Swiss Re

Risk and capital management

This document is an extract from Swiss Re's Financial Report 2021.
The complete Financial Report 2021 (including applicable disclaimers)
is available at https://reports.swissre.com/2021/

Swiss Re improves profitability despite COVID-19 impacts, reflecting the remarkable performance of its property and casualty businesses.

"

We are in a strong position to continue to support our clients and deploy our capital."

John R. Dacey
Group Chief Financial Officer

Swiss Re's very strong capital position provides the resilience that underpins profitable growth.

The Group's capital position remains very strong with a Group SST ratio of 223% as of 1 January 2022, compared with a target range of 200–250%. This is supported by our diversified business model and disciplined risk-taking.

Financial strength
Swiss Re's capital position remains very strong with a Group Swiss Solvency Test (SST) ratio of 223% as of 1 January 2022, which is within Swiss Re's 200–250% target Group capitalisation range. 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 while continuing to offer an attractive dividend to shareholders in what has been unprecedented times.

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.

Based on the Group's capital strength, the Board of Directors proposes a 2021 regular dividend of CHF 5.90 per share. In accordance with the Group's capital management priorities, the Board of Directors has not proposed a public share buyback programme for 2022.

> "Swiss Re's financial strength and leadership in sustainability provide a strong base to support profitable growth."

Patrick Raaflaub
Group Chief Risk Officer

Liquidity
Swiss Re's core insurance and reinsurance operations generate liquidity primarily through premium income. 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, it is estimated 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, its principal regulator, 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 its business. It determines the capital requirements for internal purposes and forms the basis for regulatory reporting under the SST and under Solvency II for legal entities in the European Economic Area (EEA) and the United Kingdom.

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 2022, Swiss Re's total risk increased to USD 22.7 billion (compared to USD 22.4 billion in SST 2021), driven by higher financial market risk, partially offset by lower insurance risk. These shifts led to a slight increase in diversification at risk category level.

The decrease in property and casualty risk is mainly driven by the inflation model change, the depreciation of major currencies against the US dollar and higher interest rates. These effects are partially offset by an increase in natural catastrophe risk.

Lower life and health risk mainly reflects the impact of higher interest rates and the depreciation of major currencies against the US dollar. The overall decrease is further supported by higher relief from new retrocession agreements and the diversification impact of new longevity business.

Financial market risk increased, mainly driven by the reduction of investment hedges, higher equity valuations and additional investments in private equity.

Credit risk remained stable, as the reduction of hedges and addition of corporate bonds was largely offset by foreign exchange and interest rate movements.

Financial strength and capital management

Swiss Re's capital position remains very strong, demonstrating resilience to large losses and market volatility.

Solid capitalisation enabling market opportunities
Swiss Re's policy of ensuring superior capitalisation at all times has meant that even after five consecutive years with large insurance losses, its very strong capital position and high financial flexibility enabled the company to respond to market opportunities and therefore create sustainable long-term shareholder value by maintaining the regular dividend.

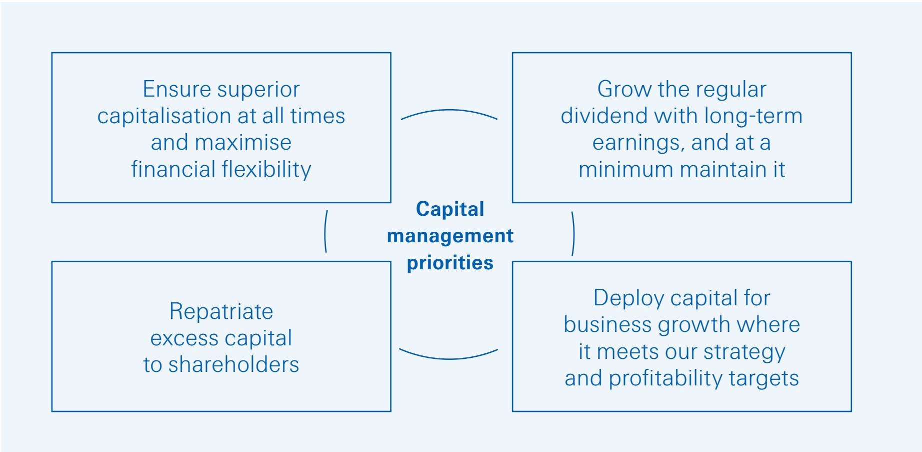
Swiss Re's capital management priorities aim to ensure the ability to continue operations following an extremely adverse year of losses from insurance and/or financial market events. Swiss Re's Board of Directors has also defined an SST capitalisation target range of 200–250% for the Swiss Re Group.

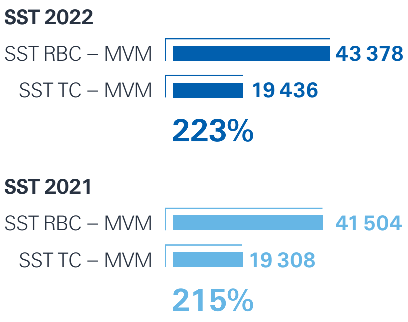
The below subsections describe Swiss Re's capitalisation according to the SST and the financial strength ratings.

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

The SST ratio is calculated as SST risk-bearing capital (SST RBC) minus market value margin (MVM), divided by SST target capital (SST TC) minus MVM.

The Group SST 2022 report will be filed with FINMA in April 2022. Accordingly, the information presented below is based on currently available information and may differ from the final Group SST 2022 figures.





Swiss Re Group maintained its very strong capital position throughout 2021 despite COVID-19 impacts. The Group SST 2022 ratio increased to 223%, 8pp higher than in SST 2021 and around the mid-point of its 200–250% target range.

The increase was mainly driven by positive underwriting and investment contributions as well as higher interest rates. These effects were partially offset by paid dividends and the reduction of investment hedges, as well as higher natural catastrophe risk.

Swiss Re Group SST Ratio

USD millions	SST 2021	SST 2022	Change
SST risk-bearing capital – market value margin	**41 504**	**43 378**	1 874
SST target capital – market value margin	**19 308**	**19 436**	128
SST ratio	**215%**	**223%**	**8pp**

223%
SST ratio
(2022)

SST risk-bearing capital (SST RBC)

The SST RBC is derived from the SST net asset value (SST NAV), which represents the difference between the market consistent value of assets and best estimate of 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 dividend payments).
The increase in SST NAV to USD 50.3 billion was mainly driven by positive underwriting and investment contributions, partially offset by paid dividends.

SST risk-bearing capital

USD millions	SST 2021	SST 2022	Change
SST net asset value	**48 804**	**50 263**	1 460
Deductions	–2 433	–2 455	–22
SST core capital	**46 370**	**47 808**	1 438
Supplementary capital	6 914	6 421	–493
SST risk-bearing capital	**53 284**	**54 229**	945
Market value margin	11 780	10 851	–929
SST risk-bearing capital – market value margin	**41 504**	**43 378**	1 874

The overall contribution from underwriting activities was positive, mainly reflecting favourable underwriting results from Property & Casualty Reinsurance, Life & Health Reinsurance and Corporate Solutions, partially offset by Group items:

- The Property & Casualty Reinsurance positive underwriting contribution was mainly driven by improved margins and portfolio quality. Reserves releases for natural catastrophe losses including US hurricanes and wildfires, weather-related events in Australia as well as typhoons in Asia and man-made losses further improved the result. This was partially offset by large natural catastrophe losses such as Hurricane Ida, European July floods and June hailstorm, US winter storm Uri, as well as riots in South Africa and proactive reserving actions on casualty claims inflation.
- The positive underwriting contribution from Life & Health Reinsurance was mainly driven by strong transactional business growth primarily in the US but also in the UK, as well as further profitable growth of core business across all regions. This was partially offset by a significant impact from COVID-19-related losses, mainly reflecting mortality developments in the US. In addition, the Life & Health Reinsurance underwriting contribution reflected unfavourable impacts from various assumption updates, including mortality improvements, while experience remained slightly positive.
- Corporate Solutions positive underwriting contribution was mainly driven by continued price momentum, growth in target areas and strong renewals, as well as by reserve releases in property, and releases on COVID-19 reserves. This more than compensated for large natural catastrophe losses, mainly Hurricane Ida, central US tornadoes, US winter storm Uri as well as large man-made losses.
- The Group items negative underwriting contribution was mainly driven by increased overhead expenses, as well as the continued investment into building the iptiQ business and unfavourable updates in the underwriting run-off business.

The positive investment contribution was mainly driven by outperformance across alternative investments and equities as well as a positive contribution from credit investments. This was partially offset by a negative contribution from Principal Investments.

Negative foreign exchange impacts were mostly driven by the depreciation of major currencies against the US dollar.

Deductions mainly reflect projected dividends (to be paid in 2022, subject to AGM 2022 approval) as well as deferred taxes on real estate.

Supplementary capital is recognised as risk bearing under SST. The change in SST supplementary capital was due to market value movements.

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 target capital 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 SST reporting purposes under their revised model review process.

Since SST 2021, one major model change has been implemented. It was approved by FINMA in October 2021:
- Inflation risk – The model was improved to capture risk more comprehensively, including the mitigation effect of contractual clauses, diversification with other risks and inclusion of additional exposures. The overall impact is an increase of the Group's SST ratio.

The risk exposure basis for SST is a projection for the period from 1 January 2022 to 31 December 2022 and is based on the economic balance sheet as of 31 December 2021 and adjustments to reflect 1 January 2022 business shifts.

To derive SST TC, total risk is adjusted for the line item Other impacts as shown below.

SST target capital declined to USD 30.3 billion, mainly driven by the decrease in market value margin (included in Other impacts), partially offset by higher total risk (see Risk assessment p. 67 for details).

Other impacts mainly reflect market value margin, the impact from business development over the forecasting period and requirements from FINMA that are not included in total risk because they are not consistent with Swiss Re's own risk view.

The decrease in market value margin is mainly driven by the increase in interest rates.

SST Target Capital

USD millions	SST 2021	SST 2022	Change
Total risk	**22 353**	**22 739**	**385**
Other impacts	8 735	7 548	–1 187
SST target capital	**31 088**	**30 287**	**–801**
Market value margin	11 780	10 851	–929
SST target capital – market value margin	**19 308**	**19 436**	**128**

USD 11.2bn

Distribution to Shareholders cumulative 2018–2022E

External dividends to shareholders

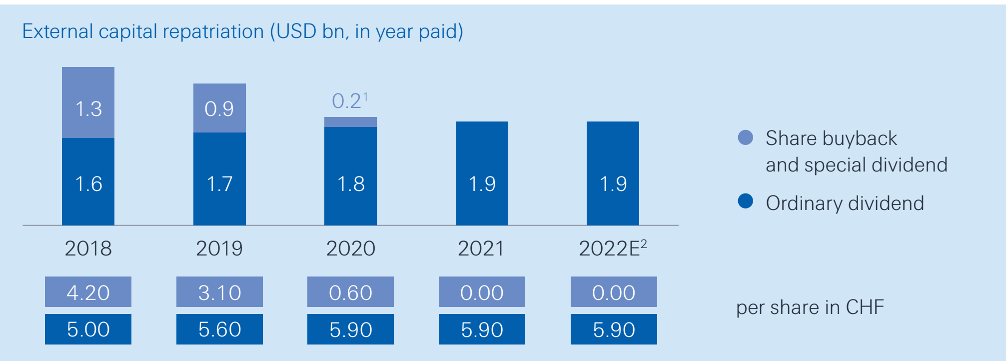
Based on the Group's very strong capital position and positive market outlook, the Board of Directors proposes a regular dividend of CHF 5.90 per share for the 2021 financial year, maintaining the dividend per share paid for the 2020 financial year.

Swiss Re Ltd subsidiaries dividends and capital allocation

Swiss Re's peer-leading capital repatriation is supported by strong dividend payments from Swiss Re Ltd subsidiaries, in particular Swiss Reinsurance Company Ltd.

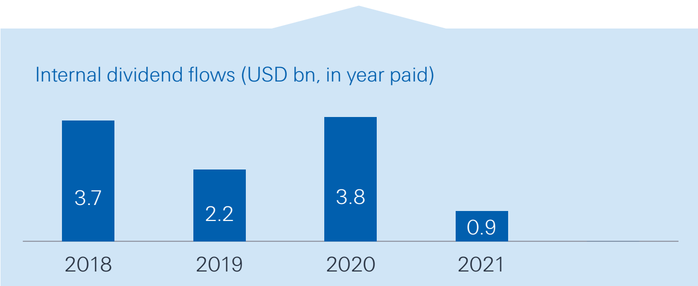
The Group also reinvested in the business by redeploying capital to support growth where it meets its strategy and profitability targets.

Excellent track record of capital repatriation



USD 11.2 bn

cumulative 2018 – 2022E



Holding funds

USD 3.1 bn

as of 2021

[1] Remainder of the first tranche of the 2019/2020 share buyback programme; second tranche of the 2019/20 share buyback programme has been cancelled.

[2] Capital repatriation includes AGM 2022 proposal for ordinary dividend.

Rating agencies

Rating agencies assign credit ratings to the Swiss Re group and its rated subsidiaries and their respective obligations. The agencies evaluate Swiss Re based on a set of criteria that include an assessment of its capital adequacy, governance and risk management. 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 quantitative inputs and an interactive dialogue. The insurance financial strength ratings are shown in the table below.

On 23 November 2021, S&P published a credit opinion with a AA– financial strength of Swiss Re and its core subsidiaries. The outlook on the rating is "negative". The rating reflects Swiss Re's very strong capital adequacy, its excellent franchise and diversified product suite across non-life and life reinsurance.

On 16 December 2021, Moody's published a credit opinion on Swiss Re and its core subsidiaries with an insurance financial strength rating as "Aa3" and stable outlook. The rating reflects Swiss Re's excellent market position, extensive diversification by line of business and geography, strong capital adequacy and good reserve adequacy.

On 22 July 2021, A.M. Best confirmed the Swiss Re Group financial strength Rating of A+ (Superior) with stable outlook. The rating reflects A.M. Best's assessment of Swiss Re's balance sheet strength as "strongest", strong operating performance, very favourable business profile and very strong enterprise risk management.

Swiss Re's financial strength ratings

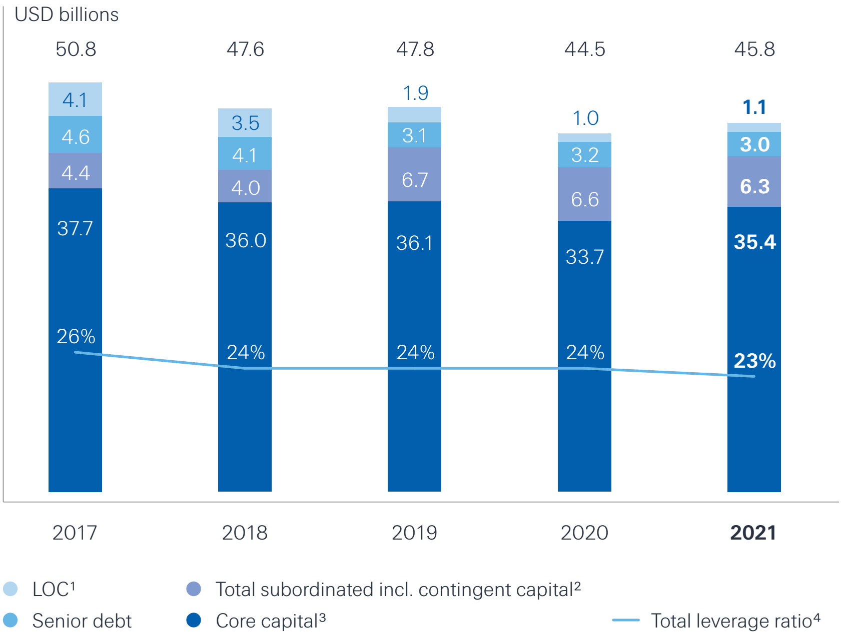
As of 31 December 2021	Financial strength rating	Outlook	Last update
Standard & Poor's	AA–	Negative	23 November 2021
Moody's	Aa3	Stable	16 December 2021
A.M. Best	A+	Stable	22 July 2021

USD 2.7bn
Additional pre-funded subordinated debt available on demand

Funding activities
The Group's high financial flexibility is underpinned by its prudent approach to leverage and strong access to diversified sources of funding.

As of 31 December 2021, the Group's total leverage ratio was 23% driven by a continued focus on senior debt reduction. In 2021, Swiss Re did not issue any senior or subordinated debt. Swiss Re continues to have available the USD 2.7bn off-balance sheet pre-funded subordinated debt facilities for use on demand for any reason, including support for business growth and management of upcoming redemptions.

Financial flexibility strengthened through reduced leverage



[1] Utilised unsecured LOC and related instruments.
[2] Funded subordinated debt and contingent capital instruments, excluding non-recourse positions.
[3] Core capital of Swiss Re Group is defined as economic net worth (ENW).
[4] Total on-balance sheet senior and subordinated debt and contingent capital, including utilised LOCs, divided by total capitalisation.

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;
- 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 and a loss event corresponding to 99% tail value at risk (see page 67).

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 29.7 billion as of 31 December 2021, compared with USD 26.7 billion as of 31 December 2020.

Based on the internal liquidity stress tests described above, Swiss Re estimates that SRZ holds surplus liquidity after dividends to Swiss Re Ltd. In 2021, the amount of surplus liquidity decreased. This was largely driven by positive net operating cash flows and the reorganisation of the legal entity structure, more than offset by the changes in the investment portfolio, mark-to-market movements as well as changes in foreign exchange rates.

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, 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.

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
- Risk culture and behaviour
- 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 the legal entity level, depending on the materiality of individual entities. 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 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.
- Open risk culture – 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
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 proactive identification of risks, as well as establishing and operating an effective control system.

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

Level 0 – Risk management tasks of Boards and Executive Management	SRL Bylaws	LE bylaws
Level 1 – Risk Appetite Framework incl. risk and capital principles	Group Risk Policy	LE risk appetite
Level 2 – Risk-taking oversight throughout the Group	Group Risk Management Standards	LE risk management standards
Level 3 – Risk-taking oversight for specific risk categories	Group risk category standards	
Level 4 – Method and process documentation	Documentation on specific topics	LE specific topics

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's 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 control activities 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 Board of Directors of Swiss Re Ltd (the Group 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 major risk 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.

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.

In addition, the Group CRO is also an Executive Committee member and the CRO of SRZ, which is the main reinsurance company and carrier for Swiss Re.

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 central departments that provide specialised risk expertise and oversight, as well as business level risk departments for Reinsurance, Corporate Solutions and iptiQ.

Key Risk Management bodies and responsibilities

Group Board of Directors
- Responsible for the Group's governance principles and policies
- Acts through the Finance and Risk Committee, Investment Committee and Audit Committee

Group Executive Committee
- Develops and implements risk management framework
- Sets and monitors risk capacity limits
- Some responsibilities delegated to Group CRO and major legal entities

Group CRO
- Principal independent risk controller
- Heads the Risk Management function
- Member of Group Executive Committee
- Reports to Board and Group CEO

Central Risk Management Units
- Oversight of financial market, credit and liquidity risk
- Shared risk expertise: risk modelling and governance, as well as political, sustainability and emerging risks
- Strategic control services: operational and regulatory risk management

Group Internal Audit
- Independent risk controller
- Assesses adequacy and effectiveness of internal control systems

Compliance
- Compliance with applicable laws, Code of Conduct
- Manages compliance risks

Business level management
- Manages underwriting decisions and operational risks in its business scope

Business level CROs
- Expertise and resources for the control of insurance and operational risks within their business scope
- Reinsurance Risk Management performs Group level accumulation control for all P&C and L&H risks
- Supported by functional, regional & legal entity CROs
- Report to Group CRO and to business level CEO

Legal entity management
- Manages underwriting decisions and operational risks

Legal entity CROs
- Responsible for risk oversight and establishing risk governance in their respective legal entities
- Supported by subsidiary CROs as well as dedicated risk teams

The central risk management departments 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

The Risk Management function is also in charge of actuarial reserving and monitoring of reserve holdings for property and casualty business, while for life and health business the setting of the reserves is performed by valuation actuaries within L&H Business Management.

The business level Risk Management departments provide the expertise and resources for the control of insurance and operational risks within their respective business scope. The heads of these departments have a dual role, as they also serve as CROs of their respective businesses, with dotted lines to the business level CEO. Reinsurance Risk Management performs Group-level accumulation control for P&C and L&H risks in addition to its business level responsibilities.

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

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.

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 internal 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 it is exposed to through its 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 Organizations 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 risk swaps 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

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.

Optimise risk/return portfolio → | Control risk exposures →

	Risk appetite	Risk tolerance
Group Risk Policy	Risk appetite statement	Risk tolerance objectives and limits
Group strategic plan	Target liability portfolio and strategic asset allocation	Risk capacity limits
Annual planning process	Business plans	Operational limits

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.

To meet the first objective, the Risk Policy defines internal respectability limits to ensure that the Group has enough resources to meet capital requirements at Group level as well as respectability and liquidity requirements for all legal entities. 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 second objective, Swiss Re's risk tolerance criteria includes internal resilience limits for SRZ to ensure that the main operating entity is able to withstand capital and liquidity stresses.

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. Any operational risk exposure that exceeds the Group's internal operational risk tolerance limit is subject to a mitigation plan that is monitored by the Group's Finance and Risk Committee.

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 own 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 internal risk tolerance describes the extent to which the Group and SRZ Boards have 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.

Swiss Re's internal risk tolerance is based on the following objectives:
- To maintain Group capital at a level that safeguards respectability with clients and regulators.
- To ensure the resilience of SRZ as the main operating entity from a capital and liquidity perspective.
- To avoid material operational risks that could subject the Group to large operational losses with corresponding consequences from an economic, reputational or regulatory perspective.

Internal risk tolerance respectability criteria for the Swiss Re Group are set out in the Group Risk Policy. The Group and SRZ Boards are responsible for approving the risk tolerance criteria, as well as for monitoring and reviewing risk tolerance. Breaches or anticipated breaches of limits established to control the risk tolerance criteria must be communicated to the 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 2022, total risk increased to USD 22.7 billion driven by higher financial market risk, partially offset by lower insurance risk.

Swiss Re's internal model provides a meaningful assessment of the risks to which the Group 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. 68).

Property and casualty risk is mainly driven by underlying risks inherent in the business Swiss Re underwrites, in particular natural catastrophe risk, non-life claims inflation, costing and reserving, and man-made risk. The main drivers of life and health insurance risk are mortality trend and lethal pandemic risk.

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

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

Total risk increased to USD 22.7 billion driven by higher financial market risk, partially offset by lower insurance risk. These shifts led to a slight increase in diversification at risk category level.

Group capital requirement based on one-year 99% tail VaR

USD millions	SST 2021	SST 2022	Change	cross reference information
Property and casualty	12 895	12 426	–469	see page 70
Life and health	11 852	11 128	–725	see page 71
Financial market	10 594	12 418	1 824	see page 72
Credit[1]	3 186	3 198	12	see page 73
Diversification	–16 174	–16 431	–257	
Total risk	**22 353**	**22 739**	**385**	

[1] Credit comprises credit default and credit migration risk from both asset management and underwriting. It excludes credit spread risk, which is part of financial market risk.

Swiss Re's internal model takes account of the accumulation and diversification between individual risks. The effect of diversification at the category level, which is shown in the table above, represents the difference between total risk (the Group's 99% tail VaR) and the sum of standalone tail VaR amounts for the individual risk categories. This amount does not reflect diversification within 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 2021	SST 2022	Change in %
99% VaR[1]	**17.2**	**17.4**	1%
99.5% VaR[1]	**20.1**	**20.4**	2%

[1] 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 — increase to USD 17.4 billion and USD 20.4 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 60.

Core risks in Swiss Re's internal model

Insurance risk

Property & Casualty
- Natural catastrophe
- Man-made
- Costing and reserving
- Claims inflation

Life & Health
- Lethal pandemic
- Mortality trend
- Longevity
- Critical illness
- Income protection
- Lapse

Financial risk

Financial market
- Credit spread
- Equity
- Foreign exchange
- FM inflation
- Interest rate
- Real estate

Credit
- Default risk
- Migration risk

Other significant risks

Operational	**Liquidity**	**Model**	**Valuation**
Regulatory	**Political**	**Sustainability**	**Strategic**

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, marine and cyber. 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). 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, hedge fund prices, real estate prices, commodity prices or foreign exchange rates. 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 governance 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 and scenarios 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 lapse, 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 or complex transactions, as well as monitoring exposures, reserves and limits.

Swiss Re's Group limit framework includes risk limits for major insurance exposures that guard against risk accumulations and ensure that risk-taking remains within Swiss Re's risk tolerance. At the entity level, underwriting and capacity limits are assigned that are used to steer the business, and ensure adherence to the Group's risk limits and SST capitalisation targets.

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

–4%

Change since SST 2021

Risk developments

The decrease in property and casualty risk is mainly driven by the inflation model change, the depreciation of major currencies against the US dollar and higher interest rates. These effects are partially offset by an increase in natural catastrophe risk, mainly reflecting higher Atlantic hurricane exposure.

Management

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.

Swiss Re's limit framework for property and casualty exposures includes risk limits for major natural catastrophe scenarios and other key risks, such as terrorism, claims inflation, reserving and liability.

Insurance risk stress tests with a 200-year return period

Annualised unexpected loss, 99.5% VaR in USD millions[1]	SST 2022
Atlantic hurricane	6 798
Californian earthquake	4 977
Japanese earthquake	3 774
European windstorm	2 703
Lethal pandemic	3 632

[1] Excluding the impact of earned premiums for the business written and reinstatement premiums that could be triggered as a result of the event.

In SST 2022, the largest natural catastrophe exposure for Swiss Re Group derives from the Atlantic hurricane scenario with a USD 6.8 billion loss. The lethal pandemic loss is estimated to be at USD 3.6 billion.

Life and health risk

–6%

Change since SST 2021

Risk developments

Lower life and health risk mainly reflects the impact of higher interest rates and the depreciation of major currencies against the US dollar. The overall decrease is further supported by higher relief from new retrocession agreements and the diversification impact of new longevity business. These effects are partially offset by new business in Asia and the US, resulting in higher exposure to critical illness and mortality trend risk.

Management

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.

Costing actuaries and 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, Products 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.

Swiss Re's limit framework for life and health exposures includes risk limits for key risks, such as mortality, life (mortality trend and longevity combined), lethal pandemic, critical illness and income protection. 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 Chief Risk Officer, 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, legal entities and lines of business). 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. Limits may be expressed in terms of notional value of policies, 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

+17%

Change since SST 2021

Risk developments

Financial market risk increased, mainly driven by the reduction of investment hedges, higher equity valuations and additional investments in private equity, partially offset by sales in listed equity and the depreciation of major currencies against the US dollar.

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 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 2022
Interest rates +50bps	10pp
Interest rates –50bps	–13pp
Credit spreads +50bps	–6pp
Credit spreads –50bps	6pp
Equity values +25%	2pp
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 13 percentage points.

Credit risk stress test with a 200-year return period

Annualised unexpected loss, 99.5% VaR in USD millions	SST 2022
Credit default[1]	2 310

[1] Excluding the impact of earned premiums for the business written and reinstatement premiums that could be triggered as a result of the event.

Credit risk

0%
Change since SST 2021

→

Risk developments

Credit risk remained stable, as the impact from the reduction of hedges and the addition of corporate bonds was largely offset by the impact of foreign exchange and interest rate movements.

Management

Credit risk is monitored and controlled by experts within the Financial Risk Management team. Financial Risk Management regularly monitors and reports on counterparty credit quality, credit exposures and limits. In addition, it is responsible for regularly monitoring corporate counterparty credit quality and exposures, and for 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 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 internal 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.

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 relevant CRO and reported to the company's management team and Board of Directors.

Swiss Re has adapted to increased remote working without any significant increase in operational or compliance failings as a result of this change in operating model. Strong communication and collaboration across teams, and between business and risk functions, continues to assure an adequate level of operational resilience is maintained.

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.

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 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 the 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. 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 internal 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 of Directors at Group and legal entity level.

Valuation risk

Financial valuation risk is managed by internal and external portfolio managers, who ensure that valuations remain in line with the market. In addition, Swiss Re has a function within Financial Risk Management that independently assesses valuations and valuation techniques; this 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 of Directors 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 assessment of the reserves to ensure that their level remains within a range of possible best estimates. Regular deep-dive investigations are performed into selected portfolios in order to review the appropriateness of both the reserves and the applied reserving approach. In addition, Swiss Re's external auditor conducts quarterly reviews as well as a comprehensive year-end audit of controls, methodology and results.

Regulatory risk

Regulatory developments and related risks that may affect Swiss Re and its subsidiaries or branches are identified, assessed and monitored as part of regular oversight activities. Swiss Re is actively engaged in a dialogue with relevant regulators to improve mutual understanding of the implications arising from new regulatory proposals. Periodic reports and recommendations on regulatory issues are provided to executive management and the Board of Directors at Group and legal entity level.

The regulatory environment of the insurance industry continues to evolve on the national, regional 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.

Regulatory efforts are becoming increasingly forward-looking, aimed at a broad range of emerging risks, both actual and perceived. If new regulation is not based on clearly understood risks with a view to materiality, and if the resulting requirements are not harmonised with international standards and best practices, this may create an excessive burden for both insurers and policyholders. It remains a key priority for Swiss Re to highlight the negative impacts of market access restrictions or impediments to global diversification towards regulators. At the same time, such risks are mitigated by seeking solutions that reduce the negative impact on Swiss Re and its clients.

There is ongoing regulatory attention on enhancing sustainability disclosure. Forward-looking climate risk assessments – such as scenario analyses or stress testing – are gaining traction. These regulatory initiatives differ in scope, methodology and key assumptions. Swiss Re supports such measures and continues to advocate for a harmonised and gradual implementation of these requirements in line with international standards and recommendations, such as those of the Financial Stability Board Task Force on Climate-related Financial Disclosure (TCFD). Swiss Re continues in its efforts to discourage regulatory fragmentation and ensure that requirements are appropriate.

Swiss Re consistently advocates the removal or reduction of market access barriers, so that policyholders, governments, taxpayers and national economies can fully benefit from international diversification and therefore from reliable, sound and affordable risk cover and transfer.

With markets more stable following the pandemic shock, supervisors, regulators, standard-setters and other actors have significantly ramped up efforts in the digital policy space. COVID-19 has accelerated discussions around operational resilience, cybersecurity rules and third-party provider concentration risks. Swiss Re follows these topics closely and monitors their potential impact.

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.

Dedicated political risk analysts identify, monitor, and assess political developments across the world. Swiss Re's political risk experts also 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 and qualitative assessments that cover political, economic and security-related country risks; these assessments complement sovereign credit ratings and are used to support risk control activities and inform underwriting or other decision-making processes throughout the Group.

In addition to identifying and assessing the impact of political risk on its business, the Group seeks to raise awareness of political risk issues within the industry and among the broader public, through active dialogue with clients, the media and other stakeholders. The Group also builds relationships that expand its 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 industry and risk management associations, and maintains relationships with political risk specialists in other industries, think tanks and universities, as well as with governmental and non-governmental organisations.

Swiss Re continues to operate in the UK mainly through the UK branches of three Luxembourg entities. Following the UK's exit from the EU, one of Swiss Re's UK branches is authorised as a third-country branch by the UK's regulators, the Prudential Regulation Authority and Financial Conduct Authority. The other two UK branches are operating under the UK's Temporary Permissions Regime which, subject to certain conditions, allows third country branches to conduct insurance and reinsurance business in the UK until licences are granted by UK regulators.

Applications for licenses for these two third country branches have been submitted and Swiss Re is in regular contact with the UK's Prudential Regulatory Authority and Financial Conduct Authority to progress these applications.

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 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.

As a signatory to the Paris Pledge for Action and the UN Global Compact Business Ambition for 1.5°C, Swiss Re is supporting the transition to a low-carbon economy and is committed to achieving net-zero emissions for its insurance and investment portfolios by 2050, as well as for own operations by 2030.

To support this ambitious goal, Swiss Re launched in 2021 the UN-convened Net-Zero Insurance Alliance as a founding member. The CEOs of the founding members also joined the COP26 Race to Zero campaign and became part of the Glasgow Financial Alliance for Net Zero (GFANZ), bringing together existing and new net-zero finance initiatives into one sector-wide strategic forum. Swiss Re's CEO also co-chairs the Alliance of CEO Climate Leaders, the largest such alliance in the world committed to delivering concrete climate solutions and innovations.

Other important steps to achieve the net-zero target are the updated Thermal Coal and Oil & Gas policies. In 2021, Swiss Re extended the Thermal Coal Policy to treaty business. The updated policy introduces specific exposure thresholds effective from 2023 and sets a long-term reduction path to reach a total phase-out of thermal coal by 2030 for OECD countries and by 2040 for the rest of the world. In July 2021, the updated Oil & Gas policy entered into force, excluding the world's 5% most carbon-intense oil and gas companies.

Swiss Re has joined the Taskforce on Nature Related Financial Disclosures (TNFD) which was launched in June 2021. The industry-led initiative aims to replicate the success of the Taskforce on Climate-related Financial Disclosure (TCFD), with the goal to provide a framework for organisations to report on evolving nature and biodiversity-related risks.

Reflecting the Group's strong overall commitment to sustainability, Swiss Re continued to be included in leading sustainability indexes and rankings such as FTSE4Good, Euronext Vigeo World 120, Ethibel Excellence Global, Bloomberg Gender-Equality Index, ISS ESG Prime and ISS QualityScore and the Dow Jones Sustainability Index. For more information on Swiss Re's sustainability practices, see the 2021 Sustainability 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 advance risk awareness across the industry and beyond, Swiss Re maintains regular exchanges on emerging risks with its clients and continues to participate actively in strategic risk initiatives such as the CRO Forum's Emerging Risk Initiative and the International Risk Governance Council.

The following emerging risks are deemed particularly important for Swiss Re's business:

Mental health

In recent years, the number of people diagnosed with mental health issues has been rising, and so have related healthcare costs and disability claims. Severe depression is of particular concern due to the risk of causing inability to work, higher suicide rates and increased likelihood for physical health impairment. As the contribution of depression to the global "burden of disease" increases, greater attention is being given to the potential progression from risk triggers and mild symptoms to severe states.

Potential business impact

For insurers and reinsurers, there are direct implications, particularly for disability claims and cases of early mortality. If conditions remain untreated, affected individuals may develop more severe health problems later in life such as cardiovascular diseases, back pain and diabetes. Preventing mental illness from developing or escalating can thus not only improve personal wellbeing, but also significantly reduce healthcare costs. For the insurance industry, challenges around offering adequate protection for mental health vulnerabilities are as much in focus as preventive measures.

Mitigation measures

Swiss Re advocates de-stigmatisation as key to tackling mental health issues, favouring prevention, early intervention, and continuous mental wellbeing management. Swiss Re has partnered with an innovative mental health platform to create an insurance-specific app to help policyholders better track their mental wellbeing and improve links to insurers' support networks, such as therapy providers or employee assistance programmes.

Swiss Re's Life & Health medical underwriting manual (Life Guide) includes support for insurers' assessment of mental health conditions. The manual embraces a holistic and inclusive approach and offers guidance on emerging risk factors like burnout and work-related stress.

To raise awareness, Swiss Re Institute has been issuing publications on mental health risks. To support the wellbeing of Swiss Re's own employees, a mental health network is maintained internally, supported by awareness campaigns.

Climate change – Moving to a low-carbon future

To meet the objectives of the Paris Agreement, global warming needs to stay well below 2°C compared to pre-industrial levels. To achieve this, the target is to reduce greenhouse gas emissions to net zero by 2050. A rapid transition to a low carbon economy is required. The changes are needed across all industries and entail an entire cluster of new risks which need to be understood, assessed and mitigated. Swiss Re, and the insurance industry in general, regularly assesses the changing risk landscape and can help accelerate this transition through risk transfer products and as a long-term investor.

Potential business impact

The insurance sector is exposed to transition risks which may arise as a result of policy, legal, technology and market changes that are required to facilitate the transition to a low-carbon economy. For insurers and reinsurers, investment risks arising from this transition are mainly linked to the potential re-pricing of carbon-intensive financial assets, and the speed at which any such re-pricing might occur.

To a lesser extent, insurers and reinsurers may also need to adapt to potential impacts on insurance resulting from, for example, reductions in insurance premium volumes from carbon-intensive sectors or coverage of new technologies without established loss histories, which may increase uncertainties in lines of business such as property and engineering.

Mitigation measures

Swiss Re is taking proactive measures to reduce potential business impacts on its investment and insurance portfolios, for example, reducing exposure to assets with the potential to be stranded in carbon-intense energy infrastructure. Swiss Re is phasing out thermal coal in its investment portfolio by 2030 and for underwriting in OECD countries by 2030 and in the rest of the world by 2040. As a leader in the underwriting of renewable energy risk, Swiss Re is actively adapting existing products, as well as developing new risk transfer solutions. A new focus area for the future will be the risk cluster related to innovations in carbon removal which will be an integral part of reaching net zero.

Reliability of energy supplies

Long-lasting outage or deficiency of energy supplies can be triggered by natural catastrophes (eg solar storms), network volatility (eg through volatile renewable energy sources such as wind and solar) and intentional (eg cyber attack or political events) or unintentional man-made events from technical or human failure. These can lead to potentially accumulating disruptions of electric power, gas, or oil distribution systems. Energy supply disruptions become more likely as energy distribution systems are increasingly operating at capacity and inconsistently maintained. In addition, the complexity, diversity and interdependency of energy supplies is increasing.

Potential business impact

A prolonged large-scale disruption of energy supplies can lead to widespread property damage, business interruption, financial market impacts and operational challenges. Importantly, it is likely that business impacts increase non-linearly the longer blackouts last. This could lead to substantial economic losses. Exposure for the insurance industry could be significant, though many of these risks remain uninsured.

Mitigation measures

Swiss Re actively addresses prolonged energy supply disruption risk through scenario assessments of the potential business impact. As an example of such an assessment, Swiss Re considered direct and indirect underwriting loss potentials from a long-duration power blackout in the US triggered by a solar storm.

Swiss Re maintains a risk dialogue with governmental bodies, power suppliers and other stakeholders to discuss energy supply disruption risk and potential mitigation measures. Considerations include preventive measures, possibilities for public-private partnerships to create insurance pool solutions and other approaches to improve resilience. Given that future energy storage technologies will play an important role as a risk mitigant, Swiss Re is engaging in raising awareness of this risk cluster through the CRO Forum Emerging Risk Initiative.

For more information about emerging risk, see the Swiss Re SONAR report.

Swiss Re Ltd
Mythenquai 50/60
P.O. Box
8022 Zurich
Switzerland

Telephone +41 43 285 2121
www.swissre.com

Design:
Superunion, London
Swiss Re Corporate Real Estate & Services/
Media Services, Zurich

The web version of the
Annual Report 2021 is available at:
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