

In 2018, Swiss Re maintained its strong capitalisation despite large natural catastrophes and man-made events. Our long-term sustainable capital generation and controlled risk-taking support our attractive capital management actions.



# Overview

Our sustainable capital generation allows us to continue returning excess capital to shareholders.

Despite the fourth-costliest year for the insurance industry, our Group SST ratio of 251% remains comfortably above the 220% target. This is supported by our diversified business model and disciplined risk-taking.



**John Dacey**  
Group Chief Financial Officer

“Large losses keep reminding us of the importance of maintaining a robust capital position.”



**Patrick Raaflaub**  
Group Chief Risk Officer

“Risk Management enables sound risk-taking and makes us a reliable partner to our clients.”

## Financial strength

Swiss Re maintained a market-leading capital position during 2018 despite natural catastrophes and large man-made losses. The Group's Swiss Solvency Test (SST) ratio of 251% remains comfortably above Swiss Re's target capitalisation of 220%. Rating agencies A.M. Best, Moody's and Standard & Poor's (S&P) rated Swiss Re's financial strength 'superior', 'excellent' and 'very strong', respectively. This capital strength enables Swiss Re to support its clients in difficult times while continuously returning capital to shareholders.

Swiss Re's overarching target is to maintain a very strong capital position that operates efficiently within constraints imposed by regulators and requirements from rating agencies while giving the company maximum financial flexibility. Swiss Re's capital allocation decisions are steered to make capital and liquidity fungible to the Group wherever possible, while complying with local regulations and client needs. Cash dividends paid by our Business Units to the Group's parent holding company, Swiss Re Ltd, have amounted to USD 17.2 billion since 2013.

As part of the ongoing maintenance of the Group's target capital structure, Swiss Re further enhanced its financial flexibility by issuing a USD 500 million non-dilutive senior exchangeable bond with anytime issuer stock settlement.

Based on the Group's capital strength, the Board of Directors proposes a 2018 regular dividend of CHF 5.60 per share. In addition, the Board of Directors proposes a further public share buyback programme at the discretion of the Board of Directors and subject to obtaining all necessary legal and regulatory approvals.

## Liquidity

Our core insurance and reinsurance operations generate liquidity primarily through premium income. Our exposure to liquidity risk stems mainly from two sources: the need to cover potential extreme loss events and regulatory constraints that limit the flow of funds within the Group.

The amount of liquidity held is largely determined by internal liquidity stress tests, which estimate the potential funding requirements stemming from extreme loss events. Based on these internal liquidity stress tests, we estimate that Swiss Reinsurance Company Ltd, the most important legal entity of the Group from a liquidity perspective, currently holds significant surplus liquidity.

Swiss Re also provides FINMA with a yearly report on its liquidity position, in accordance with FINMA Circular 13/5, "Liquidity – Insurers".

## Risk Management

Group Risk Management is key to the controlled risk-taking that underpins Swiss Re's financial strength. Risk Management is mandated to ensure that the Group and its legal entities have the necessary expertise, frameworks and infrastructure to support good risk-taking. In addition, it monitors and ensures adherence to applicable frameworks and also performs reserving and reporting activities.

Risk Management is embedded throughout Swiss Re's business. The Group has dedicated Chief Risk Officers and risk teams for all major legal entities and regions. These are closely aligned to Swiss Re's business structure, in order to ensure effective risk oversight, but remain part of the Risk Management function under the Group CRO, thus ensuring their independence as well as a consistent Group-wide approach to overseeing and controlling risks. They are supported in this by central risk teams that provide specialised risk expertise and oversight.

The Group's risk-taking is steered by Swiss Re's Risk Appetite Framework, which consists of two interlinked components: risk appetite and risk tolerance. The risk appetite statement facilitates discussions about where and how Swiss Re should deploy its capital, liquidity and other resources under a risk/return view. The risk tolerance sets clear boundaries to risk-taking.

Swiss Re's proprietary integrated risk model provides a meaningful assessment of the risks to which the Group is exposed and represents an important tool for managing our business. It determines the capital requirements for internal purposes and forms the basis for regulatory reporting under the SST and under Solvency II for our legal entities in the EEA.

Swiss Re continuously reviews and updates its internal model and parameters to reflect the Group's experiences and changes in the risk environment and current best practice.

## Swiss Re's risk profile

In SST 2019, Swiss Re's overall risk remains broadly stable at USD 19.7 billion (compared to USD 19.9 billion in SST 2018), as higher underwriting and credit risks are more than offset by a decrease in financial market risk.

Property and casualty risk increases due to growth in property business in 2018 and the 1 January 2019 renewals which leads to higher natural catastrophe and terrorism exposure. These effects are partly offset by lower costing and reserving risk.

Life and health risk increases due to business growth in Asian markets increasing critical illness and lethal pandemic exposure. Mortality trend risk also increases reflecting an update on external retrocession cashflow. The increase is further driven by the introduction of an improved health model.

Financial market risk decreases mainly driven by significantly lower credit spread risk and to a lesser extent by lower equity risk. The decrease in credit spread and equity risk is driven by adverse market developments during 2018.

Credit risk increases slightly since SST 2018 driven by business growth in credit and surety business.

# Financial strength and capital management

## Maintained very strong capital position

**Swiss Re remained strongly capitalised throughout 2018 despite large industry losses, allowing us to deploy capital for potential market developments while continuing to repatriate excess capital to our shareholders.**

### Robust capitalisation despite large events

Swiss Re’s policy of ensuring superior capitalisation at all times has meant that even in the face of large insurance losses in two consecutive years, the Group maintains a very strong capital position and high financial flexibility. Swiss Re’s financial strength enables the Group to stay committed to creating sustainable long-term shareholder value by growing the regular dividend.

Swiss Re’s capital management priorities aim to ensure the ability to continue operations following an extremely adverse year of losses from insurance and/or financial market events.

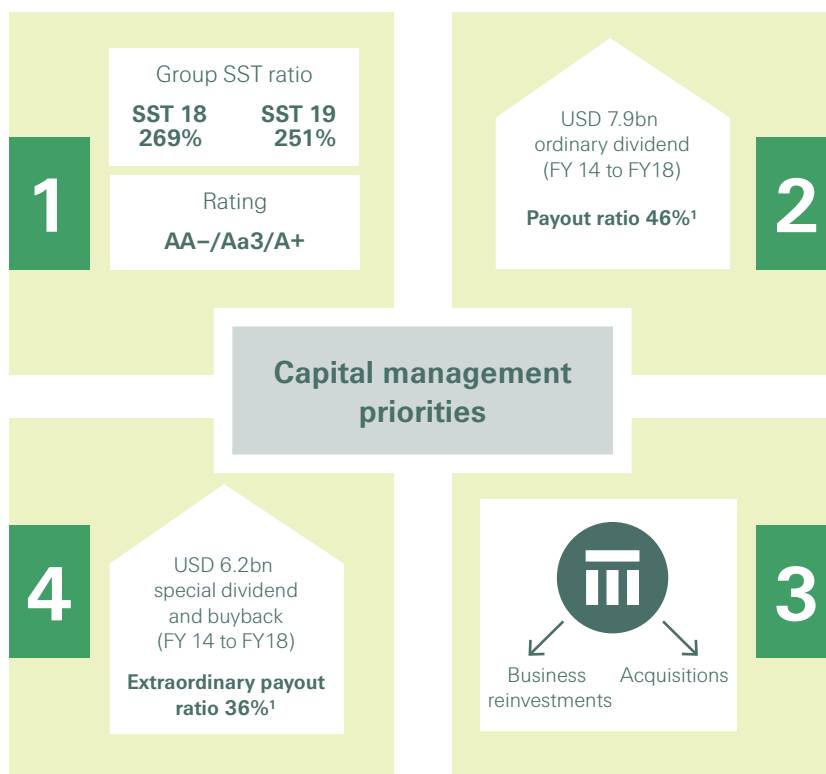
Swiss Re’s Group Board of Directors has also defined an SST capitalisation target of 220% for the Swiss Re Group.

The below subsections describe Swiss Re’s capitalisation according to the SST and the financial strength ratings.

### Swiss Solvency Test (SST)

Swiss Re is supervised at the Group level and for its regulated legal entities domiciled in Switzerland by FINMA. FINMA supervision comprises minimum solvency requirements, along with a wide range of qualitative assessments and governance standards.

- 1 Ensure superior capitalisation at all times and maximise financial flexibility
- 2 Grow the regular dividend with long-term earnings, and at least maintain it
- 3 Deploy capital for business growth where it meets our strategy and profitability requirements
- 4 Repatriate further excess capital to shareholders



<sup>1</sup> Payout ratio calculated as capital repatriation over total contribution to ENW; assumes AGM approval of the proposed ordinary dividend of CHF 5.60 per share and the unconditional share buy-back of up to CHF 1bn

Based on current SST rules introduced in 2017, the ratio is calculated as SST risk-bearing capital (SST RBC) minus the market value margin (MVM), divided by SST target capital (TC) minus the MVM.

The Group SST 2019 report will be filed with FINMA in April 2019. Accordingly, the information presented below is based on currently available figures and may differ from the information included in the final Group SST 2019 report.

In SST 2019, the solvency of Swiss Re Group remains at a very strong level of 251% and comfortably above the target of 220%. In a challenging year with large losses Swiss Re was able to generate a positive underwriting contribution. This is also reflected in a relative increase of insurance risk in the overall risk profile. Capital repatriation, the redemption of a subordinated instrument and depressed financial markets resulting in negative contribution from investments ultimately lead to a decrease in the overall SST ratio.

#### SST 2019

SST RBC – MVM



SST TC – MVM

#### SST 2018

SST RBC – MVM



SST TC – MVM

#### SST ratio 2019

# 251%

#### SWISS RE GROUP SST RATIO

USD millions	SST 2018	<b>SST 2019</b>	Change
SST risk-bearing capital – market value margin	46 345	<b>40 637</b>	–5 708
SST target capital – market value margin	17 217	<b>16 188</b>	–1 029
<b>SST ratio</b>	269%	<b>251%</b>	–18pp

#### SST risk-bearing capital (SST RBC)

The SST RBC is derived from the SST net asset value (NAV), which represents the difference between the market consistent value of assets and liabilities, according to the valuation methodology prescribed under SST. For this purpose, the SST NAV is adjusted for the items in the table below.

Changes to the SST NAV mainly include economic capital generation or depletion due to underwriting and investment activities, foreign exchange movements,

and capital management actions (such as paying dividends and share repurchases).

Compared to the previous reporting period, the SST NAV decreases by USD 3.6 billion. The decrease is mainly driven by dividends paid and share repurchases, negative foreign exchange movements in 2018 and negative investment contributions. These effects are partly offset by positive contributions from underwriting activities.

#### SST RISK-BEARING CAPITAL

USD millions	SST 2018	<b>SST 2019</b>	Change
<b>SST net asset value</b>	50 865	<b>47 268</b>	–3 597
Deductions	–3 161	–3 058	103
<b>SST core capital</b>	47 704	<b>44 210</b>	–3 494
Supplementary capital	4 584	3 450	–1 134
<b>SST risk-bearing capital</b>	52 288	<b>47 660</b>	–4 628
Market value margin	5 943	7 023	1 080
<b>SST risk-bearing capital – market value margin</b>	46 345	<b>40 637</b>	–5 708

## Risk and capital management

### Financial strength and capital management

The overall contribution from underwriting activities is positive, mainly reflecting underwriting contributions from Property & Casualty Reinsurance, Life & Health Reinsurance and Life Capital, partly offset by negative underwriting contribution from Corporate Solutions, due to large natural catastrophe and man-made losses:

- The Property & Casualty Reinsurance contribution to the SST NAV is mainly driven by a net favourable development in expected claims payout patterns and ultimate claims estimates. The positive impacts are partly offset by adverse large loss experience from natural catastrophe and man-made losses.
- The Life & Health Reinsurance contribution is driven by large transactions in Asia and strong core business in the US, partly offset by adverse experience, as well as valuation and assumption updates (mainly in the US and EMEA).
- The Corporate Solutions underwriting contribution is negatively impacted by large natural catastrophes in the US as well as the high severity and frequency of large man-made losses.
- The Life Capital underwriting contribution is positive, resulting from favourable underwriting results.

The contribution from investment activities is negative, mainly driven by the impact of spread widening and negative equity performance as well as losses from Principal Investments.

The negative impact from foreign exchange movements on the SST NAV mainly reflects the weakening of major currencies against the US dollar.

Dividend payments and share repurchases lead to a decline in the SST NAV of USD 2.9 billion.

Deductions mainly reflect projected dividends and share repurchases (to be paid in 2019 and subject to AGM 2019 approval) as well as deferred taxes on real estate. These items decrease by USD 103 million compared to SST 2018.

Supplementary capital is recognised as risk bearing under SST. The change in SST supplementary capital of USD 1.1 billion reflects the redemption of a subordinated instrument as well as changes in the market value of the capital instruments.

A description of the change in market value margin, which represents the capital costs for the run-off period, is provided together with the SST TC comments below.

### SST target capital (SST TC)

Swiss Re uses an internal risk model to determine the economic capital required to support the risks on the Group's book, as well as to allocate risk-taking capacity to the different lines of business. The model also provides the basis for capital cost allocation in Swiss Re's EVM framework, which is used for pricing, profitability evaluation and compensation decisions. In addition to these internal purposes, the model is used to determine regulatory capital requirements under economic solvency frameworks such as SST and Solvency II.

In 2017, FINMA approved Swiss Re's internal model and its components for use of SST reporting purposes under their revised model review process. In 2018, FINMA conducted a material review of Swiss Re's credit risk model, which was approved for use of SST 2019 though it will require minor adjustments for later reporting periods.

Since SST 2018, two major model changes have been implemented and were approved by FINMA in October 2018:

- Financial market risks – The change in calibration approach had no impact on required capital when it was introduced. The prospective impact is contingent on financial markets developments.
- Critical illness, income protection and hospital cash risk – The introduction of the new health model resulted in an increase in required capital.

The risk exposure basis for SST is a projection for the period from 1 January 2019 to 31 December 2019 and is based on the economic balance sheet as of 31 December 2018 and adjustments to reflect 1 January 2019 business shifts.

In order to derive SST TC, total risk is adjusted for the line item Other impacts as shown in the table below.

SST TC remains broadly stable at USD 23.2 billion as minor changes in total risk and other impacts offset each other (see Risk assessment p. 87 for details).

Other impacts mainly reflect run-off capital costs (MVM) – which are deducted again from target capital to calculate the ratio – as well as the impact from business development over the forecasting period and requirements from FINMA that are not included in total risk as they are not consistent with Swiss Re's own risk view.

The increase in MVM is mainly driven by actual and projected growth in Asian critical illness business and model improvements. These effects are partly offset by the depreciation of major currencies against the US dollar and slightly higher interest rates, mainly in US and Canadian dollar.

### SST TARGET CAPITAL

USD millions	SST 2018	SST 2019	Change
<b>Total risk</b>	19 859	<b>19 713</b>	-146
Other impacts	3 301	3 498	197
<b>SST target capital</b>	23 160	<b>23 211</b>	51
Market value margin	5 943	7 023	1 080
<b>SST target capital – market value margin</b>	17 217	<b>16 188</b>	-1 029



Find more information about Swiss Re's risk model in the interactive online report.

**Distribution to shareholders since 2013, in USD billions**

17.2

**External dividends to shareholders**

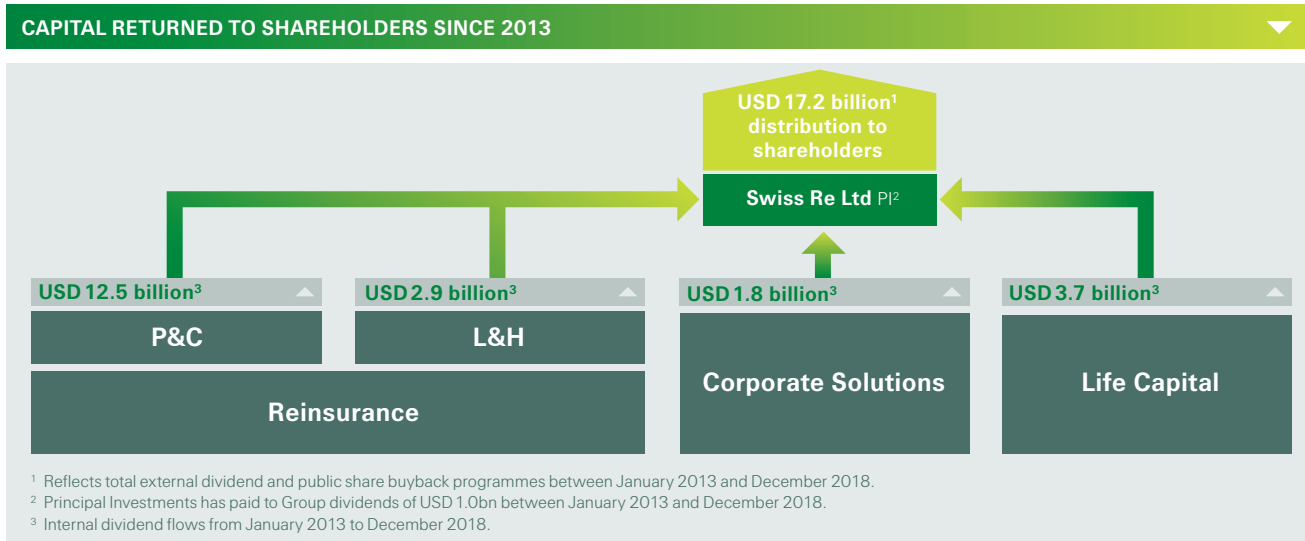
Based on the Group's solid economic earnings, the Board of Directors proposes a regular dividend of CHF 5.60 per share for the 2018 financial year, up from CHF 5.00 in 2017.

Consistent with the established capital management priorities, the Board of Directors proposes a further public share buyback programme. The first tranche of up to CHF 1.0 billion purchase value would commence at the discretion of the Board of Directors shortly after the 2019 AGM approval, subject to regulatory approvals. The second tranche of up to CHF 1.0 billion purchase value is conditional on the 2019 development of the Group's excess capital position.

**Business Unit structure and capital allocation**

Our peer-leading capital repatriation is supported by strong dividend payments from our Business Units. The cash dividends paid to Swiss Re Ltd since 2013 totalled USD 22.0 billion, while the total amount of capital returned to shareholders in the same time period is USD 17.2 billion.

The Group also reinvested into the business by redeploying capital into the Business Units. The majority of this capital was allocated to Life & Health Reinsurance, Corporate Solutions and Life Capital's open-book businesses, reflecting our strategy to steer capital to the growing areas of the business in a competitive environment.





## Risk and capital management

### Financial strength and capital management

#### Rating agency

Rating agencies assign credit ratings to the obligations of Swiss Re and its rated subsidiaries. The agencies evaluate Swiss Re based on a set of criteria that include an assessment of our capital adequacy. Each rating agency uses a different methodology for this assessment.

A.M. Best, Moody's and S&P rate Swiss Re's financial strength based upon interactive relationships. The insurance financial strength ratings are shown in the table below.

On 24 October 2018, S&P affirmed the AA- financial strength of Swiss Re and its core subsidiaries. The outlook on the rating is "Stable". The rating reflects Swiss Re's extremely strong capital adequacy in excess of the 'AAA' benchmark and extremely strong

competitive position build on a highly recognised brand name, highly diversified product offering and long-established direct client relationships.

On 13 December 2018, A.M. Best confirmed the Group Swiss Re Financial Strength Rating of A+ (Superior) with stable outlook. The rating reflect A.M. Best's assessment of Swiss Re's "strongest" balance sheet strength, strong operating performance, very favourable business profile and very sophisticated enterprise risk management.

On 19 December 2017, Moody's affirmed Swiss Re's insurance financial strength rating and outlook at "Aa3" stable. The rating reflects Swiss Re's excellent market position, very strong business and geographic diversification and strong balance sheet in terms of capital and financial flexibility.

#### SWISS RE'S FINANCIAL STRENGTH RATINGS

As of 31 December 2018	Financial strength rating	Outlook	Last update
Moody's	Aa3	Stable	19 December 2017
Standard & Poor's	AA-	Stable	24 October 2018
A.M. Best	A+	Stable	13 December 2018

### Maintenance of target capital structure

Having achieved the Group's target capital structure in 2016, the focus is now on maintaining it.

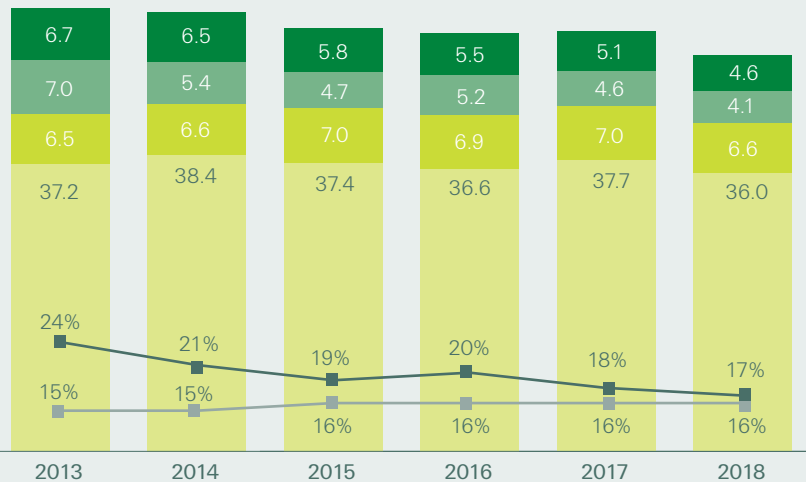
In June 2018, Swiss Re Ltd issued a USD 500 million 6 year non-dilutive senior exchangeable bond with anytime issuer stock settlement at a coupon of 3.25%. This new issuance in the equity-linked capital market provides Swiss Re with valuable, cost efficient contingent capital, further enhancing the Group's financial flexibility. The new bond replaced the CHF 320 million perpetual subordinated notes with anytime issuer

stock settlement issued in 2012 by Swiss Reinsurance Company Ltd, which were redeemed in September 2017. Swiss Reinsurance Company Ltd further reduced subordinated leverage by USD 750 million by redeeming its second series of perpetual subordinated notes with anytime issuer stock settlement on their first call date in September 2018.

The Group's leverage is comfortably within target capital structure senior leverage target range (15–25%) and at within the subordinated leverage target range (15–20%), providing the Group with additional financial flexibility.

#### TARGET LEVERAGE MAINTAINED

USD billions



- LOC<sup>1</sup> ■ Senior debt<sup>2</sup> ■ Total hybrid incl. contingent capital<sup>3</sup> ■ Core capital<sup>4</sup>
- Senior leverage plus LOC ratio<sup>5</sup> (target range: 15–25%)
- Subordinated leverage ratio<sup>6</sup> (target range: 15–20%)

<sup>1</sup> Unsecured LOC capacity and related instruments (usage is lower).  
<sup>2</sup> Senior debt excluding non-recourse positions.  
<sup>3</sup> Includes SRL's pre-funded dated subordinated debt facilities and contingent capital instruments accounted for as equity.  
<sup>4</sup> Core capital of Swiss Re Group is defined as economic net worth (ENW).  
<sup>5</sup> Senior debt plus LOCs divided by total capital.  
<sup>6</sup> Subordinated debt divided by sum of subordinated debt and ENW.

# Liquidity management

The active management of liquidity risks ensures the Group's ability to satisfy its financial obligations.

**As a re/insurance group, Swiss Re's core business generates liquidity primarily through premium income. The Group's exposure to liquidity risk stems mainly from two sources: the need to cover potential extreme loss events and regulatory constraints that limit the flow of funds within the organisation.**

A range of liquidity policies and measures are in place to manage these risks, in particular to ensure that

- sufficient liquidity is held to meet funding requirements under current conditions as well as adverse circumstances;
- funding is charged and credited at an appropriate market rate through Swiss Re's internal transfer pricing;
- diversified sources are used to meet the Group's residual funding needs; and
- long-term liquidity needs are taken into account in the Group's planning process and in the management of financial market risk.

## Liquidity risk management

Swiss Re's core liquidity policy is to retain access to sufficient liquidity in the form of unencumbered liquid assets, cash, and pre-funded facilities, to meet potential funding requirements arising from a range of possible stress events. To allow for regulatory restrictions on intra-Group funding, liquidity is managed from a legal entity perspective. The amount of liquidity held is determined by internal liquidity stress tests, which estimate the potential funding requirements stemming from extreme loss events.

The funding requirements under stress include:

- Cash and collateral outflows, as well as potential capital and funding support required by subsidiaries as a result of loss events
- Repayment or loss of all maturing unsecured debt and credit facilities
- Additional collateral requirements associated with a potential ratings downgrade
- Further contingent funding requirements related to asset downgrades
- Other large committed payments, such as expenses, commissions and tax

The stress tests also assume that funding from assets is subject to conservative haircuts, intra-Group funding is not available if subject to regulatory approval, no new unsecured funding is available and funding from new re/insurance business is reduced.

The primary liquidity stress test is based on a one-year time horizon, a loss event corresponding to 99% tail value at risk (see pages 87–88), and a three-notch ratings downgrade.

Swiss Re's liquidity stress tests are reviewed regularly and their main assumptions are approved by the Group Executive Committee. Swiss Re provides FINMA with a yearly report on its liquidity position, in accordance with FINMA circular 13/5, "Liquidity – Insurers."

## Liquidity position of Swiss Reinsurance Company Ltd (SRZ)

From a liquidity perspective, SRZ is the most important legal entity of the Group. The estimated total liquidity sources in SRZ available within one year, after haircuts and net of short-term loans from Swiss Re Ltd and securities lending, amounted to USD 15.0 billion as of 31 December 2018, compared with USD 17.9 billion as of 31 December 2017. Based on the internal liquidity stress tests described above, we estimate that SRZ holds surplus liquidity after dividends to Swiss Re Ltd.

In 2018, the amount of surplus liquidity reduced. This reduction was largely due to the management decision to reduce external debt, as well as an increase in contingent funding requirements stemming from extreme stress loss events.

# Risk management

Risk Management provides independent oversight and applies an integrated approach to managing current and emerging risks.

**Embedded throughout the business, the Group Risk Management function ensures an integrated approach to managing current and emerging threats. Risk Management plays a key role in business strategy and planning discussions, where Swiss Re's risk appetite framework facilitates risk/return discussions and sets boundaries to Group-wide risk-taking.**

Taking and managing risk is central to Swiss Re's business. All risk-related activities, regardless of the legal entity in which they are undertaken, are subject to the Group's risk management framework. Consequently, the framework is applied at Group level and cascaded to all legal entity levels, whereby the three entities Swiss Reinsurance Company Ltd (SRZ), Swiss Re Corporate Solutions Ltd (SRCS) and Swiss Re Life Capital Ltd (SRLC) represent the top-level legal entities for the Business Units Reinsurance, Corporate Solutions and Life Capital.

The risk management framework sets out how Swiss Re organises and applies its risk management practices to ensure that all activities are conducted in line with the principles and limits mandated by the Group Risk Policy.

The framework comprises the following major elements:

- Risk governance documentation, including Group Risk Policy
- Key risk management principles
- Fundamental roles for delegated risk-taking
- Risk culture
- Organisation of risk management, including responsibilities at Board and executive level
- Risk control framework
- Risk appetite framework, including limits

Swiss Re applies a differentiated governance approach at legal entity level, depending on the materiality of individual entities. SRZ, SRCS and SRLC, as well as major legal entities within the Group that are designated as so-called "Level I entities", are subject to enhanced governance, which includes the following requirements:

- Develop and maintain corporate and risk governance documentation that governs the responsibilities of the legal entity Board, committees and management
- Establish an Audit Committee as well as a Finance and Risk Committee to support the legal entity Board in performing its oversight responsibility for risk and capital steering
- Designate a Chief Risk Officer and Chief Financial Officer

## Risk and capital management

### Risk management

#### Risk governance documentation

Swiss Re's risk management framework is set out in risk governance documentation at Group and legal entity level. Risk governance is the subset of corporate governance that describes the risk management framework and documents risk management practices. Group-level risk documents form the basis for all risk governance across Swiss Re. Additional risk governance for legal entities is prepared as an addendum to the Group or parent entity document.

Group risk governance documents are organised hierarchically across five levels, which are mirrored by equivalent documents at legal entity (LE) level:

- (SRL) Bylaws and the charter for the Group Finance and Risk Committee outline the ultimate authority for risk management, assigning responsibilities to the Group Board of Directors and the Group Executive Committee.
- The Group Risk Policy is defined by the Group Board and articulates Swiss Re's risk appetite framework (risk appetite and tolerance) as well as fundamental risk and capital structure principles.
- The Group Risk Management Standards outline how the Group organises and applies its risk management practices.
- Risk category standards describe how risk practices are implemented for a specific category.
- The lowest level comprises risk management methodology and process documentation.

#### Key risk management principles

Swiss Re's risk management is based on four fundamental principles. These apply consistently across all risk categories at Group and legal entity level:

- **Controlled risk-taking** – Financial strength and sustainable value creation are central to Swiss Re's value proposition. The Group thus operates within a clearly defined risk policy and risk control framework.
- **Clear accountability** – Swiss Re's operations are based on the principle of delegated and clearly defined authority. Individuals are accountable for the risks they take on, and their incentives are aligned with Swiss Re's overall business objectives.
- **Independent risk controlling** – Dedicated units within Risk Management control all risk-taking activities. These are supported by Compliance and Group Internal Audit functions.
- **Transparency** – Risk transparency, knowledge-sharing and responsiveness to change are integral to the risk control process. The central goal of risk transparency is to create a culture of mutual trust, and reduce the likelihood of surprises in the source and potential magnitude of losses.

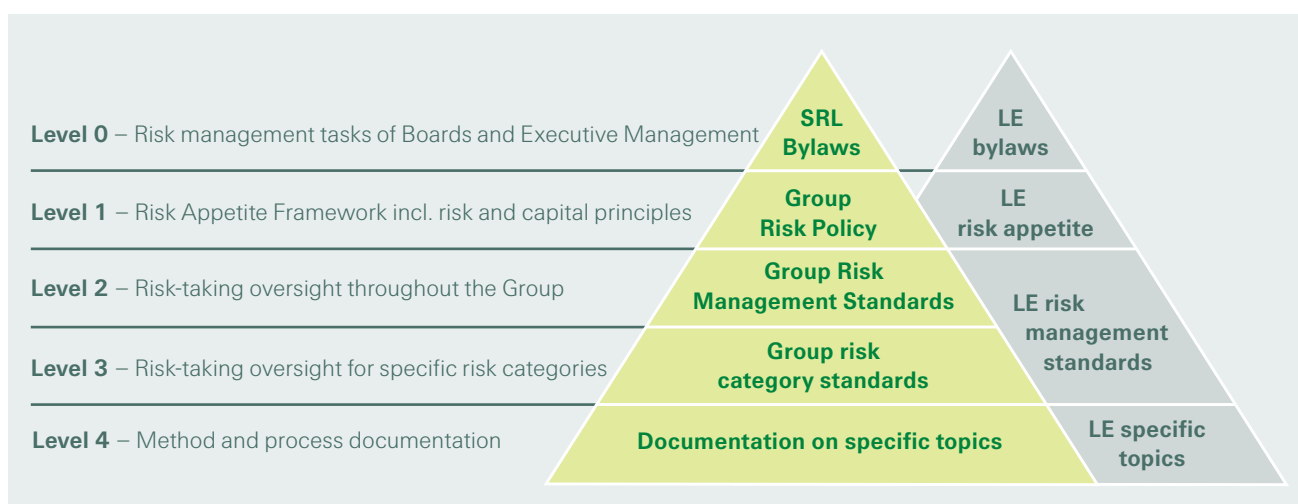
#### Fundamental roles for delegated risk-taking

In order to ensure clear control, accountability and independent monitoring for all risks, Swiss Re's risk governance distinguishes between three fundamental roles in the risk-taking process:

- **Risk owner** – establishes a strategy, delegates execution and control, and retains ultimate responsibility for the outcomes.
- **Risk taker** – executes an objective within the authority delegated by the risk owner; risk takers are required to provide the respective risk controller with all information required to monitor and control their risks.
- **Risk controller** – is tasked by the risk owner with independent oversight of risk-taking activities to mitigate potential conflicts of interest between the risk owner and risk taker; risk controllers are responsible for escalating relevant concerns.

Risk-taking activities are typically subject to three lines of control. The first line comprises the day-to-day risk control activities performed by risk takers in the business as well as in Group functions, including identification of risks and design of effective controls. Independent oversight performed by functions such as Risk Management and Compliance represents the second line of control. The third line consists of independent audits of processes and procedures carried out by Group Internal Audit or by external auditors. This approach is designed to achieve a strong, coherent and Group-wide risk culture built on the principles of ownership and accountability.

### RISK GOVERNANCE DOCUMENTATION HIERARCHY



### **Risk culture**

Swiss Re fosters and maintains a strong risk culture to promote risk awareness and discipline across all its activities. This risk culture stands for the risk- and control-related values, knowledge and behaviour shared by all employees. Its principal components are summarised in a framework that builds on the Group Code of Conduct as well as on key risk management principles in the Group Risk Policy.

The risk culture framework serves to influence appropriate risk-taking behaviour in four key aspects, which are assessed annually for all employees in the performance and compensation process:

- Leadership in providing clear vision and direction
- Consideration of risk-relevant information in decision-making
- Risk governance and accountability of risk takers as well as transparent flow of risk information
- Embedding of risk management skills and competencies

Swiss Re's risk culture provides the foundation for the efficient and effective application of its Group-wide risk management framework. Group Risk Management reinforces the risk culture by ensuring risk transparency and fostering open discussion and challenge in the Group's risk-taking and risk management processes.

Key risk takers across Swiss Re are a particular focus in promoting good risk- and control-related behaviours. The relevant positions are identified in a regular process, and those who hold them are subject to additional behavioural objectives and assessments.

Risk culture is directly linked to Swiss Re's performance management, which is based not only on business results but also on behaviours. Swiss Re's compensation framework aims to foster compliance and support sensible risk-taking. Swiss Re also has a range of incentive programmes that reflect the long-term nature of its business by rewarding sustained performance rather than short-term results. This helps to align shareholder and employee interests.

Swiss Re's compensation principles and framework are captured within the Swiss Re Group Compensation Policy. The Group's Finance and Risk Committee conducts a regular risk assessment for all changes to this policy.



**Organisation of risk management**

The Group Board of Directors (Group Board, the Board) is ultimately responsible for Swiss Re’s overall risk governance principles and policies. It defines basic risk management principles and the risk appetite framework, including the Group’s risk appetite and risk tolerance; in addition, it approves the Group’s risk strategy. The Group Board mainly performs risk oversight and governance through three committees:

- Finance and Risk Committee – defines the Group Risk Policy, reviews risk capacity limits, monitors adherence to risk tolerance, and reviews top risk issues and exposures.
- Investment Committee – reviews the financial risk analysis methodology and valuation related to each asset class, and ensures that the relevant management processes and controlling mechanisms are in place.
- Audit Committee – oversees internal controls and compliance procedures.

The Group Executive Committee is responsible for developing and implementing Swiss Re’s Group-wide risk management framework. It also sets and monitors risk capacity limits,

oversees the Economic Value Management framework, determines product policy and underwriting standards, and manages regulatory interactions and legal obligations. The Group Executive Committee has delegated various risk management responsibilities to the Group Chief Risk Officer (Group CRO) as well as to certain legal entity CROs, in particular the CROs of the legal entities SRZ, SRCS and SRLC.

The Group CRO is appointed as the principal independent risk controller of Swiss Re. He is a member of the Group Executive Committee and reports directly to the Group CEO as well as to the Board’s Finance and Risk Committee. The Group CRO also advises the Group Executive Committee, the Chairman or the respective Group Board Committees, in particular the Finance and Risk Committee, on significant matters arising in his area of responsibility.

The Group CRO leads the independent Risk Management function, which is responsible for risk oversight and control across Swiss Re. It thus forms an integral part of Swiss Re’s business model and risk management framework. The Risk

Management function comprises dedicated risk teams for legal entities and regions, as well as central teams that provide specialised risk expertise and oversight.

While the Risk Management organisation is closely aligned to Swiss Re’s business structure, in order to ensure effective risk oversight, all embedded teams and CROs remain part of the Group Risk Management function under the Group CRO, thus ensuring their independence as well as a consistent Group-wide approach to overseeing and controlling risks.

Legal entity risk teams are led by dedicated CROs who report directly or indirectly to their top-level entity CRO, with a secondary reporting line to their respective legal entity CEO. These legal entity CROs are responsible for risk oversight in their respective entities, as well as for establishing the proper risk governance to ensure efficient risk identification, assessment and control. They are supported by functional, regional and subsidiary CROs who are responsible for overseeing risk management issues that arise at regional or subsidiary level.

The central risk teams oversee Group liquidity and capital adequacy and maintain the Group frameworks for controlling these risks throughout Swiss Re. They also support CROs at Group and legal entity level in discharging their oversight responsibilities. They do so by providing services, such as:

- Financial risk management
- Specialised risk category expertise and accumulation control
- Risk modelling and analytics
- Regulatory relations management
- Maintaining the central risk governance framework

Risk Management is also in charge of actuarial reserving and monitoring of reserve holdings for SRCS and SRLC as well as their subsidiaries, while for SRZ and its subsidiaries the setting of the reserves is performed by valuation actuaries within the P&C and L&H Business Management units.

Risk management activities are complemented by Swiss Re's Group Internal Audit and Compliance units:

- Group Internal Audit performs independent, objective assessments of the adequacy and effectiveness of internal control systems. It evaluates the execution of processes within Swiss Re, including those within Risk Management.
- The Compliance function oversees Swiss Re's compliance with applicable laws, regulations, rules and the Code of Conduct. It also assists the Group Board, Group Executive Committee and other management bodies in identifying, mitigating and managing compliance risks.

### Risk control framework

Swiss Re operates within a clearly defined risk control framework. This is set out in the Group Risk Management Standards and comprises a body of standards that establish an internal control system for taking and managing risk. These standards set responsibilities for risk takers and risk controllers. The risk control framework defines key tasks, which are the core components of Swiss Re's risk management cycle:

- **Risk tolerance and appetite assessment of plan** – ensures that the risk implications of plans are understood, and determines whether business and investment plans adhere to the risk appetite framework (risk appetite and tolerance).
- **Risk identification** – ensures that all risks to which Swiss Re is exposed are transparent in order to make them controllable and manageable.
- **Risk measurement** – enables Swiss Re to understand the magnitude of its risks and to set quantitative controls that limit its risk-taking.
- **Risk limit framework** – allows Swiss Re to control its risk-taking decisions and total risk accumulations, including the passive risk we are exposed to through our operations.
- **Risk reporting** – creates internal risk transparency and enables Swiss Re to meet external disclosure requirements.

In addition, Risk Management performs the following risk control activities:

- **Model and tool assurance** – ensures that models or tools used for costing, valuation and risk capital determination are based on sound scientific concepts, have been implemented and calibrated correctly, and produce accurate results.
- **Valuation assurance** – assesses the quality of valuations for financial instrument prices and reserves.
- **Insurance risk reviews** – assess the quality of decision-making in the taking of insurance risks by performing independent evaluations of underwriting, costing, pricing and claims handling.

Swiss Re has implemented a principle-based integrated internal control system to mitigate identified operational risks including financial reporting and compliance risks, as well as risks that could impair the effectiveness and efficiency of operations. This control system represents a subset of Swiss Re's risk control framework and is based on international standards established by COSO (the Committee of Sponsoring Organisations of the Treadway Commission). It is applied on multiple organisational levels, including Group, functions, regions and legal entities.

### Risk transfer

To efficiently manage capital across the Group and ensure that risk-taking in individual legal entities is well diversified, the Group employs internal retrocession and funding agreements. These serve to improve the fungibility of capital and consequently Group-wide diversification. In addition, the Group aims to maximise the amount of funds available centrally by optimising the excess capital held within its subsidiaries and branches.

Swiss Re also manages and mitigates insurance risk through external retrocession, insurance swap or by transferring risk to capital markets through insurance-linked securities, industry loss warranties or other derivatives. This provides protection against extreme catastrophic events, further diversifies risk, stabilises economic results and releases underwriting capacity.

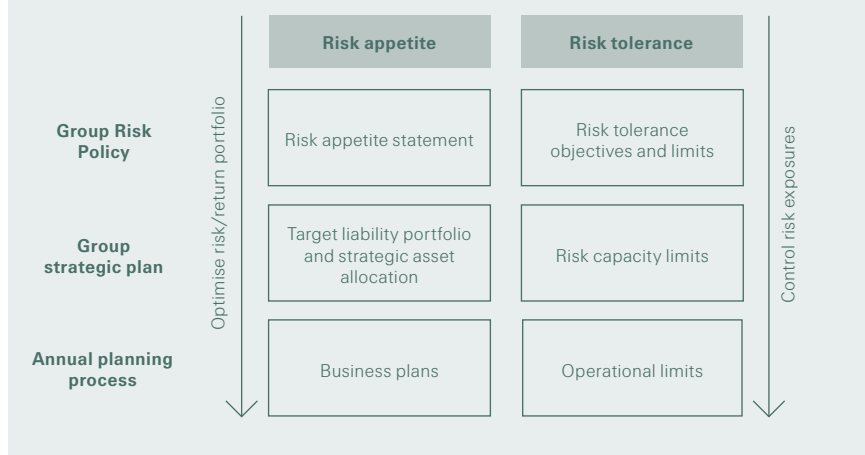
In addition, Swiss Re uses financial market derivative instruments as well as financial market securities to hedge financial market and credit risks arising from investments and insurance liabilities. Interest rate risk from insurance liabilities is managed through investments in fixed-income instruments whose pricing is sensitive to changes in government yields, such as government bonds.


 Find more information about Swiss Re's risk control framework in the interactive online report.



**RISK APPETITE FRAMEWORK**

The risk appetite framework establishes the overall approach through which Swiss Re practices controlled risk-taking throughout the Group. The framework is set out in the Group Risk Policy and consists of two interlinked components: risk appetite and risk tolerance.



 Find more information about Swiss Re’s risk appetite framework in the interactive online report.

**Risk Appetite Framework**

In the context of business strategy and planning, the risk appetite statement facilitates discussions about where and how Swiss Re should deploy its capital, liquidity and other resources under a risk/return view, while the risk tolerance sets clear boundaries to risk-taking.

During strategic planning and target-setting, Risk Management provides an opinion on the proposed strategy and targets to the Group Executive Committee and ultimately the Group Board. The opinion focuses on the risk impact of the proposed strategy and the risks related to its implementation. The strategic plan, risk appetite and capital allocation ambition are expressed in a target portfolio for the Group’s assets and liabilities, which should ultimately deliver the Group’s targeted performance.

Swiss Re’s risk appetite outlines the Group’s principles on acceptable risks and provides key directions for risk-taking and risk controlling as part of implementing Swiss Re’s strategy: achieving targeted performance, providing liquidity and financial flexibility, managing capital adequacy, and protecting and growing franchise value.

The Group Board further details Swiss Re’s risk appetite through its approval or review of the following key steering frameworks as part of the Group’s planning process: target liability portfolio, strategic asset allocation and the Group’s target capital structure.

Swiss Re’s risk tolerance describes the extent to which the Group Board has authorised executive management to assume risk. It represents the amount of risk that Swiss Re is willing to accept within the constraints imposed by its capital and liquidity resources, its strategy, and the regulatory and rating agency environment within which it operates.

The Group’s risk tolerance is based on three objectives:

- To protect the shareholders’ franchise by ensuring that the Group is able to continue operating the business following an extreme loss event
- To maintain capital and liquidity at respectability levels that are sufficiently attractive from a client perspective, and that meet regulatory requirements and expectations

- To avoid material operational risks that could subject the Group to large operational losses with corresponding consequences from an economic, reputational or regulatory perspective

To meet the first objective, the Group Risk Policy defines an extreme loss absorption limit with conditions that must be fulfilled following the realisation of a loss corresponding to a 99% Group shortfall event. To meet the second objective, the Group’s risk tolerance criteria includes respectability limits, which need to be met under normal operating conditions. These limits ensure that Swiss Re has adequate capital and liquidity above minimum requirements to be considered a respectable counterparty by external stakeholders. To meet the third objective, the Group has established a Group-wide risk matrix methodology in which key operational risks are assessed against an acceptable level of expected losses.

The risk tolerance respectability criteria for the Swiss Re Group are set out in the Group Risk Policy. The Group Board is responsible for approving the risk tolerance criteria, as well as for monitoring and reviewing risk tolerance through its Finance and Risk Committee. Breaches or anticipated breaches of limits established to control the risk tolerance criteria must be communicated to the Group Finance and Risk Committee.

Swiss Re’s risk-taking is governed by a limit framework in order to ensure that accumulation risk and large losses remain at an acceptable level, as well as to steer the allocation of available risk capacity. The limit framework is rooted in the risk appetite and risk tolerance objectives set in the Group Risk Policy and helps to translate these objectives into concrete, measurable criteria. In addition, lower level limits are implemented to allocate scarce capacity. The limit framework also allows for risk monitoring and thus supports risk controlling during the execution of the plan.

# Risk assessment

In SST 2019, total risk remains broadly stable, as higher underwriting and credit risks are more than offset by a decrease in financial market risk.

**Swiss Re's internal model provides a meaningful assessment of the risks to which the company is exposed and is an important tool for managing the business. It is used to measure the Group's risk position and related capital requirements as well as for defining the risk tolerance, risk limits and liquidity stress tests.**

Swiss Re is exposed to insurance and financial risks that are calculated in its internal risk model, as well as other risks that are not explicitly part of the economic capital requirement but are actively monitored and controlled due to their significance for Swiss Re. These include operational, liquidity, model, valuation, regulatory, political, strategic and sustainability risks (see Swiss Re's risk landscape, p. 88).

Property and casualty insurance risk is mainly driven by underlying risks inherent in the business Swiss Re underwrites, in particular costing and reserving and non-life claims inflation, as well as Atlantic hurricane risk. The main drivers of life and health insurance risk are lethal pandemic, mortality trend, lapse and critical illness risk.

The Group's financial risk derives from financial market risks as well as from credit risk. Key drivers of financial market risk are credit spread and equity risk. Credit risk is mainly driven by default risk of capital market products and credit and surety business.

Total risk is based on 99% tail VaR and represents the average unexpected loss that occurs with an estimated frequency of less than once in 100 years over a one-year time horizon.

In SST 2019, total risk remains broadly stable, as higher underwriting and credit risks are more than offset by a decrease in financial market risk. The weakening of major currencies against the US dollar also lowers this effect.

Find more information about Swiss Re's internal risk model in the interactive online report.

## GROUP CAPITAL REQUIREMENT BASED ON ONE-YEAR 99% TAIL VAR

USD millions	SST 2018	SST 2019	Change	cross reference information
Property and casualty	10 113	10 537	424	see page 90
Life and health	7 727	8 633	906	see page 91
Financial market	11 992	10 981	-1 011	see page 92
Credit <sup>1</sup>	3 175	3 371	196	see page 93
<i>Diversification</i>	<i>-13 148</i>	<i>-13 809</i>	<i>-661</i>	
<b>Total risk</b>	<b>19 859</b>	<b>19 713</b>	<b>-146</b>	

<sup>1</sup> Credit comprises credit default and credit migration risk from both asset management and underwriting. Credit spread risk falls under financial market risk.

Swiss Re's internal risk model takes account of the accumulation and diversification between individual risks. The effect of diversification at the category level is demonstrated in the table above, which represents the difference between the Group 99% tail VaR and the sum of standalone tail VaR amounts in the individual risk categories. The extent of diversification is largely determined by the selected level of aggregation – the higher the aggregation level, the lower the diversification effect.

## ALTERNATIVE RISK MEASUREMENTS FOR SWISS RE GROUP

USD billions	SST 2018	SST 2019	Change in %
<b>99% VaR<sup>1</sup></b>	14.6	<b>14.8</b>	1
<b>99.5% VaR<sup>1</sup></b>	17.4	<b>17.5</b>	1

<sup>1</sup> For the alternative risk measurements, the same risk exposure and data basis is applied as for the SST calculation.

Alternative risk measurements – 99% and 99.5% VaR – remained broadly stable at USD 14.8 billion and USD 17.5 billion, respectively.

## Swiss Re's risk landscape

The risk categories shown in the table below are discussed on the following pages. Across these categories we identify and evaluate emerging threats and opportunities through a systematic framework that includes the assessment of potential surprise factors that could affect known loss potentials. Liquidity risk management is discussed on page 80.

CORE RISKS IN SWISS RE'S INTERNAL MODEL			
INSURANCE RISK		FINANCIAL RISK	
<b>PROPERTY &amp; CASUALTY</b> <ul style="list-style-type: none"> <li>■ Natural catastrophe</li> <li>■ Man-made</li> <li>■ Costing and reserving</li> <li>■ Claims inflation</li> </ul>	<b>LIFE &amp; HEALTH</b> <ul style="list-style-type: none"> <li>■ Lethal pandemic</li> <li>■ Mortality trend</li> <li>■ Longevity</li> <li>■ Critical illness</li> <li>■ Income protection</li> <li>■ Lapse</li> </ul>	<b>FINANCIAL MARKET</b> <ul style="list-style-type: none"> <li>■ Credit spread</li> <li>■ Equity</li> <li>■ Foreign exchange</li> <li>■ FM inflation</li> <li>■ Interest rate</li> <li>■ Real estate</li> </ul>	<b>CREDIT</b> <ul style="list-style-type: none"> <li>■ Default risk</li> <li>■ Migration risk</li> </ul>
OTHER SIGNIFICANT RISKS			
OPERATIONAL	LIQUIDITY	MODEL	VALUATION
REGULATORY	POLITICAL	STRATEGIC	SUSTAINABILITY
EMERGING RISKS			

Swiss Re is exposed to a broad landscape of risks. These include risks that are actively taken as part of insurance or asset management operations and are calculated in the internal risk model as part of the Group's economic capital requirement as well as to allocate risk-taking capacity:

- *Property and casualty insurance risk* arises from coverage provided for property, liability, motor and accident risks, as well as for specialty risks such as engineering, agriculture, aviation and marine. It includes underlying risks inherent in the business Swiss Re underwrites, such as inflation or uncertainty in pricing and reserving.
- *Life and health insurance risk* arises from coverage provided for mortality (death), longevity (annuity) and morbidity (illness and disability) as well as from acquiring closed books of business. In addition to potential shock events (such as a severe pandemic), it includes underlying risks inherent in life and health contracts that arise when mortality, morbidity or lapse experience deviates from expectations.
- *Financial market risk* represents the potential impact on assets or liabilities that may arise from movements in financial market prices or rates, such as equity prices, interest rates, credit spreads, foreign exchange rates or real estate prices. Financial market risk originates from two main sources: investment activities and the sensitivity of the economic value of liabilities to financial market fluctuations.
- *Credit risk* reflects the potential financial loss that may arise due to diminished creditworthiness or default of counterparties of Swiss Re or of third parties; credit risk arises from investment and treasury activities, structured transactions and retrocession, as well as from liabilities underwritten by credit and surety insurance units.

The risk landscape also includes other risks that are not explicitly part of the Group's economic capital requirement but are actively monitored and controlled due to their significance for Swiss Re:

- *Liquidity risk* represents the possibility that Swiss Re will not be able to meet expected and unexpected cash flow and collateral needs without affecting either daily operations or Swiss Re's financial condition.

- **Operational risk** represents the potential economic, reputational or compliance impact of inadequate or failed internal processes, people and systems or from external events, including legal risk and the risk of a material misstatement in financial reporting. Swiss Re has implemented a capital model for operational risk, which is used for Solvency II purposes.
- **Strategic risk** represents the possibility that poor strategic decision-making, execution or response to industry changes or competitor actions could harm Swiss Re's competitive position and thus its franchise value.
- **Regulatory risk** arises from changes to insurance regulations and supervisory regimes as well as from interactions with regulatory authorities and supervisory regimes of the jurisdictions in which Swiss Re operates.
- **Political risk** comprises the consequences of political events or actions that could have an adverse impact on Swiss Re's business or operations.
- **Model risk** reflects the potential impact of model errors or the inappropriate use of model outputs. It may arise from data errors or limitations, operational or simulation errors, or limitations in model specification, calibration or implementation; model risk may also be caused by insufficient knowledge of the model and its limitations, in particular by management and other decision-makers.
- **Valuation risk** represents uncertainty around the appropriate value of assets or liabilities. It may arise from product complexity, parameter uncertainty, quality and consistency of data, valuation methodology, or changes in market conditions and liquidity. Swiss Re is exposed to financial valuation risk from investment assets it holds as well as reserve valuation risk from insurance liabilities that result from the coverage it underwrites.

- **Sustainability risk** comprises the environmental, social and ethical risks that may arise from individual business transactions or the way Swiss Re conducts its operations.
- Across all risk categories, Swiss Re actively identifies *emerging risks* and threats as part of its risk identification process; this includes new risks as well as changes to previously known risks that could create new risk exposures, or increase the potential exposure or interdependency between existing risks.

Some of these risks are reflected indirectly in the risk model, as their realisations may be contained in the historical data used to calibrate some of the risk factors. In addition, output from the model is used in measuring liquidity risk under stressed conditions. As separate risk categories, these risks are an integral part of Swiss Re's risk landscape. They are monitored and managed within the Risk Management organisation, and included in risk reports to executive management and the Board at Group and legal entity level.

Reputational risk is not considered a separate risk category but rather represents a possible consequence of any risk type in addition to the potential financial and compliance impact.

## Insurance risk

**Insurance risk management involves identifying, assessing and controlling risks that Swiss Re takes through its underwriting activities, including related risks such as inflation or uncertainty in pricing and reserving.**

Risk Management also provides independent assurance throughout the business cycle, starting with the annual business planning process. It reviews underwriting standards, costing models and large transactions, and monitors exposures, reserves and limits.

In 2018, Swiss Re further refined its limit framework, establishing a principles-based approach that is more strongly focused on Swiss Re's key defensive objectives. The new framework enables more dynamic capital allocation while strengthening the accountability of the first line of control of the capacity allocation decisions and capacity management.

Regular internal reports ensure transparency across the Group, providing management with quantitative and qualitative risk assessments. Swiss Re's insurance risk landscape and related

governance processes are regularly discussed and reviewed by the Senior Risk Council and other insurance risk oversight bodies in order to assist and advise the Group CRO in the risk oversight.

Swiss Re also manages and mitigates insurance risk through external retrocession, insurance risk swaps or by transferring risk to capital markets. This provides protection against extreme catastrophic events, further diversifies risk, stabilises economic results and releases underwriting capacity.

## Property and casualty risk

Change since SST 2018: +4%



### Risk developments

The increase in property and casualty risk is driven by growth in property business, which increases both natural catastrophe and terrorism exposure. Costing and reserving risk decreases, reflecting claims payment and reserve releases related to the 2017 natural catastrophes, partly offset by reserve increases for the 2018 large losses.

### Management

The legal entity CROs are responsible for overseeing all property and casualty exposures written in their areas. In addition, Group Risk Management monitors and controls accumulated exposures across Swiss Re to ensure that they remain within the defined risk tolerance level.

The first line of control for property and casualty risks lies within Swiss Re's underwriting units. In general, all transactions must be reviewed by at least two authorised individuals, and are subject to authority limits. Each underwriter is assigned an individual authority based on technical skills and experience. In addition, capacity limits are allocated to local teams; any business that exceeds this authority or is otherwise complex or unusual triggers an escalation process that extends up to the Group Executive

Committee. Certain single risks and specified renewable treaty classes with non-material changes can be authorised by only one individual underwriter with the necessary authority – but these risks and treaties are subject to checks after acceptance.

All transactions that could materially impact the risk at Group level or for key legal entities require independent review and sign-off by Risk Management before they are authorised. This is part of a three-signature principle, under which key transactions must be approved by Client Markets, Underwriting and Risk Management. For transactions of defined types and within defined limits, this may be applied through the approval of underwriting or pricing guidelines. For other transactions, the signatures must be secured through an individual review.

In addition to underwriting and capacity limits, Swiss Re's limit framework includes individual limits for major natural catastrophe scenarios and other key risks, such as terrorism, claims inflation, reserving and liability. These limits guard against exposure accumulations and ensure that risk-taking remains within Swiss Re's risk tolerance.

## INSURANCE RISK STRESS TESTS: ANNUALISED LOSSES WITH A 200-YEAR RETURN PERIOD



Annualised, 99.5% VaR in USD millions	SST 2019
Atlantic hurricane	5 854
Californian earthquake	3 751
European windstorm	2 336
Japanese earthquake	3 351
Lethal pandemic	2 799

In SST 2019, the largest natural catastrophe exposure for Swiss Re Group derives from the Atlantic hurricane scenario with a USD 5.9 billion loss. The lethal pandemic loss is estimated to be at USD 2.8 billion.

## Life and health risk

Change since SST 2018: +12%



### Risk developments

Overall life and health risk increases due to business growth in Asian markets increasing critical illness and lethal pandemic exposure. Mortality trend risk also increases reflecting an update on external retrocession cashflow. The increase is further driven by the introduction of an improved health model, which assumes higher dependencies between different health products and mortality trend risk.

### Management

The legal entity CROs are responsible for overseeing all life and health exposures written in their respective areas. Accumulated exposures across Swiss Re are monitored and controlled by Group Risk Management to ensure that they remain at an acceptable level for the Group.

Underwriters represent the first line of control for life and health risks. All transactions that could materially change risk

at Group level or for key legal entities require independent review and sign-off by Risk Management before they can be authorised. This is part of a three-signature principle, under which key transactions must be approved by Client Markets, Underwriting and Risk Management. For transactions of defined types and within defined limits, this may be applied through the approval of underwriting or pricing guidelines. For other transactions, the signatures must be secured through a review of the individual transaction.

In addition to underwriting and capacity limits, Swiss Re's limit framework includes separate limits for key risks such as mortality, longevity and lethal pandemic risk. Market exposure limits are in place for catastrophe and stop loss business. Swiss Re pays particular attention to densely populated areas and applies limits for individual buildings to guard against risk exposure accumulations.

## Financial risk

**Financial risk management involves identifying, assessing and controlling risks inherent in the financial markets as well as counterparty credit risks, while monitoring compliance with Swiss Re's risk appetite and risk management standards.**

Swiss Re's central Financial Risk Management team oversees all activities that generate financial market or credit risk. Its mandate covers internally and externally managed assets, strategic participations, treasury activities, and credit and market risks that derive from Swiss Re's underwriting and retrocession activities, including structured transactions, credit insurance and surety business. The Head of Financial Risk Management reports to the Group CRO,

with a secondary reporting line to the Group Chief Investment Officer. Financial Risk Management controls exposure accumulation for financial market and credit risks. In addition, the team is responsible for assurance activities related to asset valuation and financial risk models, as well as for reporting Swiss Re's financial risks. These responsibilities are exercised through defined governance processes, including regular reviews by Swiss Re's Senior Risk Council and other financial risk oversight bodies.

All activities with financial market and credit risk are subject to limits at various levels of the organisation (eg Group, lines of business and legal entities). At the highest level, the Group Board of Directors

sets a financial risk concentration limit, which defines how much of the Group's risk exposure can derive from financial risk. The Group Executive Committee establishes the principal risk limits for aggregate financial market and credit risk at Group level. Where required, additional risk limits are established by Risk Management for legal entities, key business lines, individual counterparties and countries. Furthermore, as part of the planning process, the risk-taking functions employ capacity limits to control the amount of risk mandated from the risk owner to the risk takers. Limits may be expressed in terms of losses in a stress scenario, value at risk based on historic market moves, linear sensitivities to a particular risk factor or different methodologies of exposure aggregation.

### Financial market risk

Change since SST 2018: -8%



#### Risk developments

Financial market risk decreases mainly driven by significantly lower credit spread risk and to a lesser extent by lower equity risk. The decrease in credit spread and equity risk is driven by adverse market developments during 2018. The increased minority investment of MS&AD into ReAssure leads to a further reduction, in particular for credit spread risk.

#### Management

Financial market risk is monitored and controlled by dedicated experts within the Group's Financial Risk Management team. Financial Risk Management regularly reports on key financial market risks and risk aggregations, as well as on specific limits for internally and externally managed investment

mandates. These reports track exposures, document limit usage and provide information on key risks that could affect the portfolio. The reports are presented and discussed with those responsible for the relevant business line at the weekly Financial Market Risk Council.

The reporting process is complemented by regular risk discussions between Financial Risk Management, Asset Management and the Group's external investment managers, as well as by regular interactions with other key units that take financial market risk, such as Principal Investments and Acquisitions, Treasury and the respective business teams that write transactions.

## FINANCIAL MARKET SST RATIO SENSITIVITIES

Impact on SST ratio	SST 2019
Interest rates +50bps	10pp
Interest rates -50bps	-12pp
Spreads +50bps	-7pp
Spreads -50bps	8pp
Equity values +25%	3pp
Equity values -25%	-3pp
Real estate values +25%	6pp
Real estate values -25%	-6pp

Among financial market sensitivities, the Group is most sensitive to a 50-basis point decrease in interest rates, leading to an estimated decrease in the SST ratio of 12 percentage points.

## CREDIT RISK STRESS TEST

Annualised, 99.5% VaR in USD millions	SST 2019
Credit default	2 331

## Credit risk

Change since SST 2018: +6%



### Risk developments

Credit risk increases slightly since SST 2018 driven by business growth in credit and surety business.

### Management

Credit risk is monitored and controlled by experts within the Financial Risk Management team. Financial Risk Management regularly monitors and reports on credit exposures and limits. In addition, it is responsible for regularly monitoring corporate counterparty credit quality and exposures, and compiling watch lists of cases that merit close attention. These reports are presented and discussed with those responsible for the relevant business line at the weekly Credit Council.

The reporting process is supported by a Group-wide credit exposure information system that contains all relevant data, including counterparty details, ratings, credit risk exposures, credit limits and watch lists. Key credit practitioners across Swiss Re have access to this system, thus providing the necessary transparency to implement specific exposure management strategies for individual counterparties, industry sectors and geographic regions.

Credit risks are aggregated by country in order to monitor and control risk accumulation to specific risk drivers, such as economic, sovereign and political risks.



## Management of other significant risks

### Operational risk

The Group has implemented an internal control system to mitigate operational risks through three lines of control. This system assigns primary responsibility for identifying and managing operational risks to individual risk takers (first line of control), with independent oversight and control by the Risk Management and Compliance functions (second line of control) as well as Group Internal Audit (third line of control). Members of the Group Executive Committee are required to certify the effectiveness of the internal control system for their area of responsibility on a quarterly basis.

Operational risk is inherent within Swiss Re's business processes. As the company does not receive an explicit financial return for such risks, the approach to managing operational risk differs from the approach applied to other risk categories. The purpose of Operational Risk Management is not to eliminate risks but rather to identify and cost-effectively mitigate operational risks that approach or exceed Swiss Re's tolerance.

Risk Management is responsible for monitoring and controlling operational risks based on a centrally coordinated methodology. This includes a pre-defined taxonomy that is used for identifying, classifying and reporting operational risks, as well as a matrix in which risks are assessed according to their estimated probability and impact. Risks are assessed for their residual economic, financial reporting, reputational and compliance impact, taking into account existing mitigation and controls.

The matrix is also used to assess residual exposures against Swiss Re's tolerance limits for operational risk. This limit represents the level of operational risk that the Board of Directors and executive management teams are willing to accept. Material risks that exceed or are approaching risk tolerance are reported to executive management and Boards of Directors at Group and legal entity level. In addition, mitigation strategies are required for all risks that are outside of operational risk limits in order to bring them within tolerance.

Cyber risk and information security are a key focus of Swiss Re's operational risk controls. The Group performs an annual cyber risk assessment to determine the current maturity of controls; this is based on internationally recognised standards defined by the Information Security Forum. The results of the assessment are shared with senior management and integrated into Swiss Re's Group-wide cybersecurity programme. This programme focuses on five key areas: security culture, critical information, technology defence, incident response and supplier governance.

All operational events and issues are recorded and managed in a central Operational Risk Management system in order to address the identified problems and avoid the recurrence of similar events. The results are reviewed by the company's CRO and reported to the management team and Board.

While techniques and technologies to turn data into risk knowledge are becoming increasingly sophisticated, Swiss Re further enhanced its organisational measures to protect privacy and safeguard data confidentiality in line with requirements of the European General Data Protection Regulation which took effect on 25 May 2018.

Processes have been finetuned to meet new requirements (eg, Data Subject Rights, Data Protection Impact Assessment, Personal Data Breach Notification) with further strengthening of Swiss Re internal control system and increased awareness of expected behaviors in respect of data protection.

### Strategic risk

Overall responsibility for managing strategic risk lies with the Group Board, which establishes Swiss Re's overall strategy. The Boards of legal entities are responsible for the strategic risk inherent in their specific strategy development and execution. Strategic risks are addressed by examining multi-year scenarios, considering the related risks, as well as monitoring the implementation of the chosen strategy year-by-year in terms of the annual business plan.

As part of their independent oversight role, Risk Management, Compliance and Group Internal Audit are responsible for controlling the risk-taking arising from the implementation of the strategy.

## Regulatory risk

Swiss Re is strongly engaged in the regulatory debate and interaction, 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.

Regulatory developments and related risks that may affect Swiss Re and its subsidiaries are identified, assessed and monitored as part of regular oversight activities. Periodic reports and recommendations on regulatory issues are provided to executive management and the Board at Group and legal entity level.

The regulatory environment of the insurance industry continues to evolve on the regional, national and international level. While some regulatory changes create new business opportunities, others come with significant costs and business restrictions. Growing regulatory complexity, increased national protectionism and a fragile global economy are persistent themes affecting regulation and the way Swiss Re operates worldwide.

While prudential regulation in most regions is developing towards more risk-sensitive and economic-based capital regimes, regulatory fragmentation is increasing. Regulators show declining appetite for globally aligned policy reforms. Local capitalisation rules often fail to fully recognise the benefits of risk mitigation and diversification. In addition, there are moves to limit the use of internal models influenced by post-crisis banking regulation. Swiss Re strongly supports the use of internal models, full recognition of risk mitigation and diversification, appropriate consideration of counterparty default and concentration risk, and efficient application of eligible capital instruments. Uncoordinated regulatory approaches

will be less effective in promoting financial stability and could undermine re/insurers' ability to support economic activity and closing the protection gap.

Technology regulation is increasing in importance. While this is mainly targeted at technology companies, it also has a significant effect on insurers and reinsurers where it concerns access to and usability of data. Insurance regulators have also to examine the use of data. If efforts at data regulation are not coordinated between jurisdictions, they could impact Swiss Re's future use of data-linked technologies on a global basis.

Swiss Re continues to advocate for the removal or reduction of market access barriers, so that policyholders, governments, taxpayers and national economies can fully benefit from international diversification and therefore reliable, quality and affordable risk cover.

## Political risk

Political developments can threaten Swiss Re's operating model but also open up opportunities for developing the business. The Group adopts a holistic view of political risk and analyses developments in individual markets and jurisdictions, as well as cross-border issues such as war, terrorism, energy-related issues and international trade controls.

A dedicated Political Risk team identifies, assesses and monitors political developments world-wide. Swiss Re's political risk experts exercise oversight and control functions for named political risks, such as in the political risk insurance business; this includes monitoring political risk exposures, providing recommendations on particular transaction referrals and risk reporting. In addition, the Political Risk team provides specific country ratings that cover political, economic and security-related country risks; these ratings complement sovereign credit ratings and are used to support risk control activities and inform underwriting or other decision-making processes throughout the Group.

Swiss Re seeks to raise awareness of political risk within the insurance industry and the broader public, and actively engages in dialogue with clients, media and other stakeholders. The Group also builds relationships that expand the company's access to information and intelligence, and allow Swiss Re to further enhance its methodologies and standards. For example, Swiss Re participates in specialist events hosted by institutions such as the International Institute of Strategic Studies, the Geneva Center for Security Policy, or the Risk Management Association, and maintains relationships with political risk specialists in other industries, think tanks and universities, as well as with governmental and non-governmental organisations.

The ultimate outcome of Brexit and the relationship between the EU and the UK remain unclear. Swiss Re operates in the UK through the UK branches of Swiss Re's Luxembourg entities and some UK-domiciled entities. Swiss Re is actively engaging with the relevant UK and EEA regulators to ensure minimum disruption from Brexit and has actioned contingency plans to mitigate the risk of any adverse impacts on Swiss Re's businesses or the ability to service clients and customers as a result of Brexit.

## Risk and capital management

### Risk assessment

#### Model risk

Swiss Re uses models throughout its business processes and operations, in particular to price insurance products, value financial assets and liabilities, assess reserves and portfolio cash flows, and estimate risk and capital requirements. Model owners have primary responsibility for model-related risks and are required to adhere to a robust tool development process, including testing, peer review, documentation and sign-off. A similar process also applies to model maintenance.

Swiss Re's model governance is based on Group-wide standards for model assurance. These standards seek to ensure that each material model has a clear scope, is based on sound mathematical and scientific concepts, has been implemented correctly and produces appropriate results given the stated purpose. Furthermore, the calibration of model parameters (and the data on which calibration relies) must be trustworthy, while expert judgments are required to be sensible, documented and evidenced.

Analytical or financial models that are used for costing, valuation and risk capital calculations are governed by Swiss Re's Model and Tool Assurance Framework. This requires the appropriateness of models to be assessed in an independent end-to-end validation process that includes specification, algorithms, calibration, implementation, results and testing. Material models used for costing, valuation of reserves and assets as well as Swiss Re's internal risk model are validated by dedicated teams within Risk Management. These teams provide independent assurance that the framework has been adhered to, and also conduct independent validations. Swiss Re's risk model is also subject to regulatory scrutiny.

Model-related incidents are captured within Swiss Re's operational risk framework. In addition, material model developments, incidents and risks are reported in regular risk updates to executive management and the Board at Group and legal entity level.

Swiss Re works closely with industry peers to develop and share best practices for assessing and managing model-related risks. In this context, Swiss Re is actively participating in a CRO Forum working group that provides a platform for such exchanges and are working on frameworks for model risk.

#### Valuation risk

Financial valuation risk is managed by a dedicated team within Financial Risk Management. The team performs independent price verification for financial risk positions to confirm that valuations are reasonable and ensure there are no material misstatements of fair value in Swiss Re's financial reports. The results of the independent price verification process are reviewed by the Asset Valuation Committee. Summary results are regularly reported to executive management and the Board at Group and legal entity level. In addition, Swiss Re's external auditor conducts quarterly reviews as well as a comprehensive year-end audit of controls, methodology and results.

Reserve valuation risk is managed by Swiss Re's Actuarial Control function, with dedicated teams for property and casualty, and life and health valuation. These teams ensure that Swiss Re's reserve setting process uses an appropriate governance framework, including defined accountabilities and decision-making processes for risk takers (as the first line of control) as well as for Actuarial Control. The framework ensures that there is independent assurance on the data, assumptions, models and processes used for valuation purposes; for all property and casualty business and selected life and health portfolios, it also includes an independent valuation of coverage provided to ensure that reserves are within an adequate range. Regular deep-dive investigations are performed into selected portfolios in order to review the appropriateness of both the reserves and the applied reserving approach.

#### Sustainability risk

Swiss Re's continued business success depends on the successful management of sustainability risks, thus helping to maintain the trust of its stakeholders. The Group has a long-standing commitment to sustainable business practices, active corporate citizenship, as well as good, transparent governance. All employees are required to commit to and comply with Swiss Re's values and sustainability policies.

Potential sustainability risks are mitigated through clear corporate values, active dialogue and engagement with affected external stakeholders, and robust internal controls. These include a Group-wide Sustainability Risk Framework to identify and address sustainability risks across Swiss Re's business activities. The framework comprises sustainability-related policies – with pre-defined exclusions, underwriting criteria and quality standards – as well as a central due diligence process for related transactional risks.

Sustainability risks are monitored and managed by dedicated experts in Swiss Re's Group Sustainability Risk team, which is also responsible for maintaining the Sustainability Risk Framework. In addition, this unit supports Swiss Re's risk management and business strategy through tailored risk assessments and risk portfolio reviews. It fosters risk awareness through internal training, and facilitates development of innovative solutions to address sustainability issues. Finally, it represents and advocates Swiss Re's position on selected sustainability risk topics to external stakeholders.

Swiss Re is a founding signatory to the UN Principles for Sustainable Insurance (UN PSI) and is currently a board member of this initiative. The UN PSI provide a global framework for managing environmental, social and governance challenges. Swiss Re has been actively contributing to the initiative for several years, co-chaired it from 2013 to 2015 and publicly reports progress against the principles in its annual Corporate Responsibility Report; the 2018 edition has been published together with the 2018 Financial Report.

Swiss Re is currently developing a carbon risk steering mechanism that will help to guide the Group's business towards a low-carbon world and support Swiss Re's clients in their transition. In July 2018, Swiss Re launched a first element of the carbon steering mechanism in the form of a new thermal coal policy. The new policy is part of Swiss Re's Sustainability Risk Framework and applies across all lines of direct, facultative and treaty business.

Reflecting the Group's strong overall commitment to corporate responsibility, Swiss Re continued to be included in leading sustainability indexes and rankings such as FTSE4Good, Euronext Vigeo World 120, Ethibel Excellence Global, oekom Prime Investment and the Dow Jones Sustainability Index. For more information on Swiss Re's sustainability practices, see also the Corporate Responsibility section on page 174 as well as Swiss Re's 2018 Corporate Responsibility Report.

### Emerging risk

Anticipating possible developments in the risk landscape is a central element of Enterprise Risk Management. Swiss Re promotes pre-emptive thinking on risk in all areas of the business in order to reduce uncertainty and diminish the volatility of the Group's results, while also identifying new business opportunities and raising awareness for emerging risks.

For this purpose, Swiss Re's risk identification processes are supported by a systematic framework that identifies, assesses and monitors emerging risks and opportunities across all areas of Swiss Re's risk landscape. This framework combines a bottom-up approach driven by employee input with central and regional experts on emerging risk. The resulting information is complemented with insights from external organisations such as think tanks, academic networks and international organisations, as well as from interaction with clients.

Findings are reported to management and internal stakeholders, including a prioritised overview of newly identified emerging risks and an estimate of their potential impact on Swiss Re's business. Swiss Re also publishes an annual emerging risk report (Swiss Re SONAR) to raise awareness within the Group and across the industry, and initiate a risk dialogue with key external stakeholders.

To further advance risk awareness across the industry and beyond, Swiss Re continues to participate actively in strategic risk initiatives such as the CRO Forum's Emerging Risk Initiative and the International Risk Governance Council.



Find more information about Swiss Re's Emerging Risk Management activities in the interactive online report.