

Our actions are guided by sustainable, long-term value creation and have a tangible link to our financial performance.

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Climate-related financial disclosures (TCFD)

These disclosures provide a foundation to improve investors' and other stakeholders' ability to appropriately assess and price climate-related risk and opportunities.

Swiss Re has a long-standing commitment to being a responsible company. A key element in our understanding of what this means is the desire to contribute to sustainable, long-term value creation. Based on our values, doing business the Swiss Re way includes:

“Taking the long-term view and playing our part in enabling sustainable progress – for stakeholders and society in general.”

This approach is also in our own best interest: it strengthens our capabilities to identify, and address, both risks and opportunities manifesting themselves in the longer run and, as a consequence, to retain our licence to operate.

Climate-related financial disclosures

Among issues that may threaten sustainable progress, climate change represents a key concern for the re/insurance business. This is why we play an active part in a task force set up by the Financial Stability Board to develop climate-related financial disclosures (TCFD, www.fsb-tcfd.org).

Starting from the premise that climate change creates physical, liability and transition risks, the TCFD's aim is to offer consistent and effective financial disclosures that allow investors and other stakeholders to properly assess the climate risks faced by companies and to take appropriate action.

We began to implement the recommended TCFD in our 2016 Financial Report and have significantly expanded them since, devoting the whole “Corporate responsibility” chapter to this important topic. The table on the right provides an overview of the core elements of the disclosures, which are covered on the following pages.

To learn more about our overarching commitment as a responsible company and for a full account of our recent actions and achievements, we invite you to read our stand-alone 2018 Corporate Responsibility Report at reports.swissre.com/corporate-responsibility-report/2018/

Climate governance

Swiss Re's governance around climate-related risks and opportunities.

At Swiss Re's highest governance level, three Board of Directors (BoD) committees are in charge of overseeing implementation of Swiss Re's climate change strategy. The Chairman's and Governance Committee, steered by the Chairman, has the overall task of monitoring the Group's strategic priorities on enabling sustainable progress, including initiatives and actions specifically addressing climate change.

The Investment Committee reviews Swiss Re's Asset Management related activities and, as part of this, receives regular updates on Group Asset Management's responsible investing strategy and approach.

The Finance and Risk Committee defines the Group Risk Policy, reviews risk capacity limits, monitors adherence to risk tolerance, and reviews all top risk issues and exposures, including those with a specific climate dimension.

Regarding the development and adoption of sustainability policies and strategies, the role of the Board of Directors is to review and endorse them, while the Group Executive Committee approves them.

Group Risk Management is responsible for maintaining a suitable risk policy framework, and the Business Units drive strategic implementation within their respective areas. Group Asset Management is in charge of developing and implementing Swiss Re's responsible investing strategy, including specific considerations on climate change, under consideration of the Group-wide sustainability principles.

You can read more about our sustainability governance in our 2018 Corporate Responsibility Report, page 10.

CLIMATE-RELATED FINANCIAL DISCLOSURES OF THE FINANCIAL STABILITY BOARD

Governance	Strategy	Risk management	Metrics and targets
A) Board oversight	A) Climate-related risks and opportunities	A) Processes for identifying and assessing climate-related risks	A) Metrics to assess climate-related risks and opportunities
B) Management's role	B) Impact of climate-related risks and opportunities	B) Process for managing climate-related risks	B) Scope 1, 2 and 3 greenhouse gas emissions
	C) Potential impact of different scenarios	C) Integration into overall risk management	C) Targets

Climate strategy

We regularly assess the actual and potential impacts of climate-related risks and opportunities on our business, strategy and financial planning.

There is clear empirical evidence that the global climate has been changing, and a far-reaching scientific consensus that this change has been due to human activity, primarily the burning of fossil fuels and agriculture. Swiss Re recognises that climate change, if left unmitigated, will potentially have disastrous effects on society and the global economy. In view of this, we are committed to playing an active role in the transition towards a low-carbon economy and to supporting our private- and public-sector clients in this transition.

Natural catastrophes are a key risk in our Property & Casualty (P&C) businesses. The damage caused by storms, floods, droughts and other natural catastrophe perils (including earthquakes) can affect millions of lives and the economies of entire countries. In 2018, we received USD 2.3 billion of P&C Reinsurance premiums from our clients for all natural catastrophe covers (for losses larger than USD 20 million). This represents approximately 14% of total premiums in this business segment, which shows the value our clients place on getting re/insurance protection against natural catastrophe risks.

On average, insured losses due to natural catastrophes have increased steadily over the past 20 years. The key reasons have been economic development, population growth, urbanisation and a higher concentration of assets in exposed areas. At the same time, the protection gap, ie the difference between insured and total economic losses, has remained substantial in all regions (see graph on page 185).

In view of the high potential relevance of climate change for our P&C businesses, we have addressed the issue with a strategy combining four pillars:

- Advancing our knowledge and understanding of climate change risks, quantifying and integrating them into our risk management and underwriting frameworks where relevant;
- Developing products and services to mitigate – or adapt to – climate risk;
- Raising awareness about climate change risks through dialogue with clients, employees and the public, and advocacy of a worldwide policy framework for climate change;
- Tackling our own carbon footprint and ensuring transparent annual emissions reporting.

Furthermore, climate change remains the focus of two of our Corporate Responsibility (CR) Topics: “Managing climate and natural disaster risk” and “Advancing sustainable energy solutions”. You can find out more about these and our other CR Topics in the 2018 Corporate Responsibility Report, pages 11–15. As our climate strategy shows, understanding the risks posed by climate change and spotting the potential to create suitable products and services have both been priorities for Swiss Re.

Climate-related risks

Physical risks

Physical risks posed by climate change could potentially affect four areas of our business:

- Reduction/disruption of our own operations
- Modelling and pricing of weather-related natural perils
- Impact on the economic viability of re/insurance for risks exposed to extreme weather events
- Impact on real assets exposed to weather-related natural perils

Our own operations

According to our in-house catastrophe loss models, severe weather risks are potentially of importance for some of our operations, mainly in Florida and on the northeastern coast of the US. However, even assuming an extreme climate change scenario, we do not expect any of these locations to be exposed to risk levels that would question their economic viability. In 2012, Hurricane Sandy in New York showed that some of Swiss Re's offices are already exposed to severe weather risks today. In response, we have sharpened the Group's business continuity management to minimise property losses and business interruption. Thanks to these investments, we are able to swiftly transfer work tasks to unaffected areas if required and to keep potential financial impacts minimal.

Modelling and pricing of weather-related perils

Based on our proprietary loss modelling, we calculate the annual expected losses (AEL) and loss-frequency distributions of the major weather-related natural catastrophes; the four perils with the largest AEL at present are disclosed on page 184 (North Atlantic hurricane, US tornado, European windstorm, Japanese tropical cyclone). Our models show that with the current climate, the dominant factor is natural variability affecting both the frequency and severity of extreme weather events in all regions. We expect this to remain the case both in the short and medium term (ie 2025 and 2030), in line with the latest scientific findings (see the IPCC Fifth Assessment Report, chapter 11, and the IPCC Special Report 15).

In addition, we expect weather risk to remain assessable by scientific methods, meaning we can continue to update our loss models in the future to assure adequate costing of extreme weather events. Since most of the re/insurance contracts with our clients have a duration of one year, we can thus adequately price natural catastrophe risks by updating our models to reflect the current climate.

Regarding the long-term time horizon (2040), we expect a substantial need to adjust some of our weather risk models, based on current scientific knowledge. We are confident, however, that future research will continue to give us sufficient guidance on the magnitude and direction of these adjustments. The potential impact of climate change, including natural variability, is already being assessed and integrated into our risk view today, eg through regular updates of tropical cyclone frequencies. In addition, we conduct internal research and collaborate with academia to study the impact on extreme weather events in the near and medium term.

Impact on the economic viability of re/insurance protection

An increase in the frequency and severity of extreme weather events can restrict the affordability of re/insurance in certain regions, especially in coastal areas, by requiring a rise in premiums. While climate projections are associated with a large range of uncertainty, especially when it comes to storms making landfall, increases in the frequency and severity of tropical storms are likely. Natural variability is expected to remain the dominant factor in the short and medium term (2025 and 2030). In the longer term (2040), though, sea level rise will lead to non-linear increases in the storm surge risk for coastal areas. Additionally, warmer temperatures will lead to more extreme rainfall events that may increase flood risk.

If rises in re/insurance premiums necessitated by increasing extreme weather risks remain modest, ie re/insurance protection remains economically viable for our clients, the overall premium volume will actually grow. Larger increases, however, will reverse this effect eventually by pushing re/insurance prices for certain exposed risks beyond the limits of economic viability. This is particularly relevant for areas with inadequate construction planning and development. In addition, timing is also of crucial importance: if measures to exclude a particular risk are taken too early and without broader market support, we can offer our clients less insurance protection and may lose significant market share; if measures are taken too late, we may end up with increased loss potential. Finally, the overall size of the re/insurance market will depend on future economic growth rates.

In line with independent external studies, we have shown through a series of scenario assessments (Economics of Climate Adaptation studies, ECA) that in many regions, climate adaptation measures need to be taken to limit expected increases in natural catastrophe damages and thus to ensure the economic viability of re/insurance in the future. This is a key reason why Swiss Re actively engages with the United Nations, the public sector, clients, industry peers and employees to advocate cost-effective adaptation to climate change.

Impact on real assets exposed to weather-related perils

Real assets such as real estate are exposed to natural perils, eg hurricanes, tropical cyclones and floods. In addition to considering physical risk when acquiring new properties, we analyse these exposures across the portfolio based on Swiss Re's proprietary modelling capabilities used for our re/insurance underwriting. This analysis has been extended and refined recently, and results suggest a very low exposure to natural perils in general and to climate-related perils, in particular.

Conclusion: Although the physical risks arising from climate change will have significant economic consequences over time, especially from a wider societal perspective, they represent a limited and manageable risk for Swiss Re.

Transition risks in our re/insurance business

Transition risks may arise as a result of the extensive policy, legal, technology and market changes that are required to make the transition to a low-carbon economy. We have carefully assessed the two transition risks that may potentially affect our business:

- Climate-related litigation risks
- Risks from technological and market shifts

Climate-related litigation risks

We assessed potential climate-related litigation risks several years ago through our own research. After years of decline, climate change litigation activities against large greenhouse gas emitters have increased recently. However, associated insurance coverage disputes have remained stable.

As a result, Swiss Re has not faced any claims from climate-related litigations in recent years and the results of the litigations, which have remained in favour of the defendants, suggest that this trend will continue.

Technological and market shifts

The re/insurance sector is likely to experience the technological transition in two ways. Firstly, new technologies by definition do not have loss histories and thus may be challenging to cost accurately. Thus, research and development is required to develop possible loss scenarios and the related expenses. Once these are developed and tested, though, new technologies are likely to present the sector with an opportunity to offer new solutions (see "Climate-related opportunities", page 180).

Secondly, the new green energy technologies are likely to gradually displace traditional, fossil-based ones. This will alter the energy market and, as a result, gradually change the nature of re/insured assets.

This transition does not automatically translate into a financial risk for Swiss Re, though. To illustrate, motor insurance is the most important business line of the re/insurance sector, globally: According to Swiss Re's *sigma* database, it currently represents 44% of all non-life gross premiums of the total property and casualty insurance market and is expected to grow by a further 6% until 2027.

Driven by intensifying efforts to curb climate change, the global vehicle inventory will shift from combustion to electric engines. A recent Swiss Re study on the Casualty Risk Trends in Automotive Industry notes that "the move from conventional (pure combustion engine) cars to a more electrically based mobility is an elementary transition process in the automotive industry. This development is a continuum to implement a variety of new technologies, from new lightweight materials to advanced battery systems."

Thus, while the automotive industry as a whole is undergoing significant change, the impact on insurance portfolios is expected to be gradual. As motor insurance contracts are renewed annually, re/insurers will be able to develop the appropriate underwriting experience, loss adjustment and claims handling.

To address the residual risk, we have recently started to develop a carbon risk steering mechanism. Its key component will be a carbon risk model designed to measure our carbon intensity and associated risks embedded in our re/insurance business.

As a first step, in 2018 we introduced a thermal coal policy for our underwriting, pledging not to provide re/insurance to businesses with more than 30% exposure to thermal coal utilities or mining. The policy is fully integrated into our Sustainability Risk Framework. It applies to both old and new thermal coal projects and across all lines of business (direct, facultative and treaty). While it is easier to implement this policy in some parts of our business, for others the transition will take some time and require a continued and constructive dialogue with our clients.

Conclusion: Overall, the transition to a low-carbon economy does not present a significant financial risk for Swiss Re. Mainly due to the annual renewal of contracts, the associated risks can be managed effectively.

Transition risks in our investments

Climate-related risks can also impact the value of our investments. A key risk for asset owners is that a changing environment for a particular company or industry sector may lead to stranded assets in investment portfolios, eg the devaluation of investments due to unfavourable changes, such as regulations or taxes. With regard to climate change, the market environment could shift to address mitigation and adaptation requirements to limit global warming to 2°C or less.

Governments and regulators have started to develop proposals to steer and transition climate change related market activities to more sustainable alternatives. The European Commission's action plan on financing sustainable growth or the UK regulators' supervisory statement, which sets out expectations regarding firms' approaches to managing the financial risks from climate change, are just two examples.

Based on these market developments, we continue to focus on policy and legal as well as technology risks, as we mainly expect changes within these two dimensions that impact the asset values. In this way, we aim to capture those industries and groups of companies that are most exposed to these risks in a positive or negative way and may therefore require adjustments in the near to medium term.

Industries and companies that are particularly exposed to changes in policy and legal as well as technological developments show elevated risk exposures either in the production process, in raw materials, in transportation/logistics or distribution and store operations due to high carbon footprints in these areas. Furthermore, the industries and companies may face increased costs due to higher or more volatile energy prices, compliance costs in the production and distribution process, and cost from product demand substitution. All these changes may cause increased price volatility of the underlying assets.

Based on Swiss Re's commitment to support the transition to a low-carbon environment, we started to measure the weighted average carbon intensity¹ of our listed equities and credit portfolio from the end of 2015. Measurement results are presented in the "Metrics and targets" section (pages 184–189). Since then, we have also stopped investing in companies that generate 30% or more of their revenues from thermal coal mining or that use at least 30% thermal coal for power generation and divested from related holdings. As from 2018, we also exclude tar sands companies that generate 20% or more of their revenues from such operations from the investment universe.

¹ Weighted average carbon intensity = (company CO₂/company revenue) * (investment/portfolio)

Corporate responsibility

Climate strategy

Climate-related opportunities

Climate change does not just create risks, it also presents companies with new opportunities. Developing such products and services has long formed one of the four pillars of our climate strategy. With these offerings we pursue two different but complementary objectives: mitigation of climate change and adaptation to some of its effects.

Opportunities related to physical risks in our re/insurance business

Since most of our re/insurance contracts are renewed on an annual basis, we can offer our clients effective natural catastrophe protection that helps them cope with current climate risks. The same applies to our weather insurance solutions.

In addition, we undertake special efforts to help expand re/insurance protection, by focusing on non-traditional clients (in particular from the public sector), underdeveloped markets and innovative risk transfer instruments. You can read about some innovative transactions we have recently completed in our 2018 Corporate Responsibility Report, pages 20–23.

Opportunities related to transition risks in our re/insurance business

While Swiss Re is active in all types of renewable energy re/insurance, we have recently become recognised as a lead market for offshore wind risks. Swiss Re Corporate Solutions has continuously built up and refined the technical expertise required to understand and manage these risks and, in 2015, opened a Centre of Competence for Wind Power in Copenhagen. Over the next decade, we expect many new development opportunities to arise, which will create demand for re/insurance protection in numerous business lines (credit, engineering, property, liability, etc).

You can read about our involvement in some new offshore wind farm projects as well as a pioneering solar revenue put in our 2018 Corporate Responsibility Report, pages 24–25.

Opportunities for our investments

The consistent and broad-based integration of environmental, social and governance (ESG) factors in the investment process is expected to improve the risk/return relationship particularly over the longer term. We consider sustainability risks, such as climate change, in our investment process to make the portfolio more resilient against financial market shocks. This is all the more important as such risk factors are not yet considered as fully reflected in current market valuations.

The transition to a low-carbon economy also creates opportunities for specific asset classes:

Green bonds

Green bond proceeds are used to exclusively finance environmentally sustainable projects that address key areas of concern including climate change, but also natural resources depletion, loss of biodiversity and/or pollution control. With the movement towards a low-carbon economy, the green bond market saw an impressive increase from about USD 11 billion in 2013 to USD 167 billion in 2018². Currently, the market shows an annual growth rate of more than 70%, with a growing variety of issuers besides supranationals, sovereigns and agencies (SSA). In 2018, we achieved our target of having a green bond portfolio worth at least USD 1.5 billion.

Infrastructure renewables

For our infrastructure loan mandates, we work with best-in-class managers to gain access to and invest in renewable energy projects that reflect our risk appetite, provide attractive long-term returns and help build a more sustainable energy supply for the future. Renewables make up approximately 20% of our infrastructure portfolio, whereof 65% are in solar panels and 35% in wind farms.

Real estate

For investment real estate in Switzerland, we apply the following sustainability criteria: analysis of energy sources as a percentage of market value and MINERGIE® certifications. MINERGIE® is a Swiss sustainability label for new and refurbished buildings. By the end of 2018, the combined value of our MINERGIE®-certified buildings reached USD 0.4 billion, or 23% of our Swiss portfolio of direct real estate investments by value, which corresponds to a gross floor area of 82 497 m².

In the US, our approach to sustainability includes some of the most recognised certificates and guidelines, such as “GreenGuide: Sustainable Property Operations”, a best-practice guideline for sustainable and efficient real estate operations; and the LEED certification of the US Green Building Council (USGBC).

² "The Green Bond Chartbook", UniCredit, 1 February 2019.

Swiss Re's climate resilience under different scenarios

The TCFD requests companies to describe the resilience of their strategy taking into account different climate-related scenarios, including one of a 2°C increase or less. In principle, it would be possible for us to compute the potential long-term effects caused by climate change on AEL based on today's re/insurance book. However, we do not consider this to be meaningful, for the following reasons.

Looking at climate effects in isolation would mean ignoring all the other factors that will shape Swiss Re's future re/insurance book and thus also our future AEL. These include the company's strategy and risk appetite, market conditions, capital costs, insurance penetration, storm hardening and other climate adaptation measures. Since our re/insurance book and current AEL are the result of a complex interaction between all these factors, any future scenario would have to consider all of them, in the process obliterating the effect of climate change on the resulting AEL.

Moreover, the future AEL for Swiss Re's weather-related re/insurance book can be seen as a compound assessment of the company's future market share and scenario projections of overall future business volume and profitability. Independent studies have shown a wide uncertainty range for future market volumes, though (see eg Kunreuther et al., 2012)³.

On a societal level, our Economics of Climate Adaptation (ECA) studies have shown that climate change can lead to an increase of economic losses due to weather risks of up to 30% within the next 25 years. More importantly, though, economic development, urbanisation, higher population densities and asset concentrations in flood plains are expected to be the dominant factors in increasing weather-related economic losses. As they continue to rise, our models will gradually factor in this trend, since they are updated and refined at regular intervals.

To summarise, we do not consider climate change to be a single factor posing a fundamental threat to the resilience of our business. It is one of many equally important factors we will need to take into account in shaping our future business strategy. A key precondition for our ability to continue acting as ultimate risk-taker is diversification, with regard to regions, business lines, sectors and clients. In a world of strong or unmitigated climate change, however, the proportion of weather-related risks we could re/insure would decline and the protection gap would likely increase further.

³ Kunreuther, Howard; Michel-Kerjan, Erwann; and Ranger, Nicola, "Insuring Future Climate Catastrophes" (2012). *Published Articles & Papers*. Paper 171.

Climate risk management

The processes we use to identify, assess and manage climate-related risks are integrated into our risk management, underwriting and asset management.

Sound risk management, underwriting and asset management lie at the core of the re/insurance business. This enables us to use our existing processes and instruments to address climate-related risks.

Physical risks

To assess our P&C businesses accurately and to structure sound risk transfer solutions, we need to clearly understand the economic impact of natural catastrophes and the potential effect of climate change on their frequency and severity.

Natural catastrophes constitute one of the core risks modelled in Swiss Re's risk landscape. Specifically, they are one of three categories in which we classify and model our P&C re/insurance risks (the other two being man-made and geopolitical risks). These risks arise from the coverage we provide to our clients for property, liability, motor, accident plus specialty risks.

We have an internal property risk modelling team that builds, maintains and updates sophisticated models for all relevant natural catastrophe risks (flood, tropical cyclones, wind storms, earthquakes). The models are based on current scientific knowledge and are regularly updated to include new scientific findings – including from our research collaborations with academic institutions –, and to make use of advances in computing capabilities. Using statistical data spanning 100 years, our models are capable of simulating probabilistic “daughter” events that may have never occurred in reality but that may occur in the future.

Swiss Re's full, proprietary integrated risk model is an important tool for managing the business: we use it to determine the economic capital required to support the risks on our books as well as to allocate risk-taking capacity to the different lines of business.

Transition risks in our re/insurance business

To ensure appropriate management of transition risks, we have set up an annual monitoring system that combines expertise in risk management, casualty underwriting and relevant legislation to understand the developments in the US market, in particular, and to assess any potential impacts on our business. An underwriting guideline regulates the limits and triggers for the more exposed types of risks. Any deviation from the guideline must be discussed and documented in the underwriting file.

For the other types of transition risks described on page 180 we also have risk management systems in place. Technological developments are monitored through Swiss Re's respective underwriting units and pricing of associated covers is reviewed on an annual basis.

General sustainability risks in our re/insurance business

We consistently use our Sustainability Risk Framework to identify and address potential sustainability risks in all our underwriting and investment transactions (see 2018 Corporate Responsibility Report, pages 27–31). This framework continuously evolves to reflect scientific knowledge and internal standards. With respect to climate change, this framework prevents us from offering any re/insurance cover to offshore drilling activities in the Arctic and using predefined quality criteria to screen transactions in the areas of oil sands, fracking and shale oil.

In 2018, we integrated a thermal coal policy for our underwriting in our Sustainability Risk Framework, pledging not to provide re/insurance to businesses with more than 30% exposure to thermal coal utilities or mining. The policy applies to both old and new thermal coal projects and across all lines of business (direct, facultative and treaty). Its introduction marks the first step towards the development of a carbon risk steering mechanism, to measure our carbon intensity and associated risks embedded in our re/insurance business.

Investments

Swiss Re is a long-term investor. Therefore, it is important that we also take a long-term view on the risk factors that may have an adverse impact on our portfolio, such as climate change. Hence, sustainability and climate change are essential topics for our Asset Management. Our Sustainability Risk Framework enables us to identify and address environmental and human rights concerns throughout our business. Its criteria are fully applied to our investments. For further details, see above and our 2018 Corporate Responsibility Report, pages 27–31.

Swiss Re is committed to investing its assets responsibly via a controlled and structured investment process, integrating ESG criteria. As part of our continuous improvement, in 2017 we switched to benchmarks composed of higher ESG-rated companies for our active listed equity and credit portfolios. For more information about our approach to ESG integration, see our publication “Responsible investments – The next steps in our journey”, launched in 2018 and available at swissre.com (www.swissre.com/our-business/managing-our-assets/responsible-investments-next-steps-in-our-journey.html).

For our dedicated approach towards climate risk management, we review our credit and listed equity portfolio along the development of our carbon footprint on an ongoing basis. We also monitor our portfolio on coal and tar sands related investments that are below the set thresholds. As part of our active risk management, we stopped investing in coal and tar sands related companies that are above the thresholds (for details, see page 179).

Further actions to support the transition to a low-carbon economy are described in the section “Opportunities for our investments” on page 180.

Climate metrics and targets

We use a number of metrics and targets to assess and manage relevant climate-related risks and opportunities.

We assess and manage climate-related risks and opportunities in our re/insurance business (the liability side), our own operations and our investments.

Re/insurance

Annual expected losses (AEL)

AEL for weather-related natural perils can be used as an indicator for our average current climate-related risk exposure, while they do not capture the potential losses in years with intense natural catastrophe activity like 2018 and 2017 (on page 91 you can see our risk exposures to four major natural catastrophe scenarios, ie single-event losses with a 200-year return period). The figures are the compound result of the expected weather activities, the vulnerability of insured objects, their values and the volume and structure of our insurance products. Changes in the AEL figures will show the evolution of our climate risk exposure. This could be due to climate change, but also due to changes in the vulnerability of insured objects, their values or changes in our business strategy. AEL figures are updated on an annual basis.

As per the end of 2018, the four weather-related perils with the highest gross annual expected loss for our whole business were:

WEATHER-RELATED PERILS: ANNUAL EXPECTED LOSSES, SWISS RE GROUP ▼

As of 31 December 2018	In USD millions
North Atlantic hurricane	500
US tornado	230
European windstorm	150
Japanese tropical cyclone	130

Weather-related catastrophes: insured vs uninsured losses

There is a substantial protection gap between total economic losses from weather-related catastrophes and insured losses in all regions. These data do not represent a company-specific metric but are an important overall risk indicator (see table on the upper right).

Climate protection offered to (sub-)sovereigns

Cover against natural catastrophes accounts for approximately 14% of premiums in our P&C Reinsurance business. As we regularly update our risk models to reflect any changes in the underlying parameters and renew contracts annually, we are in a position to offer our clients effective re/insurance protection against current climate-related risks.

Reflecting our efforts to help expand re/insurance protection by working with public-sector clients, we made this commitment to the United Nations: to advise up to 50 sovereigns and sub-sovereigns on climate risk resilience and to offer them USD 10 billion against this risk by 2020. You can see the progress we have made against this goal in the middle table on the right.

Aligning our carbon intensity

We have recently started to develop a carbon business steering mechanism. This will help us to steer the overall carbon footprint embedded in our re/insurance business and align it to the Paris Climate Agreement and related Nationally Determined Contributions (NDCs), set with a view to limiting global warming to 1.5–2°C above pre-industrial levels.

INSURED VS UNINSURED WEATHER-RELATED CATASTROPHE LOSSES, PER REGION



CLIMATE PROTECTION OFFERED TO (SUB-)SOVEREIGNS

	2016	2017	2018
Number of (sub-)sovereigns advised	26	66	96
Amount of climate protection offered (in USD)	3.9 billion	5.3 billion	8.2 billion

Scope 1, 2 and 3 greenhouse gas emissions

Reducing our carbon footprint is one of the four pillars of our climate strategy. As part of our Greenhouse Neutral Programme, we have publicly reported on our Scope 1 and 2 greenhouse gas emissions plus a major source of Scope 3 emissions (business travel) since its launch in 2003. From 2013, we have expanded our reporting to include further Scope 3 emissions (see table below).

You can find out more about the Greenhouse Neutral Programme in our 2018 Corporate Responsibility Report, pages 47–51.

CO₂ EMISSIONS PER EMPLOYEE (FULL-TIME EQUIVALENT, FTE), SWISS RE GROUP

	2013	2017	2018	Change in % since 2017	Change in % since 2013
	kg/FTE	kg/FTE	kg/FTE		
Scope 1 Heating	378	264	244	-7.6	-35.4
Scope 2 Power ¹	824	651	584	-10.3	-29.1
Scope 3 Business travel	3 713	4 126	3 892	-5.7	4.8
Copy paper	40	17	16	-5.9	-60.0
Waste	50	34	33	-2.9	-34.0
Water	12	12	11	-8.3	-8.3
Technical gases	27	21	6	-71.4	-77.8
Commuting ²	1 250	1 050	1 000	-4.8	-20.0
Total	6 294	6 175	5 786	-6.3	-8.1

¹ Calculation based on a market-based approach taking into account the purchase of renewable energy instruments, with the exception of the UK, where the government requires companies to report an average grid factor.

² Commuting data are gathered biannually by means of a survey. The figures are rounded and fraught with considerable uncertainty.

Investments

We measure and monitor the level of integration of our climate-related investment activities.

Green bonds

Green bonds, whose proceeds are used to finance environmentally sustainable projects facilitating the transition towards a low-carbon economy. In the near term, we have committed to building a portfolio of at least USD 1.5 billion, which we reached by 2018.

Physical risk assessment of real estate

In addition to considering physical risk when acquiring new properties, the physical risks of properties in the Real Estate investment portfolio have been analysed both for an “as is” climate scenario and for a future climate change scenario. This analysis was carried out leveraging in-house know-how and catastrophe loss models developed for the Reinsurance side. Results suggest a very low estimated financial impact from all perils, in particular climate-related perils.

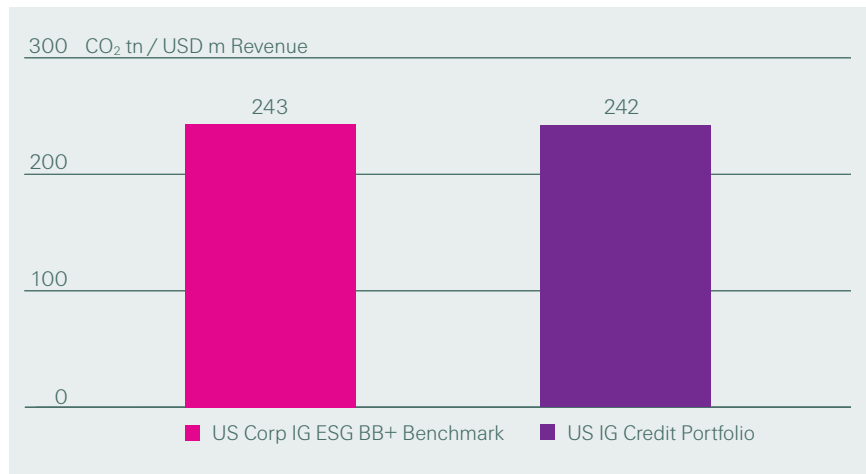
Tar sands exposures

Tar sands assets are particularly carbon-intensive and susceptible to stranded asset risk given the long life of these assets, as well as the evolving regulations on carbon emissions. For that reason we decided to limit investments to issuers with less than 20% revenues from tar sands business in 2018.

Carbon footprint of our investment portfolio

In line with TCFD guidelines, we monitor the carbon footprint of our corporate credit and listed equity portfolio on an ongoing basis as we have extended our internal tools to allow for interactive day-to-day analysis. We also evaluated the size of our private equity investments in coal-related activities. For the carbon footprint, we use the metric “Weighted average carbon intensity”, which defines the portfolio carbon intensity based on relative investment share.

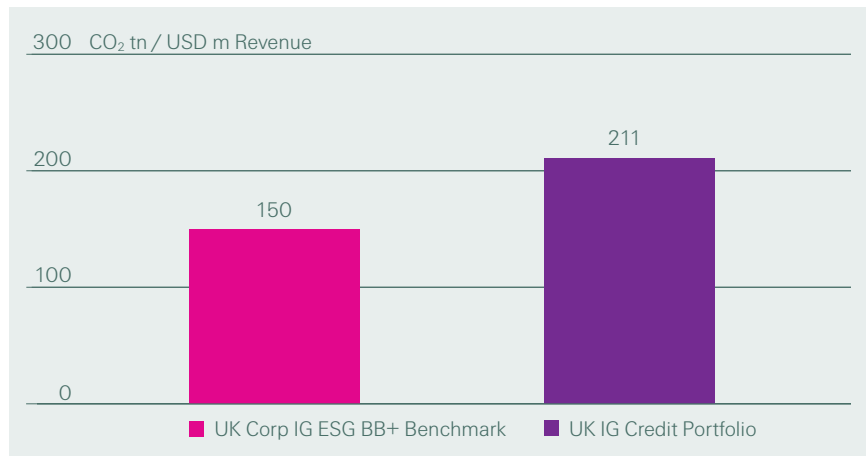
WEIGHTED AVERAGE CARBON INTENSITY COMPARISON OF THE US CREDIT PORTFOLIO VERSUS CORRESPONDING BENCHMARK PER END OF 2018



The US credit portfolio was closely aligned with the corresponding benchmark in terms of weighted average carbon intensity.

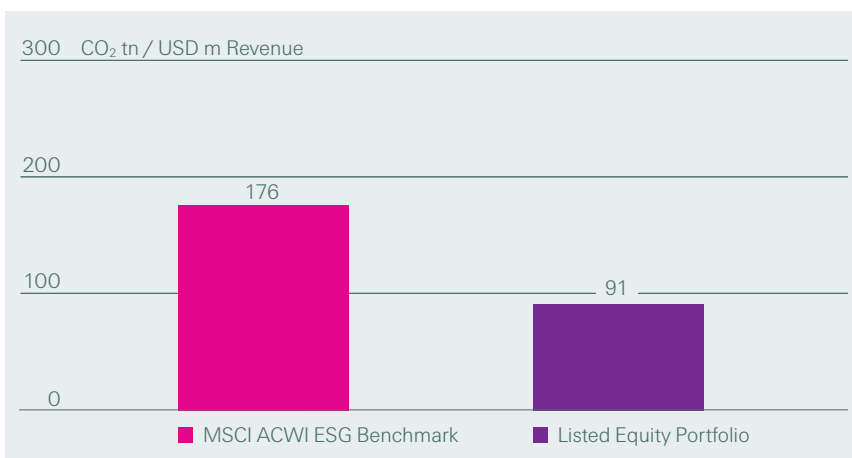
The weighted average carbon intensity of the UK credit portfolio was lower than that of the US portfolio, but above its corresponding ESG benchmark at the end of 2018.

WEIGHTED AVERAGE CARBON INTENSITY COMPARISON OF THE UK CREDIT PORTFOLIO VERSUS CORRESPONDING BENCHMARKS PER END OF 2018



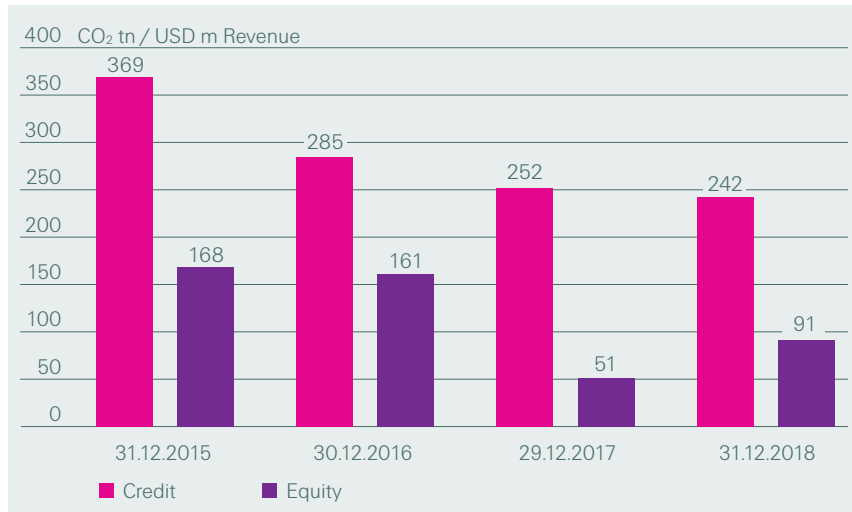
Since the previous year, the UK portfolio carbon intensity decreased by 20 units, while the corresponding index reduced by more than 130 units. The reduction in the index carbon intensity was mainly caused by a constituent update towards more sustainable issuers in the utility sector.

WEIGHTED AVERAGE CARBON INTENSITY COMPARISON OF THE LISTED EQUITY PORTFOLIO VERSUS CORRESPONDING BENCHMARK PER END OF 2018



Listed equities in Swiss Re’s portfolio continued to be much less carbon-intensive compared to their corresponding benchmark due to the active reduction of companies that exceeded the threshold of 30% in coal-related revenues and the single name selection of less carbon-intensive names across industries. In 2018, investments in emerging market equities partly offset prior reductions.

WEIGHTED AVERAGE CARBON INTENSITY COMPARISON OF CREDIT AND LISTED EQUITIES PORTFOLIOS SINCE MEASUREMENT INCEPTION



Since the end of 2015, carbon intensities in both the credit and the listed equity portfolio decreased substantially as part of our thermal coal divestment of more than USD 1.3 billion. In the second half of 2018, investments in emerging market equities led to a modest increase in the weighted average carbon intensity of our listed equity portfolio.

Forward-looking carbon indicators

Companies may mitigate exposure to climate risk through adaptation to market forces or adherence to new and evolving requirements. We therefore undertook efforts to get a better understanding of the details behind carbon intensities and to further improve our monitoring based on that. For that reason we started to review the listed equities and corporate credit portfolios using forward-looking indicators related to carbon emissions. The analysis focused on the more carbon-intense sectors, responsible for the vast majority of the portfolio carbon intensity.

The forward-looking indicators allow to analyse particularly climate risk exposed industries down to issuer level and add an important piece to the carbon intensity analysis.

The results are encouraging in the sense that most issuers held in carbon-intense sectors have set a carbon reduction target and work actively towards lowering energy consumption, while improving operational efficiencies. This newly developed toolset will allow us to continuously improve our understanding of the carbon emissions we invest in and with that support our monitoring of involved stranded asset risks.