TRUST RE

PERSPECTIVES

EMERGING RISKS MANAGEMENT

ACTUARIAL & RISK MANAGEMENT DEPARTMENT, SEPTEMBER 2018

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Opportunities and threats – Trust Re's approach to managing emerging risks

Emerging risks are defined as "newly developing or changing risks that are difficult to quantify and which may have a major impact on an organization".* As such, emerging risks pose both a business opportunity for any company active in the risk transfer industry, but also a threat as emerging risks by definition defy the standard risk management measures of established risk, as typically they lack historical data which could be categorized and modelled into frequency or severity.

Trust Re's approach to managing emerging risks includes the identification, assessment, monitoring and reporting of such risks for better preparedness. Given its client base and the markets it operates in, Trust Re is exposed to a multitude of emerging risks which the Company manages as follows:

Identifying the Risks

To successfully identify emerging risks, the "Emerging Risk Management" process forms part of the Company's Enterprise Risk Management Framework.

The risks identification process starts with substantial research using existing information via various sources including media, the internet, academia and scientific studies, professional body publications, expert predictions, as well as consultation with internal and business sources. Also, emerging risk findings from industry sources like international (re)insurers, brokers and risk consultants are particularly useful in the identification process. Risks are identified based on their origin, implications or other characteristics that help to understand the nature of the risk and their potential consequence on the business.

Assessing the risks

Qualitative assessments of identified emerging risks are undertaken via internal brainstorming sessions and/or workshops to discuss their significance and correlations with respect to the Company's overall business strategy and objectives, and also by examining expert judgements on identified risks.

Quantifying the likelihood and impact of emerging risks is often very difficult and is not common in the industry because the risk has rarely happened before, if at all. Assessing their impact is difficult and could be performed via scenario analysis or stress tests only when it is possible to relate the identified risk to similar/related events to some extent.

Monitoring & Reporting

Once the risks have been assessed, their development is monitored (at least annually) to determine how they evolve in order to take any related management actions/initiatives, if required. Trust Re also tracks the development of these risks in the relevant industry bodies and synchronizes its approach with the assessment of its peers.

"Emerging Risks Reports" are produced to assist in the monitoring and reporting of the emerging risks. The Company is also looking into improving its approach on both identifying emerging risks and enhancing the assessment process with the aim to improve the exploitation of any opportunities stemming from such risks.

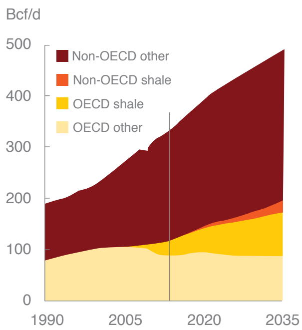
*Swiss Re Sonar, Emerging Risk Insights, 2013

Trust Re’s Emerging Risks

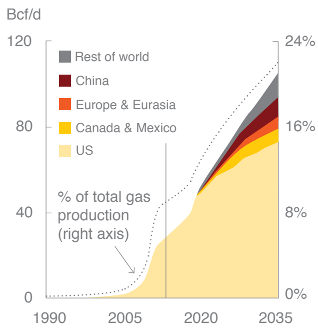
Based on its recent Emerging Risks Report, the Company has identified the following Emerging risks:

GCC Shale Production: According to British Petroleum (BP), Shale gas will account for nearly half of the growth in global gas by 2035 as seen on the figure to the right. The GCC is known to have adequate shale gas and shale/tight oil deposits across several regions. Recently, Bahrain announced the discovery of a new hydrocarbons field, the first major field since oil was discovered in the country in 1932.

Gas production by type and region

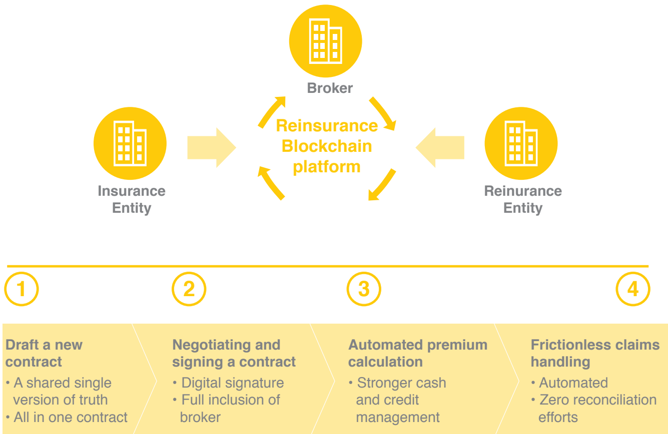


Shale gas production



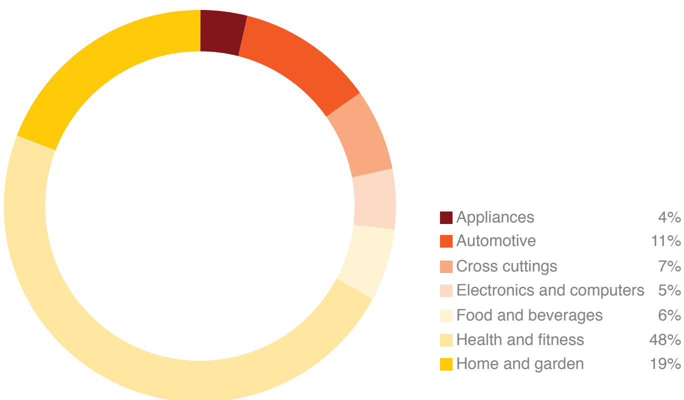
Source: Energy Outlook 2035, BP, 2015

Blockchain Technology: A Blockchain is a continuously growing list of records, called blocks, which are linked and secured using cryptography. In insurance, the potential opportunities of Blockchain technology are very broad and the material impact on the value chain is vast. As such, the Blockchain Insurance Industry initiative (B3i), a collaboration of insurers and reinsurers (including Trust Re), has been formed to explore the potential of Blockchain on the industry and its benefit for all stakeholders of the insurance value chain. The prototype of the B3i platform is depicted in the diagram to the right.



Source: B3i Website, 2018

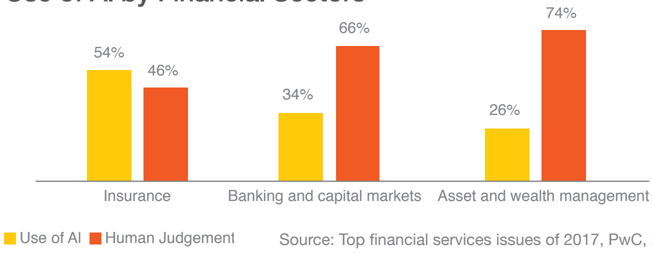
Nanotechnology: Nanotechnology is a multidisciplinary field, covering a vast and diverse array of devices derived from engineering, biology, physics and chemistry (figure to the right). The insurance industry is one of the main stakeholders capable of contributing to the safer and more sustainable development of nanotechnologies and nanomaterials, given that the technology can impact multiple lines of insurance business, including Life & Health, Energy and Engineering.



Source: Emerging Risk Nanotechnology, Munich Re, 2017

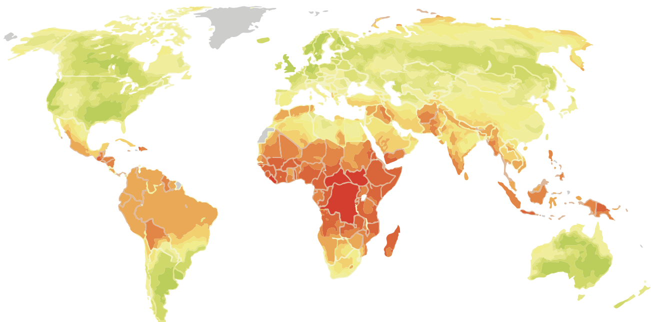
Artificial Intelligence: Artificial Intelligence (AI) has been implemented in multiple industries, from stock trading, hospitals to insurance markets. As seen in the figure to the right, the finance and insurance sectors, given their reliance on mass amounts of figures and data, are prime candidates for the automation offered by intelligent learning systems.

Use of AI by Financial Sectors



Source: Top financial services issues of 2017, PwC, 2016

Climate Change: Climate change can be regarded as a serious risk particularly due to the effect it has on altering weather patterns and triggering extreme weather events. The projected increase in flood and cyclone frequency and severity, particularly in Eastern and South Asia, exposes insurers to significant further catastrophe risk. The climate change vulnerability index from Verisk Maplecroft is depicted on the right.



Source: Climate Change Vulnerability Index 2018, Verisk Maplecroft

Legend ▲

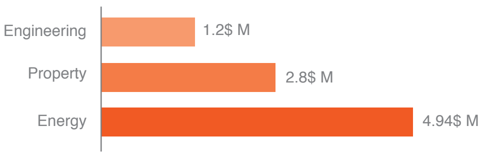
Cyber Risks: According to the 2018 Annual Global Risks report of 'The World Economic Forum', cyber-attacks are placed within the top three global risks in terms of likelihood. Cyber threats are also among the top concerns for the energy industry, especially in countries with a high infrastructure maturity, in particular North America and Europe.

Main Causes of cyber incidents

Source: A Guide to Cyber Risk: Allianz, 2016

Business Interruption: One of the significant trends over the past five years has been the notable increase in business interruption incidents. More specifically, energy, property and engineering sectors seem to be most exposed to business interruption events.

Average Value of Business Interruption (BI) Claims Per Line of Business



Source: Global Claims Review: Business Interruption, Allianz, 2015

Risk of Stranded Assets: Stranded assets are defined as "assets that have suffered from unanticipated or premature write-downs, devaluation or conversion to liabilities"*. Based on a study conducted by the Organization of Economic Co-operation and Development (OECD), by 2070 seven of the top ten cities most exposed to coastal flooding in terms of assets, as a result of climate change are expected to be in developing Asian countries as seen in the table to the right.

*Stranded Assets: the transition to a low carbon economy. Overview for the insurance industry, Lloyd's, 2017.

	TOP TEN CITIES RANKED BY ASSET EXPOSURE TO COASTAL FLOODING IN THE 2070s			
Rank	Country	City	Exposed Assets 2007 (USD bn)	Exposed Assets Future (USD bn)
1	USA	Miami	416	3,513
2	China	Guangzhou	84	3,358
3	USA	New York Newark	320	2,147
4	India	Kolkata (Calcutta)	32	1,961
5	China	Shanghai	73	1,771
6	India	Mumbai	46	1,598
7	China	Tianjin	30	1,231
8	Japan	Tokyo	174	1,207
9	China	Hong Kong	36	1,164
10	Thailand	Bangkok	39	1,118

Source: Nicholls et al (2007), OECD, Paris

Key Emerging Risks Trends as viewed by the industry

Some key emerging risks trends within the industry are presented below.

I. Society of Actuaries

In its annual survey among its members, the Society of Actuaries (SOA) has identified a list of top emerging risks over the course of the past four years. This list has consistently been topped by cyber risk as the most prevalent current risk.

	Year			
Rank	2014	2015	2016	2017
1	Cybersecurity	Cybersecurity	Cyber	Cyber
2	Financial volatility	Financial volatility	Financial volatility	Terrorism
3	Terrorism	Terrorism	Terrorism	Technology
4	Regional instability	Asset price collapse	Technology	Regional instability
5	Asset price collapse	Regional instability	Retrenchment from globalization	Asset price collapse

II. Institute of Risk Management (IRM)

The IRM has examined the main emerging trends and concerns of some of its key risk practitioners as part of its 'Risk Agenda' project.

Risk Name	Description
Technical Change	Artificial intelligence (AI), big data, robotics, the Internet of Things (IOT), blockchain technology and the development of the sharing economy were identified as key trends for the coming decade. Insurer's risk functions have the most to learn about these risks. 40% of respondents stated that they are insufficiently equipped to handle these risks.
Economic and financial instability	Economic and financial instability is the risk which creates the greatest concern among risk managers currently. However, respondents felt the risk will decline in relevance until 2025. In addition, respondents are convinced that companies are most familiar with and prepared for this risk.
Geopolitical volatility	The developments of the past two years have kept geopolitical risks on the radar for most organizations, noting the changes in the US political system, instability regarding North Korea, Brexit, tensions within the EU and continued conflict in the Middle East.
Climate change	Climate change ranks among the top three future risks for 2025. However, respondents from Africa and the Middle East felt the risk deserves immediate action and should be given highest priority.
Longevity	The aging populations have strong implications for businesses and public services, particularly as of 2025 in developed economies. Ageing populations will pose a challenge to many organizations due to the attention, resources and financing they require in terms of social systems.

Conclusion

The need for the identification and management of emerging risks in the industry is even more relevant given globalization and the interconnectedness of risks. Moreover, emerging risks management has become one of the key sub factors in the evaluation of a (re)insurers' ERM framework by rating agencies to assess the level of preparedness if such risks materialize.

As indicated earlier, given the high degree of uncertainty associated with emerging risks and lack of historical data, quantifying emerging risks remains a challenge and (re)insurers and experts in the field are researching possible statistical and actuarial techniques to help better quantify such risks. Despite the challenges, the process of attempting to quantify emerging risks is likely to improve understanding and knowledge of them.

Title: Emerging Risks Management
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