

Exploring and shaping **the risk landscape**

We engage in regular dialogue with our stakeholders. By sharing expertise and know-how, we help society to develop effective responses to key risks.

With our re/insurance solutions we help our clients and partners to cope with the risks they face. This helps to create stability and enables economic growth. But many of today's risks are complex and may threaten sustainable progress. To find effective, long-term responses to such risks, partners from the public and the private sector need to work together.

This is why we attach great importance to ongoing dialogue with our stakeholders. Using the expertise from our core business, we identify key risk topics and take an active role in discussions on them. We share and exchange knowledge through many channels, eg our renowned publications including the *sigma* series, international dialogue platforms, events at our Centre for Global Dialogue, and cooperation with governments and academic institutions. Through this ongoing dialogue, our stakeholders give us valuable feedback and new insights for our risk management and product development.

Group Issue Management

With Group Issue Management (GIM), we have a formal process to identify topics that are strategically important to us, our clients and society at large. These Top Topics denote the global challenges we want to help address and set an important focus for our stakeholder dialogue.

The GIM process involves our risk specialists, product experts and other professionals from across the Group. We share their risk expertise and solutions with key stakeholders, ie clients, investors, regulators, policy makers, academics and civil society groups. Through our Top Topics dialogue, we also aim to help shape public policy in a way that facilitates the development of effective responses to the issues identified.

We periodically review our Top Topics portfolio to reflect new business developments and shifting global agendas. Since an extensive review in 2012, we have been focusing on the following five Top Topics in our stakeholder dialogue:

- Advancing sustainable energy solutions
- Funding longer lives
- Managing climate and natural disaster risk
- Partnering for food security
- Supporting financial resilience

In 2015, we again worked on these Top Topics with many partners from the public and private sectors. In the following sections we provide a brief introduction to each topic, explain why we consider it to be important and give examples of our dialogue activities:



Decentralised power generation through renewable energy sources can help to make energy infrastructure more resilient. A report we produced together with the World Energy Council discusses what can be done to better protect our energy supplies against extreme weather events.

Advancing sustainable energy solutions

The 2015 Paris agreement on climate change (see page 41) underscored that sustainable energy sources are essential to combat global warming. Reducing greenhouse gas emissions while, at the same time, satisfying the energy needs of a growing population will be one of the great challenges we face in the coming decades. Sustainable energy projects continue to increase in scale and complexity, as do the risks associated with them.

Innovative risk transfer solutions help to drive investment in the sector by reducing risk for investors. Building on our long-standing commitment to sustainability, we have recently intensified our renewable energy research to help our clients and the global community to develop and establish secure energy supplies for the future.

Our notable achievements in 2015:

- Together with the World Energy Council (www.worldenergy.org), we published our first report on energy infrastructure and extreme weather, outlining the steps that need to be taken to make our energy supplies resilient for the future;

- As a founding member of the RE100 initiative (www.theRE100.org), we started to work towards our goal of obtaining 100% of our energy from renewable sources. By increasing demand for clean power in a joint effort with our partners, we expect RE100 to make it more viable for energy companies in challenging markets to build renewable energy plants (for more details, see page 49);
- We extended Swiss Re Corporate Solutions' partnership with Solar Impulse (www.solarimpulse.com) on the world's first round-the-world flight with a solar-powered airplane, underscoring our commitment to supporting cutting-edge innovations in the field of sustainability.

For more information see swissre.com/rethinking/sustainable_energy/

Funding longer lives

People are living longer today than ever before, but the share of the working population is shrinking. As a result of this demographic megatrend, the costs of funding retirement income, healthcare and long-term care in old age are increasing dramatically. This could have significant financial consequences for individuals, insurers, employer pension funds and society in general. Public-private partnerships are needed to overcome this challenge.

Life and health reinsurance is part of our core business, and we are the world's largest reinsurer of mortality risk. Consequently, we are a natural home for the longevity and health risks associated with ageing societies, and have the financial strength to take on risks across a person's whole lifespan. Swiss Re has a broad base of expertise to help insurers understand the medical and social factors that affect longevity, mortality and morbidity, and we can bring new insights from experience in markets around the world. We want to help clients create solutions that better support people as they age.

Our notable achievements in 2015:

- We continued to host the Asia Health Symposia series, which is an information-sharing platform to gather a cross-section of key stakeholders and create a forum for sharing information and encouraging discussion, collaboration and exchange;
- We published the 2015 European Insurance Report – a study of more than 13 000 people in 13 European countries which, for the first time, measured a EUR 750 billion disability income gap. This gap is considered to be the amount of protection missing between the annual income required by people in the event they are injured or have poor health and the amount available through private, employer and/or state provisions;
- We contributed several industry presentations and participated in panel discussions on various topics related to healthy ageing and the urgent need for innovative solutions in this space.

Managing climate and natural disaster risk

Losses from floods, storms, earthquakes and other natural catastrophes can have a dramatic impact on the citizens and economies of entire countries. Insurance helps people, businesses and societies to get back on their feet after disaster strikes.

Although insured losses from natural catastrophes were lower in 2015 than in recent years, the number of events was among the highest ever recorded. The expectation is that, as a result of climate change, extreme weather events like hurricanes and floods will increase. Moreover, the economic losses from such events are also expected to rise given a higher concentration of assets in exposed areas. If no action is taken, climate change could cost the world economy an estimated 20% of global GDP by the end of this century.

By financing measures to mitigate disaster risks and adapt to climate change, we can strengthen the resilience of businesses, local and national economies and societies. As insurance puts a price tag on risk, it helps to create an incentive to invest in prevention measures.

Understanding natural catastrophe risks and the impact of climate change is critical to cost our business accurately and to structure sound risk transfer solutions. By sharing this knowledge, we help our partners to identify cost-effective measures to protect themselves. In addition, we provide solutions to cover the residual risk that cannot be avoided.

Our notable achievements in 2015:

- We provided our research and expertise for the COP21 Climate Change Conference (www.cop21.gouv.fr) in Paris in December 2015 and were personally represented by our Group CEO (see page 41);
- We continued to share our data on the potential impact of major natural catastrophe events on cities. Following on from last year's publication "Mind the risk: a global ranking of cities under threat from natural disasters", we extended our "Risky Cities" series in 2015, providing more detailed data for Istanbul and Bangkok;
- We launched a "Flood Focus" series of publications starting with Vietnam, released "Four earthquakes in 54 days" and an updated version of "Closing the protection gap".

The impact of climate change on sovereign ratings

In 2015, we partnered with Standard & Poor's in a special project to quantify the impact of natural catastrophes and climate change on sovereign ratings. Based on a sample of 38 countries, our simulations indicate that natural disasters (earthquakes, tropical storms, floods and winter storms) of a severity that is likely to occur once every 250 years can indeed weaken the affected sovereign's rating.

Moreover, we found that climate change can be expected to increase this impact by 20% on average. The expected effect is strongest in emerging countries and especially in the event of earthquakes and tropical storms. The most severe of these disasters could lead to a downgrade of around 1.5 notches. However, our joint study also found that this potential effect can be significantly reduced by catastrophe insurance.

For more information see swissre.com/rethinking/climate_and_natural_disaster_risk/

For more information see swissre.com/rethinking/longer_lives/



Our Group CEO Michel M. Liès addresses the participants of Action Day at the COP21 Climate Change Conference in Paris.

Swiss Re's contribution to the COP21 Climate Change Conference

In December 2015, ministers and negotiators from 195 countries gathered over two weeks in Paris for the COP21 UN Climate Change Conference (www.cop21.gouv.fr). Finally, after 20 years of repeated disappointments, a legally binding agreement to fight climate change was adopted, and by consensus. The agreement not only aims to cap global warming at 2°C over pre-industrial levels – but if possible to go further, with a new target of 1.5°C. The agreement was lauded a landmark success.

Having played a major role in the climate change debate for over two decades, we actively supported the COP21 negotiation process, both before and during the conference.

In the run-up to COP21, Group CEO Michel M. Liès signed the Paris Pledge for Action (www.parispledgeforaction.org), together with 77 other CEOs of Fortune 500 companies. This pledge states that:

"... we, the undersigned, affirm our strong commitment to a safe and stable climate in which temperature rise is limited to under 2 degrees Celsius.

"In support of this, we welcome the adoption of a new, universal climate agreement at COP21 in Paris, which is a critical step on the path to solving climate change. We pledge our support to ensuring that the level of ambition set by the agreement is met or exceeded."

An earlier version of this pledge was published as an open letter in the Financial Times on the eve of the 2015 World Bank Spring Meeting, under the heading "Let's partner on climate action. Now".

Michel Liès also took part in the COP21 Action Day in Paris. Speaking at the Protect the Planet session and later at the launch of the new G7 InsuResilience initiative, he explained the important role re/insurance plays in tackling climate change and strengthening climate resilience: Firstly, by putting a price tag on the risk, which creates an incentive to invest in prevention measures; secondly, by offering solutions that make socioeconomic systems more resilient to climate change. He emphasised, however, that in order to maintain the insurability of severe weather events at reasonable cost, it would be essential to limit global warming to 2°C. This requires a framework to channel financial flows into low-carbon economic development.

On our website you can watch a video in which Michel Liès offers his analysis of the COP21 conference:

For more information see swissre.com/climate_action/Climate_Conference_a_landmark_success_but_where_do_we_go_from_here.html

You can learn more about how we help to tackle climate change in these sections:

- Our climate change strategy [page 11](#)
- The impact of climate change on natural catastrophe re/insurance and selected solutions [pages 16–22](#)
- Our insurance covers for offshore wind farms [pages 23–24](#)
- Our UN commitment to provide sovereigns and sub-sovereigns with climate risk protection of USD 10 billion [page 22](#)
- Our active involvement in a regulatory initiative to establish a set of climate-related financial disclosures [page 31](#)
- Our research partnership with Standard & Poor's on the impact of climate change on sovereign ratings [page 40](#)
- Our long-standing efforts to minimise our own carbon footprint [pages 47–57](#)

Partnering for food security

805 million people – or one in 11 – are chronically hungry and malnourished on the planet today. By 2050, the world's population is expected to grow to an estimated 9 billion people, which will further aggravate the situation. Meeting this demand for food will be particularly challenging, as supply is constrained by factors such as climate change, depleted agricultural soils and the distribution of land, water and energy.

Most farming in the world is still carried out by small-scale subsistence farmers, who feed their families and sell a small surplus on local markets. This needs to change as more and more people are living in cities. Recently, the urban population exceeded the rural one for the first time ever, which means that cities are becoming increasingly dependent on the remaining farmers for their food.

The surplus subsistence farmers currently produce will not be enough to feed the growing population in our cities. Smallholder farmers must make the transition to commercial agriculture to feed the world. For this, they need access to credit so they can buy tools, seeds and fertilizer. But lending will remain restricted if banks fear that farmers will be unable to pay back their loans in the event of a lost harvest due to drought, flood or other disasters. Here, insurance can play the same role in the developing world as it already does in developed countries: protecting farmers against the perils of nature to keep them in business, even if disaster strikes.

Our notable achievements in 2015:

- We looked at the whole food value chain from “farm to fork” by providing for the first time our research insights on food security in the publication “Food safety in a globalised world”, which we launched at the EXPO in Milan (www.expo2015.org);
- We published seven more fact sheets providing key data on insurance in African countries and also explored new types of coverage in our publications on livestock and aquaculture;
- We strengthened the spread of index insurance products in countries across the globe by sharing our know-how at the Global Index Insurance Conference (www.indexinsuranceforum.org) in Paris, where governments, banks, multilateral donors, food companies, development experts and international organisations gathered.

Supporting financial resilience

Re/insurance supports financial resilience by acting as a shock absorber and promoting growth through its core businesses. This is particularly important in a challenging and volatile macro-economic environment.

However, unconventional monetary policies implemented by central banks following the financial crisis of 2008-2009 present a challenge for our industry and have contributed to an environment that is not conducive to sustainable economic growth.

As long-term investors, re/insurers could play a pivotal role in bridging the emerging infrastructure financing gap, which in turn would contribute to a healthier economic environment. But for that to happen, the right framework needs to be put in place. Standardisation of infrastructure investments would be an important step forward, while infrastructure debt as a tradable asset class would certainly make infrastructure more attractive for long-term investors.

At Swiss Re, we are striving to influence these developments by actively participating in and contributing to the global and local financial reform dialogue. Ultimately, we want to ensure long-term investors can act – not only think – on a long-term horizon to achieve greater financial resilience.

Our notable achievements in 2015:

- We published the report “Financial repression: The unintended consequences”, highlighting the costs of unconventional monetary policies for savers and long-term investors as well as the broader implications for financial resilience;
- We remained at the forefront of the policy call to make infrastructure debt a tradable asset class – as we believe that bridging the large infrastructure financing gap is key to sustainable economic growth;
- We continued to keep a close eye on the regulatory reform agenda, sharing our knowledge at important forums such as an IIF panel discussion hosted during the World Bank and International Monetary Fund Annual Meeting (www.imf.org/external/am/2015/index.htm).

 For more information see swissre.com/rethinking/food_security/

 For more information see swissre.com/rethinking/financial_stability/

Our Centre for Global Dialogue

The Swiss Re Centre for Global Dialogue (the “Centre”) is an important platform for interaction with our external stakeholders. Located near Zurich, this state-of-the-art conference centre hosts client and expert events. It allows us to present our thinking on some of the key issues confronting our industry and society at large, while exploring topics that are critical to a better understanding of the risk landscape we are facing.

Besides organising dialogue events, the Centre is responsible for executive client training and engages in research projects with third parties, principally from academia. These projects provide us with fresh perspectives on topics of pressing concern to the re/insurance industry. The Centre also manages some of Swiss Re’s key external networks.

Our Centre for Global Dialogue reflects our commitment to being a knowledge company. We believe that by openly exchanging and sharing this knowledge we, our clients and stakeholders can be “smarter together”. Below you can read summaries of three events organised by the Centre in 2015:

Financial repression: the unintended consequences

It is widely recognised that the extent of the global financial crisis has warranted swift implementation of a number of extraordinary measures to mitigate a deep recession. While these policies have been necessary to support the global economy, the time has come to take note of their possible implications for the financial system. To discuss and further analyse these implications, we held an executive roundtable with senior private and public sector representatives at the Centre. Ahead of the event, we had published the report “Financial repression: The unintended consequences” (see pages 42 and 46).

Participants of the roundtable expressed concern about public sector policies that are keeping interest rates at historically low levels. This financial repression not only results in an invisible tax on savers since it prevents them from earning interest on their deposits; it also means that future generations will have to shoulder the long-term costs – including the underfunding of pension provisions. Furthermore, people have had to compensate by increasing their savings, which, in turn, has weakened consumption growth and slowed down the economic recovery.

A second worry is that institutional investors have been driven by requirements and incentives into holding government debt instruments, meaning that they have less money available for productive investment, such as infrastructure projects. As one participant said, there is a global search for yield, which possibly leads to a misallocation of resources. Further distortions have been caused by the unprecedented active participation of public institutions in financial markets: Crowding out private investors may result in less diversification of funding sources and weaken a key element of financial stability.

In view of these implications, the participants at the roundtable agreed to continue working together to build the foundation for stronger and sustainable economic growth, benefiting individual savers, long-term investors and society at large.

The autonomous car 2015: Risks and opportunities for the re/insurance industry

Autonomous cars – or new forms of mobility – are regarded as a highly disruptive technology, with significant implications for the re/insurance industry. As such, the topic appeared on the radar of our emerging risk specialists a few years ago, and we first drew attention to it with a special feature in our 2013 Corporate Responsibility Report. In 2014, our Centre for Global Dialogue held a two-day conference in Switzerland and, in 2015, followed this up with a one-day event at our Armonk office in the US, bringing together experts from car manufacturing and technology, safety and legal specialists.

The momentum around self-driving vehicles is astonishing. Whether we are fully prepared for them or not, autonomous cars have arrived. Almost all major carmakers are currently testing first-generation prototypes, while Google already has semi- and fully autonomous cars on the roads in California. When they start to appear in larger numbers on our roads, this will present many new challenges to the way we do business and how we view and manage risk, retail insurance and liability.

The conference in Armonk offered the following key takeaways: 1. Autonomous cars will improve safety; 2. The sharing economy will drive autonomous car adoption; 3. They are more climate-friendly and can reduce energy reliance; 4. Consumers will begin to embrace the technology; 5. Regulation and the law will adapt, slowly; 6. Cyber risk will increase; and 7. Autonomous cars will affect liability and tort cases. Although it is uncertain how legal and regulatory issues will play out, it is clear that our role as re/insurers will change considerably. Many of these changes will also create new opportunities for businesses who quickly adapt and diversify their products and services so as to target new market segments.

 For more information see cgd.swissre.com

EXPLORING AND SHAPING THE RISK LANDSCAPE

Expert Forum on 3D printing: changing the world one print at a time

3D printing is the name given to additive manufacturing, a process of making three-dimensional solid objects from a digital file. It is widely seen as a technology that will change the course of global manufacturing and the supply chain. Today, a number of industries already apply 3D printing for various purposes, from rapid prototyping to end-product manufacturing.

As this, too, is seen as a disruptive technology, we have a strong interest in understanding the potential implications for the re/insurance industry. Our emerging risk specialists already took a closer look at the topic some years ago and we included a case study in our

2012 Corporate Responsibility Report. The Expert Forum held at the Centre for Global Dialogue in 2015 brought together participants from re/insurance, industry, academia, regulatory bodies and the general public to discuss the risks and opportunities posed by this new technology.

After five breakout sessions, Eric Schuh, Head of the Casualty Centre at Swiss Re, gave a keynote speech on some of the lines of business that could be affected as 3D printing becomes more widespread. 3D printing experts and legal scholars then joined Jayne Plunkett, our Head Casualty Underwriting Reinsurance, in an interactive panel discussion. Points made during the discussion concerned the difficulty to regulate 3D printing

across different industries and whether it would be possible to clearly identify the source of any losses. The conclusion was that 3D printing will require new underwriting approaches but that it will also create significant opportunities to provide additional cover to small, medium and large enterprises.

Cyber Security Risk Governance Workshop:

This event was organised by the International Risk Governance Council and hosted by us at the Centre for Global Dialogue. "Cyber attacks" are yet another emerging risk we identified and showcased a few years ago, namely in the 2011 Corporate Responsibility Report.



Impressions from the Expert Forum on 3D Printing we held at our Centre for Global Dialogue. Together with our partners, we seek to understand both the risks and opportunities this "disruptive" technology will create for re/insurers.

Collaboration with (inter-) governmental and academic institutions

In recent years, we have collaborated with various (inter-)governmental and academic institutions both to promote effective approaches to sustainability challenges and to share our expertise on managing specific risks.

Our work with (inter-)governmental agencies to promote effective sustainability responses

- In Europe, we have continued to raise awareness of the important role insurers play in mitigating climate risk through different interactions with policy makers. This includes speaking at industry conferences (Insurance Europe and the ABI), presenting at the European Commission's DG Climate Action's working group on Climate Adaptation and bilateral engagement with the European Commission and national governments. We also remain engaged in the debate via our trade association memberships (eg the Reinsurance Advisory Board);
- In the US, we have maintained regular dialogue with the National Association of Insurance Commissioners (NAIC), principally on climate change and natural catastrophes;
- In Switzerland, we have provided a committee member of the OcCC (*Organe consultatif sur les changements climatiques*), an advisory body on climate change set up by the Swiss Federal Administration.
- For our participation in the FSB Task Force on Climate-Related Financial Disclosures, see page 31.

Our work with (inter-)governmental agencies to share risk management expertise

- With Global Partnerships, we have a team that works strategically with public-sector bodies to improve risk resilience:
 - directly with sovereigns or sub-sovereigns and their agencies, recently eg with the Florida Hurricane Catastrophe Fund to strengthen risk resilience, the Turkish Catastrophe Insurance Pool to improve re/insurance protection against earthquakes, the government of Uruguay to create a solution providing cover for drought conditions that affect hydropower generation or through the Pacific Catastrophe Risk Insurance Pilot;
 - with the United Nation's International Strategy for Disaster Reduction (UNISDR) in a consulting role;
 - with development agencies such as the United States Agency for International Development (USAID), the UK's Department for International Development (DFID), the Swiss Agency for Development and Cooperation (SDC), the World Bank, the Asian Development Bank (ADB), the Inter-American Development Bank (IADB) or the German Development Bank (KfW).
- We have regularly contributed to platforms such as the World Economic Forum, B20, G20 and G8 to share our insights on key risks, and support the United Nations Framework Convention on Climate Change (UNFCCC) process.

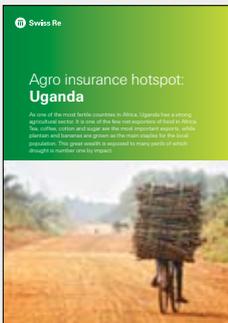
Working with academic institutions

- We have been supporting the Integrative Risk Management and Economics project at the Swiss Federal Institute of Technology (ETH) Zurich, which aims to advance a holistic approach to managing risks and educate a new generation of researchers;
- As a member of the steering committee of Swiss-based ProClim – Forum for Climate and Global Change – we support integrated research activities and get access to the latest scientific findings;
- We support the "20th Century Reanalysis" project of the NOAA Earth System Research Laboratory and the University of Colorado, Boulder. It contains objectively-analysed four-dimensional weather maps and their uncertainty from the late 19th to the 21st century.

Selected communication products of 2015

The publications and other media we produce in-house or in cooperation with our partners play an important role in our efforts to help clients and society form effective responses to key risks. Listed below are publications mentioned in this chapter. Further Swiss Re publications are displayed on pages 74–75.

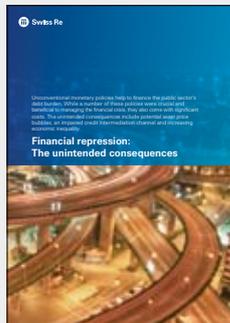
Swiss Re publications



Agro insurance hotspot (on Uganda, Nigeria, Cameroon, Zambia, Angola, Senegal and Zimbabwe)



Closing the protection gap – Disaster risk financing: Smart solutions for the public sector



Financial repression: The unintended consequences



Flood Focus: Vietnam



Food safety in a globalised world: Keeping our food safe in the 21st century



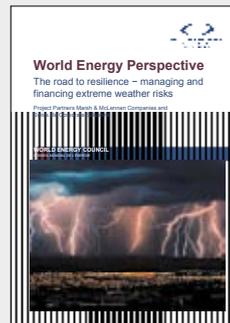
Four earthquakes in 54 days



Introducing the European Insurance Report 2015 – Next Generation insurance



Risky Cities (on Istanbul and Bangkok)



World Energy Perspective: The road to resilience – managing and financing extreme weather risks

Publication with partner organisation