RISING AWARENESS ON NATCAT A GLOBAL UNDERWRITER'S VIEW

Karachi, April 11, 2012

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AGENDA

- Introduction
- Global NatCat statistics.
- NatCat within our region.
- Catastrophe Modelling
- Conclusion

INTRODUCTION

- Natural disasters include earthquake, volcanic eruption, tropical storm, winter storm, severe weather, hail, tornado, local storm, storm surge, river flood, flash flood, mass movement (landslide), Heat-wave, cold wave, wildfire, drought.
- Low frequency and high severity events.

CATASTROPHE ARTICLE

Disasters take toll on Asian insurance

NON-LIFE INSURANCE

Japanese quake reinsurance up 30%

Impact of tsunami and floods revealed

By Anousha Sakoui and Alistair Gray in London

The scale of divergence in global reinsurance premiums has been highlighted by a closely-tracked study that shows rates for some Japanese insurers have doubled or more in the past year while other areas are little changed.

Willis, one of the world's biggest insurance brokers, said in a report that while reinsurers are enjoying a better start to 2012 than in the previous two years, reinsurance rates for property have risen sharply since last year's earthquake in Japan and flooding in Thailand.

The April 1 renewals season is dominated by the Asian insurance industry, and the report shows for the first time a broader view of the impact of last year's earthquake and tsunami in Japan and the Thai floods on the insurance industry.

The Japanese earthquake happened just weeks before the reinsurance season, so many renewals had already been agreed before the disaster happened.

Japanese earthquake reinsurance is up 30 to 50 per cent, while reinsurance rates for Japanese properties and other for various risks including fire were up between 25 and more than 100 per cent.

One of the most difficult losses the global insurance industry has had to manage in 2011 was the flooding losses in Thailand, the scale of which came as a surprise, according to the report.

The exposures were significantly underestimated the report found, in particular with regard to the extent of the global connections across supply chains.

As a result, reinsurers are seeking greater transparency and control over the potential losses caused by contingent business interruptions. They are also putting a growing emphasis on all other areas of previously unmodelled risks such as the Thai floods.

The flooding in Thailand stopped production in many important car and electronic factories. While the flood damage to properties was estimated to add more than $10bn in insurance losses to the roughly $60bn already seen from the Japanese earthquake last March, the losses from business interruption have been harder to quantify.

Peter Hearn, chairman of Willis Re, said in the report: "The overall loss from the Thai floods is still developing and may take a number of years until final numbers are determined, but the technical and psychological impact of this loss on the global insurance industry will far outweigh the ultimate financial loss for years to come."

The report says that reinsurers face lower levels of loss activity in the US and elsewhere at the start of this year, than in recent years.

The high rate increases in regions affected by heavy losses, such as Japan, are not matched by widespread premium increases elsewhere because the global insurance industry remains well capitalised, having absorbed $100bn of insured losses in 2011.

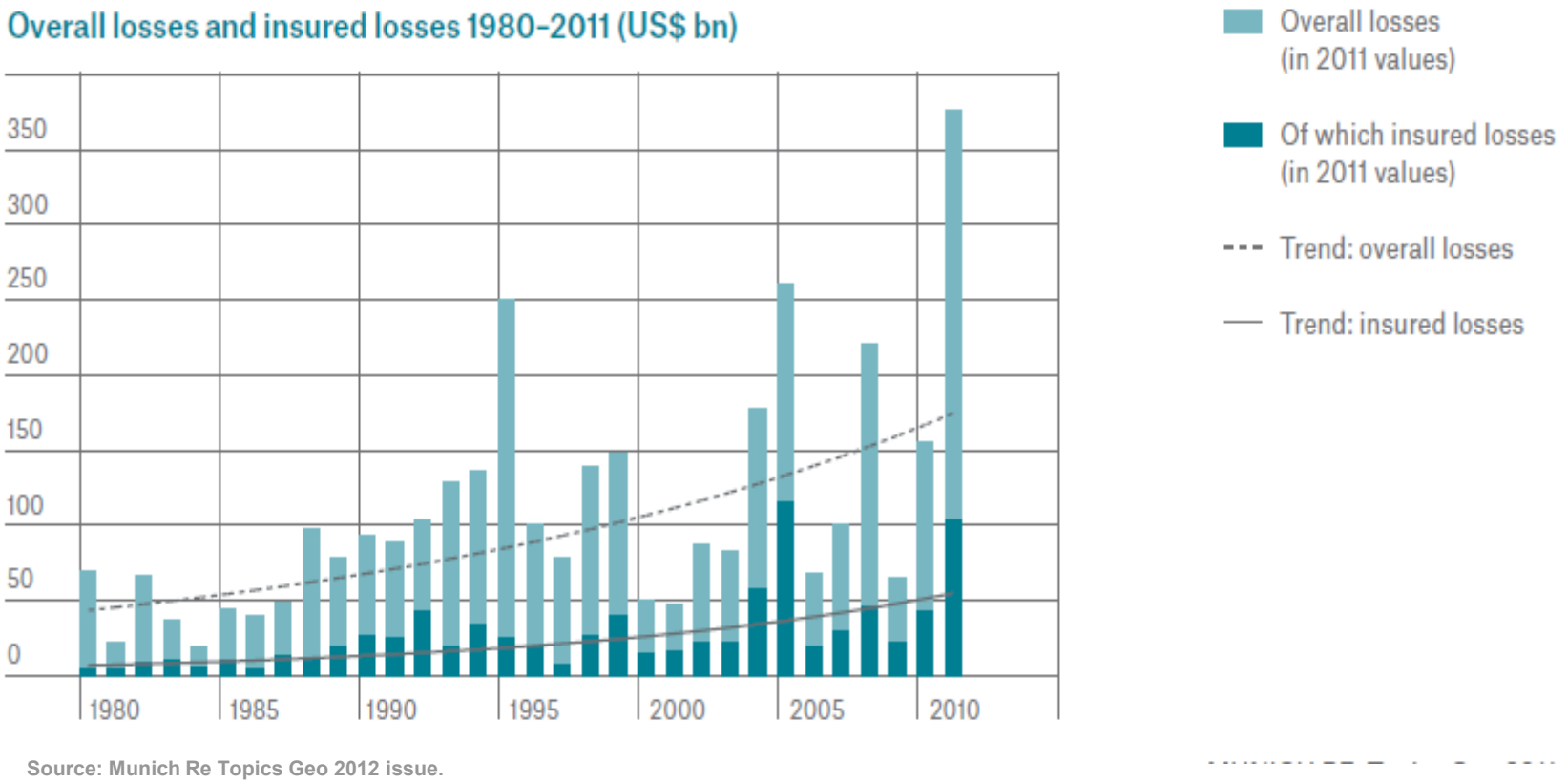
Analysts at Numis are predicting an overall increase in rates of between only 2 and 3 per cent this year.

Many renewals were agreed just ahead of the earthquake

www.ft.com/insurance

- Scale of the Thai Floods was a shock to the Global Insurance Industry.
- Exposures were significantly underestimated, especially in respect of Contingent Business Interruption.
- As a result reinsurers are seeking greater transparency and control over potential losses caused by Supply Chain Interruption.
- Named suppliers/customers.
- Growing emphasis on all other areas of previously unmodelled risks such as the Thai floods.
- Thai Floods estimated to add additional $10BN in insurance losses to approximate figure of $60BN already seen from the Japanese earthquake in 2011.

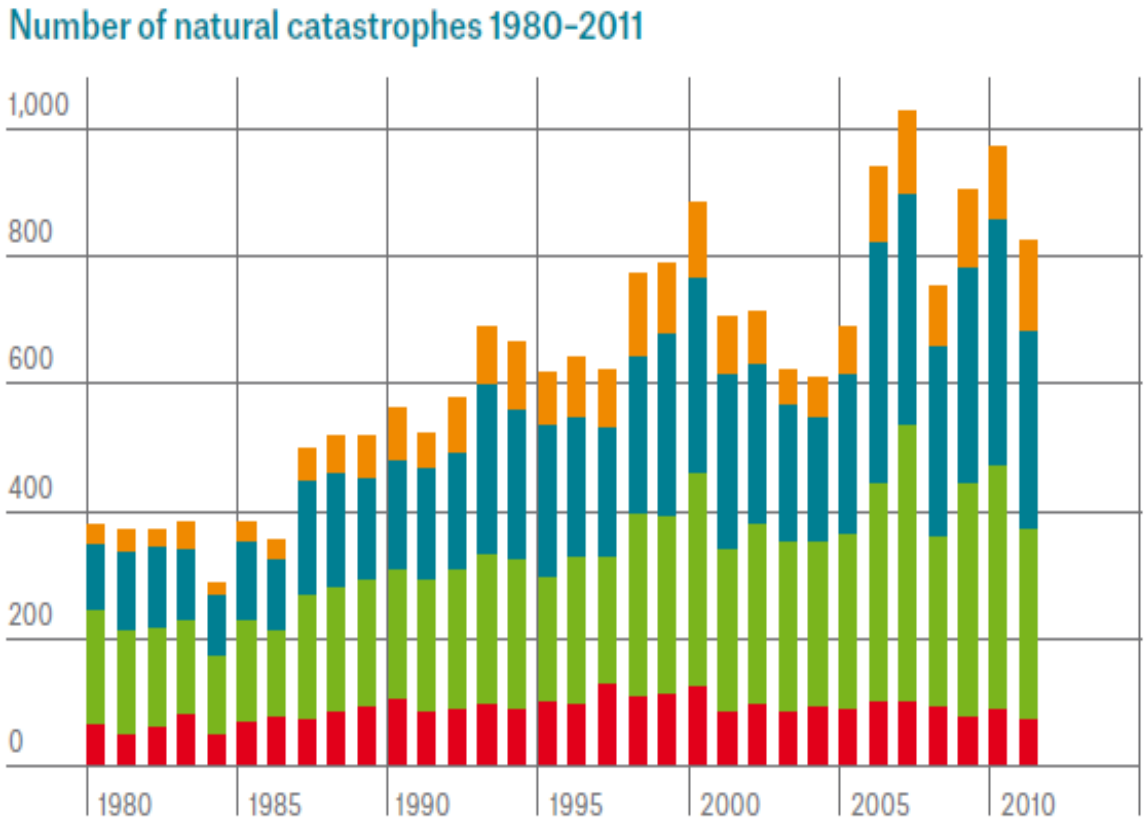
FACTS AND FIGURES



Source: Munich Re Topics Geo 2012 issue.

In 2011 the overall NatCat economic losses were approximately USD $370BN with USD $116bn being insured losses. Most expensive NatCat year.

FACTS AND FIGURES



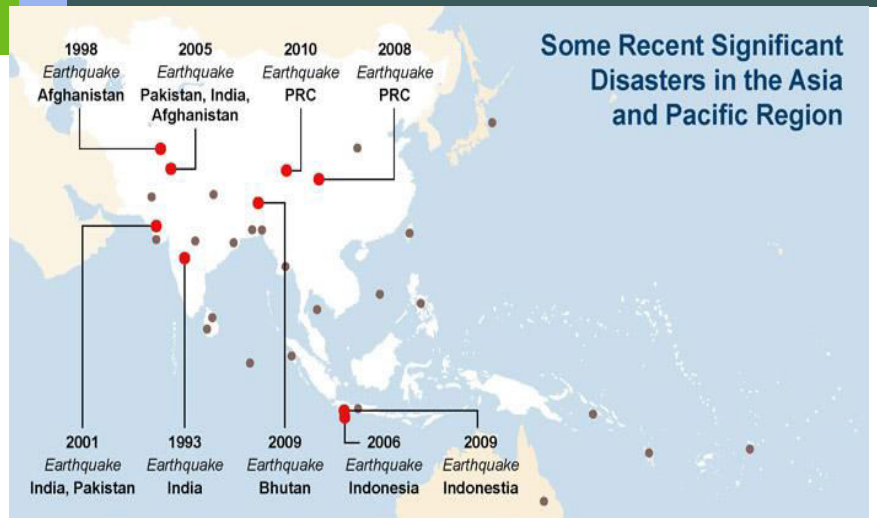
Source: Munich Re Topics Geo 2012 issue.

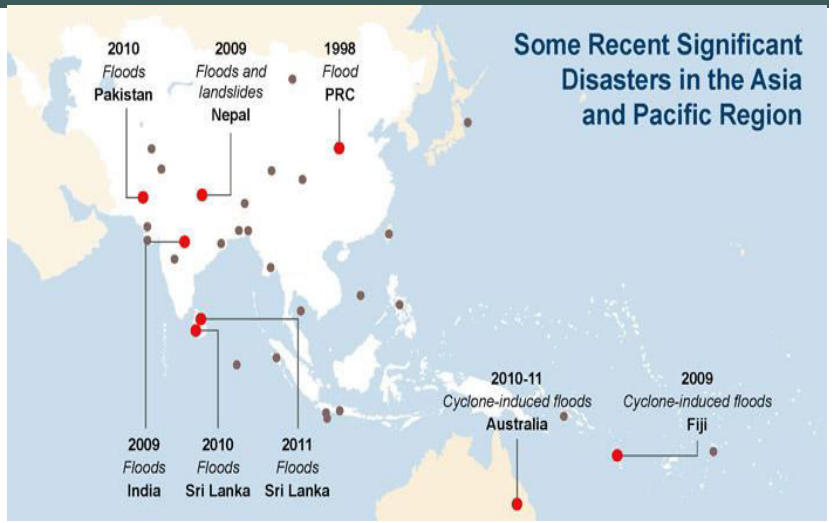
In 2011 91% of Natural catastrophe losses were weather related, while only 9% were Geophysical natural hazards.

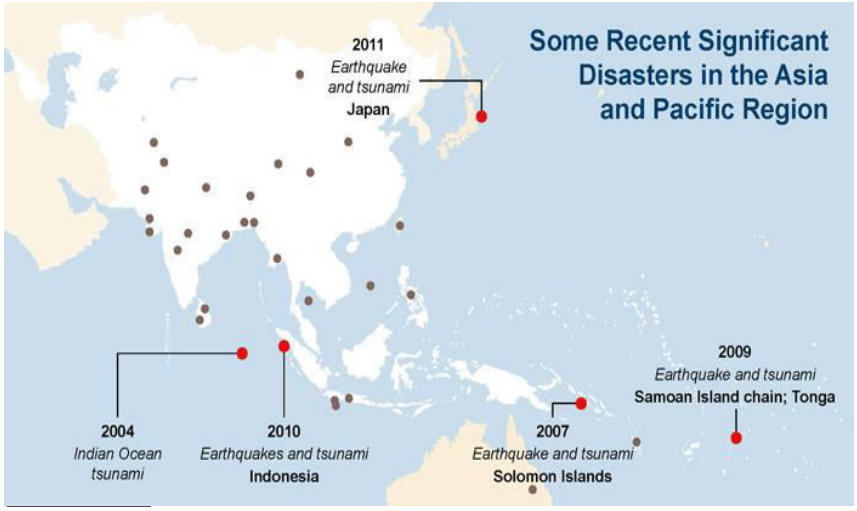
NATCAT WITHIN OUR REGION

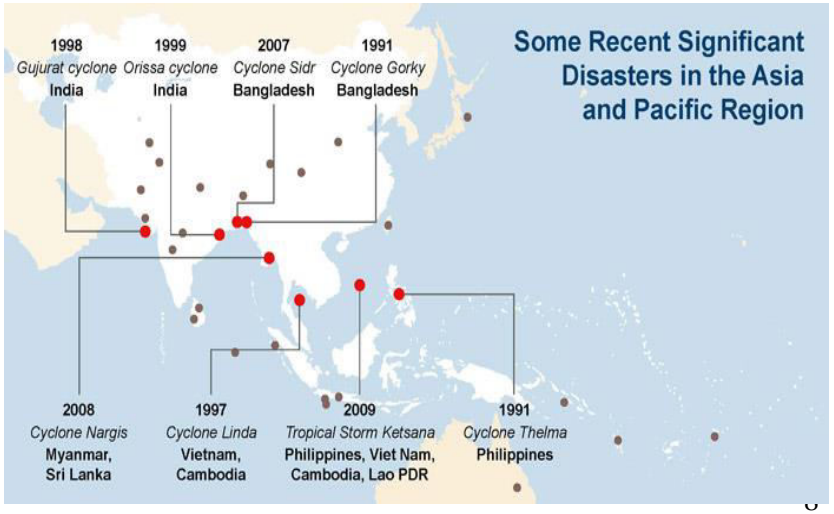
- False perception of being in a non cat region.
- Market tend to ignore and underestimate the NatCat risk in the region.
- Few NatCat loss limits or differential deductibles imposed in the insurance policies.
- Market is well capitalised with high capacity available in the market.
- Low insurance penetration in parts of the region.
- Fast developing cities - Exposure and accumulation will grow.

REGIONAL MAPS WITH HISTORICAL NATCAT DISASTERS

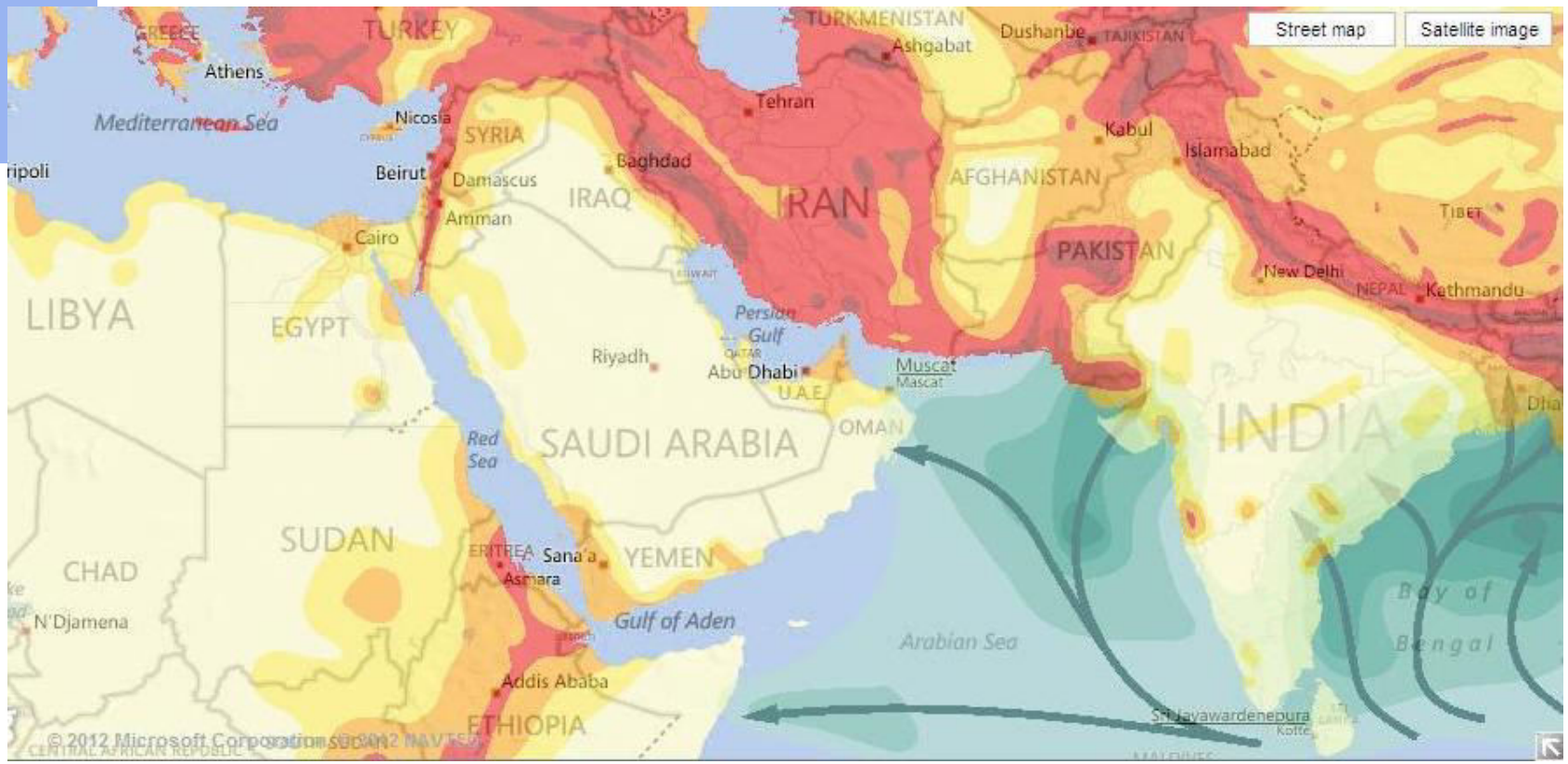








REGIONAL NATCAT MAP

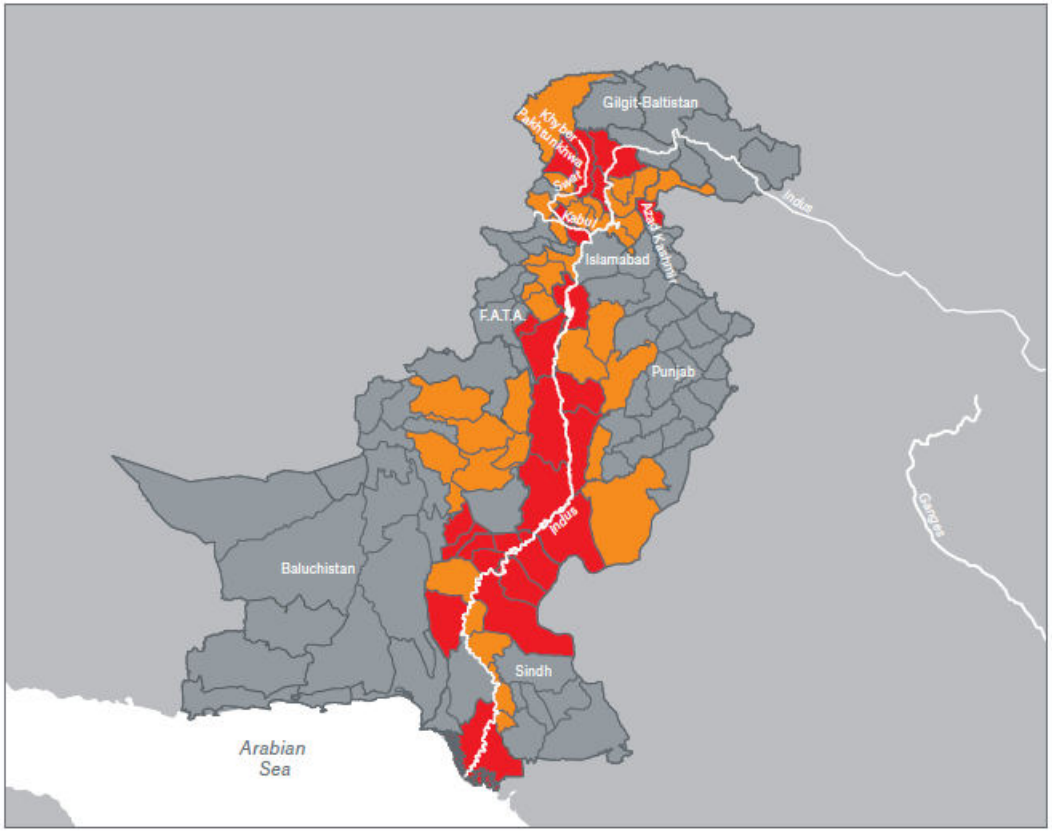


Source: Munich Re.

Regional EQ and Tropical Cyclone map

2010 PAKISTAN FLOODS

Extent of the flooding



The most severely hit districts were also those with the most intensive land use. They line the banks of the Indus like pearls on a string.

Districts affected

- Not affected
- Moderately affected
- Severely affected
- Provincial borders
- District borders

Source: OCHA, National Disaster Management Authority Pakistan

Worst floods in Pakistan's history – for over 6 weeks one fifth of the country was flooded.

2010 PAKISTAN FLOOD LOSS IN FIGURES

Loss figures

Fatalities	1,760
Homeless	6 million
Overall losses (US$ bn)	9.5
Insured losses (US$ m)	100
Number of homes destroyed/damaged	approx. 1.5 million
Flooded fields	>69,000 km^2

Source: Munich Re Topics Geo 2010.

CATASTROPHE MODELLING

- Catastrophe Modeling helps determine reinsurance premiums for catastrophe events.
- Catastrophe Modeling represents a range of probabilities so that the user can manage exposure to an acceptable level.
- Predominantly used for Earthquake and Windstorm currently.
- Trend towards Probabilistic models rather than Deterministic.
- Deterministic models measure losses caused by a specific event; for example Hurricane Katrina (GOM). This can be analyzed against the portfolio of exposures.
- Probabilistic models measure a set of events against multiple variables in order to determine probable maximum loss over a given time period and an annual premium.

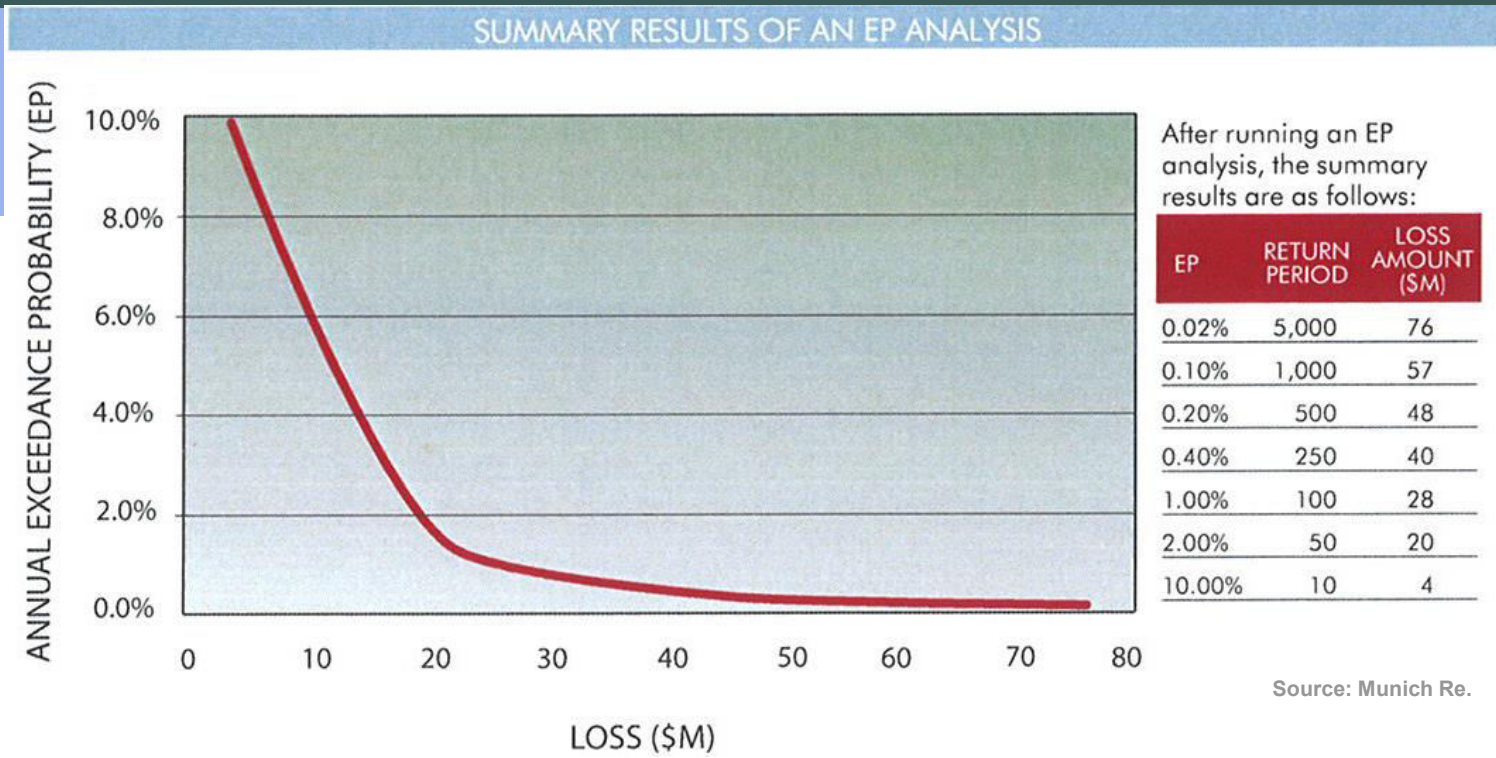
DATA ENTERED INTO A PROBABILISTIC MODEL

- Site locations (geocoding data) such as street address, postal code, county/CRESTA zone, country.
- Physical characteristics of the exposures such as construction, occupation/occupancy, year built, number of stories (Height), number of employees.
- Financial terms of the insurance coverage such as total insured value, limit and deductible/excess.

BASIC FRAMEWORK FOR PROBABILISTIC MODELLING

- The basic framework for Probabilistic modeling includes;
- **Stochastic Event Module:** Database of scenario events. Each event is defined by a specific strength or size, location or path, and probability of occurring or event rate. Thousands of possible event scenarios are simulated.
- **Hazard Module:** Assesses the level of physical hazard across a geographical area at risk.
- **Vulnerability Module:** Calculates the amount of expected damage to the properties at risk.
- **Financial Analysis Module:** Estimates of insured losses are then computed by applying policy conditions (eg, deductibles, limits) to the total loss estimates.

MODELLED OUTPUT EXCEEDANCE PROBABILITY (EP) CURVE



After running an EP analysis, the summary results are as follows:

EP	RETURN PERIOD	LOSS AMOUNT ($M)
0.02%	5,000	76
0.10%	1,000	57
0.20%	500	48
0.40%	250	40
1.00%	100	28
2.00%	50	20
10.00%	10	4

Source: Munich Re.

- Illustrates annual probability of exceeding a certain level of loss.
- Average Annual Loss (AAL) is an estimate of the annual premium required to cover losses from the modelled peril over time, assuming that the exposure remains constant.
- AAL is calculated as the area under the EP curve and is also known as the 'burn cost' or 'Pure Premium'.

PROBABILISTIC MODELLING IS NOT PERFECT

- Requires substantial amounts of data for model construction and validation. The more information the more accurate the summary.
- Reliability of such models depends heavily on an understanding of the underlying physical mechanisms that control the occurrence and behaviour of natural hazards.
- They do not model every region or territory. The number of regions being modelled continues to grow, however, this is restricted by demand and therefore insurance penetration.

CANNOT AFFORD TO IGNORE NATCAT

- NatCat exposure can be monitored and aggregated in order to monitor portfolio exposure.
- NatCat sublimits and deductibles can be implimented into the slip to control NatCat exposure further.
- Separate NatCat premium can be allocated.

CONCLUSION

- NatCat risk is here to stay.
- Exposures are increasing due to the growing economies of the developing world, thus the monetary amount of losses will increase.
- Insurers responsibility to offer appropriate cover and help with the mitigation and recovery of the business and economies.
- Global Insurance Industry can only take risk to the extent of it's balance sheet. Therefore NatCat capacity is a limited resource for insurers.
- Catastrophe goes beyond the Global Insurance Industry, It's a both a political and social issue. Insurance is only part of the solution.
- Inadequate Building Codes and/or over concentration of values in Catastrophe areas.
- Smart deployment of NatCat capacity, maximizes returns and controls the exposures.

Thank you!