produces open-source software and it will make tools for risk assessment on a global, national and local scale accessible to anyone. As urban planner Laurie Johnson comments, even California, Japan and Taiwan struggled to finance recovery after suffering major earthquakes during the 1990s. Users will be able to calculate not only the loss from single events, but also from the full range of probabilistic earthquake scenarios in a chosen area. They will be able to assess both direct and indirect losses, and so the socioeconomic impact of earthquakes as well as physical damage.

Combining the direct and indirect loss information from the global earthquake model will allow the more accurate earthquake indexes that are attuned to different areas.

Crucially, the open source nature of the product allows users to see how risk is

computed. Pinho argues that this will help the launch of innovative schemes and products. The information will also allow community-based organisations to educate people about risk and buying insurance.

Pinho adds: "All these things in turn will contribute to the development of the seismic risk insurance markets in many countries."

The RMS pilot project shows that it would be possible to charge premiums of less than 10 Chinese RMB, or about \$1.50, for low-income households in rural China. This would generate total premium income of around

550mn RMB (\$80mn), which RMS calculates is sufficiently above the total estimated risk and operational costs of around 400mn RMB, based on average annual losses of around 180mn RMB.

RMS has used analysis from its China earthquake model to propose a three-layer risk-sharing programme to provide the protection in its pilot study. The primary insurance layer would cover losses of up to 2bn RMB, the next reinsurance layer would cover up to 4bn RMB losses and the top layer 12bn RMB for the most extreme events would involve government participation.

RMS is discussing the potential to expand this pilot study initiative with government bodies in China and industry stakeholders.

Can microinsurance offer substantial cover for earthquakes? Haiti will give fresh impetus to these and other microinsurance initiatives.

"There is still very little insurance penetration" RMS China head Dr Zifa Wang

Economic losses from 2009 cat events

Event	Location	Deaths	Economic Loss (\$)
Earthquake	Indonesia	1,195+	2.2bn
Typhoon Morakot	SE Asia	717+	5bn
Typhoon Ketsana	Philippines, Vietnam	645+	1bn
Flooding	Saudi Arabia	500+	1bn
Typhoon Parma	Philippines	494+	2bn
Cyclone Aila	India, Bangladesh	330+	500mn
Earthquake	Italy	308+	2.5bn
Flooding	India	300+	4bn
Flooding	India	296+	Unknown
Flooding	SE Asia	281+	200mn

Source: Aon Benfield

Deadliest earthquakes 1990-2010

Year	Region	Fatalities	Magnitude
2010	Haiti	200,000 est	7.0
2008	E.Sichuan, China	87,587	7.9
2006	Java, Indonesia	5,700	6.3
2005	Kashmir	86,000	7.6
2004	N.Sumatra coast	228,000	9.1
2003	Bam, Iran	31,000	6.6
2001	Gujarat, India	20,000	7.7
1999	Izmit, Turkey	17,000	7.6
1995	Kobe, Japan	5,500	6.9
1993	Latur, India	9,700	6.2
1990	Manjil-Rudbar, Iran	40,000-50,000	7.4

Source: USGS

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