Windstorms – A rising threat?

It has been an active typhoon season so far this year. **Mr Amer Ahmed** of **Allianz Reinsurance** discusses the effects of climate change on these windstorms and notes that the combination of increasing wealth in Asia, growing population in the coastal areas and the persistence of underinsurance all makes the situation one that needs urgent work from all stakeholders, including insurers.

This typhoon season has been an active one, seeing the development of 13 tropical storms, six typhoons and four super typhoons so far. Two Category 4 super typhoons, Neoguri and Rammasun, have made landfall – in Japan (among other countries) and China respectively – causing billions of dollars in damage.

The story is not unfamiliar. The warm waters of the Pacific Ocean generate an average of 26 tropical storms per year, compared with 11 arising from the Atlantic. The western north Pacific is the most active base for these tropical storms – a problem for the large coastal areas of Southeast Asia which front it. The Philippines in particular, suffers under regular tropical storms, Haiyan of 2013 being the deadliest on record to hit the island country and arguably the strongest ever to make landfall.

Will climate change affect these storms?

The typhoon season, which runs from the beginning of June to the end of November, has been the subject of much scientific debate over the past decade.

2013 saw the most active Pacific typhoon season in almost 20 years, with 13 typhoons developing, and those that made landfall causing an estimated US$22.8 billion in damages.

The key concern is: how will climate change affect the storms? If sea temperatures rise, will such events become more frequent? After all, these formations gain their fuel from hot ocean surface temperatures, among other factors such as steering currents and vertical wind shear.

While there has been no conclusive answer to the question, most scientists agree that the severity, rather than the frequency, of windstorms will increase. The disparity in temperature between sea level and the top of a tropical storm formation is another of its key energy sources and climate change is believed to be increasing this temperature difference.

However, the IPCC's Managing The Risks Of Extreme Events And Disasters To Advance Climate Change Adaptation has "low confidence" that global warming will result in increased tropical cyclone activity, due to the complexity of atmospheric processes which are still not fully understood.

Land subsidence a major problem

So, good news? Not exactly.

When windstorms strike Asia, the primary loss driver is often the precipitation component, rather than the damage caused by wind.

One example was the devastating Typhoon Morakot in August 2009 - one of the deadliest storms to affect Taiwan in recorded history. Within 100 hours, a record-breaking 2855 mm rainfall (almost three times the annual precipitation of New York) was recorded, resulting in devastating

landslides and close to 700 casualties. Flooding and flood management are therefore key issues in Asia.

In their Climate Risks and Adaptation in Asian Coastal Megacities, the World Bank labelled land subsidence "a major problem [that] can account for a greater share of the damage cost from flooding compared to climate-related factors".

This particularly affects areas of Bangkok and Shanghai. Shanghai has sunk an alarming 2.6 metres since 1921, and it is not alone. From a 2013 article by China Water Risk: "China's official agencies note that 50 cities are at risk of subsidence due to over extraction of groundwater ... Sinking cities can result in damaged buildings, buckled highways, disrupted water supply and drainage as well as increased risk of flooding."

Population in coastal areas increasing

Asia is already over 60 times more vulnerable to flooding than the United States, with Thailand having suffered at least seven major flood events in the last 30 years, and Delhi sometimes receiving as much rain in a single day as New York does in a year.

Secondly, while the frequency of tropical windstorms may not be increasing, populations in coastal areas exposed to such storms definitely are. Statistics coming out of Asia show that its population is predicted to have doubled by 2050 – particularly in urban, coastal areas.

A simultaneous increase in prosperity means the number of people defined as "middle-class" will have doubled between 2009 and 2020. More wealth means more insured assets, and more land development.

A study by the Texas A&M and Yale Universities found that by 2030, the amount of developed, low-elevation, coastal land in China will have increased by over 60,000 sq km since 2000.

"Future increases in income are likely to double tropical cyclone damage even without climate change," warns a 2012 report on The impact of climate change on global tropical cyclone damage which was published in Nature.

So we have increasing assets and a booming population clustered around tropical storm hotspots in the face of intensifying storm activity.

Severe underinsurance in the region

Compounding the problem is severe underinsurance in the region. Munich Re reported that "for every euro of destruction caused by a natural catastrophe in Asia, on average only eight cents was covered by insurance during this period [1980 – 2012], while the average for the same period was 40 cents on the American continent".

Of the $168.11 billion global insurance shortfall uncovered by the Lloyd's Global Underinsurance Report, the majority rests in Asia – whose countries lose a disproportionate percentage of their GDP each year through natural catastrophe recovery costs. Studies have shown that even a one percentage point increase in a country's insurance penetration level will reduce the burden on state and tax-payer by up to 22% after a natural disaster.

The reasons for underinsurance in Asia are many and varied, including a cultural tendency to rely on savings, the perceived high cost of insurance and a general mistrust of the industry. This highlights the importance of raising awareness and adequate risk pricing. The industry has talked at length about the need for good data to assist in pricing and risk analysis. Asia continues to pose a challenge in this regard.

Towards this end, on a group-wide scale, Allianz Re has recently purchased a global data set showing floodable areas in riverine flood events. Combining the flood hazard data with portfolio data will aid the understanding and assessment of flood risk at individual and portfolio level. The data will be used to determine risk and exposure adequate premiums, limits and deductibles.

Insurance can complement global efforts to mitigate and adapt to climate change

Insurance penetration is also vitally important in a social context to developing countries, assisting them to protect against the future effects of climate change. This is something Michael Butt, co-chair of the Geneva Association Climate Risk and Insurance working group, is acutely aware of.

"Already, the insurance and reinsurance industry provides a remarkable service in de-risking the global economy and reducing the burden on taxpayers by taking risks off government and public institution balance sheets, and dispersing them globally through risk transfer mechanisms such as the global reinsurance market."

But the industry needs to go further.

This was the aim of the Climate Risk Statement of the Geneva Association, released earlier this year and to which Allianz is a signatory. The Statement was described by Butt as "a reference point for policymakers, non-governmental organisations and customers, in addition to the insurance industry itself, on the ways in which insurance can complement global efforts to mitigate and adapt to climate change".

And as another active typhoon season draws closer to an end, it is clear that's just what is needed.

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