



Risk Management Newsletter

No. 53

May 2013

Editorial	1
Looking Back at 25 Years of Risk Management Research (RMR) at The Geneva Association	
In his editorial <i>Walter R. Stahel</i> gives the conclusions of his 25 years' of risk observation.	
Updates on the Topics of the Editorial of the <i>Risk Management Newsletter</i> of November 2012	4
<i>Walter R. Stahel</i> discusses global versus local strategies to manage risks and opportunities.	
Guest Editorial	6
The Case for a Southeast Asian Agriculture Risk Pool	
<i>Dr Suzanne Corona</i> highlights that the demand for food in Southeast Asia increases for a number of reasons and that food security thus gains in urgency.	
The Changing Framework of Sustainable Reporting	10
<i>Walter R. Stahel</i> points out that sustainability may shift to a fundamentally new way of reporting.	
Publications by The Geneva Association	13
The Geneva Association's Research Project on the Actors Involved in Reducing Disaster Risks	14
<i>Walter R. Stahel</i>	
Notes from the First European Fire Advisory Meeting	19
<i>Meghan Orie</i>	
Forthcoming Risk Management Seminars of The Geneva Association	21
The M.O.R.E. 27 Seminar 5 th CR+I Seminar of The Geneva Association	
Publications Received	24
Forthcoming Conferences of The Geneva Association	26

Editorial

Looking Back at 25 Years of Risk Management Research (RMR) at The Geneva Association

by *Walter R. Stahel*⁺

On 1 May 1988, your humble servant took over responsibility for the RMR programme from Dr Orio Giarini, the first Secretary General of The Geneva Association. The RMR programme—mostly “hard” engineering and NatCat risks—was spun off from the other research activities that remained in the hands of Dr Giarini. Financial risk issues later took on a dynamic which led to a number of distinct programmes: Insurance Economics, Life and Pensions (the Four Pillars) and PROGRES, which are managed by their respective heads of research. Financial risks in the 21st century also called for supranational regulation frameworks: Solvency II was the precursor of things to come. Today, research-based advocacy and institutional relations have become the key activity of The Geneva Association.

The risk-control side of insurance companies took a different course. The chief risk officer (CRO) as a distinct function existed in banks before spreading to insurance. The first CROs in the insurance industry appeared at the end of the 20th century. In 2003, I organised the Geneva Association's first Annual Round-Table of Chief Risk Officers (ART of CROs); at the time, 15 Geneva Association Members had a CRO. This meeting led to the creation of the CRO Network, chaired by Bruno Porro from Swiss Re, who is credited as being the first CRO of an insurance company worldwide. Bruno Porro was succeeded in 2011 by Hans Peter Würmli as Chair of the CRO Network.

Coming back to “hard” risks allows me to reflect on some fundamental changes in the risk landscape that I have observed since starting my work. Forgive my black-and-white depiction for greater clarity. The changes I am referring to are:

- from electro-mechanical to electro-electronic technologies,
- from parallel techno-economic systems to interwoven networks,
- from expert judgements to a generalisation of the Titanic syndrome.

A combination of electro-mechanic-hydraulic systems was the norm in airplanes, cars and telephones 25 years ago. This meant that airplanes could be piloted “manually” in an emergency, automobiles with a flat battery could be push-started and fixed-line telephones could be used during power cuts—all three options disappeared with the shift to

⁺ Vice Secretary General and Head of Risk Management Research, The Geneva Association, walter_stahel@genevaassociation.org

electro-electronic systems, which constitute Siamese twins: no IT without electricity, no electricity without IT.

Systems of different technologies running in parallel modes 25 years ago provided redundancy and resilience. Manual cash registers (or abacuses in Eastern countries) in shops relied on people for their functioning; newspapers, radio and television mostly supplied information on locally relevant events; cash, different types of checks and credit cards offered payment options. Today, scanners make self-billing cash desks in supermarkets possible; information on global events is available instantly via the Internet; ATMs provide global access to cash—provided the Siamese twins of electricity and IT function properly. If not, there may not be any alternative available. Any prolonged power cut, caused by floods, sabotage or solar storms, will create havoc for modern industrialised societies, crippling communication systems, pumps, lighting systems, horizontal and vertical transport, communication systems, supply chains, heating, cooling and ventilation systems, bank and money distribution systems, which all need electricity and often also IT to function.

In India, a 2012 power cut affecting 600 million people had little real impact because most households use kerosene lamps and most enterprises have diesel generators as a result of unstable power supplies. Vulnerability thus depends as much on the level of technical development and self-sufficiency as on external events.

For some extremely infrequent events, such as solar storms and their potential impact on modern technology and infrastructure, or impacts of traditional hazards on new technologies, such as volcanic eruptions on jet engines, there is no historic record.

The shift from parallel techno-economic systems to interwoven networks is most visible in global supply chains and technologies. The events of 2011 were a case in point: the tsunami in Japan and the floods in Bangkok both created shortages of components for, among others, the European car industry, and raised the issue of prolonged business interruption for insurance.¹ Global IT services are another: outsourcing companies that provide low-cost computer services are emerging as “the weakest link” in the battle against cybercrime; the work of hackers is facilitated by the advances of cloud computing² and smartphones. The speed to market trend makes them the low-hanging fruit for hackers and cybercriminals. Economies of scale and the drive to push replacement sales dominate risk management in these techno-commercial developments.

The Titanic syndrome is the term I use for the overestimation of technological progress, forgetting that progress may create new risks. For human operators want to exploit technological progress! If Mr Smith, the Titanic’s captain, had not been informed that his ship was unsinkable, he would not have raced through the iceberg zone on the ship’s maiden voyage. Nor would so many expensive cargos have accumulated, waiting for the safest transport of all times to come. The overestimation of progress thus resulted in the biggest human and economic loss in history. One hundred years later, cars and airplanes have the capability of operating on their own, reducing the human operator to an observer. Stanley Kubrick’s 1968 movie *2001: A Space Odyssey* showed the hazards that computers in charge of a space mission can create “if they get it wrong”. Air France’s ill-fated flight AF447 across the Atlantic highlighted the hazards that arise when the autopilot switches itself off and junior co-pilots—the observers—have to take manual control in a storm. A lack of experience, combined with the absence of the senior pilot, led to the crash.³

In addition to the new hazards that technological leaps may create, there are risks and opportunities deriving from linear developments in nature and society, such as pandemics and climate, weather and population-related events, as well as from radical innovations in science and technology.

Nature was responsible for the disaster of 11 March 2011 in Tohoku, Japan when an earthquake of unprecedented magnitude triggered a record tsunami. But the impact of the disaster was increased by human action (urban and industrial development) which ignored lessons from the past, despite the warnings inscribed on tsunami memory stones along the Tohoku coastline. The storm Sandy that hit Manhattan was the collision of two extreme weather events over a densely built, urban area, where much electrical and IT equipment was located in underground rooms rather than on (expensive) upper

¹ The forthcoming Geneva Report No. 7 *Insurers’ contribution to disaster reduction—a series of case studies* will cover this topic.

² “Cybercrime linked to outsourcing”, *Financial Times*, 25 March 2013, p. 18.

³ The counter-example is US Airways Flight 1549, where an experienced pilot safely landed his airplane on Hudson River—a situation which cannot be learned in simulators.

floors.⁴ While hazards stemming from nature and society develop slowly and gradually, their impacts can be sudden and accidental—tornadoes and flash floods; acts of terrorism (9/11, cyber criminals, “sleepers”)—and will normally be covered by insurance.

Radical innovation in science and technology changes the characteristics of both opportunities and risks. The move from chemical molecules to nanoparticles, from breeding to genetically modified organisms, from lead-acid to lithium-ion batteries was a choice and may be reversible or not—the future will tell. Nuclear weapons are another example: The Geneva Association’s 1987 Science Meeting,⁵ on the future of nuclear disarmament after the Moscow Agreement, was attended by leading physicists from East and West and concluded that we will have to live with the bomb, because dismantling the last bomb would need an absolute trust and faith in the other nations doing the same thing—one cheater would rule or terrorise the world.

What nature and society, as well as science and technology, have in common is that adaptation is a valuable and proactive option, but an option which implies changes in people’s behaviour: not building in flood plains or not exploiting nuclear energy means foregoing economic opportunities in exchange for preventing potential risks. This brings us back to one of the first lessons of risk management I was taught: an ounce of prevention is worth a pound of cure; but prevention has to be paid upfront and may lead to alternatives with unknown risks and opportunities.

What are my conclusions after 25 years of observing risks?

- Risk management is an approach consisting of balancing risk and opportunity, and a cultural issue; Europeans consider the risks, leading to risk aversion for anything new and a loss of competitiveness; Asians and Americans consider the opportunities, leading to rapid technical developments, but also to underestimation of potential risks.
- Journalists write about known risks—the events of Wednesday 13 February 2013 are an excellent example of this. For weeks, newspapers worldwide had written about an asteroid which would pass very close to Earth with potentially catastrophic consequences—but nobody had foreseen the coming of a meteorite which hit Russia, causing extensive damage and injuring 500 people only a few hours before the asteroid safely passed Earth.
- Expect the unexpected, think the unthinkable, and remember Murphy’s law: anything that *can* go wrong, *will* go wrong. Societal unrest is a case in point: high youth under- and unemployment or the lack of personal future prospects is a bomb ready to explode in both less developed and industrialised countries. But who will defuse the bomb, and how can it be done?⁶
- Increase societal resilience. Adaptation measures make sense independently of the cause; many disasters are not foreseeable, their impact either. Insurance is therefore part of resilience by enabling economic reconstruction after a disaster and speeding up society’s path back to “normality”.
- Natural catastrophes are only disasters if they impact people or their property. Adaptation measures must include the option of getting out of harm’s way, and insurance can play a role and should take action to encourage this option.⁷
- Vulnerability and resilience are two sides of the same coin. Insurance should focus on increasing societal resilience and promoting adaptation measures to reduce the impacts of disasters, as societal vulnerabilities come from a combination of potential “aggressors” (e.g. terrorists, poverty) and “victims” (technical networks, ageing populations) that are constantly evolving.
- Insurance could better sell its contributions to people’s well-being and societal resilience and The Geneva Association could play a larger role in this.

I now look forward to a continued analysis of risks and opportunities in the coming years, as well as their significance for the insurance industry—a never ending learning experience.



⁴ Sandy represented the third biggest storm loss in the U.S., after Katrina and Andrew.

⁵ Held at the Castello di Duino, and organised jointly with the International Centre for Theoretical Physics (ICTP) in Trieste.

⁶ See also the article on the changing framework of sustainability reporting, page 10 of this newsletter.

⁷ Victims of Sandy are complaining that they only get reimbursed if they rebuild their houses on the same plot of land—situated in a flood plain.

Updates on the Topics of the Editorial of the *Risk Management Newsletter* of November 2012

by Walter R. Stahel

In the last *Risk Management Newsletter*, we presented the issues of the global power perspective—Fukuyama's one world versus Huntington's clash of cultures⁸—and the related conflict between the European environmental, social and governance (ESG) issues promoted by the United Nations Environment Programme Finance Initiative (UNEP FI) and other, differing sets of values competing on a global level.⁹

In Germany, the judiciary authorities have discovered that German Muslims are increasingly relying on a system of mediators to solve criminal issues including rape and manslaughter, rather than informing the police. One of the mediators defended this position on German state television by pointing out Islam's priority of avoiding further bloodshed between Muslim families rather than punishing the "guilty". The German authorities will now try to regain control, as the existence of two parallel judiciary systems is not compatible with the German constitution; U.K. authorities are involved in a similar battle to push back applications of sharia law in preference to U.K. law.

The case of the bombers of the Boston Marathon has shown yet another side of two cultures with different values leading to sudden eruptions of violence.

Intellectual Property Rights (IPR) are one of the success factors of modern society. However, the ethical foundation of IPR is increasingly being questioned. In the case of "Novartis v. The Supreme Court of India", after seven years of litigation, the Supreme Court of India ruled against the Swiss pharmaceutical multinational; you could say: a victory of need-based over IP-based jurisdiction, a trend also observed in Liability Dynamics (see Richard Murray's paper on tort rule replaced by need rule).¹⁰ The World Trade Organization (WTO) TRIPS Agreement ([Trade-Related Aspects of Intellectual Property Rights](#)), which came into effect on 1 January 1995, is to date the most comprehensive multilateral agreement on intellectual property. In cases of a national emergency such as pandemics, it allows "imposed licenses". Where the ruling on Novartis' Glivec is concerned, or the other IPR protection exclusions for pharmaceuticals upheld by the Supreme Court of India, this exception did not apply. The court's decisions created a substantial, rapidly growing and globally active Indian generic drugs industry producing cheap copy products for both domestic and export markets. NGOs hailed the court's decision as a victory for the poor; approximately 40,000 NGOs exist worldwide and are also the drivers of UNEP's ESG issues.

The reaction of EU policymakers is not to defend IPR, but to propose a third approach: pharmaceutical research in Europe could be done by national research centres funded by the EU; the resulting patents would then be placed in the public domain for the common good. This might solve the IPR issue; what would be the impact on insurance of the pharmaceutical sector?

Parallels could be drawn with risk models on climate and weather issues, where governments have much of the weather data needed by the private modellers. Governments could help the continual cycle of model development by making data available free at the point of use, and by stimulating the publically funded academic sector to continually improve risk and engineering models and then publish their work in open access journals.

A mass violation of IPR is happening through the use of smartphones nowadays. Any artist such as a musician or an actor is at the risk of being filmed during a performance, with the video clips being

⁸ Cf. *Risk Management Newsletter* 52, November 2012, "Background Information on Topics of the Editorial", p. 10.

⁹ With regard to the Global Commons, the International Club of Rome is hosting its 2013 Annual Assembly and Conference, 18-21 September in Ottawa, Canada on the theme "Governance of the Commons". The last day will focus on "Governance and the Rule of Law"; without the rule of law, governance is a hollow concept. The issue of liability for damaging the global commons is a hot topic as a number of claims are still pending based on CO₂ emissions as a case of destroying the atmosphere and causing climate change.

¹⁰ Guest Editorial of the *Risk Management Newsletter* 51, May 2012: "[Climate Liability Risk: Will it be the Next Chapter in the Global 'Blame Game'?](#)".

instantly available on YouTube or other social networks. Traditional IPR issues such as quality control, the rights to one's own image and royalties, are practically unenforceable. In addition, the artists performing on stage can be blinded by the flashes or lights emitted by these devices.

Complexity and resilience—whose complexity?

The world has been complex ever since the Big Bang. But our perception and knowledge of this complexity have been constantly changing, creating new visions of it. Blaise Pascal (1623–1662) was probably the first to compare our knowledge to a balloon floating in the universe of the unknown. If this balloon increases in volume, so does its surface and hence, its contact with the unknown. Is mankind caught in a sorcerer's apprentice dilemma? Or is the issue how we can adapt to this situation?

We have two fundamental choices:

- creating resilient communities that are culturally adapted and integrated on local and regional levels. This approach demands that societies adapt their structures in order to reduce the impacts of any extreme event;
- creating a global governance structure that applies a command-and-control approach of global governance to impose the "right solution" on the world population.¹¹

With regard to governance, regulation and control, this means that:

- The first choice may give an impression of powerlessness and complexity, of replacing order by uncertainty, but also of creating room for creativity and innovation.
- The second may give rise to a huge new global organisation and enable taking proactive action to save the world, in the form of a benign dictatorship.

If this dilemma is applied to green technology, photovoltaic solar energy is a case in point, offering the choice between:

- decentralised power, produced locally and individually in rural and urban regions for self-consumption, relying on stand-alone equipment, increasing societal resilience; and
- harnessing this decentralised green electricity in order to feed it into national grids, which requires a well-defined network structure and a centralised management.

The first option is left to the market and is today applied in areas of need (such as isolated rural and mountain areas) or for strategic reasons (autarky); the second has been promoted in many European countries and relies on state subsidies. The two choices lead to very different energy supply systems: in the first case, individual (battery) storage, e.g. 12V DC¹², and in the second, 220V AC with no storage of surplus energy (and lower efficiency because of double transmission losses).

The first option enables building energy-resilient communities and energy-autonomous buildings; the second leads to increased uncertainty and systemic problems as its applications spread. In Europe, on sunny and windy days, electricity spot prices at lunchtime periodically turn negative and up to half the windmills may have to be shut down (there is no way to shut down photovoltaic solar panels), leading to a loss of revenue for the operators and thus, reduced return on investment for the green windmill owners—a non-insurable event or an opportunity for insurers?¹³

In the case of solar storms having a disastrous impact on terrestrial infrastructures, the first option provides security and societal resilience on a local level. The second option represents a lost opportunity to mitigate the impact of solar storms. If the power cuts from solar storms should extend over weeks or months, the discussion of economy of scale and diseconomy of risks in the choice of technologies could move into the societal and thus political centre stage.

¹¹ As a consequence, democracy is considered an unethical form of government. This position is taken by some NGOs.

¹² The 12V DC (direct current) electric system is standard for motor vehicles and cheap component appliances are therefore available. All electronic devices (IT, smartphones) function on 12V DC.

¹³ www.energymarketprice.com, 27/03/2013

Guest Editorial

The Case for a Southeast Asian Agriculture Risk Pool

by Dr Suzanne Corona⁺

Central to the issue of food security is the role of the agriculture industry, which currently contributes to between 20 and 50 per cent¹⁴ of intermediate consumption for the production of food in a country. Natural or man-made disruptions to agricultural activity have however led to severe food shortages, sharp increases in food prices and starvation among the poor. Apart from the moral considerations of managing food security, history is also replete with examples of the attendant risks to social stability, as was seen recently in the case of the Arab Spring. Adequate protection of agricultural interests is therefore fundamental in managing food security, an area of vital focus for governments and one in which the (re)insurance industry has an important role.

This reflection will be about the roles of agricultural insurance and governments in ensuring food security. The demand for food products is increasing across the globe in step with population growth, and this is particularly true in Southeast Asia, where the middle class could triple over the next 20 years.¹⁵

A growing population is only one driver behind the increase in demand for food. The effect of population growth could be easily amplified by changes in food consumption patterns as income rises. According to the Food and Agriculture Organization of the United Nations (FAO), per capita consumption of meat tends to increase with per capita income (FAO, 2009). A larger livestock population diverts resources away from production of food for human beings (FAO, 2009).

How about the supply side? Although the global agricultural land area has increased significantly since 1961, data from the last decade indicate that the trend has started to reverse (FAO, 2012a). Landowners seek to optimise income from their land. Political pressure is towards maximising tax revenue, an incentive to transform agricultural land into commercial land. If the benefit of land use for commercial activity offsets the price of sacrificed agricultural production, there is an understandable realignment of priorities.

Land area is only one factor; there is also yield-per-area. Over the past 20 years, yield has been increasing. However, the rate of increase is levelling off. This could be attributed to multiple reasons such as the degradation of soils and water quality, toxin build-up and the fact that modern agronomy is reaching its limits (Thapa, 2009).

Water supply is a significant risk factor in agricultural activity. Fresh water only makes up 3 per cent of the global water supply. Most agriculture production uses fresh water, with the exception of salt water fish farms. According to FAO, 70 per cent of the world's fresh water consumed is used by the agricultural sector (Fischer *et al.*, n.d.). Given the projected increase in demand for agricultural products, fresh water scarcity is projected to increase (FAO, 2012b). To meet the demand for water, expensive technology may be required to tap into the 97 per cent of global saline water supply. Consequently, the cost of agricultural production may increase.

This could be a tragedy for the poorest citizens of Earth, as they will need to feed their families at a potentially prohibitive cost. Apart from moral considerations, the risks to social stability arising from sharp increases in food prices are well understood. Governments are thus aware of the need to cater to the basic needs of their citizens and will therefore be inclined to subsidise the cost of domestically produced or imported food.

Climate change effects exacerbate the situation in Southeast Asia, where much of the population lives in river deltas or on islands that will be inundated if sea levels rise. The increase in extreme weather,

⁺ Chief Underwriter, Asia Catastrophe Pool/Asia Agriculture Pool, Asia Capital Reinsurance Malaysia Sdn Bhd.

¹⁴ Figures are based on a sampling of OECD and non-OECD countries' input-output data from (OECD, 2012).

¹⁵ Kharas (2010). The paper defines a global middle class as all those living in households with daily per capita incomes of between USD10 and USD100 in purchasing power parity terms.

such as drought, floods, extreme cold or heat and storms is attributed to climate change. This is intensifying water shortages, which in turn jeopardise agricultural yield and food security. In Southeast Asia, we have observed competition for the use of dam reservoir water to produce power or to irrigate crops, especially during periods of drought.

Asia is also a particularly vulnerable region when it comes to the agricultural sector's exposure to calamities. This suggests a major need to protect Asian agricultural interests against disaster risk. As local governments are major stakeholders in agriculture, sovereigns are ideal candidates to participate in a robust insurance-based financial solution. Most fundamentally, sovereigns have a vested interest in promoting food security with the ultimate objective of ensuring domestic and regional political stability.

The establishment of a pan-ASEAN¹⁶ agriculture pool as a collective scheme can mitigate the risks associated with agricultural production and food security in the region. In this scheme, the Member States of ASEAN contribute underwriting capacity based on the relative importance of agriculture trade to their economies. Using weather-based indices and backed by an insurance policy, farmers will obtain financial coverage for major agricultural disasters that affect their production. Member States which are net consumers of agricultural products will subsidise the insurance premiums of those countries which are net producers, thus promoting food security and political stability across the entire region.

Starting an international venture such as this on the ASEAN level makes sense, as there is already an existing framework of government exchange upon which to build the infrastructure of the proposed public-private partnership (PPP) risk transfer scheme. Given the experience with the ASEAN Plus Three Emergency Rice Reserve (APTERR) regarding food security, a pan-ASEAN agriculture pool among the ASEAN Plus Three (APT) states¹⁷ may also be feasible. A pan-ASEAN agriculture pool would complement APTERR¹⁸ in that the insurance scheme's *raison d'être* is to incite farmers to continue producing food, rather than moving to cities in search of a better life, by insuring the costs of production, in contrast to APTERR, which aims to stabilise the market price of the product for consumers.

Substantiating the case of a pan-ASEAN agriculture pool is the benefit of geographical diversification in dealing with the perils that affect agriculture risks most. Similar working and existing reinsurance solutions are based on the same principles. We have calculated the straightforward Pearson correlation coefficients between different countries and regions using again the EM-DAT database.¹⁹ Here we chose climatological and hydrological perils for the period 1960 to 2012 that are most relevant to agriculture. For Asia, North America and Europe, the average correlation of these events is 0.16. Focusing in on the Asian continent, the average correlation between the five major Asian regions is slightly higher at 0.18. Among the APT countries, this correlation coefficient increases to 0.22 and, at the ASEAN level, it is highest at 0.27. This is still a relatively low correlation, but obviously the correlation becomes weaker as geographical diversification increases. Once we move down to the intra-country level, only the largest countries like China and India seem to offer the potential for meaningful geographical diversification on the national level. The size of a Chinese province is comparable to the size of a country; hence, the Chinese provincial agriculture pools make economic sense.

The pan-ASEAN agriculture pool would bring together capacity from the Member States, who will each take their share of risk in terms of both premiums and losses. This is a manifestation of the principle of solidarity. The innovative feature of this pool is that net importing (consuming) and net exporting (producing) countries are brought together in one scheme as illustrated in Figure 1.

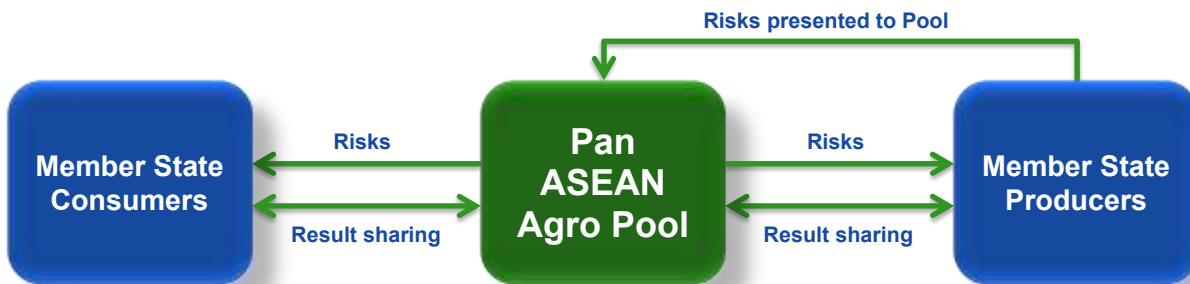
¹⁶ ASEAN, the Association of Southeast Asian Nations, comprises Brunei, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam.

¹⁷ ASEAN Plus Three (APT) includes the 10 ASEAN states plus Japan, China and the Republic of Korea.

¹⁸ APTERR aims to stockpile rice and use this reserve to manage the supply/demand dynamics of this basic staple food. By injecting a meaningful supply of grains into the market, APTERR counters price increases, thereby keeping this food supply affordable to all (Briones, 2011).

¹⁹ Centre for Research on the Epidemiology of Disasters—CRED (2012).

Figure 1: Schematic Organisation of the pan-ASEAN Agriculture Pool



The question will be how to share the risk and, more precisely, the level of participation that should be undertaken by each Member State. We can measure the relative importance of agriculture products for each country by their net agricultural trade position normalised to gross domestic product (GDP). While this is a somewhat simplistic approach, it offers a basic idea for determining orders of magnitude. Going forward, we would need to refine participation levels based on the actual assets (crop or other) actually ceded into the pool.

The next step is to understand the risks which are ceded into the pool. This will give an estimate of the amount of reserves the pool will need to be able to handle a catastrophic event loss and also indicate a price for the risks which are ceded into the pool. As seen by the experience of Agroseguro in Spain, the results are volatile and the process in understanding the risks is long and challenging. (Burgaz Moreno, n.d.) Better tools aimed at understanding the risks will also help the insurance industry to grow in a healthy manner, thereby allowing Member States to eventually focus their capacity on the higher layers covering the most catastrophic events.

The data available today for modelling agriculture risk in Asia is quite dispersed and often biased by state politics or other issues. For example, the mortality of livestock being imported by a state may look like it is decreasing. Data cleansing is thus crucial before using these statistics. Our agriculture model covers crops, livestock and forestry. In its first version it aims to cover the main Asian agricultural markets: China, India, Korea, and Japan.

Statistics on crops, forestry and livestock generally go back to the 1960s or 1970s and give an estimate of the economic damage ratio. For crops, we use the area affected by peril for drought, flood, frost, typhoon, hail and wind; for winter and summer crops. For forestry, we use the area affected by fire or, in the case of coastal zones, the area affected by typhoons. For livestock, we use mortality rates for the baseline, due to large events and due to weather-related events. These “damage observations” can be correlated to weather conditions. The presence of El Niño and La Niña actually do correlate with the observed “damage observations”, so we can even load pricing for these climate phenomena. Using weather measurements such as rainfall and temperature, we can associate return periods to the level of damage of each year. The data can be fitted onto a distribution to determine its mean and standard deviation.

The final step is to calibrate these results with the actual claims history. Here, the data is limited data in that it covers only up to five years in China, but, in time, the model will be refined. The available data also needed cleansing and, where premium was the only exposure, transformation into sums insured. Using sums insured will reduce uncertainty in results that would arise from changes in premium rates.

Our first results give us indications on probable maximum losses (PML) benchmarked at the 100-year return period level. We studied several different portfolios of agriculture risk using the model. Depending on the geographical split of each portfolio, the PML can be anywhere from 80 per cent to 250 per cent of the gross written premium for crops, from 110 per cent to 220 per cent for livestock and from 80 per cent to 230 per cent for forests. This large range reflects the importance of properly analysing the risks and the volatility associated with the risks ceded into the pool, i.e. ultimately, the case for a pool scheme.

Pursuing studies that allow building upon these first results is key to the better understanding of agriculture risk in Asia. Profit-seeking insurers and reinsurers will drive these studies as will governments seeking to ensure food security.

These modelled approaches work for risks of significant size (middle-class residential risks or commercial risks), where it makes sense to use traditional insurance techniques (annual policy whereby premium payment is in exchange for coverage of a defined set of risks and perils). The demographics of Asia, APT countries in particular, introduce a twist. Microinsurance will often be the proper vector of distribution in this PPP proposal due to the number of poor citizens. While the Chinese provincial schemes are using traditional insurance claims management techniques, the experience of India has shown that weather parameters could be more adapted to use as triggers for an event declaration. This approach erases the need to select the risks which are accepted into the pool, as pricing differentials no longer exist. It puts all the risks on an equal footing in terms of price.

Another advantage is that the return periods for different levels of weather parameters are relatively well known from several decades of measurements. Agriculture production can be correlated to these weather measurements and used to define triggers. The intensity of perils such as drought can also be measured with piezometers to complete, for example, rainfall measurements and give underground water table levels. Satellite imagery techniques could also complete the tool box. These meteorological instruments will help to reduce fraud and moral hazard. One issue with the use of weather-based indices to trigger insurance claims is that they sometimes trigger a claim when there is no loss or, on the contrary, do not pay claims when there is a loss. If the pan-ASEAN agriculture risk pool is calibrated for larger catastrophes, this bias will be reduced.

The premium corresponding to the risks ceded into the pool will be calculated and all members will share this risk proportionally to their interest in the pool, meaning that both the producing *and* consuming Member States subsidise the premium for the producers (usually producers alone set up these subsidised insurance schemes). Those premiums will be used to build up a fund which can pay for future claims from extreme weather events. The pricing should be calibrated so that there is some profit. However margin expectations are to be moderated, as evidenced by existing local and national schemes in Asia and around the globe. More importantly, this is not meant to be a risk funding exercise disguised as risk transfer.

Going forward, all the ingredients are there to create a pan-ASEAN agriculture pool as a PPP initiative between ASEAN or APT states and the (re)insurance industry to manage agriculture risks in the region. Among Member States, the pool can be formed via a treaty that defines how much capacity is to be contributed by each Member State. For each type of agriculture operation, the insurers will distribute insurance policies to the producing farmers in each Member State. Do note that a given Member State could be a net producer of one agricultural commodity and a net consumer of another. The pool should limit its cover to key agricultural staples as a first step. Insurance cover of the agriculture risks of APTERR using the pool can also be explored. Further studies should be pursued by all relevant stakeholders to better understand the risks involved, while keeping in view the overall objective of promoting food security and reducing political risk through a healthy and sustainable insurance market environment with responsible players.

References

- Briones, R.M. (2011) *Regional Cooperation for Food Security: The Case of Emergency Rice Reserves in the ASEAN Plus Three*, ADB Sustainable Development Working Paper Series No. 18, Metro Manila: Asian Development Bank.
- Burgaz Moreno, F.J. (n.d.) *The Spanish Combined Agricultural Insurance System*.
- CRED (2012) *EM-DAT*.
- FAO (2012a) *FAOSTAT-Agriculture*, Rome: Food and Agriculture Organization of the United Nations.
- FAO (2012b) *Global Trends and Future Challenges for the Work of the Organization*, Rome: Food and Agriculture Organization of the United Nations.
- FAO (2009) *The State of Food and Agriculture*. Rome: Food and Agriculture Organization of the United Nations.
- Fischer, G., Hizsnyik, E., Prieler, S. and Wiberg, D. (n.d.) *Scarcity and Abundance of Land Resources: Competing Uses and the Shrinking Land Resource Base*, SOLAW Background Thematic Report (TR02), Rome: Food and Agriculture Organization of the United Nations.
- Kharas, H. (2010) *The Emerging Middle Class in Developing Countries*, OECD Working Paper No. 285, Paris: Organisation for Economic Co-operation and Development.
- OECD (2012) *OECD StatExtracts*. Viewed on 29.10.2012.
- Thapa, G. (2009) *Smallholder Farming in Transforming Economies of Asia and the Pacific: Challenges and Opportunities*, International Fund for Agriculture Development (IFAD).

The Changing Framework of Sustainable Reporting

by Walter R. Stahel

Traditional corporate sustainability ratings follow one of two models:

- either environmental—social and economic checklists that compare, from one period to another, the reduction of negative impacts such as environmental impairment (water and soil pollution, greenhouse gas (GHG) emissions, fossil fuel and water consumption);
- or improvement of social conditions, e.g. abolishment of child labour, active trade union participation, no excessive salaries or bonuses and support for community activities.

The ratings proposed by UNEP—Principles of Responsible Investment, Principles of Sustainable Insurance—approach environmental, social and governance (ESG) issues follow the first model.

By contrast, international sustainability accounting for nation states uses the Human Development Index (HDI), a composite statistic of life expectancy, education and income indices to rank countries into four tiers of human development. The HDI was created by economist Mahbub ul Haq, followed by economist Amartya Sen in 1990, and published by the [United Nations Development Programme \(UNDP\)](#). Starting with the 2010 *Human Development Report*, a new method combining three dimensions has been applied:

- a long and healthy life: life expectancy at birth;
- education index: mean years of schooling and expected years of schooling;
- a decent standard of living: gross national income (GNI) per capita.

For industrialised countries, I have proposed an approach which measures changes in societal wealth, both qualitative and quantitative. This strategy might be tested on a regional level for the federal state of Baden-Württemberg in Germany, and then extended to nation states (see the box below: “Societal wealth should be measured in stock, not flow”).

Yet another approach has been proposed in a memorandum of understanding (MOU) dated 7 February 2013, by the International Integrated Reporting Council (IIRC) and the International Accounting Standards Board (IASB). They propose an integrated reporting procedure for corporate-level accounting, which extends financial reporting to environmental and social capital.²⁰ The MOU adopts an approach which can be compared to mine, but on a global corporate basis rather than a national, legal level. What makes sense in national sustainability ratings—to measure the changes in the quality and quality of stock in order to ascertain whether a nation has become richer or poorer through economic activity—does not necessarily make sense in corporate accounting, where precise measurements of material financial significance occur within one year.

Richard Murray, head of the Liability Project of The Geneva Association, will closely follow the development of the IIRC-IASB proposal as it unfolds.

My proposal to measure the sustainable wealth of regions and nations is based on the fact that monitoring capital or stock is accepted today for natural, cultural and financial capital, but not for human and manufactured capital (instead we measure GDP, the flow of industrial production). A circular economy, which is labour-intensive but consumes few material and energy resources, would make it possible to manage human capital (people) and manufacturing capital (stock of infrastructure, buildings, equipment and goods) more efficiently, simultaneously reducing unemployment and increasing resource efficiency. The rationale of this is summarised in the following statement.

²⁰ The MOU may be influenced by a standard-setting war with US GAAP, rather than driven by the wish to improve a sustainability rating.

Societal wealth should be measured in stock, not flow²¹

1. *Societal wealth is measured in stock—equal quality and quantity of stock—and wealth can be increased by intelligently managing/exploiting this stock.*

The quantity of stock can be preserved by smart operation and maintenance, continued education and intelligent stock management.

The quality of stock can in some domains be upgraded by integrating scientific and technological progress into the existing stock (of human, health, agricultural and manufactured capital).

Stocks that are part of societal wealth include:

- natural capital and environment (biodiversity and fish stocks, clean water, arable land, local stocks and global commons);
- cultural capital (physical such as UNESCO world heritage sites and immaterial cultural goods including crafts, music);
- human capital including education and health over the full life-span, beyond age 60;
- acquired human working capital (knowledge and skills, capabilities, science and technology);
- manufactured capital (infrastructures, buildings and goods; processed raw materials);
- financial capital.

Today, nation states do not have full quantity and quality (Q&Q) statistics for many of these stocks; hence they do not know their overall wealth, partly because they focus on measuring only financial flows such as GDP.²²

2. *CARING is the management principle behind successful stock optimization.*

Caring is labour-intensive and decentralised; it has to be done where the clients are (health services, repair services, organic food production). Economy of scale may not be the overriding objective and can be difficult to achieve in the case of caring activities.²³

Today, for two of the domains listed under 1), there is no intelligent stock management and little caring:

- For manufactured capital—physical goods, infrastructure and buildings produced in the industrial flow economy—ownership of property and responsibility changes at the point of sale.
- Human capital, people—in terms of health,²⁴ education, capabilities, among others—are not managed as stock, despite the known links between activity and good mental health below the age of 60,²⁵ and between activity and the absence of Alzheimer/dementia for the 60+ age group.²⁶

A circular economy is a proven strategy for intelligent stock management of manufactured capital. A circular economy is regional and labour intensive, consumes few material and energy resources (compared to manufacturing) and makes best use of human capital of all levels of skill and technology. The circular economy is the link to better stock management of manufactured *and* human capital.

It is expected that by 2030, policymakers will fully support a circular economy, especially in markets near saturation. This will trigger a shift from flow optimisation to stock optimisation for manufactured capital and human capital, speeding up technological progress to the market as technical systems are now upgraded by incorporating innovative components, instead of replacing whole systems.

3. *Today's political objectives (in industrial countries and in a global ethics way) are to:*

- decouple resource consumption from wealth;
- create more jobs in order to overcome underemployment;

²¹ The English version of this paper was first presented at Sustainability Day in Stockholm, 23 April 2013, by Dr h.c. Walter R. Stahel, The Geneva Association.

²² Does the expenditure (flow) for education lead to an increase in the quality of the stock (level of knowledge in the population)? Does the expenditure (flow) in health infrastructure result in an increase in the quality of stock?

²³ In Japan, the wish to protect the health of patients and caregivers has led to the development of robots to lift elderly people in and out of a bathtub, and the decision not to develop robots to feed elderly people.

²⁴ Medical sciences can repair many physical problems (new hip joints, knees, ankles, transplants of organs) in order to enable people to live better and longer—but it cannot heal mental health problems the same way.

²⁵ [Mental Health and Work: Sweden](#), [Mental Health and Work: Norway](#).

²⁶ See the work by Shigeaki Hinohara, a Japanese medical doctor, on lifelong learning.

- turn end-of-life goods into new products, as the EU 2008 Directive on waste²⁷ calls for the re-use and service-life extension of goods as a priority;
- reduce GHG emissions in order to mitigate climate change.

These objectives correspond to the very characteristics of the circular economy,²⁸ but are not yet reflected in the political framework conditions.

It is expected that by 2030, a sustainable taxation scheme will be part of economic policy:²⁹

- do not tax renewable resources, including human labour;
- tax only non-renewable resources.

Sustainable taxation will promote a circular economy by reducing the economic cost of labour and increasing the cost of non-renewable resources. This will reduce the cost of all activities involving caring, in health and cultural services, education and agriculture as well as in the reuse and service-life extension of goods and components.

The circular economy is *competitive*; it does not need subsidies. However, stopping subsidies of non-renewable resources (carbon fuels such as oil and coal) will greatly help such a shift. Today, renewable resources are subsidised at the level of €56 billion per year in the EU, worldwide by almost half a trillion US\$ per year (OECD/IEA). The circular economy is competitive: the re-use and service-life extension of the stock of manufactured capital is cheaper than manufacturing equivalent new replacement goods.

A circular economy of manufactured capital is *social*; it substitutes manpower for energy. It is labour and skill-intensive and regional, and probably the best approach for keeping more people in good health through activity, thus reducing health costs for society as a whole, as well as providing a source of additional revenue for the individuals concerned (reducing the risk of old-age poverty).

A circular economy is *ecological*; it greatly reduces resource consumption as it preserves to a large extent the embodied water, energy and materials, prevents waste and CO₂/ GHG emissions.

The most profitable strategy of the circular economy is selling performance, for example, selling goods as services, in the context of a performance economy.³⁰ This business model, in addition to the advantages inherent in a circular economy:

- retains the ownership of goods and the embodied resources, thus providing future resource security for companies and nations;
- internalises all costs of risk and of waste over the entire product-life of goods, which constitutes a strong economic incentive for risk management and loss prevention;
- gives a life-long quality and performance guarantee to customers.

Conclusion

The only societal wealth not managed as stock (quantity and quality) is the economy (measured as GDP flow) and human capital (measured as a flow of school-leavers, active population and retirees). Yet these two stocks are closely interrelated: people's health depends directly on work/activity. The circular economy enables an intelligent combined management of these two stocks; it can be fostered by adapted public framework conditions including sustainable taxation.

This paper (box), addressed to policymakers, does not discuss the impact of measuring qualitative and quantitative changes in stock on insurance. Yet it is obvious that a shift from flow to stock management will have an impact on insurance topics, as, for instance, the concept of the depreciated value of physical stock will be replaced by its utilisation value (in, for instance, liability claims).



²⁷ [Directive 2008/98/EC](#).

²⁸ Examples are remarketing and re-use (eBay and second-hand markets), repair, remanufacturing and technological upgrading of goods and components, which are often best done in a regional economy.

²⁹ See: Stahel (2013) "Policy for material efficiency—sustainable taxation as a departure from the throwaway society", in: *Philosophical Transactions A of the Royal Society* 371 201 10567, 28 January.

³⁰ Examples of selling performance: infrastructure as a service (cloud computing), power by the hour (Rolls Royce), individual mobility services (taxis), shared mobility services (public transport, airlines)

Publications by The Geneva Association

Geneva Report No. 7

Insurers' contributions to disaster reduction—a series of case studies

The frequency and severity of natural catastrophes (NatCats) has radically increased since the turn of the century, causing major economic losses and gross human suffering. Mitigating losses and protecting populations have become one of society's greatest challenges. The magnitude and scope of these events require the involvement and cooperation of multiple actors to strengthen societal resilience.

The impacts of man-made disasters (technical failures) have also increased, leading to higher numbers of casualties and bigger economic losses. As a result, liability claims against the economic actors perceived as guilty have grown in numbers and complexity.

Through a series of case studies, analysing floods, earthquakes, natural perils, resilient communities and liability, the report examines the cooperation between governments, insurers and citizens in their endeavours to mitigate extreme events, which are worsened as much by poor risk management as by effects of climate change. Given insurance's unique capacity for mitigating the losses resulting from extreme events, the report focuses on the arrangements, regulation and conditions that best exploit its deep knowledge of risk management. The ultimate goal is to draw lessons learned—from obstacles faced and successes achieved in specific circumstances—for broader use in the domain of disaster risk reduction.

Geneva Report No. 8

The Evolving Roles of Liability and Property Insurance as Climate Hazards Increase

The Climate Risk and Insurance (CR+I) Liability Subcommittee, part of the Risk Management research programme, has produced an edited compilation of articles relating to the current and prospective use of third-party liability law as a method of compensating victims of climate-related extreme events (e.g. windstorms, floods, droughts and wildfires).

The document notes that a decade ago, compensation for such hazards was provided by public funding and property insurance. As extreme events became more severe, however, losses began to exceed traditional resources. Since these events were increasingly seen as partly influenced by greenhouse gas emissions (GHGs), emitters are being accused of irresponsible behaviour—a form of fault on which liability recoveries could be based.

Because the U.S. is the breeding ground of most new liability theories, the first section of the document consists of a study by Ina Ebert of the current state of climate liability law there. Ebert concludes that the liability theories have not fared well in U.S. courts, but notes that the cost of defence alone is a concern for insurers and that the conditions of U.S. law are not certain to deny liability claims permanently.

The second section, by Rick Murray looks at the less developed state of climate liability claims outside the U.S. and the increase in global influences seeking to lower the liability thresholds, particularly for compensating the poorest and least protected victims of climate events. It identifies several compensation initiatives that have been considered for the victims of climate liability over recent decades. The author finds that, of the concepts that have been explored, third-party liability is the wrong choice for both economic and political reasons.

He also notes that increasingly costly climate compensation needs cannot be met by liability insurance and urges that the industry's resources be used to help define and finance sound public policies that will reduce the loss consequences of extreme events.

The *Geneva Report No. 8* concludes with a collaborative chapter by Lindene Patton of Zurich Insurance Group and the Emerging Risk Group at Lloyd's. They propose a more effective use of insurance's resources to compensate victims: its unique value and competencies and ability to provide products and services to both the private and public sectors to minimise.

A Geneva Association Report

Warming of the Oceans and Implications for the (Re)insurance Industry

There is new and robust evidence that the global oceans have warmed significantly. Given that energy from the ocean is the key driver of extreme events, ocean warming effectively caused a shift towards a "new normal" for a number of insurance-relevant hazards. This shift is quasi irreversible—even if greenhouse gas emissions would completely stop tomorrow, oceanic temperatures will continue to rise.

In the non-stationary environment caused by ocean warming, traditional approaches, which are solely based on analysing historical data, increasingly fail to estimate today's hazard probabilities, and a paradigm shift from historic to predictive risk assessment methods is necessary.

Due to the limits of predictability and scientific understanding of extreme events in a non-stationary environment, today's likelihood of extreme events is ambiguous. As a consequence, scenario-based approaches and tail-risk modelling become an essential part of enterprise risk management.

In some high-risk areas, ocean warming and climate change more generally threaten the insurability of catastrophe risk. To avoid market failure the coupling of risk transfer and risk mitigation becomes essential.

The report is divided into three chapters. It first provides evidence for ocean warming from the mid-20th century. Then it describes the impact of ocean warming on extreme events. Finally it analyses the impact of ocean warming on the global insurance industry.

The Geneva Association's Research Project on the Actors Involved in Reducing Disaster Risks

by Walter R. Stahel

The following text is based on an ongoing dialogue with UNISDR on how to structure approaches to disaster risk reduction, and a report on the spider web of links between the different players in the arena of disaster reduction. It looks into which forms of cooperation between these players have mitigated in the past, and could mitigate, in the future, the effects of extreme natural events (NatCats). A first result is the Geneva Report No. 7 reviewed above.

NatCats come in a wide variety of "original" events, such as hurricanes and typhoons, volcanoes and earthquakes, floods and droughts, avalanches and mudslides, as well as rising average sea levels and thawing permafrost; in addition, they can trigger devastating "secondary" events, such as tsunamis.

This research tries to find new insights into the links between the players involved in NatCats. It does not double up with the large number of studies and publications that have been, and continue to be, published on specific NatCats.

The research on the actors of disaster reduction looks into different types of NatCats and the role of several groups of "players" with different motivations:

- economic actors, such as individuals, farmers and companies;
- insurance and reinsurance companies;
- government offices and authorities, both legislative and executive;

- judiciary authorities;
- risk experts and engineers, looking for solutions to restrict losses or restrain nature.

NatCats

Natural catastrophes are wrongly named; they are in reality human catastrophes when people are in the way of nature. This can be seen when volcanic eruptions or a possible sea level rise hit uninhabited parts of the world, such as the Antarctica or Siberia: they are considered irrelevant NatCats, because they do not impact human life or economic property. For the same reason, no or only limited meteorological statistics exist for these areas including large parts of the oceans which make up most of the southern hemisphere.

“Sudden and accidental” extreme weather events

These are most frequently caused by water (floods, droughts, ice and snow), wind or a combination of the two, occasionally also (wild) fires caused by lightening, and geologic events (volcanic eruptions, earthquakes). Because these events are “sudden and accidental”, they are in principle insurable. But in emerging economies, they are often not insured, a fact which today is recognised as a major factor for a lack of reconstruction. New forms of private–public cooperation including insurance may therefore contribute to a considerably higher quality of life of the population at risk.

Statistics show that the frequency and severity of many of these events have increased since the turn of the century. For other events such as storm surges and solar storms, there are not enough data to judge their frequency, and there are no past experiences of their impact on modern infrastructure such as IT, satellites, railway and electricity networks

Water is used in the following as an example to explain the different facets of NatCats.

- *Floods*

River floods often occur in well-defined and known areas—the flood plains. Exceptional floods—often named “flood of the century”—occasionally touch much larger areas. Floods do not exclude the economic use of flood plains, such as building bridges, but necessitate the use of risk management by, for instance, engineers who take calculated risks.

“Flash floods” can occur anywhere and anytime, with little advanced warning. They are normally caused by extreme precipitation or accidents such as burst water mains or dykes, or by natural events such as mudslides or monsoon rains. Flash floods are a special hazard for underground structures.

- *Droughts*

Equally devastating as floods is the absence of water, droughts. Droughts develop slowly, and agricultural crops are their main victims, as people have time to escape. If droughts are linked to heat waves, they may result in multiple deaths, especially in rural areas, due to a lack of caring; the 2003 heat wave in France caused 13,000 deaths, mostly elderly people living in remote areas with no relatives or structures to supply them with food and water.

- *Ice and snow*

Ice and snow can occur anywhere, but tend to follow certain seasonal and regional patterns. However, climate change may change these patterns in unexpected ways—witness the snow fall in the north of England and Ireland which killed hundreds of sheep in the spring of 2013.

Avalanches, like floods, mostly occur in defined mountain areas and depend on primary events such as heavy snowfall, strong winds drifting snow or changes in temperatures. The same areas are also increasingly affected by mudslides and the effects of thawing permafrost.

Slowly evolving natural hazards

These events are typically linked to accumulation effects caused by industrial activity in nature (atmosphere, oceans, soil and ground water). They are often intertwined or mutually reinforcing, such as GHG emissions, climate change and ocean warming. The reports by the [United Nations Framework Convention on Climate Change \(UNFCCC\)](#) periodically give an extensive view of many of these hazards.

Rise of average air temperatures

Fluctuations in average air temperatures have now been documented for a million years; in the past, higher temperatures coincided with higher CO₂ concentrations in the atmosphere and seemed to peak approximately every 100,000 years. These fluctuations of air temperature are accompanied by similar variations in other GHG emissions in the atmosphere, such as methane. The effects of a rise of air temperatures, also known as global warming, are manifold.

GHG emissions into the atmosphere are caused by a variety of natural events, such as volcanic eruptions, the thawing of tundra and peat land, the burning of biomass during wildfires, methane vents in the oceans. But, with the rise in both world population and industrial activities over the last 250 years, higher atmospheric GHG concentrations are also the result of the increase in anthropogenic GHG emissions. The human activities concerned include rainforest deforestation, the burning of fossil fuels such as coal, oil and gas, and industrial accidents such as underground coal mine fires.

Rise of average sea levels

This effect is caused by melting polar ice caps, due to rising average air temperatures as well as to water expansion resulting from rising ocean water temperatures.

The danger of floods in coastal areas, however, is equally due to the subsidence of the land, according to geologists, a phenomenon these experts attribute to the pumping of water, oil and gas in coastal regions, leading to the sinking of the land. This will remain the dominating factor for floods in coastal areas for several decades.

Rise of average ocean temperatures

The report *Warming of the Oceans and Implications for the (Re)insurance Industry* by The Geneva Association, to be published in June 2013, looks into the phenomenon of ocean warming and its implications for economy and society (see p. 14).

* * * * *

Economic actors, such as individuals and companies

Individuals pursue their personal interests, ranging from the quest for the biggest thrill, to mere survival, to better quality of life to higher economic gain.

In this pursuit, individuals look to increase their quality of life by amassing increasing wealth, by shifting their dwellings to sites with vistas such as coastal zones, which are often more exposed to NatCats. Economic actors, in addition, are driven by profit motives such as economies of scale and global supply chain considerations, which do not take into account potentially higher inherent risks.³¹

The actors involved in risk would often be the best to mitigate a specific risk, individuals and companies alike. Mountain climbers and sports people take “irresponsible” risks, but which they feel are within their capabilities. In German towns along the Rhine River, where floods are frequent, buildings including restaurants have no cellars and often a tiled ground floor. In case of flood warnings, furniture and equipment are moved upstairs and potential losses thus restricted to a minimum.

Insurance is only one approach which human actors can take to protect themselves against possible losses. And insurance brings with it moral hazard, or “an invitation to risk taking”, which may be a contradiction in itself.

Nevertheless, individuals and companies are at a loss to protect themselves against infrequent catastrophic events. A drought of the century in the U.S., Brazil or India would bankrupt many farmers if there were no protection—crop insurance, government subsidies or other.

On the other hand, groups of individuals and companies may have a collective memory, which can be maintained through education. Japan’s memory stones as grim reminders of previous tsunamis are such an institutional memory, small chapels in avalanche areas in the European Alps, too.

³¹ A higher economy of scale goes hand in hand with a higher dis-economy of risk, for example.

Insurance companies

One of the main contributions by insurance companies is to develop insurance products which correspond to the needs of, and are affordable by, the population.

Insurance has a broad risk expertise and offers a number of services protecting customers against dangers. In the case of NatCats, these services include insurance contracts against specific dangers, such as floods or windstorms, as well as risk engineering services. But insurance normally does not sell “all-risk protection”.

The actions of insurance companies are restricted by, for instance, the limits of insurability, including risk-based premiums. Regularly recurring events leading to economic losses may therefore not be insurable. This can tempt governments to establish affordable insurance schemes, which compete with insurance companies.

Insurance mainly reimburses financial losses suffered, such as buildings destroyed or the loss of human life, but does not recompense hardship suffered. And insurance contracts have to be signed before a NatCat. This differs fundamentally from governments as insurers of last resort, who often intervene after a major disaster.

In the case of NatCats, insurance can have a crucial role in the rapid rebuilding of private and public infrastructure. When public infrastructure is not insured, the reconstruction of the economy can be held back for a long time, as the Haiti earthquake shows.

However, insurance companies may have to adapt their rules. After Sandy, flood insurers only paid out the losses for destroyed properties under the condition that the houses would be rebuilt on the same parcel of land—often situated in a flood plain. Many people who wanted to take the insurance money and move elsewhere made known their—justified—frustrations to journalists and TV crews.

Government offices and authorities

Politicians have among their objectives the protection of populations against impairments of their health or wealth, and promoting economic development and quality of life.

Governments are unique in that they have the power to legislate, which includes the option not to legislate—the Kyoto Protocol to reduce GHG emissions is a case in point. Therefore, many politicians prefer other options to solve a given problem, such as subsidies, which increase their popularity and boost their chances of re-election—fossil fuel subsidies are a case in point.³²

Legislation to protect people and property against specific NatCats include land-use zoning to prevent, for instance, houses being built in flood plains, and building codes to increase the resilience of constructions against earthquakes or windstorms. The knowledge of how to do it is often publicly available but involves higher costs or other restrictions on the owner. Governments exercising their political power to impose legislative solutions to protect against possible impacts of NatCats may prefer other less restrictive options.

Governments can also develop early warning systems (EWS), for instance for water hazards; EWS pose several important challenges, such as the need for integrated systems capable of responding to multiple hazards that cross national boundaries. Such initiatives are being developed, examples include the [European Flood Awareness System](#) and the World Meteorological Organization's [Severe Weather Information Centre](#).

Education is another option open to governments, but which needs a foundation in the culture of a society. Japan may be the only country where children learn in school what to do in case of a tsunami: “*When tsunami, do not wait for family; run to higher ground*”. This is the only situation when children are asked to abandon their parents and act on their own.

A cooperative form of protective legislation is the avalanche forests in the Swiss Alps, located in a triangular form on the slopes above a village. They prevent avalanches from reaching the village, by diverting or stopping them, and are based on the principle of the “commons”, which is a public property fulfilling a public objective and maintained by all villagers. Modern approaches of building metal or wooden structures on the slopes where avalanches start, or building avalanche dams above villages,

³² OECD has estimated the yearly subsidies paid worldwide for fossil fuels at half a trillion US\$.

no longer depend on a cooperative spirit and also offer protection against such other extreme events as mudslides.

Judiciary system

Judges and courts are emerging as new players in the aftermath of NatCats. As judiciary systems, based on culture and tradition, vary greatly between countries, this opens a new dimension in the post-disaster management of catastrophic events. Recent examples are the Chevron case in Ecuador, the L'Aquila case in Italy and the new Tort Law of the People's Republic of China and its application by local judges.

Risk experts, scientists and engineers

With satellite technology and super computers, scientists increasingly have the capability to develop early warning systems for NatCats. This raises expectations by politicians and the public that hazards and disaster are predicted precisely and in time. The impacts of NatCats can thus become anthropogenic risks, open to liability claims. And for predictive models with shared applications developed by commercial companies, it may raise questions of intellectual property rights and royalties, in addition to liability issues.

Since Roman times, engineers have been in the centre of risk management approaches to limit the impacts of NatCats, by designing structures to prevent losses, by restraining ("taming") nature, increasing the resilience of structures against extreme events or mitigating their impacts on infrastructure and the built environment in general.

To prevent losses, engineers built bridges across major rivers using arched or suspended constructions; these bridges normally span both rivers and flood plains. Despite the fact that only part of the bridge would in normal times have appeared to be necessary, the historic knowledge of previous events justified the additional expense for the longer bridges.

The construction of tunnels has been another approach to protect railway lines and roads against avalanches. Tunnels were also built in urban areas to tame rivers. These tunnels have now become a major hazard, increasing the impact of flash floods—witness recent floods in Istanbul and São Paulo. To protect property and human lives, engineers who built dykes or avalanche dams may also develop resilient structure methods, such as earthquake- or typhoon-proof buildings, floating houses (The Netherlands) or structures on pillars.

Common to all engineering solutions is that they require effort for their operation and maintenance over their full service-life. Not only in times of austerity, the funds to maintain infrastructure are often the preferred savings option of governments, including the U.S. Army Corps of Engineers. In the case of rainwater run-off systems, dykes, mechanical systems (Thames flood barrier) and pumps, this only becomes visible during the next flood.

* * * * *

New trends of cooperation in dealing with NatCats—building resilient communities

There is a trend to develop new types of private–public "cooperation", of which only one is presented in the first report: building resilient communities, which are a win-win situation for all.

The following examples show that the objectives of resilient communities are manifold:

- Crop insurance schemes guarantee greater food security, which creates more resilient societies—food shortages inevitably lead to the risks of famine and higher prices of staple foods, which can lead to riots and even threaten governments.
- Greater risk awareness in the urban populations prepares people for an emergency. The historic district of Ichitera-kototoi in Tokyo, with a high number of wooden houses, has been identified as a major fire risk in case of an earthquake. The local government works with the population to open new escape routes, reduce fire risk and create rainwater tanks.
- The 2010 initiative of the Australian Insurance Association linked individuals, local governments and insurance companies to develop new approaches to mitigate the impacts of floods and wildfires, for instance, on settlements and towns.
- Scientists and governments team up to develop early warning systems for major NatCats which will become publicly available.

Notes from the First European Fire Advisory Forum

by Meghan Orié⁺

The first European Fire Advisory Forum was held this year by Underwriters Laboratories (UL), from 16–18 April 2013 in Prague, Czech Republic. The two-day conference's objectives were to gather UL members, its European clients and broader stakeholders to promote safe living and engage in discussions to advance European safety and provide applicable and relevant solutions to fire hazards.

UL is a global independent safety science company that, among other activities, certifies, validates, tests, inspects and audits. Founded 1894 in the U.S., it is currently expanding globally. It is increasingly involved in fire research, safe living and working environments, and sustainability. UL focuses on buildings' entire life cycles which encompass multi-disciplinary, multi-functional perspectives and actors i.e. architects, insurers, firefighters and building officials.

The conference had two keynote speeches and was divided into six case studies. These case studies can be subdivided into two general groups: firefighting logistics and fire product regulation, monitoring, enforcement and property protection. The cases were:

1. *Future of certification marks?*, by Chris Miles, Business Development Manager Europe and Latin America,
2. *What's burning (Modern building contents)*, by Bob Williams, UL Vice President Standards,
3. *The Value of European Building Control in Fire Prevention*, by Hugh Johnson, Consortium of European Building Control (CEBC),
4. *Sprinklers in European houses*, by Alan Brinson, European Fire Sprinkler Network,
5. *Paradigm shift in (Dutch) fire brigades*, by Dr Ricardo Weewer, lector of Firefighting at Dutch Fire Academy, and
6. *Strategic Orientation Fire Protection in Europe*, by Hao-Giang Tay, FIFireE, International President, the Institution of Fire Engineers.

Firefighting logistics

The first keynote speech, *Fire Protection in the Czech Republic as One of the Tools for Community Safety* by Col. Dipl. Ing. Dr Vladimír Vlček and cases 2, 5 and 6 dealt specifically with the challenges firefighters face and the logistical and institutional arrangements that they have established to overcome these challenges. As case 2, a series of fire experiments executed by UL, aptly demonstrated, housing materials are increasingly synthetic and therefore burn much faster than housing materials from the 1970s when the amount of plastics in homes increased. In addition, firefighters face other new challenges such as the recent popularity of green materials. UL is developing research on photovoltaic panels and also on fire velocities in different types of ventilation. Hao-Giang Tay noted in case study 6 that many "green constructions" are not sustainable, particularly when they catch fire. Green construction still needs to be considered for impact.

Because of faster burning times, firefighters have been coming up with ways to improve early warning systems and create centres where multiple emergency first responders work together to improve communication and coordination.

Fire product regulation, monitoring, enforcement and property protection

Case study 1 launched broader debates on how to protect lives from these faster burning times by regulating and ensuring safety standards. Chris Miles discussed CE ("Conformité Européenne") marks, which demonstrate a product's suitability to enter, circulate and be sold throughout Europe. CE marks are based on the Construction Products Directive (CPD) that forces certain essential characteristics such as product safety and use to be considered. In July 2013 this directive will become the Construction Products Regulation. Part of this new regulation comprises a declaration of performance by the manufacturer. Miles expressed scepticism at the change's efficacy. This sentiment was echoed

⁺ Research Assistant, Risk Management Research Programme, The Geneva Association.

by Dr Volker Bechtloff, Minimax,³³ day 2's keynote speaker on *Challenges Seen from Manufacturers' and Contractors' Point of View*.

Miles brought up certain challenges to CE marks including low general safety standards, opaque quality control, limited capacities to determine fitness for purpose, etc. He suggested that they could be improved with increased market surveillance—including third-party, independent sampling—installation certification, which requires training, and ongoing maintenance. Participants debated whether CE marks were effective because they only identify whether a requirement has been fulfilled. Many argued that only governments could enforce technical standards and that, in many cases for CE marks, the national authority makes deviations that must be considered. Dr Bechtloff suggested that approval bodies can guarantee the quality of fire protection. Regular inspections require companies to do the inspection and a notified body to check it, because the risks change.

A major component of upholding safety standards is building control, as presented in case 3. In Great Britain there are building regulations and property protection which are not included in regulation. Regulation requires a risk assessment, usually carried out by the fire brigade. Property protection is mostly covered by insurers, sprinklers and the fire brigade. Building control faces a number of challenges: firefighters are not always qualified to carry out risk assessments and there are no licenses for builders. In England and Wales, local authority and private parties are in a broader competition which has led to accusations that, in these hard economic times, building controllers are lenient in enforcing compliance with the building regulations in hope of getting more work in the future.³⁴ Speaker Hugh Johnson argued that this competition has resulted, rather, in an improvement in the expertise and service given by building control surveyors, whether local authority or approved inspectors (private sector).

Building codes are easy to harmonise across Europe because there are functional requirements. But there are still many gaps in statistics that make it difficult to compare events i.e. lack of standard classification for victims. The Geneva Association was mentioned as one of the few organisations that collect global fire statistics.

Lastly, property protection was addressed. In a brief relevant video, Chris Hasbrook described an algorithm developed that could calculate for insurers the loss from a fire in a specific house. Typically insurers use Verisk Analytics, an analytics service that would rate a city's fire risk on a scale of 1–9 (1 being worst and 9 being best) based on proximity to fire station, possession of sprinklers, etc. This algorithm calculates losses per specific house. According to Mr Hasbrook, this product has generated insurers' interest.

How to require safety mechanisms was up for debate but the group generally agreed about their efficacy in protecting property and saving lives as case study 4 on sprinklers demonstrated. Alan Brinson briefly described sprinkler sales in Europe. He then cited a study by the National Institute of Standards and Technology that gave economic and moral cases for sprinklers. Similar themes of European standards, installer quality assurance schemes (better to have than not) were discussed.

This event set a high standard for future UL conferences as it addressed broader issues of the firefighters' roles at a governmental level and combatting fires; the role of the government versus private sector and harmonisation of security standards. It was highly informative, enjoyable and generally achieved its objectives. Speakers and participants came from a wide range of backgrounds and expertise that made discussion particularly rich. The author looks forward to the results of upcoming tests on green building materials that should provide ample material for future conferences.



³³ Minimax is a full service provider of fire protection.

³⁴ To explain, Gordon Biezeveld, Business Development Manager—Built Environment at UL, quoted Dan Ariely's *Predictably Irrational: The Hidden Forces that Shape Our Decisions* wherein Ariely basically argues that when the concept of "Professus" (Latin for affirmed publicly) disappeared, so did the ethics and morals that underpinned it. This basis was replaced by individual judgment, the laws of commerce, and the desire for wealth. These tendencies can be mitigated by public commitments to moral benchmarks. Should actors be able to offer services without public oversight, they tend to succumb to commercial pressure and lower the benchmark of performance over time.

Forthcoming Risk Management Seminars of The Geneva Association

M.O.R.E. 27 Seminar

Ground Effects of Solar Storms— Impacts on Terrestrial Infrastructure and Adaptation Measures

16–17 July 2013, Berlin

Organised in collaboration with Allianz SE

Venue: The Allianz Forum, Pariser Platz 6, Berlin

Draft programme as of 25 April 2013

Day 1 Tuesday 16 July 2013

9.00 Welcome and opening

Representative of the host company Allianz

Walter R. Stahel, Vice Secretary General and Head of the Risk Management Research Programme, The Geneva Association

9.15 Introduction

9.30 Keynote address by a Board Member of Allianz SE

10.15 Break

10.45 Workshop 1 The science behind solar activities and storms

Chairman: Neil Smith, Lloyd's

Speakers:

- **Lisa H. Wei, PhD**, Staff Scientist, Atmospheric and Environmental Research, Inc.
- **Kyle Beatty, CCM**, Senior Vice President, Atmospheric and Environmental Research, Inc.
- **Dr Alan Thomson**, Head of Geomagnetism, British Geological Survey
- **Prof. Jim Wild**, Reader in Space Plasma Physics, Space Plasma Environment and Radio Science Group, Lancaster University

12.30 Lunch

14.00 Workshop 2 Potential effects of solar storms on, and vulnerability of, terrestrial infrastructure

Chairman: Jan Eichner, Munich Re

Speakers:

- **Visto Periola** (*tbc*)
- **Prof. Trevor Gaunt**, University of Cape Town
- **Chris Rogers**, National Grid U.K.

15.30 Break

16.00 Joint Panel of the speakers of workshop 1 and 2

17:30 Adjournment

19.30 Cocktails

20.00 Conference dinner (venue to be announced)

Day 2 Wednesday 17 July 2013

9.00 Summary and conclusions of Day 1

9.15 Workshop 3 Potential societal and economic impacts of solar storms

Chairmen: Michael Bruch and Markus Aichinger, Allianz

Speakers:

- **Mr Maik Poetzsch**, Scientific staff, Office of Technology Assessment at German Bundestag
- **Dr Birgitta Sticher**, Professor at the Department of Police and Security Management, Hochschule für Wirtschaft und Recht (Applied University for Business and Law)
- **Mr Werner Raithmayr**, Geschäftsführer Anlagemanagement & Energieversorgung, Deutsche Bahn AG

10.30 Break

11.00 Continuation of Workshop 3

12.00 Lunch

13.30 Workshop 4 Mitigation strategies and technologies—state of the art and outlook**Chairmen: Reto Schneider**, Swiss Re and **Chris Lewis**, The Hartford

Speakers:

- **Ms Sanna Zandén**, Swedish Civil Contingencies Agency (*tbc*)

16.00 End of the Seminar**5th CR+I Seminar of The Geneva Association**

Lessons Learned from the Events of 11 March—The Earthquake and Tsunami and its Impact on Human Life, Terrestrial Infrastructure and Consequential Losses

28–29 October 2013, Sendai, Japan

Organised jointly with Tokio Marine & Nichido Fire Insurance

Venue: Trust City Conference Sendai (adjacent to Westin Sendai)

*Draft programme as of 6 March 2013***Day 1 Monday 28 October 2013****Workshop 1 The state of global development in disaster risk reduction (DRR)**

Aim: *Receive updates from UNISDR on global DRR discussions, and think about what role the insurance industry can play.*

Time	Contents	Speakers
09:00	Welcome and opening remarks by the host company	Tokio Marine
09:10	Introduction by CR+I Chair	Michael Butt, AXIS Capital
09:15	Current state of global discussions on disaster risk resilience—Expectation to the insurance industry	Margareta Wahlstrom, UNISDR (<i>tbc</i>)
09:45	Setting the stage for “Hyogo Framework for Action 2” —Viewpoints from the Japanese public sector	Ministry of Foreign Affairs (<i>tbc</i>)
10:15	Q&A + free dialogue	
10:30	Coffee break	
10:45	The state of “Global Framework for Climate Services (GFCS)”	Maryam Golnaraghi, WMO (<i>tbc</i>)
11:30	Q&A + free dialogue	
12:00	Lunch	

Workshop 2 Lessons from 11 March (including a tour to the affected site)

Aim: *Understand the scientific aspects of the 11 March disaster, and its economic consequences. Review the post-disaster activities undertaken by the insurance industry, and exchange views on what effective measures can be taken going forward.*

Time	Contents	Proposed speakers
13:00	Overview of the earthquake and tsunami science	Tohoku Univ. IRIDeS (<i>tba</i>)
13:30	Leave for a guided bus tour to the affected site	Tohoku Univ. IRIDeS (<i>tba</i>)
15:15	Return to the meeting venue, coffee break	
15:30	Lessons from 11 March	
	Part 1: The state of stochastic tsunami hazard assessment	Tohoku Univ. IRIDeS (<i>tba</i>)
	Part 2: Reviewing evacuation method, ongoing archiving efforts	Tohoku Univ. IRIDeS (<i>tba</i>)
16:45	Review of the insurance industry responses, efforts in practice: disaster risk training	General Insurance Association of Japan (<i>tbc</i>) / Tokio Marine
17:15	Q&A + free dialogue	
17:30	Adjourn	
18:30	Cocktail reception and dinner Venue: "Vista" Westin Sendai 37 th Floor	

Day 2 Tuesday 29 October 2013

Workshop 3 Advancement in risk research

Aim: *Understand recent developments in scientific findings in NatCat risk research. Exchange thoughts on how to best utilise the results. (Each session includes Q&A + free dialogue.)*

Time	Contents	Speakers
08:30	Implications of 11 March: Assessing the earthquake and tsunami risk in other regions of the world	Robert Muir-Wood, Risk Management Solutions
09:30	Warming of the oceans and implications for the insurance industry	Falk Nihörster, Bermuda Institute of Ocean Sciences
10:15	Coffee break	
10:30	Tropical cyclone genesis in the Pacific Ocean	Tokio Marine Research Institute
11:15	Extreme weather events in Asia	Prof Dr Peter Höpfe, Munich Re
12:00	Lunch	

Workshop 4 Harnessing public–private partnership programmes in Asia-Pacific

Aim: *Understand the mechanism of the newly launched Pacific Disaster Risk Financing Pilot Programme, and the challenges towards the future. Look into the possibilities of implementing similar initiatives in the Asia-Pacific region.*

Time	Contents	Proposed speakers
13:00	Pacific Disaster Risk Financing Pilot Programme—The background, structure and prospects of the pilot programme	World Bank
14:00	Q&A + free dialogue	
14:15	Current status of the disaster risk reduction discussion in Asia—Building on ADB's report "Investing in Resilience: Ensuring a Disaster-Resilient Future"	ADB (<i>tbc</i>)
15:00	Q&A + free dialogue	
15:15	Coffee break	

General Discussion

15:30	Building on the discussions throughout the seminar Future works of the CR+I Project	Michael Butt / Walter Stahel
16:30	Adjourn	

Publications Received

Busch, A. (2012) "Brasilien steuert auf ein Energie-Blackout zu: Die Regierung erweist sich als Investitionshemmnis—Trockenheit wird immer mehr zu einem Problem" [Brazil is heading towards an energy blackout: the government proves itself to be an obstacle to investments—droughts are an increasing problem], *Neue Zürcher Zeitung* 20 November: 26.

Brazil is heading precipitously towards a major energy blackout. Energy consumption has been increasing more than the production of electricity and fuel due to the government's energy politics, in particular, the subsidisation of imported diesel and petrol, and the subsequent lack of adequate investments in energy infrastructure. Complicating this situation is a concurrent lack of electricity and fuel.

Howell, L., ed. (2013) *Global Risks 2013*, (8th edn) Geneva: World Economic Forum.

Kirbach, R. (2012) "Schön gerechnet" [Beautifully calculated], *Neue Zürcher Zeitung* 25 October.

"Beautifully calculated"—Germany's public-private partnerships (PPPs) are being treated as a panacea to circumvent public spending caps in order to redevelop public infrastructure. However, The Auditor General Department has recently put out a report *Gemeinsamer Erfahrungsbericht zur Wirtschaftlichkeit von OPP Projekten (A Report on Common Experiences of the Cost-Effectiveness of Public-Private Partnerships)* that argues that this arrangement increases the government risks and creates a black hole for public funds.

Munich Re (2012) *Severe weather in North America: perils, risks, insurance*, Knowledge Series: Natural Hazards, Munich: Munich Re.

Panagiotidou, P. (2013) "Designing sustainable business models for the offshore and marine construction sector", in collaboration with the company Keppel Verolme, Ph.D. Thesis.

Resources for the Future (2012) *Resources*, No. 181, Washington D.C. Resources for the Future.

Sarfati, H. and Ghellab, Y. (2012) *Social Security for All: The political economy of pension reforms in times of global crisis: State unilateralism or social dialogue*, Geneva: International Labour Office.

Scott, J.T. (2013) *The sustainable business, a practitioners' guide to achieving long-term profitability and competitiveness*; 2nd edition, Sheffield: Greenleaf Publishing Company.

Sauer, H.D. (2012) "Wasserreicher Rhein: Wie sich der Klimawandel auf die Schiffbarkeit auswirken könnte" (The water-abundant Rhine: How climate change can affect navigability), *Neue Zürcher Zeitung* 21 November: 58.

The Rhine is the most important traffic artery in Europe. The 2003 drought in Germany sparked fears that climate change would dry up this fluvial highway, prompting researchers to explore climate change's effects on it. The first results of Effects of climate change on waterways and shipping indicate that the Rhine has instead increased its water abundance during the 20th century and will experience no marked changes in the short term and small changes in drainage in the long term. Rather than climate change, the Rhine has experienced a more pronounced technological change of ever larger, energy efficient ships navigating in its waters.

Swiss Re (2012) *Building a sustainable energy future: risks and opportunities*, Zurich: Swiss Re.

World Economic Forum (2013) *Developing Future Social Protection Systems Retirement Income: Sustainability, Risks and Challenges of Current Retirement Income Schemes*, Geneva: World Economic Forum.

The Geneva Association is pleased to announce a forthcoming

Special Issue on Disaster Reduction and Extreme Events

Editors: Christophe Courbage and Olivier Mahul

of

The Geneva Papers on Risk and Insurance—Issues and Practice

Volume 38, No. 3, July 2013

For further information on *The Geneva Papers on Risk and Insurance—Issues and Practice*, please visit [Palgrave Macmillan's](#) website.

The Research Programme on Risk Management

The Risk Management Research Programme is an integral part of The Geneva Association's dialogue with economic and academic actors in order to emphasise the role of insurance in a modern service economy.

The focus of the Risk Management Programme is:

- to provide a platform between the insurance community, the engineering and academic communities, and policy-makers to discuss issues on balancing risks and opportunities;
- to be a facilitator for the Chief Risk Officers (CROs) of The Geneva Association and CROs in general;
- to foster the use of risk assessment tools and risk management in new fields of application, such as policymaking;
- to promote the concept of the insurability of risks as the "natural" borderline between State legislation and the market economy;
- to identify new opportunities for insurers in the emerging sustainability concept in order to enlarge the field of insurable and insured risks; and
- to research and illustrate the new risks in the emerging service economy, based on an extended performance responsibility of economic actors.

The Geneva Association

The Geneva Association is the leading international insurance think tank for strategically important insurance and risk management issues.

The Geneva Association identifies fundamental trends and strategic issues where insurance plays a substantial role or which influence the insurance sector. Through the development of research programmes, regular publications and the organisation of international meetings, The Geneva Association serves as a catalyst for progress in the understanding of risk and insurance matters and acts as an information creator and disseminator. It is the leading voice of the largest insurance groups worldwide in the dialogue with international institutions. In parallel, it advances—in economic and cultural terms—the development and application of risk management and the understanding of uncertainty in the modern economy.

The Geneva Association membership comprises a statutory maximum of 90 Chief Executive Officers (CEOs) from the world's top insurance and reinsurance companies. It organises international expert networks and manages discussion platforms for senior insurance executives and specialists as well as policymakers, regulators and multilateral organisations. The Geneva Association's annual General Assembly is the most prestigious gathering of leading insurance CEOs worldwide.

Established in 1973, The Geneva Association, officially the "International Association for the Study of Insurance Economics", is based in Geneva, Switzerland and is a non-profit organisation funded by its members.

Secretary General: Mr John H. Fitzpatrick; *Vice Secretaries General:* Prof. Jan Monkiewicz (Head of PROGRES and Liaison—Eastern Europe), Dr h.c. Walter R. Stahel (Head of Risk Management); *Heads of Programmes and Research Directors:* Dr Etti Baranoff (Research Director for Insurance and Finance), Dr Christophe Courbage (Head of Health and Ageing and Insurance Economics), Mr Daniel Haefeli (Head of Insurance and Finance), Mr Anthony Kennaway (Head of Communications), Prof. Krzysztof Ostaszewski (Research Director for Life and Pensions); *Special Officers:* Mr Katsuo Matsushita (Liaison—Japan and East Asia), Mr Richard Murray (Head of Liability Regimes Project), Dr Hans Peter Würmli (Chairman of Chief Risk Officers Network).

The Geneva Association Newsletter—Risk Management, N° 53, May 2013

This Risk Management Newsletter is linked to the Risk Management Research Programme and is published biannually in May and November. For information and suggestions, please write to the Editor at the Geneva office. To subscribe to the e-newsletter, please go to www.genevaassociation.org/Home/Publications_Request.aspx

Editor: Walter R. Stahel, walter_stahel@genevaassociation.org. **Production:** Valéria Pacella

Available at www.genevaassociation.org

The opinions expressed in Geneva Association newsletters and publications are the responsibility of the authors. We therefore disclaim all liability and responsibility arising from such materials by any third parties.

© 2013, The Geneva Association, Route de Malagnou 53, CH- 1208 Geneva. Tel: +41-22 707 66 00
The Geneva Association, Sternengasse 17, CH- 4051 Basel. Tel: +41-61 201 35 20

ISSN: 1605-8240

Forthcoming Conferences of The Geneva Association

2013

May

30 Zurich **7th Meeting of Chief Investment Officers in Insurance**, hosted by Zurich Insurance Company (*CIO members only*)

June

5-8 London **40th General Assembly of The Geneva Association** (*members only*)

13-14 Hanover **11th ART of CROs**, hosted by Hannover Re (*CROs of member companies only*)

13-14 Girona **15th Joint Seminar of the European Association of Law and Economics (EALE) and The Geneva Association on “Liability and Insurance in Times of Crisis”**, jointly organised by IECPL, University of Girona and Universities of Maastricht and Rotterdam

16-19 Seoul **The Geneva Association/IIS Research Award Partnership Ceremony**

July

15-17 Berlin **M.O.R.E. 27 Seminar on “Ground Effects of Solar Storms—Impacts on Terrestrial Infrastructure and Adaptation Measures”**, jointly organised with Allianz SE

August

21 Beijing **The Geneva Association 3rd China Liability Regimes Conference**, jointly organised with Swiss Re China

September

16-18 Paris **40th Seminar of the European Group of Risk and Insurance Economists (EGRIE).**

26 Rio de Janeiro **Latin America International Liability Regimes Conference**

October

28-29 Sendai, Japan **5th CR+I Seminar on “Lessons Learned from the Events of 11 March—The Earthquake and Tsunami and its Impact on Human Life, Terrestrial Infrastructure and Consequential Losses”**, jointly organised with The Tokio Marine and Nichido Fire Insurance Co. Ltd.

November

4-5 London **10th Annual Liability Regimes Conference**, hosted by Lloyd’s

5-7 Zurich **9th CRO Assembly**, jointly organised with Swiss Re and CRO Forum

14 London **10th Insurance and Finance Seminar**, hosted by Prudential plc

18-19 Zurich **10th Health & Ageing Conference of The Geneva Association on “Insuring the Health of an Ageing Population”**, co-organised with Swiss Re

December

5 New York **Four Pillars Roundtable on “The Retirement Crisis: The Fierce Urgency of Now”**