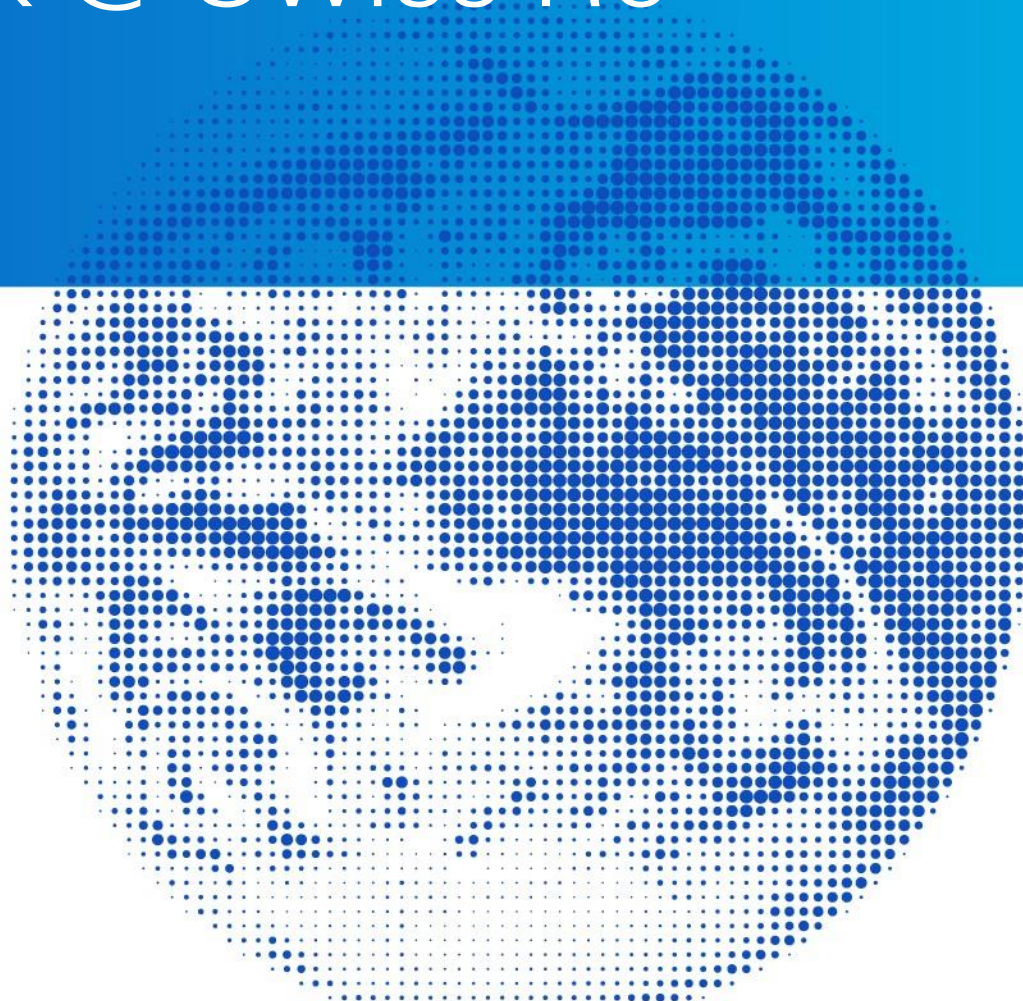


New emerging risk insights

Swiss Re SONAR

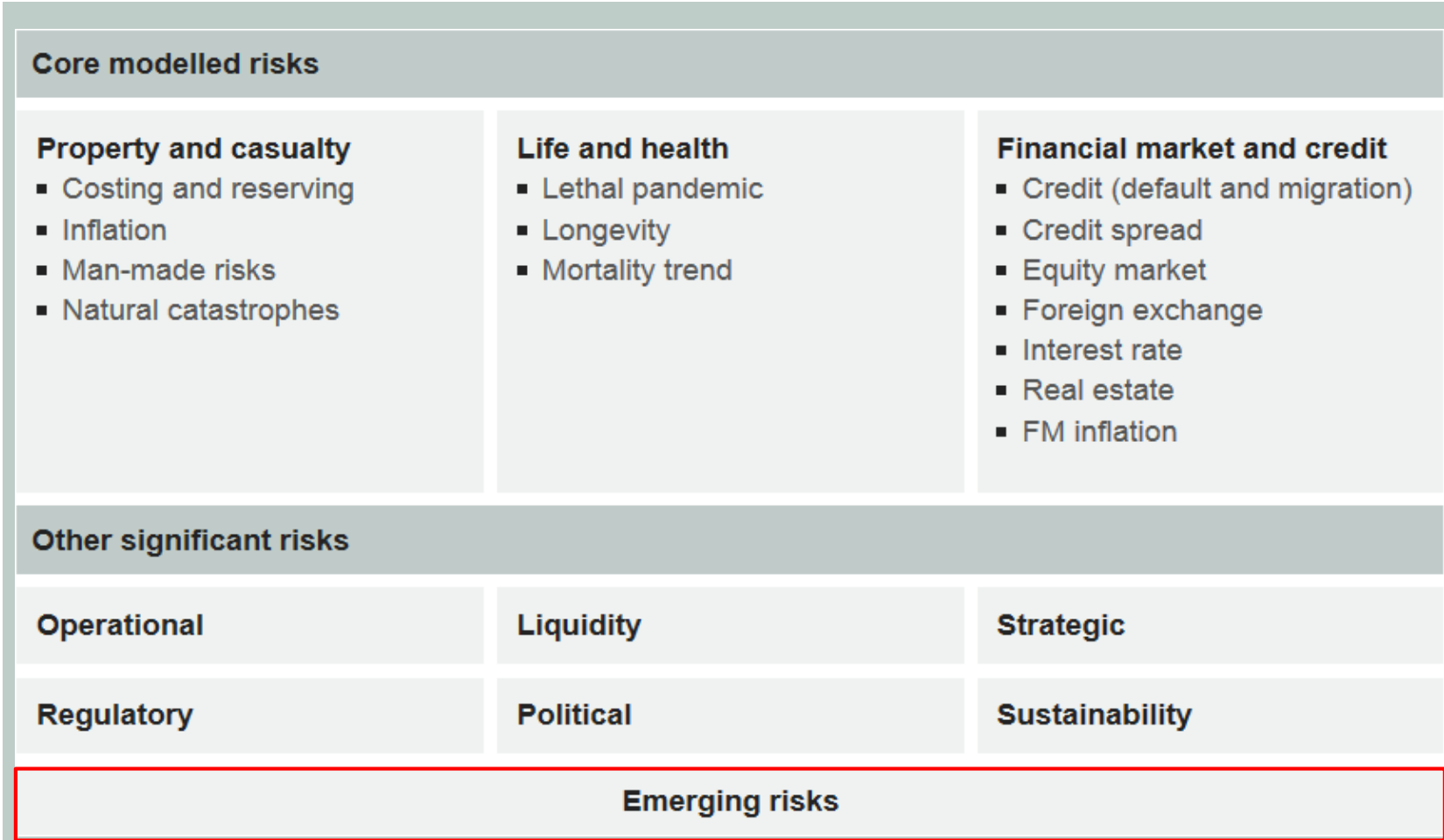


Emerging risk @ Swiss Re



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The risk landscape



Where does emerging risk emerge from?

Emerging risks arise due to

- discovery of new previously unperceived risk factors and related risk exposures
 - novel risks: e.g., biotechnology, nanotechnology, blockchain, antibiotic resistance etc.

Risks as a consequence of technological, social, economic and political progress and development

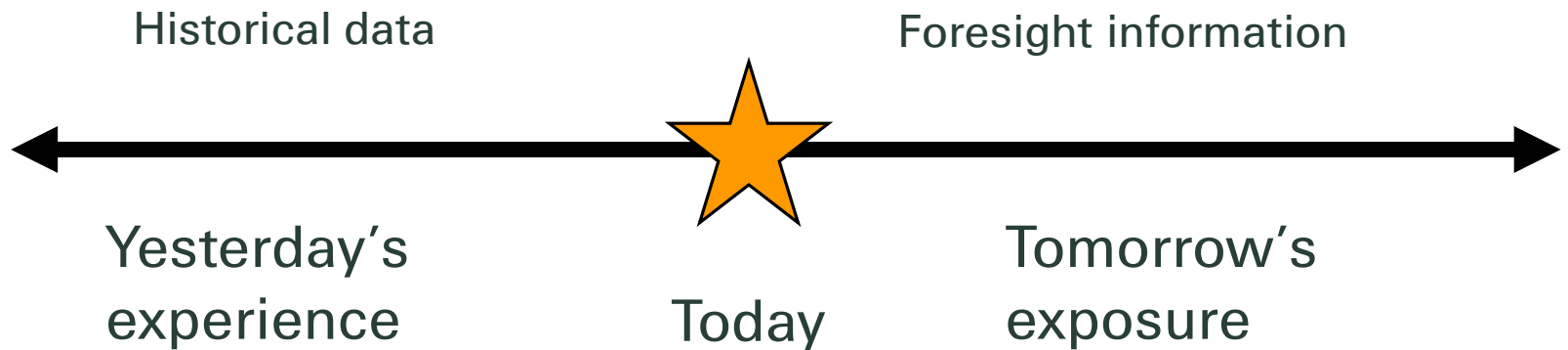
- discovery of previously unidentified and underestimated exposures to known risk factors
 - latent risks: e.g., hurricane Katrina 2005: exposure to storm surge and wind were not aggregated resulting in higher than expected losses

Risks as a consequences of underestimated or not foreseen risk factor correlations in existing or future underwriting or investment portfolios

- changes in the interdependencies of risk factors.
 - mutating risks: e.g., Changed legal treatment of asbestos exposure

Risks as a consequence of changing regulation, legislation, industry practices or more.

Insurance: Looking back is not sufficient to prepare for tomorrow's risks



The challenges of foresight

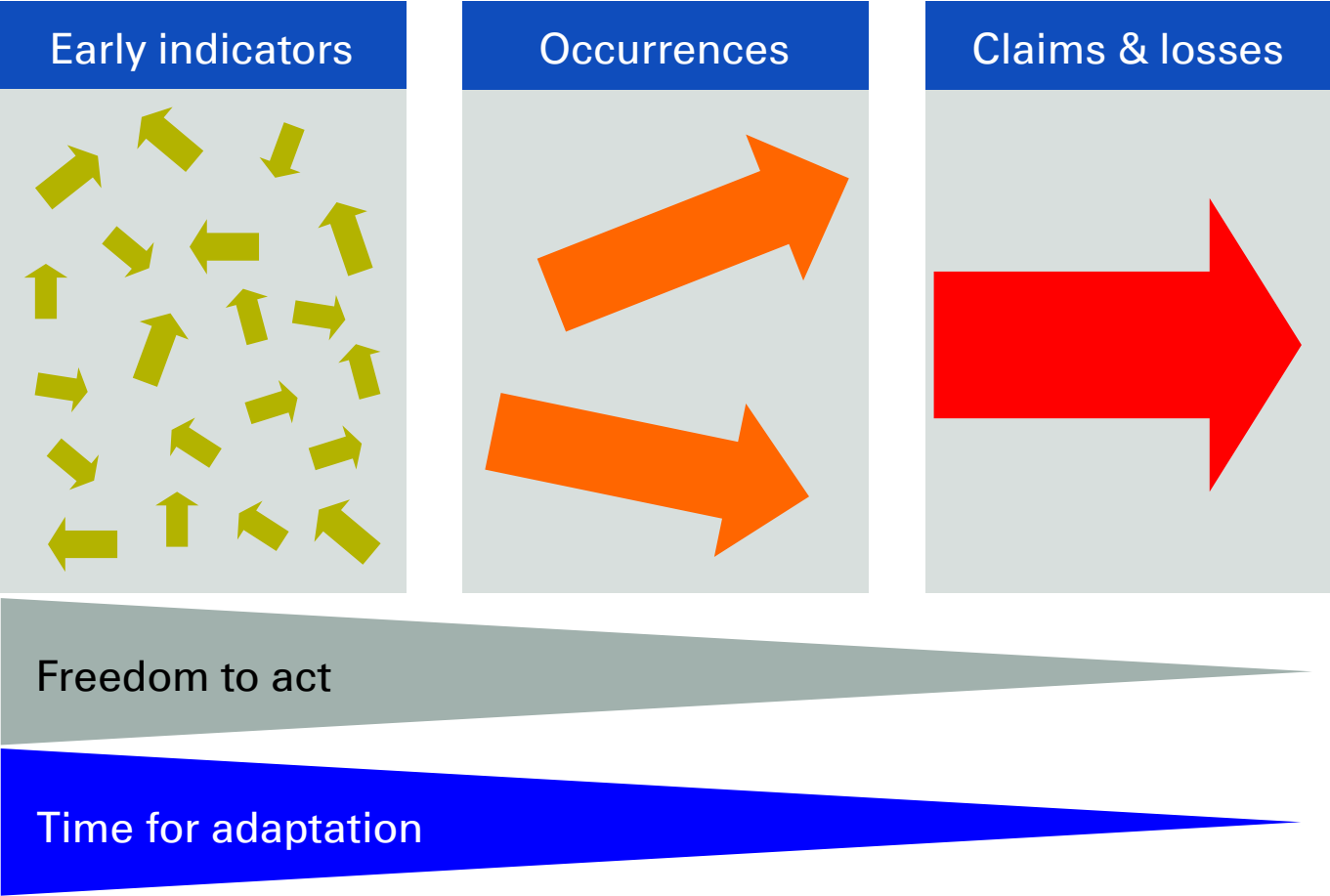
Foresight information is

- ✓ by definition unstructured
- ✓ not quantified and often not quantifiable
- ✓ derived from scenarios
- ✓ long-term, at the horizon or beyond the horizon
- ✓ disputed in importance, significance and impact
- ✓ difficult to incorporate in an actuarially-driven environment



But: It is neglected at your own peril!

Picking up early indicators ensures freedom to act and time for adaptation



New emerging risk insights



Global macro trends shape tomorrow's risk landscape

Societal Environment

- Growing middle class in High Growth Markets
- Longevity and chronic diseases
- Connected & collaborative society
- Radical medical innovation
- Mass migration and urbanisation
- The future of work & talent gaps

Political Environment

- Public sector moving risk to private sector
- Increasing government influence and regulations, "nationalisation"
- Volatility of economic powers in emerging markets
- Geopolitical instability & divergence
- Low yield environment

Competitive & Business Environment

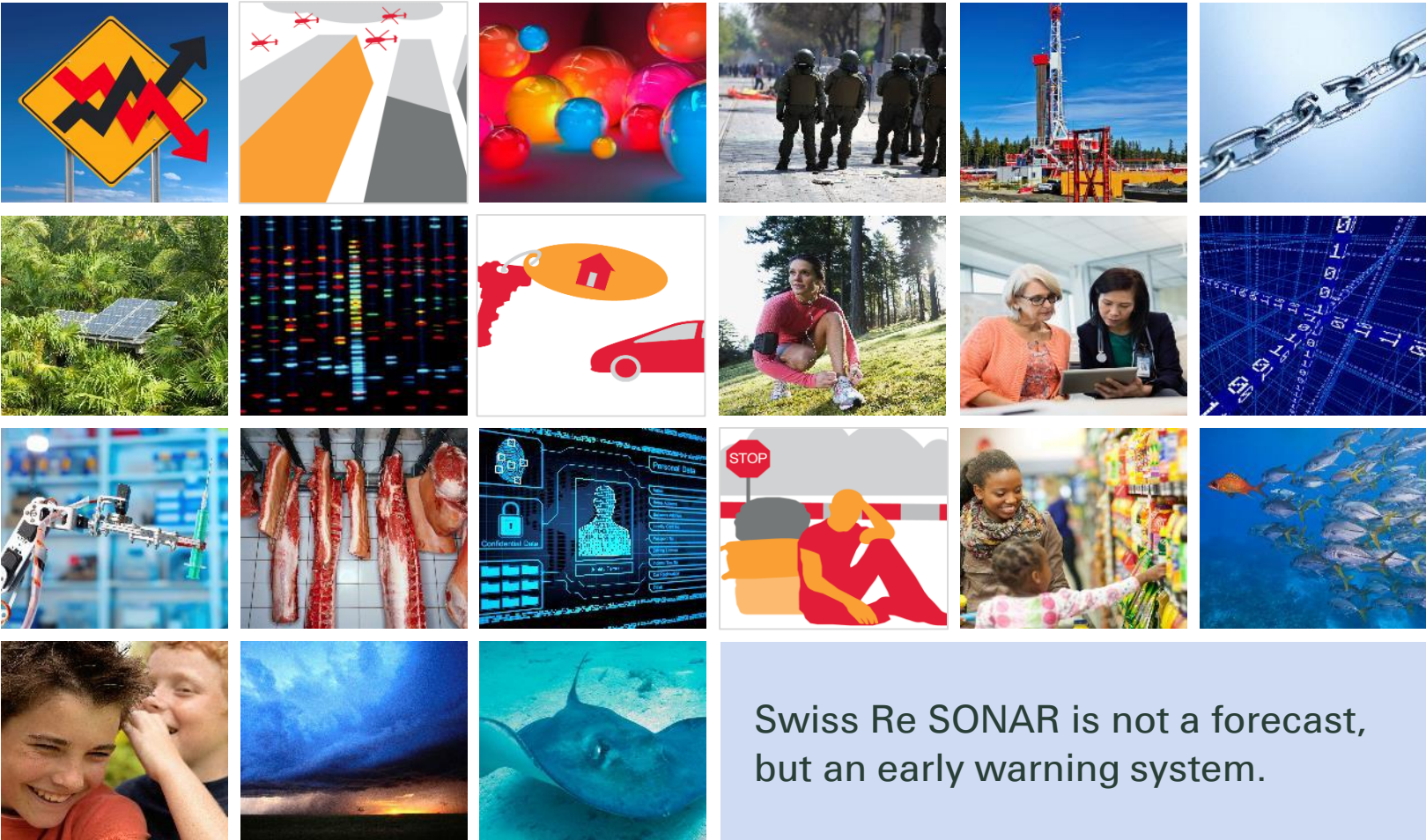
- Retention of reinsurance risks by primary insurers
- Shifting role of re/insurance brokers
- Convergence of alternative and traditional capital
- Market entrances of non-insurance companies form new ecosystems
- Regional champions going global
- Increasing digital customer interaction

Technological & Natural Environment

- Climate change
- Enhanced economics of non-carbon energy
- Massive expansion of cyber risk
- Digital analytics (Big Data and smart analytics)
- Cognitive computing
- Internet of Things
- Autonomous vehicles and drones



The 2016 edition of Swiss Re SONAR presents 21 new emerging risk themes ...



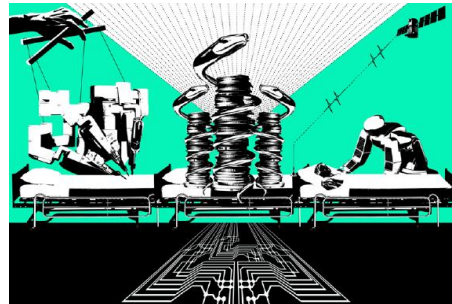
Swiss Re SONAR is not a forecast, but an early warning system.

... and 5 emerging trend spotlights

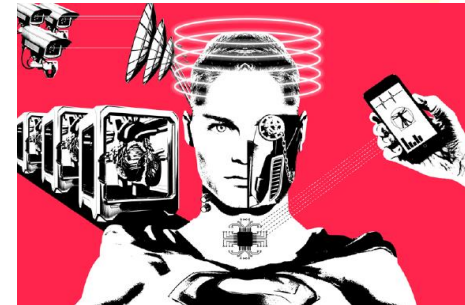
Emerging trend spotlights highlight current developments which we deem interesting to follow, although they have not yet manifested into risks.



Gamification



Health 4.0



Cyborgisation



Smart cities




Space race reloaded


The 2016 edition of Swiss Re SONAR presents 21 new emerging risk themes

0 - 3 years

 Emerging market crisis 2.0


 The great monetary experiment (cont.)

 Crisis of trust


 Human-induced earthquakes: a new protection gap?

 Digital identities

 Mass migration

 Nutraceuticals

 Ocean pollution from micro-plastics


 Viral leaderless mobilisation

> 3 years

 Internet fragmentation


 Blockchain risks

 Geoengineering

 Distributed energy generation

 Seabed mining


 Gene drives

 Legal & pricing risks of the sharing economy

 Phoney data

 Precision medicine

 The FinTech risk landscape

 The future of work

 The meat story: Beefing about beef

Affected business areas	Potential impact
 Casualty	 High
 Financial markets	 Medium
 Property	 Low
 Life & Health	
 Operations	

Human-induced earthquakes – a new protection gap?



- A rising number of earthquakes are linked to human activities such as hydrofracking
 - Most insurance risk models do not incorporate the associated increase in seismic hazard
 - Losses arising from the rapidly rising number of human-induced seismic events are largely uninsured or fall into the deductible of traditional earthquake insurance products
- ⇒ Growing protection gap for businesses and households in exposed areas

The future of work



- Artificial intelligence and robotics enable a “4th industrial revolution” where automation and M2M communication dominate industrial production
- This will increase productivity, but will also make many current jobs obsolete
- Mass unemployment could result in a shrinking customer base for personal insurance and a reduced portfolio for employers’ liability
- Insurance might find new opportunities in supporting the growth of a new informal economy

Mass migration



- We are currently facing the worst refugee crisis since World War II
- More than 1.2 million people have sought asylum in the EU in 2015
- Migration pressures across borders will likely continue to increase due to a number of unresolved, protracted crises in many regions of the world
- While this is a major topic for society, we expect only minor impacts for insurers

Ocean pollution from microplastics



- Microplastics are tiny pieces of plastic which find their way to the ocean through waste water containing cosmetic products or through break-down of larger plastic objects
- They can bind a variety of (potentially toxic) chemicals on their surface, which then accumulate in the food chain
- Environmental groups are advocating for a ban on microplastics, and regulation starts catching up
- There could be impacts on liability covers

Viral leaderless mobilisation



- Smartphones and social media increase the number of communication channels and enable viral spreading of messages and calls for action
- In a social environment with high levels of individual frustration, youth unemployment and disillusionment this could trigger more riots with corresponding losses
- ‘Public shaming’ campaigns may hurt a company's reputation and lead customer loss and stock devaluation

Geoengineering



- Geoengineering is the deliberate large-scale intervention in the Earth's natural systems to counteract climate change:
 - Solar radiation management
 - Carbon dioxide removal
- Public acceptance is currently very low, but this could change with a growing number of climate-change related extreme events
- Potentially huge liability exposures due to unintended side effects

Sea-bed mining



- Experimental industrial field focusing on extracting submerged minerals and deposits from the sea floor
- Technological advances and increasing global demand for metals and rare earth elements may make it economically viable in the near future
- There are concerns about the potential impact on fragile marine ecosystems, and regulation may change → uncertainty rg. potential exposures

Conclusion

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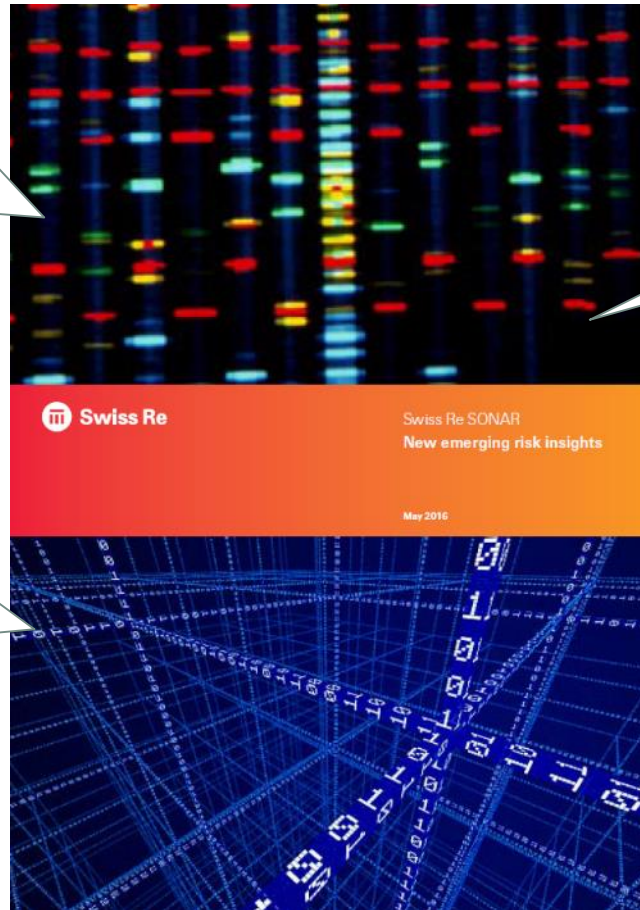


Swiss Re SONAR in a nutshell

Emerging risks are an important concern for the insurance industry and its clients, and awareness has risen steadily over the last years.

Swiss Re SONAR presents insights on **21 new emerging risk topics**.

With **SONAR**, Swiss Re has established a solid process for identifying, assessing and managing emerging risks.





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