



The value of ecosystem resilience to insurers

Exploring the role of insurance as a global connector and driver of shared risk management to generate shared value

Ian Kirk, Chief Executive of Santam Group



Introduction

In 1992 in Rio de Janeiro, Climate Change, Biodiversity and Environmental Degradation were put on the international agenda at the first Earth Summit. Twenty years later nobody can ignore that human development and economic growth rely on healthy and resilient ecosystems but all too often we do, perhaps because it is easier to compartmentalise issues and believe that someone else will deal with the complexity. From 20 - 22 June 2012 governments, businesses and NGOs from around the world have come together at the Rio+20 conference to showcase and stimulate activity where environment, development and economic policy need to be considered together.

In this Thought Leadership article, Ian Kirk, Chief Executive of Santam Group – a diversified developing market general insurer head-quartered in South Africa – explores the implications of a key theme at the Rio+20 conference for the insurance sector. Ian demonstrates how the insurance sector is uniquely placed to act as global connector for shared values and what the value of ecosystem resilience plays in mitigating disaster risk, including climate change risk.

This ClimateWise Thought Leadership article is the second in a series which is being published throughout 2012. Each article is authored by an executive from a ClimateWise member organisation and aims to inspire debate around a new issue related to managing climate change risk which the author believes could yield value for the insurance industry if adopted more widely.

The ClimateWise Thought Leadership Series is intended to provoke debate. Join the discussion on the ideas contained within this article on LinkedIn (Search '**ClimateWise**' to find the Discussion Group), or connect with us on Twitter (**@ClimateWise**) or email (info@climatewise.org).

In the 21st century we can no longer deny that we live in a connected world. Three unrelated top-of-mind examples bear this out:

- Mark Zuckerberg, 27, has just become a billionaire through the IPO of Facebook – which is a social and now also a business connector
- A middle class teenager dresses the same whether you are in the USA, Europe, Africa or Asia - courtesy of global branding
- There are floods in Thailand and hard drive prices across the world spikes as global supply chains are disrupted ...

Yet the idea of insurance as a global connector is not obvious. On closer inspection the insurance industry is exactly that – a global connector – it cuts across regions, nations, individuals, businesses, and industries to pool the funds from *many* insured entities to pay for the losses that some may incur. The industry effectively spreads risk over time and entities. In its capacity as “global risk pool provider” the insurance industry at large is an important contributor to global socio-economic well-being.

An initiative facilitated by

And although the insurance industry is not perfect and remains with work to do, it exists for a reason — the fundamental need for people to protect themselves against “risk exposures”, either as individuals or businesses. One of the critical “risk exposures” of our time is climate change.

Globally insurers have observed an upward trend in weather-related insured losses due to the increase in frequency and intensity of extreme weather events and the increasing economic cost associated with them. A cursory glance at the global reinsurance catastrophe reports confirms that 2011 was the year with the costliest natural and man-made disasters on record. Our experience on the ground in South Africa bears this out, where we have incurred significant weather related losses in each of the last 5 years.

Furthermore, these weather-related losses have been growing faster than insurance penetration, while insurance density remains low especially in developing countries. This is placing pressure on the availability and affordability of insurance, slowing growth in the industry, and most significantly, shifting greater risk exposure onto governments and individuals. This trend is not good news for insurance, policyholders, insurance intermediaries, risk advisors, communities and governments and therefore needs to be addressed.

A response that consists solely of insurance and re-insurance remodeling and upwardly rating of risks is not adequate, as it will decrease availability and affordability, a trend which is not in service of sustainable development, especially when one views this from the need and potential of a developing country.

In 2009 we embarked on a study with partners from outside the insurance industry to better understand what this means from a practical perspective to the risk on the ground in a municipal district called Eden in South Africa ¹. Eden is a rural district, small population, and includes the coastal Garden Route. We wanted to understand the specific socio-ecological risks, present and future; the measures of socio-ecological resilience and the drivers of these risks and levels of resilience in the landscape.

We produced 3 key findings with significant implications for the insurance industry:

1. Climate changes are driving risks higher
2. Changes to ecological buffering capacity is as important as climate change
3. Real risk on the ground is the end result of many factors in a dynamic complex system

Climate changes are driving risks higher

The first finding confirmed our claims experience and also the scientific communities’ predictions of increasing climate risk. We focused on temperature, intense rainfall days and sea storms, all of which showed significant changes and linkages to risk:

- **Fire risk:** Using the MacArthur Fire Danger Index and input parameters of temperature, wind speed and relative humidity, we were able to show that the number of high fire risk periods is likely to increase by approximately 41% for the period 2020 to 2050 compared to 1960 to 1990
- **Intense rainfall days:** Climate simulation models demonstrated that the number of intense rainfall days (>20mm) per year were predicted to increase by 36% in winter months for the period 2020 to 2050 compared to 1960 to 1990

¹ For the full report please go to http://www.unepfi.org/fileadmin/documents/insurance_changing_risk_landscape.pdf

- **Sea storms:** Models indicate that the occurrence of extreme wave run-up events, as recently recorded in 2007, is expected to be six times greater due to a predicted sea level rise of 1m by 2100

Changes to ecological buffering capacity is as important as climate change

The second major finding of our study is surprising - and good news – as it can be more easily and immediately be addressed: **Local human-induced changes to land cover and the buffering capacity of ecosystems was of equal or greater importance in driving increasing risks, when compared to climate change.**

- Using historical data, we found that the occurrence of invasive alien trees was the most important driver of significant wild fires in this region, explaining 37% of the change in fire occurrence. While the naturally occurring fynbos vegetation of this area is also fire-prone, the occurrence of invasive alien trees increased the number of high fire risk areas by between 31% and 37%.
- We found that land cover changes recorded in this area over the past two decades had an equal effect on extreme surface water flows. The occurrence of large fires in commercial forestry plantations as well as clear-felling of stands without active rehabilitation could increase the return period of an extreme flow event of 150mm per day by 40%.
- The destruction of coastal fore-dunes and the hardening of surfaces in this area (leading to increased erosion of these dunes) was one of the most significant predictors of coastal risk.

These findings point out that human-induced impact on the ability of a given ecosystem to absorb weather events (i.e. its ecological buffering capacity) have an equal or greater impact on risk, as compared to future climate change predictions. This means in turn that focusing on the proactive management of the specific risks on the ground and restoration of these ecological systems; where their buffering capacity has been impaired, **has the potential to offset most of the future increases in risk related to climatic changes.**

Real risk on the ground is the end result of many factors in a dynamic complex system

The actual risk of any individual asset is the end-result of many inter-dependent and connected factors – it emerges from the many non-linear interactions between the different drivers of the different risk exposures. For instance, in our case study, land cover changes (i.e. reducing the hardening of surfaces and increasing natural vegetation that increases buffering capacity) could almost halve the return period of extreme surface flows of water from a 1 in 75 year event to a 1 in 45 year event.

The implications are that modeling fine-scale 1 in 50 year flood lines based purely on climatic data becomes less valuable in assessing risk. One has to model the system and the drivers of the risk exposures in this dynamic inter-dependent system instead to get a true understanding of the risk exposure over time.

In addition, the system is continually changing, so a static model is not a very good approximation of the real exposure. Within such dynamic and complex systems there is thus a limit to the power of predictive models and therefore the usefulness of ever-finer scale risk assessments.



From shared risk exposure to shared risk response

Having acknowledged the existence of a shared risk, the critical question becomes how one moves towards a shared response for a given complex system. A sensible approach is the more unifying concept of creating shared value; finding ways of expanding the total pool of economic and social value, and effectively reducing the level of risk exposure on the ground to the benefit of all – society, business and government.

This sharing of risk is not foreign to the insurance industry with its many financial instruments. It does however challenge the industry to use its influence and connection to raise the system's responsiveness to risk from reactive stance to proactive stance. It also challenges the industry to connect to the system and influence it, as the drivers of risk in a system needs to be managed in a dynamic real-world connected manner. Often the owner of the asset, the manager of the risk driver and the recipient of the risk exposure are connected in the system, but not the same party. More work is needed to find ways to do just this at scale.

Reflection

It is perhaps not widely known that Benjamin Franklin wholeheartedly believed in insurance: "An ounce of prevention is worth a pound of cure." In 1752, he became one of the early proponents of mutual insurance and helped formed The Philadelphia Contributionship for The Insurance of Houses from Loss by Fire, the first successful fire insurance company in the U.S. colonies. Houses that didn't conform to legal specifications were denied insurance. By hiring a chimney sweep to maintain the chimneys of insured houses, they were officially one of the first insurance carriers to enact loss control standards.

This prompts one to ask about the kind of insurance specifications we need to address the drivers of climate risk exposures in a systems-based manner, and about the climate risk equivalents of the chimney sweep for the global insurance industry.

On a macro level, this project allowed us at Santam to better understand the system dynamics between risk and resilience in a socio-ecological landscape and the role of the insurance industry in shaping societal behaviour. On a micro level, it will eventually impact certain decisions that we make in terms of underwriting and risk exposure.

We remain with much work to do to manage the risk factors under our control, but collaboration is required. On our own as insurers we cannot do much, but collectively we need to make the difference to ensure the sustainability of our industry.

Ian Kirk, Chief Executive of Santam Group, June 2012

Next steps

It is crucial for insurers to understand the drivers of the risks they underwrite, and how those drivers are connected to the social and environmental landscape in which the business operates.

- **Do you currently understand these links?**
- **Have you considered the benefits to your business of working with others to manage shared risks?**
- **What can you do to encourage good socio-ecological risk management that benefits your business and society?**