Extending our **risk intelligence**

We address sustainability, emerging, political and regulatory risks in our core business transactions. For this, we have developed specific tools and know-how.

SUSTAINABILITY RISKS

We define sustainability risks as ethical concerns related to potential environmental and socio-economic impacts of our business transactions, and the reputational risks they may entail.

Risk management is an integral part of Swiss Re's business model and key to the controlled risk-taking that underpins our financial strength. It is embedded throughout our business and ensures that the Group and the three Business Units have the necessary expertise, frameworks and infrastructure to support good risk-taking (see 2017 Financial Report, pages 68–69 and 75–91).

Sound risk management is essential for a re/insurer. Tight control of our exposures guarantees that we can fulfil our role in society as ultimate risk-taker and be a reliable partner to our clients when they need us. The core categories of our risk landscape comprise insurance risk (property and casualty, life and health) as well as financial market and credit risk. In addition, we consider it essential for a responsible company to pay attention to further significant risks we may be exposed to, especially in the longer term.

Sustainability, political, regulatory and emerging risks are particularly relevant in this respect. We have developed instruments and know-how that help us identify and assess all of them. This allows us to determine the specific risks we think we should avoid – because of their potential to increase losses, for ethical reasons, or both.

Our Sustainability Risk Framework

In a market environment, profitable business activities create economic value. Occasionally, however, they may also adversely affect the environment and certain vulnerable groups. If such impacts are ignored, they may pose a threat to societies' long-term sustainable development.

For companies this situation can create dilemmas. A specific business transaction may be economically beneficial and in compliance with all legal and regulatory requirements, yet may have significant environmental or social downsides. Swiss Re recognises that such dilemmas exist and develops effective responses through a well-defined approach and by taking decisions based on ethical principles.

Mines can potentially have serious consequences on the environment and local communities. A dedicated policy of our Sustainability Risk Framework clearly states when our underwriters need to carry out due-diligence checks on such risks.

Our Sustainability Risk Framework is an advanced risk management instrument specifically designed to identify and address the potentially negative effects of our transactions on local communities, workforces and the environment. This framework applies to all of our business transactions in re/insurance as well as investments, to the extent that we can influence their various aspects.

The Sustainability Risk Framework consists of:

- Two umbrella policies on human rights and environmental protection plus seven specific guidelines on sensitive sectors or issues;
- The Sensitive Business Risk (SBR) process comprising an online assessment tool and a referral tool – due diligence mechanisms to assess our business transactions;
- Company exclusions; and
- Country exclusions beyond mere compliance with international trade controls.

Policies and guidelines

Our Sustainability Risk Framework is based on the overarching principles of respecting human rights and protecting the environment, encapsulated in two umbrella policies that are valid for all our transactions. In addition, specific guidelines apply these overarching principles to seven sectors or issues in which we perceive major sustainability risks: the defence industry; oil and gas (including oil sands and hydraulic fracturing); mining; dams; animal testing; forestry, pulp & paper and oil palm; and nuclear weapons proliferation.

We regularly review all the policies and guidelines of our Sustainability Risk Framework to ensure they stay abreast of relevant new risk developments and stakeholder expectations (for recent refinements, see page 32).

OUR MAIN CONCERNS IN KEY SECTORS

Respecting human rights and protecting the environment

- Human rights violations and abuses such as murder, torture, deprivation of liberty, forced labour or harmful child labour;
- Countries that lack an operational, effective and internationally recognised government;
- Companies that are causing ongoing, severe and unmitigated damage to the environment, flora and fauna of a particular place and biodiversity in general, especially in industries and activities that have had a problematic track record in this area in the past.

Defence industry

- Particularly cruel weapons that inflict indiscriminate harm to humans and the environment, often after a conflict has ended;
- The provision of certain services by private security companies.

Oil and gas

- Human rights abuses;
- Significant adverse environmental or social impacts, particularly where critical natural habitats, vulnerable groups and/or critical cultural heritages are impacted.

Mining

- Human rights abuses;
- Significant adverse environmental or social impacts, particularly where critical natural habitats, vulnerable groups and/or critical cultural heritages are impacted;
- Poor occupational health & safety record and risk of increasing HIV penetration.

Dams

- Human rights abuses;
- Significant adverse environmental or social impacts, particularly where critical natural habitats, vulnerable groups and/or critical cultural heritages (in particular, indigenous people) are impacted;
- Non-involvement of relevant stakeholders;
- Non-involvement of affected neighbouring states.

Animal testing

- Unethical and inhumane treatment of animals.

Forestry, pulp & paper and oil palm

- Illegal logging;
- Uncertified logging and timber/oil palm processing in sensitive regulatory environments;
- Greenhouse gas emissions from peatland conversion, timber processing activities and/or forest clearance using bushfires;
- Significant adverse environmental or social impacts, particularly where critical natural habitats, vulnerable groups and/or critical cultural heritages are impacted.

Nuclear weapons proliferation

- Activities associated with nuclear energy or similar in countries that are outside the established framework and international regime of global non-proliferation efforts.

The Sensitive Business Risk process

Each of the two umbrella policies and seven sector guidelines of our Sustainability Risk Framework contains criteria and qualitative standards which define precisely when a transaction may present a "sustainability risk". We assess such transactions through our Sensitive Business Risk (SBR) process, which consists of two due diligence mechanisms – the SBR online assessment tool and the SBR referral tool.

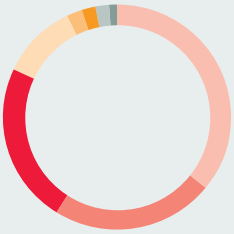
The online tool stores the relevant sustainability risk information for these sectors and is regularly updated to reflect new risk developments. It thus provides our underwriters with an efficient means to check the potential impact of their transactions on human rights, labour rights and the environment. For transactions that reveal low to medium risks, they need to carry out additional due diligence based on industry and country advice provided by the tool.

If the potential human rights or environmental risks of a transaction are assessed as high but the responsible underwriter wants to pursue it, it is automatically transferred through the SBR referral tool to Swiss Re's in-house team of sustainability experts. These specialists then conduct targeted research to decide whether the transaction at hand is acceptable on ethical grounds.

This decision takes the form of a binding recommendation either to go ahead with the transaction, to go ahead with certain conditions attached, or to abstain. If there is disagreement about the recommendation, the case can be escalated to the next management level and, ultimately, to the Group Chief Risk Officer and the Group Executive Committee.

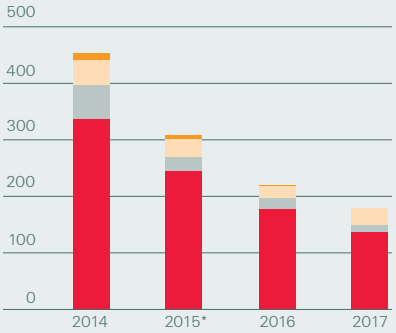
We first introduced the online SBR assessment tool midway through 2015 and have continuously fine-tuned it since, gradually strengthening our underwriters' ability to integrate sustainability risk assessment into their decision-making. This has resulted in a steady decrease of SBR referrals to our in-house sustainability experts, from 454 in 2014 to 178 in 2017. Of those

SENSITIVE BUSINESS RISKS REFERRED TO OUR EXPERT TEAM IN 2017, BY SECTOR/ISSUE



- 36% Oil and gas
- 23% Mining
- 23% Dams
- 11% Other: human rights
- 2% Other: environmental protection
- 2% Defence
- 2% Forestry, pulp & paper and oil palm
- 1% Animal testing

NUMBER OF SENSITIVE BUSINESS RISK REFERRALS AND DECISIONS TAKEN



- Proceed
- Proceed with conditions
- Abstain
- Not materialised

* Starting in mid-2015, we have refined our SBR process, which has led to a steady decrease in the number of referrals

178

Sensitive business transactions referred to our team of sustainability experts

(219 in 2016)

transactions, we issued negative recommendations in 29 cases and positive recommendations with conditions attached in 12 cases.

Company exclusions

Our Sustainability Risk Framework policies specify certain criteria that may lead us to exclude a company from both our re/insurance transactions and our investments, to the extent that such an exclusion is permissible (eg by virtue of mandatory law or internal policies) and possible (eg if existing documentation relating to such re/insurance transactions and investments provide for it). These criteria include: involvement in prohibited war material; verifiable complicity in systemic, repeated and severe human rights violations; causing repeated, severe and unmitigated damage to the environment; unregulated proliferation of nuclear weapons; and unethical/cruel animal testing practices.

Country exclusions

Swiss Re also excludes certain countries from its business that have particularly poor human rights records. This step goes further than compliance with international trade controls (ITCs). Our goal is to refrain from directly underwriting risks or making investments in entities that are based in these countries. We review the list of excluded countries annually based on independent human rights assessments and update it if warranted.

As the Sustainability Risk Framework is based on the principles of respecting human rights and protecting the environment, the SBR process with its two due diligence tools, company exclusions and country exclusions are our principal means to ensure compliance with the UN Global Compact in our core business.

WEBSITE
You can read more about the international declarations and principles underpinning our Sustainability Risk Framework at **www.swissre.com/library/archive/sustainability_risk_framework_sustainable_business_is_good_business.html**

Recent refinements
to our Sustainability Risk Framework

Development of a carbon steering mechanism and a thermal coal policy
Swiss Re supports the worldwide reduction of greenhouse gas emissions and contributes to limiting global warming to 1.5–2°C above pre-industrial levels. To this end, we continually review further measures to support the transition to a low-carbon economy.

After a range of such measures we have taken over the years in our product development, risk management and operations, we recently started to develop a carbon risk steering mechanism that will help guide our business towards a low-carbon world and assist our clients in their transition.

The first part of this carbon steering mechanism will take the form of a thermal coal policy, to be integrated in the Sustainability Risk Framework by mid-2018. It will apply across all lines of business on the direct, facultative and treaty sides. This transition will take some time and constructive dialogue with our clients.

Sharpening our dam assessments
In 2017, we also undertook research to enhance our assessment capabilities for the specific environmental and human rights challenges potentially encountered in the Mekong River basin. The Mekong is the world's 12th longest river, traversing six Asian countries over a distance of 4 350 km. It supports the world's second largest aquatic biodiversity and wild fisheries worth USD 2 billion.

At the same time, the whole Mekong basin is estimated to have hydropower potential of up to 30 000 megawatts. Extensive dam construction in such an important ecosystem harbours significant sustainability risks, though, eg resettlement, affected hydrology and fishery regimes, and falling agricultural productivity in downstream areas.

We analysed these and other risks for both existing and planned dams in the Mekong basin. The results have enabled us to determine which of the projects are compliant with the policies of our Sustainability Risk Framework and to update our SBR assessment tool accordingly.

As part of our efforts to support the transition to a low-carbon world, we have developed a thermal coal policy, to be implemented in our Sustainability Risk Framework by mid-2018.

Training

Ever since we introduced our Sustainability Risk Framework, we have made considerable efforts to raise awareness of sustainability issues among our underwriters and client managers. Through training, we ensure that they know how to properly apply the framework with its underlying principles of respecting human rights and protecting the environment. In recent years, we have focused on high growth markets where we want to expand our business.

In 2016, we developed a new eLearning course for our in-house training. While this continues to be compulsory for all our employees who work in underwriting and with our clients, it is now mandatory for all our new entrants, as well. In 2017, a total of 2 388 employees completed this mandatory training course.

Complementing this eLearning course, we provided instructor-led training personally or via web-based conference to approximately 190 experienced underwriters and graduates.

Emerging risks

Re/insurers operate in a rapidly changing and increasingly complex risk landscape. New demographic, economic, technological, socio-political, regulatory and environmental developments are all capable of changing risks or creating new ones. In addition, growing interdependencies between these developments can lead to accumulations of risk and create significant knock-on effects. People's risk perceptions are shifting, liability and regulatory regimes continue to evolve and stakeholder expectations are growing.

This complex landscape gives rise to "emerging risks" – newly developing or changing risks that are difficult to quantify and whose potential impact on our business is not yet sufficiently taken into account.

Detecting and investigating such risks early on forms an important part of our comprehensive approach to risk management. In analysing how risks are evolving and related to each other, we seek to assess their potential impact on Swiss Re. This is vital to reduce uncertainty and prevent unforeseen losses, raising awareness within the Group and across the industry.

Our SONAR framework

SONAR ("systematic observation of notions associated with risk") is our Group-wide framework specifically designed to manage and communicate emerging risks. Firmly embedded in the Group's risk management organisation, SONAR allows us to identify, assess and report these risks in a timely manner and to factor them into our strategic business decisions.

The SONAR process involves several steps. The first is an interactive intranet platform which enables our employees to share and discuss risk notions based on developments in the re/insurance landscape, allowing for bottom-up identification and peer reviews. While many of the risk notions – or "early signals" – flagged on the SONAR will never turn into emerging risks, others may well do so. However, as we cannot anticipate which signals will become emerging risks, we scan the horizon quite broadly before concentrating on those with the highest impact potential on the re/insurance business.

Our emerging risk specialists periodically cluster and further assess these risk notions for their potential impact on our business. Finally, in-depth investigations are carried out on selected topics.

You can learn more about one of these topics – antimicrobial resistance – in the case study on page 34.

To share some of our key insights on these emerging risks with external audiences, we published the fourth edition of our comprehensive Swiss Re SONAR report in 2017.

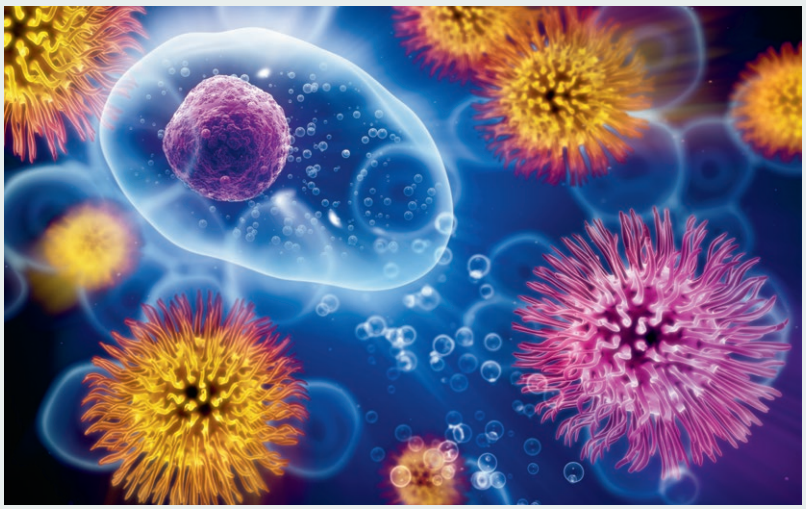
SWISS RE SONAR; NEW EMERGING RISK INSIGHTS

The Swiss Re SONAR report features emerging risk themes that have the potential to impact the re/insurance industry. These topics derive from our SONAR process and have been assessed by our emerging risk management experts in recent years.
media.swissre.com/documents/SONAR_publication_2017.pdf

EMERGING RISKS

We define emerging risks as newly developing or changing risks that are difficult to quantify and whose potential impact on our business is not yet sufficiently taken into account.

EMERGING RISKS CASE STUDY: ANTIMICROBIAL RESISTANCE



Antimicrobial resistance (AMR) obstructs the effective treatment of an increasing range of infections. Most prominent among these are bacterial infections, which are treated by antibiotics.

Inappropriate, ie excessive and/or wrong use of antibiotics is prevalent in human medicine and features prominently in animal farming, too. In fact, the proliferation of antimicrobials in the production of livestock and in aquaculture is a key factor in the spread of global AMR. Overuse of antimicrobial drugs favours the selection of resistant strains, thus accelerating the emergence and spread of AMR.

The global increase of meat consumption and the shift in high growth markets from extensive to more intensive livestock husbandry and aquafarming is amplifying this development.

While some countries have initiated restrictions and regulations, others remain reluctant to take effective action. Furthermore, the surveillance and monitoring of antimicrobial resistance varies significantly between different regions and is insufficient from a global perspective.

As a result, a comprehensive and coordinated response to this emerging risk is currently lacking. This is needed, though, as antimicrobial resistance represents a typical "commons" or "public good" problem: a resource open to all risks to be overused by particular parties, with detrimental effects for everyone. Seen from a re/insurance perspective, it could, for example, exacerbate the impacts of a pandemic by further increasing mortality rates.

We have covered aspects of antimicrobial resistance repeatedly in our recent publications. The 2015 SONAR report put the spotlight on the interconnections between regulatory issues, the development of new antibiotics and human health effects. The 2017 edition highlights the issue with a particular focus on animal farming.

Further activities on emerging risks identified in the past

The emerging risks we previously examined in more detail and featured in our Corporate Responsibility Reports since 2007 are:

2007: Electromagnetic fields

2008: Critical infrastructure

2009: Carbon nanotubes

2010: Smart grids

2011: Cyber attacks

2012: 3D printing

2013: New forms of mobility

2014: Electronic cigarettes

2015: The Internet of Things

2016: Human-induced earthquakes

Since we first identified these emerging risks, we have followed up on several of them together with our stakeholders. Recent examples include the following:

References to further activities

Cyber attacks
Improving the measurement of digital security incidents and risk management
institute.swissre.com/events/Measurement_digital_security_incidents.html

Expert Forum on Cyber Risk: Reducing vulnerability to attack
institute.swissre.com/events/Expert_Forum_Cyber_Risk_2016.html

"Financing resilient energy infrastructure – managing cyber risks"
www.swissre.com/library/partner-publication/world_energy_perspective_the_road_to_resilience_financing_resilient_energy_infrastructure.html

Smart grids / The Internet of Things
Risk approach to electricity grid storage innovations,
institute.swissre.com/events/Risk_approach_to_grid_storage_innovations.html

Risk talk on smart homes
institute.swissre.com/events/Risk_Talk_on_smart_homes.html

Strategic risk initiatives

Identifying and addressing emerging risks can be challenging. Their novelty and interconnectedness makes it difficult to determine when a particular risk notion must be considered an emerging risk. Timing is of crucial importance. If measures to exclude a particular risk are taken too early, we may not be able to offer our clients insurance protection; if measures are taken too late, we may end up with increased loss potential.

Given these challenges, we believe it is essential to foster risk dialogue with various partners. By sharing perceptions and assessments, all parties can gain a better understanding of potential emerging risks.

WEBSITE
You can read about our most important strategic initiatives concerning emerging risks at **www.swissre.com/rethinking/emerging_risks/strategic_risk_initiatives.html**

Political risks

In today's increasingly integrated world, political risks are key determinants of the business landscape. We need to be aware of any relevant political developments, actions and decisions that may affect our business. Within our risk management organisation, we have a team of specialists who look at a wide range of political risks at global, country and business transaction levels.

These specialists identify, assess and monitor political risks on an ongoing basis, so the Group understands their implications and can initiate appropriate mitigation measures if required. Covering both developed and high growth markets, they pay attention to domestic risks such as political instability, terrorism or social unrest as well as cross-border issues, for example international trade, energy and armed conflicts.

Our understanding of political risks is also highly relevant to ensuring sustainable business operations in line with ESG principles. Several of the sectors and issues covered by the umbrella guidelines and policies of our Sustainability Risk Framework (see pages 28–32) have a significant political dimension. Implementing these policies, both through SBR assessments and exclusion policies, thus requires a solid grasp of political risks. This is particularly true with regard to human rights violations, the proliferation of armaments in conflict areas and the identification of areas prone to civil unrest.

Furthermore, we seek to raise awareness of political risk within the re/insurance industry and among the broader public, and engage in dialogue with our clients and other stakeholders. We also distil our ongoing assessments of political risks into country ratings which support our risk control frameworks.

Regulatory risks

Swiss Re is strongly engaged in the regulatory debate, striving to mitigate potentially negative impacts while supporting reforms that could enhance the overall health of the sector, facilitate convergence of regulatory standards or generate business opportunities.

CONTENT IN THE 2017 FINANCIAL REPORT
You can find information about our engagement in the general regulatory debate in the "Risk and capital management" chapter, pages 88–89.

Climate risk and sustainability

Reflecting our commitment to enabling sustainable progress, we closely monitor regulatory developments in connection with climate change and sustainability and contribute to selected initiatives. These issues are gaining traction among policy makers, regulators and standard-setters.

At present, two main areas of activity can be identified. The first concerns a shift from voluntary to mandatory disclosure of environmental, social and governance (ESG) information, eg carbon and climate, diversity and human rights. These efforts seek to create more transparency about how ESG issues affect organisations' businesses, strategy and financial planning.

The second area of activity revolves around efforts to reduce capital requirements for ESG and long-term investments. This is mainly promoted by the re/insurance industry as a way to facilitate its role as a long-term investor. Especially in the EU, regulators are sympathetic to these arguments as they see them as a way to meet the commitments made as part of the Paris Agreement on climate change.

Recently, we have participated in the Financial Stability Board's Task Force on Climate-related Financial Disclosures (FSB-TCFD, www.fsb-tcfd.org). Starting from the premise that climate change creates physical, liability and transition risks, the initiative's goal has been to develop a set of voluntary financial disclosures that allow stakeholders to properly assess the climate risks faced by companies and to take appropriate action.

The FSB-TCFD's final recommendations report was published in December 2016 and has received broad public support, with more than 100 business leaders and their companies committing to support the recommendations. Swiss Re supports the work of the task force and has been one of its members since its launch. We started to integrate the recommended disclosures in the 2016 Financial Report and have significantly expanded our disclosures in the 2017 edition.

CONTENT IN THE 2017 FINANCIAL REPORT
You can view our Climate-related Financial Disclosures in the "Corporate responsibility" chapter, pages, 138–151.

We also provided input to the European Commission's High Level Panel on Decarbonisation Pathways, a group of nine renowned climate experts established in late 2016. The task of this panel is to support cost-effective climate action towards a low-carbon future by delivering science-based, policy-relevant advice, thus helping to implement the Paris Agreement in the European Union. Our input focused on such aspects as data sharing on weather extremes and variability, research on the economics of climate adaptation, transparency on contingent liabilities and facilitating viable infrastructure investments.