



XL Insurance  
Reinsurance

# 2022 Climate Report



November 2022

# Contents

<b>About AXA XL</b>	<b>3</b>
<b>1. Introduction</b>	<b>4</b>
<b>2. Governance</b>	
2.1 Board oversight	5
2.2 Management oversight	6
2.3 Remuneration	7
<b>3. Strategy</b>	
3.1 AXA XL climate strategy overview	8
3.2 Underwriting and Investment exclusions	9
3.3. Net Zero Insurance Alliance	11
3.4. Green Business & insurance product development	12
3.5 Client engagement and Risk Consulting services	13
3.6 Investments	14
3.7 Our approach to our supply chain	14
3.8. Employee training and capacity building: AXA Climate Academy	14
3.9 Informing policy and external stakeholder engagement	15
3.10 Sustainability and corporate responsibility	16
3.11. Thought leadership and academic research	17
<b>4. Risk Management</b>	
4.1. Risk management framework	19
4.2. Identifying climate-related risks	20
4.3. Climate stress tests, scenarios and ORSA	21
4.4. Catastrophe modelling & future conditions driven by climate change: understanding hazard uncertainty	22
4.5. Managing climate-related risks	23
4.6 Climate risk and AXA XL operations	25
<b>5. Metrics &amp; Targets</b>	
5.1 Our operational carbon footprint	26
5.2 Our carbon reduction strategy	27
5.3 Decarbonizing our Underwriting portfolio	28





# About AXA XL

AXA XL is the property & casualty and specialty risk division of AXA Group (“AXA” or “Group”), providing insurance and risk management products and services for mid-sized companies through to large multinationals, and (re)insurance solutions to insurance companies globally.



# 1. Introduction

The climate is changing, with greenhouse gases (“GHG”) emissions at the highest measured levels. These changes are affecting multiple areas of our climate system; namely sea levels, the atmosphere, the oceans, the cryosphere and carbon and other biogeochemical processes, along with the associated impact on local weather phenomena.

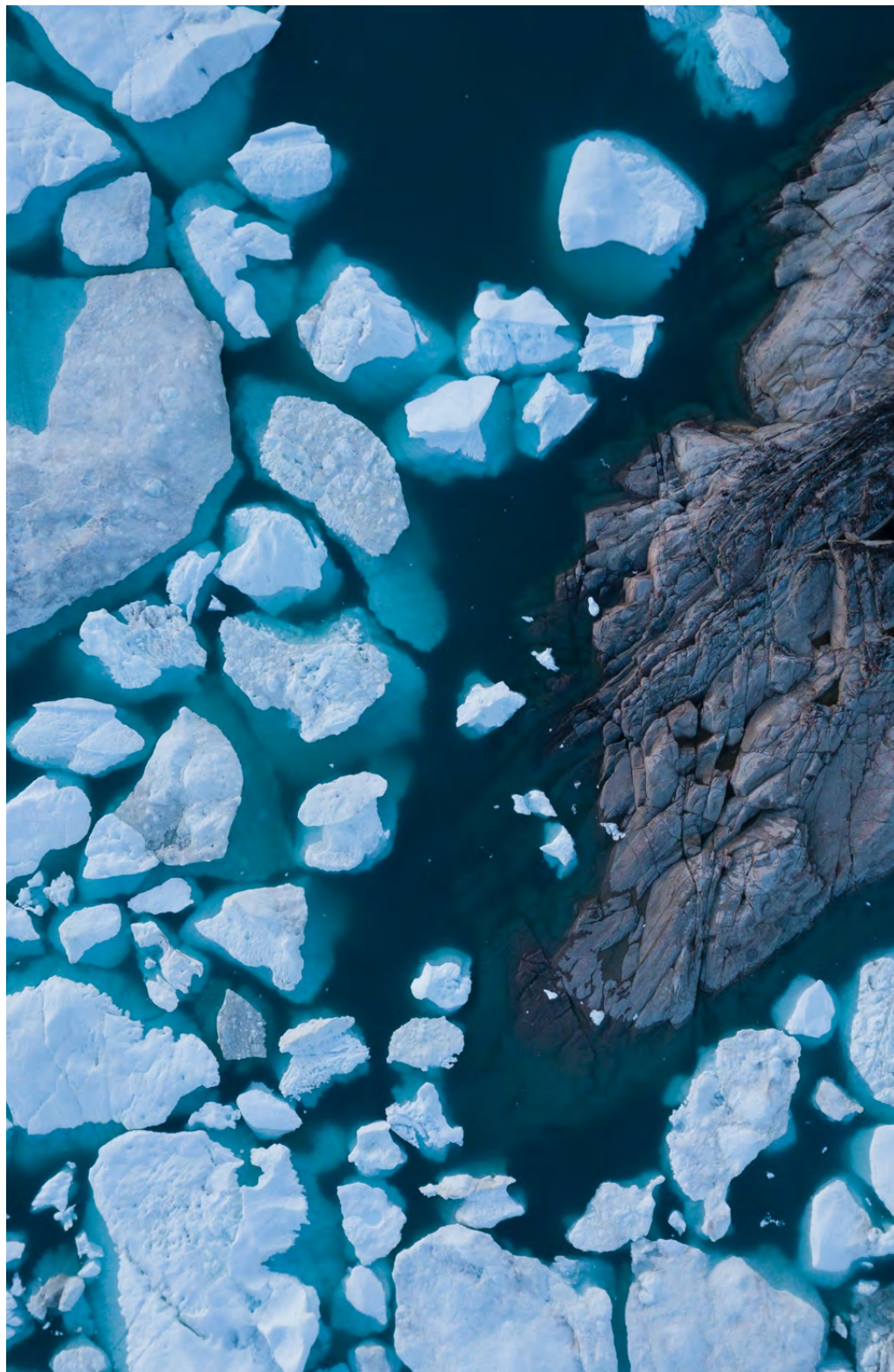
The impacts of climate change are of paramount importance to the (re)insurance industry.

Given their experience in predicting and preparing for damaging events, (re)insurers are ideally placed to help shape the conversation on the risks arising from climate change.

The climate-related risks (re)insurance are exposed to are complex - through the risks we underwrite, the investments we make and the actions we take as a company. But there are also opportunities for us to play our part in supporting the transition to a low carbon emission economy. We anticipate the future needs of our clients and our communities, as the world manages its response to a warming climate.

Climate Leadership is one of the five pillars of AXA Group’s Driving Progress 2023 strategy.

At AXA XL, we believe we have a responsibility to help clients and communities manage the impacts of a changing climate, promote greener practices, support the protection of natural assets and biodiversity, as well as reduce our own environmental footprint through science-based carbon reduction targets.



# 2. Governance

## 2.1 Board oversight

AXA XL's boards oversee the activities of its key regulated entities in jurisdictions where it has a presence. Where relevant, AXA XL has defined the oversight of local boards on climate, in line with local legal and/or regulatory requirements. By way of example, AXA XL's key regulated entities in the UK have appointed the UK & Lloyd's CEO as the Senior Manager function within such entities, responsible for identifying and managing climate-related risks. AXA XL's key regulated entities in the USA have designated a Senior Manager as responsible for the management of climate-related risks in accordance with the New York State Department of Financial Services guidance.

The boards of AXA XL's key regulated entities evaluate and oversee climate-related issues and risks in connection with, among other things, approval of Own Risk and Solvency Assessments

("ORSA") (or equivalents) and business strategy and planning. Climate-related topics are also considered by the relevant board committee(s), depending on the subject matter in question, and escalated to the relevant board(s), as appropriate.

Climate and Environmental, Social and Governance ("ESG") training and regular updates are provided to boards of AXA XL's key regulated entities, covering the concepts associated with climate in the areas of physical risk, transition risk and liability risk, as well as other ESG dimensions. It also aims to provide information around regulations, the role of the board, reputation-related risks, and climate and ESG strategies.





## 2. Governance

### 2.2 Management oversight

AXA XL has established a Climate Steering Committee (“Committee”) in order to provide ‘tone from the top’ leadership and direction on climate, ensuring alignment with AXA Group’s climate strategy, and driving a single view regarding climate across AXA XL. SteerCo oversees the development, approval, and sponsorship of AXA XL’s climate strategy, provides direction on priorities, and regularly assesses progress against the strategy. It provides climate guidance across all relevant functions and regional business units.

The Committee is composed of the AXA XL Leadership Team, the AXA XL Head of Climate and the AXA XL Global Sustainability Director.

The AXA XL Head of Climate, appointed in 2021, acts as a central point of contact and leadership on climate risks and opportunities at AXA XL, and works proactively with the AXA XL Global Sustainability Director, who oversees all other ESG dimensions outside climate.

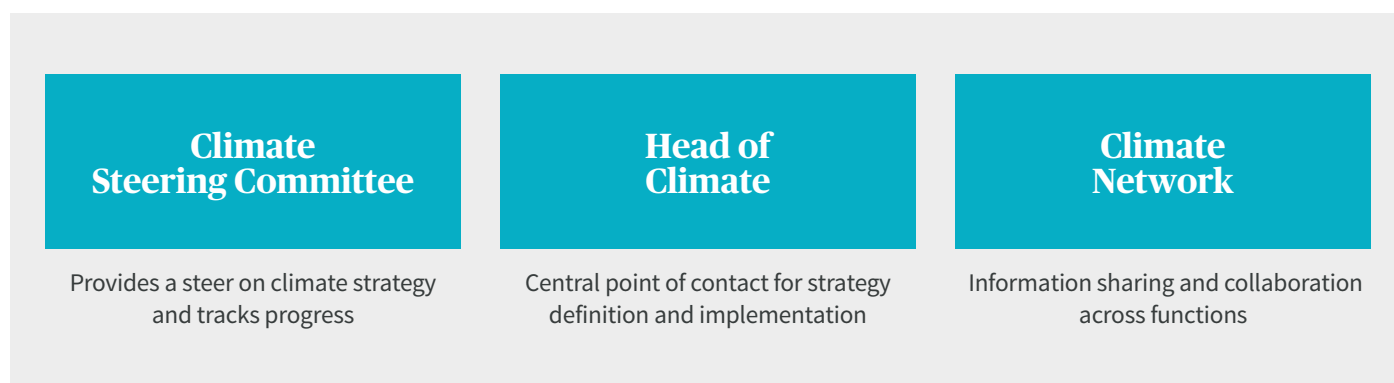
They both report to the AXA XL Head of Strategy and Corporate Development, who reports to the AXA XL CEO.

The AXA XL Head of Climate coordinates with AXA Group to implement the insurance-related climate initiatives, notably those emanating from the relevant “Group Acceleration Teams”. These are cross-AXA working groups focused on strategic topics for the Group - (see [AXA 2022 Climate and Biodiversity Report section 2.6](#)) and the relevant Group Commitments such as the Net Zero Insurance Alliance (“NZIA” – see [AXA 2022 Climate and Biodiversity Report section 3.2](#)).

The AXA XL Head of Climate is responsible for supporting the AXA XL Committee in setting goals and priorities, and he works with the AXA XL respective corporate functions, reinsurance teams, and regional insurance business units (Americas, UK & Lloyd’s, Europe and Asia Pacific)

The AXA XL Climate strategy was developed during 2021, with a focus on: education; embedding climate and sustainability into our business; developing KPIs & metrics; and ensuring the climate strategy implementation is consistent with developing regulatory requirements.

The AXA XL Head of Climate is supported by the Climate Network, comprised of senior product leads and representatives from the regions and corporate functions, to facilitate information sharing, collaborate across areas of the business, seek opportunities to develop new initiatives, and share best practices.



The implementation of the AXA Sustainability Underwriting Restrictions is subject to a dedicated governance. It frames the AXA XL implementation of AXA Group climate and sustainability-related sectoral guidelines and business restrictions (e.g. on coal or oil & gas). The corresponding business referral process includes an escalation process to AXA Group Risk Management and to the AXA Group Underwriting Committee for sensitive and/or strategic climate-related business underwriting decisions (For more information, please see [AXA 2022 Climate and Biodiversity Report section 2.4](#), and [3.4](#)).

## 2. Governance

### 2.3 Remuneration

In addition to the governance framework, AXA's compensation policy, which also applies to AXA XL, is designed to align the interests of AXA employees with AXA's sustainability strategy. In this context, AXA has progressively integrated ESG criteria, in compensation packages of its top executives on the short- and long-term components.

For 2022, annual variable compensation of top executives is subject to Group performance (including criteria on reduction in the Group's carbon footprint in AXA's General Account assets, weighting for 15%) and individual performance (including achievement on diversity and climate related goals).

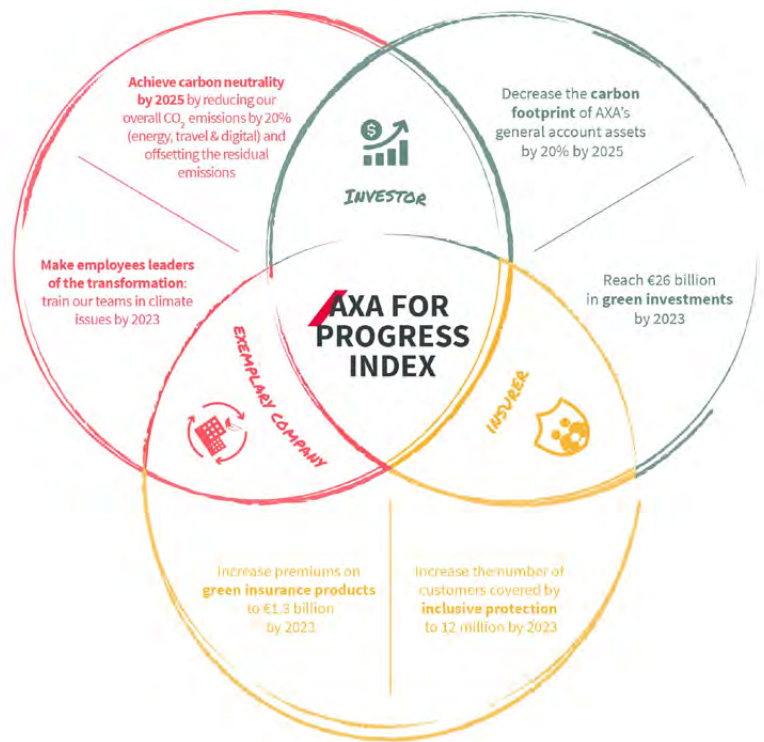
Since 2021, AXA has also increased the weight of sustainability criteria in AXA Performance Shares from 10% to 30%, including the following metrics for the 2022 grant: AXA ranking in the Dow Jones Sustainability Index ("DJSI") (10%), reduction in Group operations carbon emissions (10%), and increase in the proportion of women in the Group executive population (10%).

Furthermore, approximately 5,000 employees across the AXA Group were granted long-term incentives known as Restricted Shares, which are subject to a Sustainability underpin i.e. minimum AXA's ranking in the DJSI to be met. Finally, the weight of environmental and social criteria in profit sharing schemes (20,000+ employees across the AXA Group) has been enhanced in 2022. For more information, please refer to [AXA's 2021 Universal Registration Document](#) ("Annual Report", section 3.2, "Executive compensation and share ownership").



# 3. Strategy

AXA Group launched its “AXA for Progress Index” in 2021. This is a set of climate and sustainability-related commitments translated into targets and shared across the Group to further embed sustainable development in our activities: as an investor, as an insurer and as an exemplary company. These AXA-wide commitments include AXA XL and are detailed throughout this report.



## 3.1 AXA XL climate strategy overview

At AXA XL, our climate strategy builds upon:

- **Education** – through the commitment from the AXA for Progress Index we are committed to ensuring our colleagues complete the AXA Climate Academy by 2023. This is being supplemented with additional training and development of our colleagues, further exploring what a changing climate might mean for the area of the global economy that they support.
- **Embedding Climate** – we are looking to embed climate into the main aspects of our business, from building our underwriting strategy through to our risk management, claims management and risk consulting services. Through education and internal initiatives we aim to position climate risks and opportunities as a core consideration in annual planning, whilst also working with our clients to support their net-zero aspirations.
- **Climate Metrics & Analytics** – in order to track our progress. AXA is a founding member and current chair of the Net Zero Insurance Alliance (“NZIA”) which is working to establish a framework and target-setting protocol to assess the “Insurance Associated Emissions” for our underwriting portfolio to meet the NZIA commitments of net-zero by 2050. AXA’s Green Business strategy looks to provide insurance products and services supporting the activities of climate change mitigation, adaptation, the circular economy, and biodiversity protection. In addition, our carbon reduction strategy for our company operations and travel focuses on an absolute reduction of 25% by 2025.
- **Culture & engagement** – underpinning much of the above is creating a culture of climate action as a strategic priority across AXA XL. Providing training and education, as well as broader opportunities for colleagues to engage – for example through our colleague-led “Green Committees” - supports our aspiration for climate leadership.

Teamwork and collaboration across AXA XL and the AXA Group is an imperative. We regularly work with our Underwriting, Science & Natural Perils, Sustainability, Risk Consulting and Risk Management teams to create multi-disciplinary working groups to respond to the challenges we face and the issues we are being asked to solve.

This work comes with the support of our senior leaders, which is critical in bringing a number of these initiatives to fruition.





### 3.2 Underwriting and Investment exclusions

Across AXA Group, we believe we can influence climate mitigation and adaptation through our underwriting practices and products; namely by restricting coverage for carbon-intensive industries and by developing new products that support “greener” practices.

In 2021, AXA extended its commitment to fight climate change and protect biodiversity. AXA announced several new milestones in its approach to the energy sector by strengthening its existing oil and gas exclusions, with a specific focus on unconventional activities and new greenfield explorations.

#### 3.2.1. AXA Group Energy Policy

AXA's energy commitments are the following:

Firstly, AXA will stop investing in and underwriting new upstream oil greenfield exploration projects unless they are carried out by companies with the most far-reaching and credible transition plans.

- AXA excludes all new direct investments in listed equities and corporate bonds in developed markets in oil and gas companies operating in upstream and/or oilfield services and/or downstream subsectors, as well as most midstream players. AXA selects integrated oil and gas companies for investments based on a restrictive selection process.
- From 2023, AXA will apply the same selection process, and take into account the Science-Based Targets initiative (SBTi) framework as it becomes available, for its underwriting business of new insurance coverage on new upstream oil greenfield exploration projects.

Secondly, AXA will significantly reduce its investment and insurance exposure to unconventional exploration and production from its business from 2022, as follows:

- Arctic: AXA extends the scope of its Arctic investment and underwriting restrictions beyond the Arctic Circle and the 70°N zone in alignment with the Arctic Monitoring and Assessment Programme (AMAP). Only businesses with Norwegian operations in the AMAP region will be maintained, given their high environmental standards and lower operational carbon footprint. AXA will strengthen the thresholds applicable to both its investments and insurance activities in this particularly fragile region, excluding new investments and underwriting coverage for oil and gas extraction activities carried out in the AMAP region by companies deriving more than 10% of their production from the AMAP region or producing more than 5% of the worldwide volume of AMAP-based oil & gas. For underwriting, exemptions may be granted if the projects are carried out by oil and gas companies with the most far-reaching and credible transition plans.
- Fracking/shale Oil and Gas: AXA will no longer directly invest in companies, nor provide any insurance coverage to activities of companies, deriving more than 30% of their production from fracking/shale oil and gas.
- Oil sands: on top of the existing restrictions in place, AXA will adopt a more stringent policy by ceasing direct investments in companies producing more than 5% of the worldwide volume of oil sands. For underwriting, current exclusions will be extended to all lines of business.

In addition, AXA's coal underwriting restrictions continue to apply to power generation and mining clients developing new coal capacity or with significant coal business, as well as coal industry partners, defined as manufacturers (e.g. equipment suppliers) and infrastructure players (e.g. port terminals, dedicated railways) operating or developing coal assets, or standalone coal-related infrastructure assets.

AXA is committed to a long-term exit strategy reducing exposure to the thermal coal industry to zero by 2030 in the European Union and OECD (Organization for Economic Co-operation and Development) countries, and by 2040 in the rest of the world.

### 3. Strategy

#### 3.2.2. AXA Group Ecosystem conversion & Deforestation policy

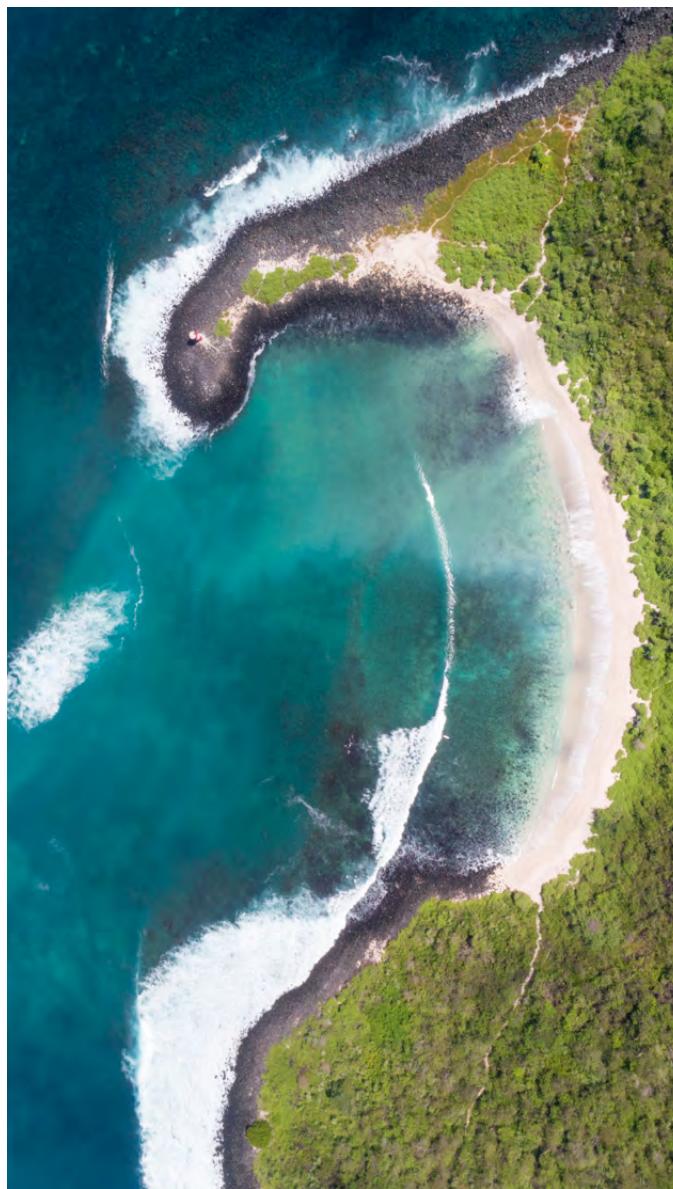
In October 2021, AXA announced a new policy on Ecosystem protection, Deforestation and Natural World Heritage Sites. It seeks to address risks related to deforestation and protected areas of key biodiversity value, and to stop supporting firms which have a negative impact on ecosystems that host critical biodiversity. Curbing deforestation conserves water resources, prevents flooding, controls soil erosion, and preserves habitats, in addition to preserving key carbon sinks. In 2013, AXA divested from “unsustainable” palm oil producers and banned illegal logging from its underwriting. AXA’s new policy builds on previous work to address other drivers of deforestation, resulting in a more comprehensive approach.

On the investment side, as an asset owner, AXA does not invest in companies in three cases:

- Palm oil producers who have not achieved “sustainable palm oil” production certifications and/or have significant unresolved land rights conflicts and/or conducting illegal logging (as per AXA’s 2013 palm oil policy, which remains in place).
- Companies in any sector facing “high” and “severe” controversies related to land use and biodiversity; and
- Companies producing palm oil, soy, cattle, and timber that face “significant” land use and biodiversity controversies and that are found to have a “critical” impact on deforestation.

With respect to insurance underwriting, AXA focuses more on activities at risk of causing deforestation. AXA restricts Commercial Lines Property and Construction Insurance Underwriting in four cases:

- Illegal logging (pre-dates the policy released in October 2021 and remains in place).
- Companies that are excluded by the investment policy screening are to be referred to the Group Risk Management and the critical activity will likely be banned from Construction and Property covers.
- Businesses that operate in “high-risk countries” and commodities (soy, beef, palm oil, timber) and facing high or severe deforestation controversies are also to be referred to the Group Risk Management with a view to restrict the critical activity.
- Traders of soy, beef, palm oil and timber operating in “high-risk countries” and facing high or severe deforestation controversies are also to be referred to the Group Risk Management and the critical activity will likely be banned from marine cargo covers.



#### 3.2.3 AXA Group Natural World Heritage Sites policy

In line with the UN PSI-UNESCO classification, AXA commits to protect Natural World Heritage Sites (“WHS”) by ensuring it does not support, through property and construction insurance underwriting, businesses in sensitive sectors that are developing activities incompatible with ecosystem preservation in these vital sites. WHS are classified by UNESCO as containing both ‘exceptional natural beauty’ and ‘the most important and significant natural habitats for conservation’. Examples include the Galapagos Islands of Ecuador and the Ivindo National Park in Gabon. They provide both key biodiversity benefits, such as fauna and flora protection, and environmental benefits, including soil stabilization, flood prevention, and carbon capture. They also contribute to economies through jobs, ecotourism, recreation, and exports.



## 3. Strategy

### 3.3. Net Zero Insurance Alliance

As Chair of the Net Zero Insurance Alliance (“NZIA”), AXA played an important role in its founding and development in 2021. AXA notably helped the NZIA to:

- Lead outreach to educate other insurers and encourage their participation
- Communicate with the insurance regulators
- Dialogue with the real economy regarding the risks and opportunities of the energy transition

The NZIA now counts over 25 insurer members, plus Lloyd’s Corporation with its unique role in the insurance industry as a marketplace and regulator. The NZIA has been partnering with the [Partnership for Carbon Accounting Framework](#) (“PCAF”) on developing the first ever insurance associated emissions attribution framework for property and casualty insurance lines, this framework was released in November 2022.

The NZIA achieved significant milestones in 2021 with:

- The official launch of the NZIA statement of commitment by signatory members
- Accreditation by the Race To Zero campaign
- Becoming a member of the Glasgow Financial Alliance for Net Zero (“GFANZ”)

AXA was a contributing author to the NZIA white paper “Insuring the Net-Zero Transition” launched in April 2022. AXA also provides resources for the development of the target setting protocol, and the Governance, Engagement, Communications and Life & Health workstreams.





AXA XL is actively involved with AXA Group in the NZIA engagement, planning and implementation.



### 3. Strategy

#### 3.4. Green Business & insurance product development

The AXA Green Business strategy focuses on delivering a positive impact on the environment by contributing to at least one of the following: climate change mitigation, climate adaptation, promotion of a circular economy and biodiversity protection/pollution prevention.

 <b>Mitigation</b> <b>GHG emissions reduction</b>	 <b>Adaptation</b> <b>Climate change adaptation</b>	 <b>Circular economy</b> <b>Transition to circular economy</b>	 <b>Biodiversity &amp; pollution</b> <b>Biodiversity loss limitation &amp; pollution prevention</b>
Examples: low-emission energy infrastructure / vehicles (...)	Examples: resilient buildings, some insurance on NatCat events (...)	Examples: second-hand spare parts (...)	Examples: pollution prevention, mangrove and coral reef conservation (...)

	Environmentally-sustainable behaviour	Green Claims Management	Green Assets	Green Clients / Activities
	Commercial Lines	Commercial Lines	Commercial Lines	Commercial Lines
 <b>Mitigation</b>	Offers encouraging transition towards <b>reductions in GHG emissions</b> , including less energy consumption, low-emission/renewable tech, sustainable behaviour, etc.	Offers encouraging damaged goods <b>repair</b> rather than replacement, <b>using low-emission resources to rebuild, or replacement with low emission equipment</b>	Offers covering <b>environmentally friendly assets</b> (e.g., low-emission vehicles, solar panels, etc)	Offers covering <b>environmentally friendly clients and/or activities</b>
 <b>Adaptation</b>	Offers encouraging preventative measures <b>to limit vulnerability to climate change</b> (e.g., via information sharing)			
 <b>Circular economy</b>		Offers encouraging <b>the replacement with 2nd hand goods rather than new ones</b> (e.g. reconditioned electronic devices)		
 <b>Biodiversity &amp; pollution prevention</b>	Offers encouraging preventive measures <b>to limit biodiversity loss</b> (e.g. via advisory)			

At AXA XL, some of our green-focused products include the following:

- We offer Green Building Materials Expense supplemental coverage in our North America Environmental Pollution and Remediation Legal Liability (“PARLL”) policy. This insurance coverage protects businesses against loss, remediation expense and legal defense expenses that may arise from sudden and gradual pollution conditions. Now businesses not only have the financial help to clean up a pollution incident, such as a fuel oil spill, they can take it a step further. With this added Green Building coverage, in the event of a pollution incident that causes property damage, clients can choose to use green, sustainable materials in the property’s restoration.
- We have worked with an energy client to launch the world’s first sustainability-linked insurance program. Through this program, the cost of the insurance premium is linked to the client’s goal to reach 55% of its total installed capacity from renewable sources by a target date.
- AXA XL’s North America Construction business has developed tailored Builders Risk insurance programs to address clients’ mass timber project risks. Mass timber, which includes cross-laminated timber (“CLT”) is gaining popularity in North America. It’s also considered a more sustainable building material; according to the Wood Council, replacing steel with mass timber would reduce carbon dioxide emissions by 15% to 20%. The process of manufacturing timber uses substantially less fossil fuel energy per unit volume than steel, concrete, or aluminum, meaning that timber has a lower carbon footprint.
- In addition, our Structured Risk Solutions team continues to develop performance insurance solutions for the technical risks associated with breakthrough low-carbon technologies (e.g. renewable energy, fuel cells, energy storage, energy efficiency, carbon capture, hydrogen, waste to energy, and biofuels).

We also offer Green Endorsements in our Property business, enabling clients to rebuild to more sustainable standards post-damage.



### 3. Strategy

#### 3.5 Client engagement and Risk Consulting services

The Risk Consulting segment of AXA XL works closely with corporate clients to help them translate climate hazards into a risk.

This means quantifying the physical and economic impacts of climate change on their assets and business operations and implementing appropriate risk metrics into the decision-making process. AXA XL Risk Consulting services model the unique vulnerability of assets to hazards, e.g. estimate the physical damage associated to a given flood water depth and quantify a wide range of direct and indirect economic consequences, such as the property damage associated with the said flood, the risk of disruption to the upstream supply chain or downstream disruption, and the risk of interruption of production. Some recent examples of analyses performed by Risk Consulting to support AXA XL clients are:

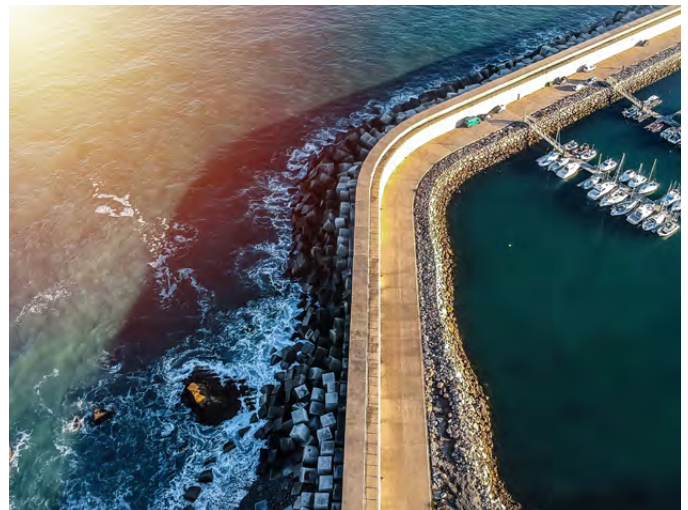
- Natural hazards prioritization analysis, aimed to identify regions and sites – among a client’s portfolio, or supply chain – potentially more affected by natural hazards, as of today and due to climate change in the next 30 years.
- Water stress risk assessment, i.e. the assessment of potential water shortage and related impacts on business continuity and communities, as of today and in the next 30 years.

In addition to Risk Assessment, Risk Consulting is also able to support clients in tailoring the best risk mitigation strategy, and identify which countermeasures should be taken to control losses, or accelerate the pace and scale of adaptation, for instance reducing the physical vulnerability of assets by retrofitting, identifying alternate suppliers, creating backup stocks, or transfer risks, etc.

We have taken steps to encourage policyholders to reduce the losses caused by climate change-influenced events. Our Property Risk Consultants evaluate policyholders’ property exposures and provide recommendations to reduce the potential for property losses from natural catastrophe events (including hurricane, storm surge, earthquake, and flood events).

We also help our customers manage fire perils. This includes advice to reduce carbon emissions from the fire’s smoke plume, managing firefighting water runoff, the need to remanufacture damaged building materials, inventory, equipment, and the need to place damaged material that cannot be recycled in a landfill.

We have approximately 400 risk professionals across AXA XL. This includes Account Consultants that help clients to understand their portfolio, manage their risk and prioritize risk improvement activities as well as Property, Machinery Breakdown, Construction and Environmental Loss Prevention Consultants in the field globally, who visit our customers’ key locations to help identify and mitigate risk. These risks include pre-emergency planning and preparation, as well as developing recommendations on how to further improve site protection.



Specific areas of focus in wind-prone areas include detailed wind inspections to help our customers ensure they have the necessary protection in place to withstand hurricane-force winds.

Another key activity our consultants focus on is categorizing the flood hazard for every location they visit. For those locations in flood-prone areas, they conduct detailed Flood Loss Estimates as well as survey current protection in place and recommend enhancements. AXA XL has invested in a state-of-the-art Global Risk Maps tool, which gives consultants access to multiple flood assessment sources of information. AXA XL Risk Consulting also has an active partnership with the University of Naples Federico II for flood and earthquake research.

We regularly advise our clients on how to ensure that well-meaning energy saving products do not adversely contribute to a fire or make the facility more vulnerable to natural catastrophe losses. We advise them on how to quickly recover from losses that do occur, which includes pre-planned and engineered environmental remediation strategies.

AXA XL has developed an “Environmental Sensitivity Tool” enabling clients to identify and mitigate pollution and environmental risks in Europe and in the UK. The tool uses comprehensive datasets and applies machine-learning algorithms to assess individual facilities’ environmental liability risks. The outputs include environmental sensitivities scores and high-resolution maps for each location. When combined with customer-specific information like site location, industry type, and occupancy, companies can use this tool to assess their environmental liability exposures at individual facilities or across an entire portfolio of sites.

In 2021, AXA XL’s teams in France began engaging with clients on their climate strategies and transition plans to achieve Net Zero. On a quarterly basis, a series of “Climate Catchup” interviews were held with multinationals across France. Those interviews enabled our teams to share our climate strategy with clients, and also to help determine how we can better support these clients with their low carbon transition.

## 3. Strategy

### 3.6 Investments

AXA Group's Responsible Investment strategy, which applies to all AXA entities - including AXA XL - is based on the following pillars:

- Integrating ESG and carbon metrics into investment processes and decision-making, using KPIs and qualitative research across most of our assets. This includes the implementation of ESG "minimum standards" rules to review and potentially exclude underperforming issuers from AXA's portfolios.
- Excluding sectors or companies that face acute social, human rights, ethical or environmental challenges. These sector restrictions (which apply both to investments and insurance) currently include controversial weapons, coal mining/coal-based power generation, oil sands and associated pipelines, palm oil, food commodity derivatives, and tobacco.
- A green investment target and transition financing to increase the allocation of green assets across various asset classes and to support companies shifting towards less carbon-intensive business models.
- Impact investments that create intentional, positive, measurable, and sustainable impacts on society while simultaneously delivering financial market returns.
- Active stewardship through voting and engagement on a range of ESG or sustainability issues.



### 3.7 Our approach to our supply chain

AXA XL works with its supply chain to actively reduce their environmental impacts and improve the sustainable nature of their services. This engagement forms part of our overall strategy to manage our carbon emissions and environmental impacts. AXA XL conducts Corporate Responsibility scoring of its supply chain in partnership with EcoVadis, the business sustainability ratings platform. Based on leading standards such as the Global Reporting Initiative, the UN Global Compact, and ISO 26000, this assessment covers four themes: environment, labor & human rights, ethics, and sustainable procurement (assessing the vendor's own supply chain).

In 2022 AXA XL signed the Sustainable Markets Initiative Global Pledge for Sustainable Supply Chains, committing to measuring the carbon emissions associated with our supply chains, and engaging our suppliers on opportunities for reduction.

### 3.8. Employee training and capacity building: AXA Climate Academy

As part of the AXA for Progress Index, AXA committed to upskilling all its employees on climate by 2023. To achieve this, AXA has designed the AXA Climate Academy, a modular, bite-sized digital learning program that takes 2-3 hours to complete and helps employees think critically about climate and understand how they can act differently. It focuses on the fundamental scientific principles to understand climate change and gives an overview of the impact throughout the value chain for insurance and for investments, and the company's carbon footprint. The program is divided into four key components: Learn the science; Rethink the business perspective; Commit to change; and Transform.





## 3. Strategy

### 3.9 Informing policy and external stakeholder engagement

AXA XL engages key constituencies on the topic of climate change through a number of means, including the following:

- We are a member of **ClimateWise**, aiming to address how insurance can better respond to climate change. ClimateWise (UK) is a growing global network of leading insurers, reinsurers, brokers, and industry service providers, who share a commitment to reduce the impact of climate change on society and the insurance industry.
- AXA XL employees are members of the **Emerging Environmental Topics Advisory Committee of the Geneva Association**, which analyses the existing and potential role of insurance and risk management in tackling the challenges posed by climate risk and extreme events. AXA Group CEO, Thomas Buberl is a member of the Board of Directors for the Geneva Association.
- AXA XL is an active member of the **Insurance Development Forum (“IDF”)**. The IDF is a public-private partnership that brings together insurers, reinsurers, and brokers, together with the World Bank and the United Nations Development Program (“UNDP”). By optimizing and extending the use of insurance and Risk Management capabilities to build greater resilience and protection for people. In 2019 the IDF signed a partnership with the UNDP and the German Federal Ministry for Economic Cooperation and Development to provide risk financing solutions in 20 emerging countries by 2025 to protect vulnerable populations against climate-related disasters and improve their climate resilience.
- AXA XL supports the work of the **United Nations Environment Programme Finance Initiative (“UNEP FI”) Principles for Sustainable Insurance** including being a member of a consortium to develop tools and methodologies to assess climate risks in the underwriting portfolio, in line with the Taskforce for Climate-related Financial Disclosures (“TCFD”) recommendations. (AXA Group were a founding company of the TCFD framework) In January 2021, AXA XL became a signatory of UNEP FI Physical Risk and Resilience Statement, committing to a public climate-related physical risk disclosure by 2023.
- In 2022, AXA XL joined the **Poseidon Principles for Marine Insurance**, a framework for measuring and reporting the alignment of insurers’ shipping portfolios with climate goals, to promote responsible environmental stewardship throughout the maritime value chain, foster collaboration with clients, and gain insights to enhance strategic decision-making.
- In addition, AXA XL companies’ membership in the American Property Casualty Insurance Association (“APCIA”) provide regional support of US initiatives to promote disaster preparedness, sound building practices and highlight lessons learned post-catastrophic events. AXA XL companies are also members of the (re)insurance Association of America (“RAA”) who have partnered with environmental, consumer and insurance groups to form SmarterSafer.org. SmarterSafer.org advocates for smarter, more effective policies to help people in need, promotes disaster safety and preparedness, and fosters sounder environmental stewardship of fragile coastal ecosystems. We continue to be members of the Insurance Institute for Business & Home Safety (“IBHS”), which identifies and promotes effective actions that strengthen homes, businesses, and communities against natural disasters and other causes of loss.





## 3. Strategy

### 3.10 Sustainability and corporate responsibility

AXA XL's 2019-2021 sustainability strategy focused on three key pillars: climate change, access to water and financial resilience. Throughout 2022 we have been conducting an ESG materiality assessment and subsequently developing a series of goals and targets for 2023-2026, largely focused on climate and biodiversity. We expect to communicate our new sustainability strategy with external stakeholders in early 2023.

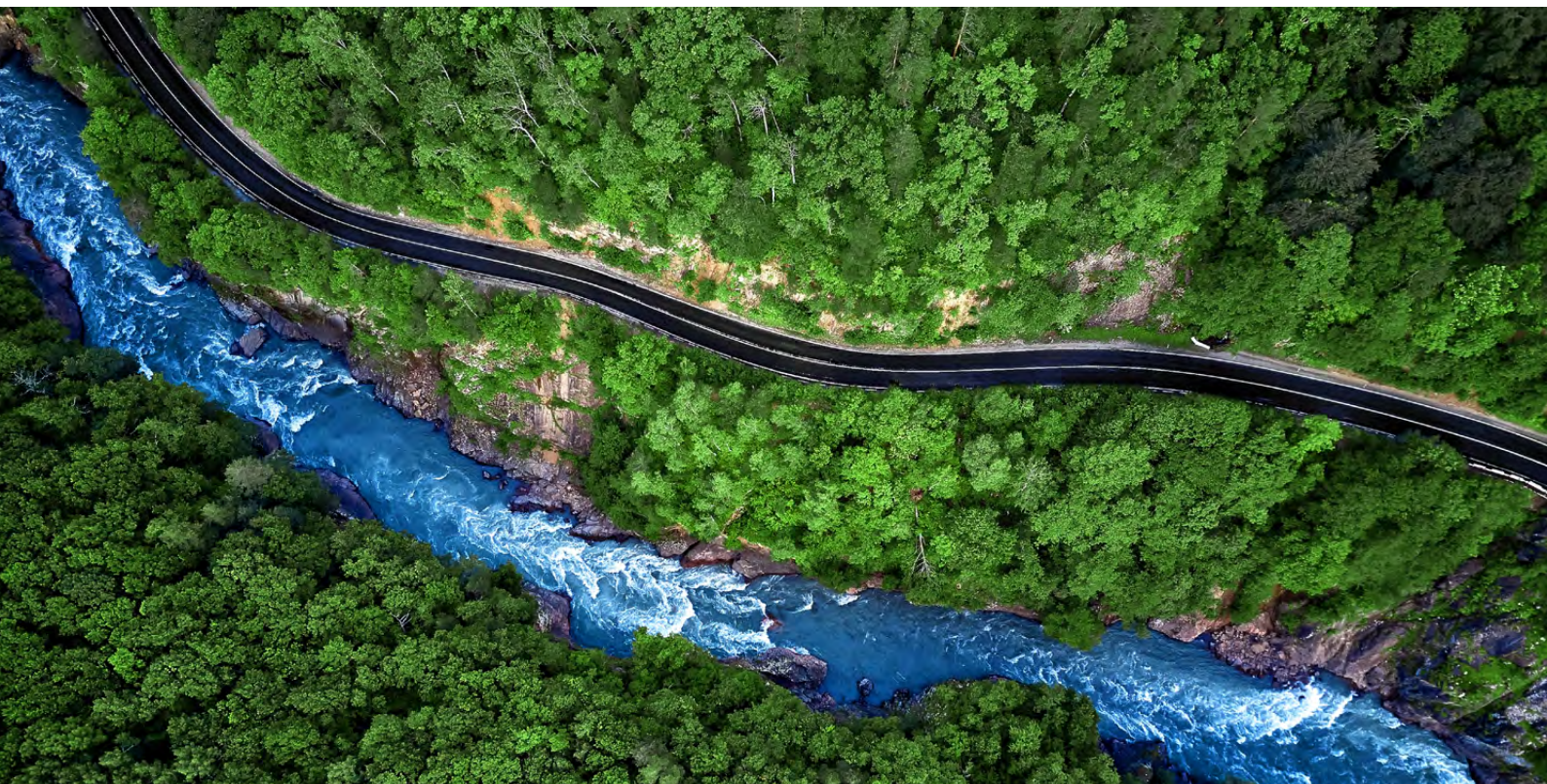
As part of our ongoing sustainability commitments, we recognise the importance of helping disaster-prone communities develop preparedness strategies. We partner with RedR UK, an international humanitarian charity which provides training, skill-sharing and technical support to help equip aid workers, local and international humanitarian organizations better prepare for, and recover from, disasters. Our support enables RedR to deliver climate change adaptation and disaster risk reduction ("CCDRR") courses for humanitarian organizations working in the Philippines and Bangladesh.

In partnership with The Nature Conservancy, we are assisting in the creation of a ground-breaking investment product: Blue Carbon Resilience Credits. These would, for the first time, value the combined carbon sequestration and resilience benefits provided by coastal wetland ecosystems. The development of blue carbon credits will tap into the carbon credit marketplace that has traditionally focused on terrestrial credits and enable carbon finance to support these critical habitats over the long term. The resilience credit, purchased with the blue carbon credit or separately, will quantify and invest in the added risk reduction benefits of shielding coastal communities from more intense and frequent natural disasters in the future, conserving and restoring our natural ecosystems to their full potential.

Our focus on understanding ocean risk continues. Our Ocean Risk Initiative, which launched in 2017, has three key focus areas: to drive the insurance industry's response to ocean risk, catalyze new product innovations and increase ocean literacy.

In 2021 we launched the Coastal Risk Index (CRI), an innovative tool that maps current and future flood hazard resulting from climate change and integrates for the first time the protective benefits of coastal ecosystems into insurance risk models. The CRI has been developed in partnership with AXA's scientific partners, IHE Delft (Netherlands) and University of California, Santa Cruz (USA) and the Government of Canada through the Ocean Risk and Resilience Action Alliance ("ORRAA").

We know that water is the primary medium through which we will see the impacts of climate change so at AXA XL we are working on ways we can make sure our clients and our communities recognize the social and economic value of water. We're helping our clients understand what their future water-related risks will be to help them plan for long term resilience. We recently issued a [Future Water Risks](#) study, to identify the most significant risks facing industries – from ageing infrastructure to contaminants impacting drinking water quality. Based on this, AXA XL is developing a water resilience tool, which will aid long-term planning and help companies better communicate to their customers about how they are mitigating against these risks.





### 3.11. Thought leadership and academic research

#### 3.11.1 The AXA Research Fund

AXA supports climate risk mitigation efforts by funding top-tier scientific research through the AXA Research Fund (“the Fund”). A scientific philanthropy initiative launched in 2008, the Fund supports academic research in health, climate and environment and socio-economic issues. The strategic focus is determined by an Advisory Board, and the selection of research projects is overseen by an independent Scientific Board.

As of 2021, the Fund has committed €250 million to fund over 670 research projects in 38 countries, including over 230 projects focusing on climate and environment. In 2021, the Fund selected a new AXA Chair on high-latitude fires supported with €1m over 5 years. High-latitude fires have been identified as a particularly threatening aspect for the balance of the Earth system. The AXA Chair in Wildfires and Climate is hosted at the School of Chemical and Environmental Engineering at the Technical University of Crete. It is led by Dr. Apostolos Voulgarakis, who uses fire and Earth system modelling, satellite observations and Machine Learning to inform prevention and preparedness strategies. Dr. Voulgarakis thus aims to:

- Pursue cutting-edge research on the link between wildfires and climate
- Significantly advance AXA’s understanding of how fires may shape the future of climate

In 2021, the Fund highlighted its support for climate and nature’s resilience. Climate change and infrastructure development are undeniably adding to the degradation of coastal ecosystems such as mangroves and coral reefs, thereby increasing the exposure of coastal communities to sea level rise, flooding, erosion and more. Therefore, the Fund held a Coastal Resilience and the Role of Nature Based Solutions webinar attended by leading academic, government and industry experts to discuss:

- The challenges of coastal risk
- The opportunities to accelerate investment in nature-based solutions

The Fund also selected four outstanding climate researchers for its AXA Awards for Climate Science in recognition of their contribution to the understanding of climate change and related adaptation strategies. The four awardees are respectively working on:

- Advancing the understanding of climate change
- Informing the predictability of occurrence and impact of extreme weather events such as heat waves and storms
- Describing and mitigating the effects of climate change on inequality
- Promoting more resilient and fairer societies that are better prepared to face future global changes

#### 3.11.2. AXA XL’s climate-related research

AXA XL has played a leading role in pushing for greater understanding of the impacts of climate change and has engaged in research with academic institutions on further understanding the changing nature of risks and the impact it could have on our activity.

In 2021, AXA XL published a report on Climate Risk ([www.axaxl.com/climate-risk](http://www.axaxl.com/climate-risk)), examining how climate change will create new risks along with examining the role that insurance has to play now, and in the future, to assess climate risk and address these associated challenges and opportunities to play a role in the low carbon transition and support clients with mitigation and adaptation efforts. The report states that the physical risk associated with a changing climate is a function of hazard, exposure, and vulnerability (defined further in section 4.2). Understanding how each component changes, along with how the relationship between all three components change over time, will allow us to develop a clearer picture of how risk is going to evolve.



### 3. Strategy

The Science and Natural Perils team at AXA XL also focuses on understanding the impacts of climate change by undertaking and supporting research on these risks. This research focuses on:

- **Tropical cyclone induced precipitation (“TCIP”):** A new project has been developed in 2021 to start in 2022 with the National Center for Atmospheric Research (“NCAR”). The project looks at the how best to assess and parametrise the TCIP in the US, how risk varies along the US coast and with the intensity of a storm, and how climate change affects this peril.
- **Predictive Exposure Modelling:** AXA XL works with the University of Colorado Boulder on a California focused pilot case study, focused on modelling near-future (i.e. 3-10 years) urban development dynamics in the region, in order to understand how risk might change due to factors which influence exposure (i.e. the assets that are at risk of being impacted from the hazard) rather than just the hazard (i.e. the extreme event that has the potential to cause destruction).
- **Interconnections:** Over the past five years, and continuing to 2022, AXA XL has partnered with the University of Quebec at Montreal (UQAM) to support academic research. In its initial phase, the partnership has explored the global correlation and diversification of atmospheric perils, specifically floods and tropical cyclones. Some of the research questions that were answered through this endeavor were: what is the spatial distribution of flood and tropical cyclone risks over the world? How does the El Nino – Southern Oscillation (ENSO) large-scale climate pattern impact the spatial distribution of these risks? Are floods and tropical cyclones easily diversifiable over a global portfolio? What are the impacts of ENSO on such diversification?
- **Counterfactuals:** Working with academics at the University of Exeter and University of Reading, AXA XL embarked upon an exercise to explore the use of historical, dynamical, ensemble forecast data to create a suite of alternative histories. The assumption within the stochastic catastrophe modelling process is that the observed historical record accurately represents the mean of possible outcomes. We tested this assumption by comparing alternative, but realistic, histories to those which have been observed. What if the hurricanes we have observed had taken a different, but realistic course? Our objective was to explore where our observed history sits in a distribution of alternative histories, to assess potential deviations from the mean, but also look at both tails of the distribution.
- **Seasonal Hurricane Forecasting:** The North Atlantic Hurricane activity is always of great interest to society, market and most certainly to AXA XL. In meeting this interest, AXA XL has been sponsoring the Barcelona Supercomputing Center to produce and maintain a website that collects and aggregates all seasonal forecasts provided by various research institutions or private entities. The website serves as a useful tool for gauging the current expectations for tropical cyclone activity in the basin, while also being able to check on the status of the season or to compare against historical seasons. In addition, the AXA XL community benefits from regular presentations and updates from top scientists on season status as well as latest trends in hurricane activity.
- **Wildfire Risk:** Record industry losses from the 2017 and 2018 California wildfire seasons prompted the question of whether we are entering a new phase of wildfire activity. To address this question, the AXA XL Science & Natural Perils team commissioned a study with wildfire experts from the University of Idaho to develop a predictive loss model for California. Severe fire seasons during 2020 in south-eastern Australia, California and Siberia reflected unprecedentedly high temperatures, combining with specific atmospheric circulation patterns, to create extreme fire risks. There is thus an urgent need to develop a new approach to the spatially detailed assessment of wildfire risk in the present and the near future that takes account of the non-stationary nature of climate, together with current understanding of the meteorological, ecological, and human influences on fire. To do this, AXA XL is co-supervising a PhD studentship that started in October 2021, together with scientists from the Leverhulme Centre for Wildfires, Environment and the Society and Reading University. The project will demonstrate the feasibility of mapping present and near-term wildfire risk, using a combination of climate and wildfire models.
- **Impact of climate change on global tropical cyclones and flood:** Following up on the UQAM work mentioned above, a new project has been developed that takes advantage of the tools and models already developed in the first phase of the project to estimate the impacts of climate change versus those of a changing exposure and compared to natural variability. Such comparisons are extremely valuable at this stage of climate change quantification for the insurance industry.



# 4. Risk Management

## 4.1. Risk management framework

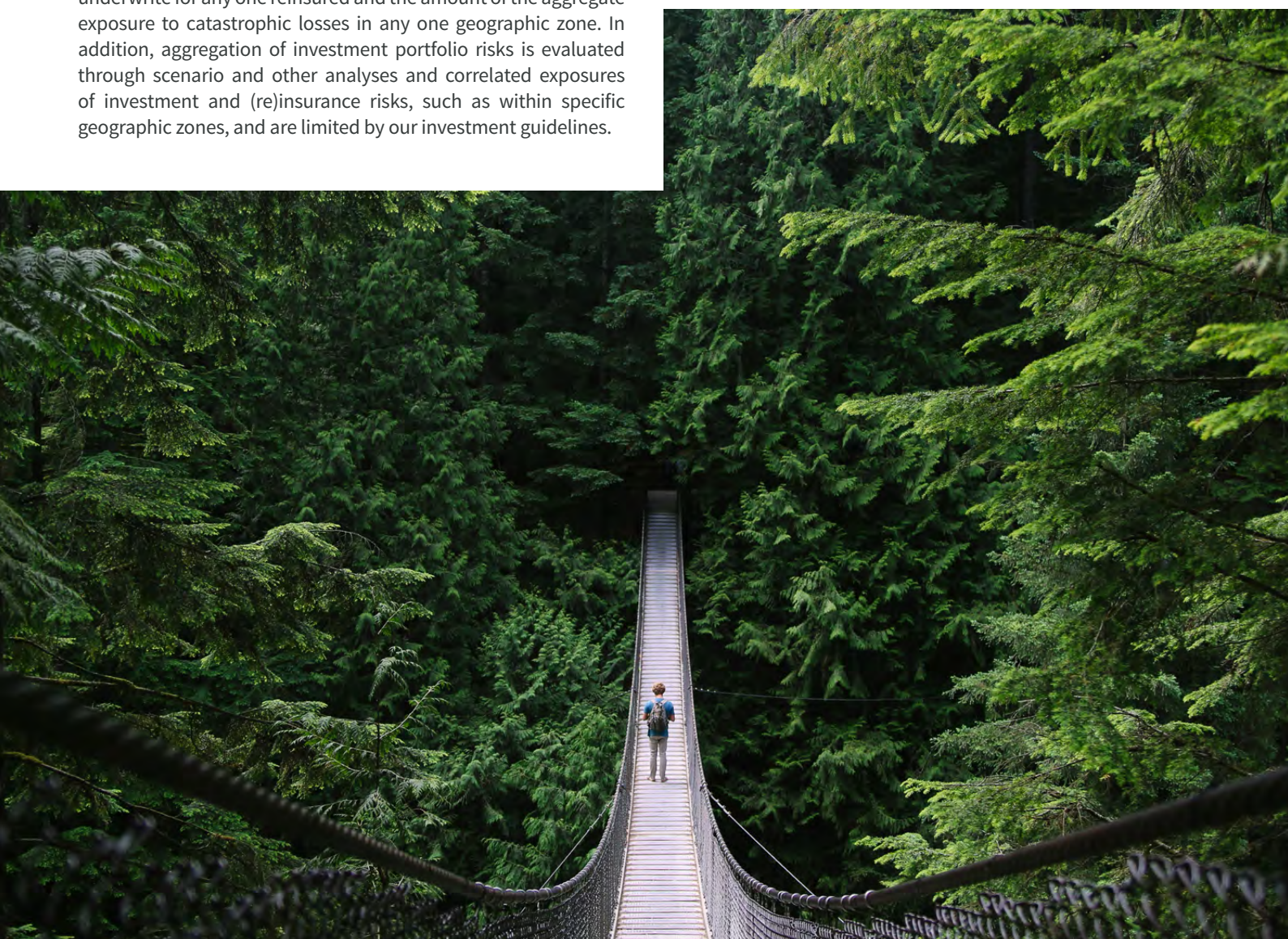
AXA XL's Chief Risk Officer (CRO) is responsible for ensuring that the company has a risk framework across all major risks. He is the chairman of our AXA XL Risk and Compliance Committee, responsible for identifying, assessing, monitoring, and reporting key risks.

AXA XL has established policies and procedures to contain and monitor risks, and AXA XL's risk framework is designed to allow us to identify and understand material risk concentrations, including concentrations that have unattractive risk/reward dynamics, so corrective or mitigating actions can be taken. Our risk management committees serve as points of dialogue across our business, create risk aggregation methodologies, and develop specific risk appetites to coordinate the identification and discussion of risk topics/metrics. We apply stress tests, risk indicators and reporting processes that examine the consequences of low probability/high severity events (including those related to emerging risks) in order to take mitigating actions where required. For example, with our property catastrophe (re)insurance business, our underwriting guidelines generally limit the amount of exposure we will directly underwrite for any one reinsured and the amount of the aggregate exposure to catastrophic losses in any one geographic zone. In addition, aggregation of investment portfolio risks is evaluated through scenario and other analyses and correlated exposures of investment and (re)insurance risks, such as within specific geographic zones, and are limited by our investment guidelines.

Our risk appetite framework guides our strategies relating to capital preservation, operational loss, and claims paying rating among others. This framework addresses our tolerance to risks from material individual events (e.g. natural catastrophes), our investment portfolio, and realistic disaster scenarios that cross multiple lines of business.

AXA XL's Emerging Risk Committee, which monitors issues where the extent and nature of any potential losses are particularly uncertain due to insufficiency of information or time to have fully analyzed the emerging situation, covers climate risks as part of its scope. It can provide "deep dive" assessments as appropriate on emerging risks and their impact on AXA XL's operations. The Emerging Risk Committee meets quarterly and provides quarterly emerging risk report summary updates as part of the AXA XL Risk and Compliance Committee.

Briefings on climate and sustainability risks are held as appropriate within AXA XL legal entities' boards (see section on governance).



## 4. Risk Management

### 4.2. Identifying climate related risks

The climate-related risks insurers are exposed to are complex. They range from the physical climate-related risks from natural catastrophes such as tornadoes, hailstorms, hurricanes, and floods through to the transition risks associated with transitioning to a low carbon economy and the liability risks associated with legal challenges from policyholders around responsibility for the impacts of climate change:

#### Physical Risk

The physical risks insurers are exposed to arise from extreme weather and climate that affect the hazards we experience through acute (e.g., tropical cyclones, flood, tornado/ hail) and chronic (e.g., temperature, sea-level rise) impacts. When we think about the impacts from the physical risk relating to a changing climate, we think about it from the perspective of:

#### Risk = f (Hazard, Exposure, Vulnerability)

<b>Hazard</b>	the extreme event that has the potential to cause destruction
<b>Exposure</b>	the assets that are at risk of being impacted from the hazard
<b>Vulnerability</b>	the susceptibility to damage of an asset to a given intensity of the hazard, including its adaptive capacity

The hazards are typically from events like hurricanes, floods, tornadoes/hail, or other acute local weather phenomena. Internal analysis shows that exposure increases have been a significant driver in the increase in the costs associated with catastrophic natural hazards in recent years.

This includes the increased costs of assets, along with the increase in number of structures driven by population growth, urbanization, and urban sprawl, in high-hazard areas. Vulnerability is the part of the risk equation that has been least studied. Vulnerability encompasses factors like building codes, economic development, availability of research and natural and non-natural defenses.

We expect that increased awareness of the impact of climate change should drive improvements in vulnerability through government investments, increased attention to resilience and adaptation measures, as well as mitigation efforts.

#### Transition Risk

Transition risks related to climate change are the risks associated with a move towards a low- or net-zero carbon economy and typically arise from changes in three areas: (1) Policy (2) Technology (3) Consumer preference and societal pressure. The severity of the financial risk as well as the opportunities arising from policy, technology and changes in consumer behavior are markedly dependent on the speed at which these transitions take place. Regulators around the world are quickly realizing the potential impact that a transition to a lower carbon economy might have, whether through direct measures like carbon pricing or through market forces as consumers turn towards greener alternatives. The time horizon and likelihood of changes in the various industries that we support are evolutive. Despite this, we are working to identify their potential impacts and to continue to improve our own understanding of these changes, both short-term and long-term, to ensure that our underwriting reflects the changes in the risks that we are exposed to, and that we are well positioned to help facilitate this transition.

#### Litigation Risk

Liability risks include lawsuits initiated by claimants who allege loss or damage due to a changing climate. Lawsuits for contribution to climate change have most commonly been launched based on public/ private nuisance or negligence, but product liability-related lawsuits are increasingly being filed. Society continues to encourage climate-related financial disclosures whether from regulators or through other initiatives in a move towards a more transparent environment where climate change risk is concerned. While these disclosures are a step in the right direction in addressing the impacts of a changing climate on our financial system, disclosures, as well as marketing campaigns can expose companies to litigation and regulatory non-compliance from inaccurate or inadequate disclosure claims and possible advertising liability claims related to greenwashing.

It is important to understand that while we have defined physical, transition and liability risk separately above, these risks are interconnected, and we should not think of them as independent.



## 4. Risk Management

### 4.3. Climate stress tests, scenarios and ORSA

AXA's approach to climate scenarios is described in the [AXA Group 2022 Climate and Biodiversity report](#) (section 5.2). As explained in that section, the development of climate scenario analysis and stress testing has accelerated in the past two years under the impetus of the supervisory authorities. We see the use of climate scenario analysis as an opportunity to further understand the implications of climate change on our investment portfolios and insurance business. Cooperation with supervisory authorities and industry peers makes it possible to improve the methodological framework and internal expertise to better assess climate change risks.

AXA XL is committed to developing capabilities on climate change risks and considering them as appropriate in our business planning and risk management.

AXA XL actively participated in the Bank of England's "Climate Biennial Exploratory Scenario" ("CBES") exercise in 2021. The goal was to test the resilience of current business models at leading UK banks and insurers to the physical and transition risks from different climate pathways, built on the NGFS climate scenarios. The CBES exercise considered three scenarios, each one assuming to take place over a period of 30 years:

- **Early Action:** Global carbon dioxide emissions are reduced to net-zero by around 2050 and global warming (relative to pre-industrial levels) is successfully limited to 1.8°C by the end of the scenario, falling to around 1.5°C by the end of century.
- **Late Action (LA):** The implementation of policy to drive the transition to a Net Zero economy is assumed to be delayed by a decade under this scenario. Global warming is limited to 1.8°C by the end of the scenario (2050) relative to pre-industrial levels, but then remains around this level at the end of the century.
- **No Additional Action (NAA):** The absence of transition policies in this scenario leads to a growing concentration of greenhouse gas emissions in the atmosphere and, as a result, global temperature levels continue to increase, reaching 3.3°C higher relative to pre-industrial levels by the end of the scenario.

The CBES exercise looked at the impact of these scenarios on both invested assets & insurance liabilities. The CBES exercise also included looking at the litigation risk associated with climate change.

For the physical risk, given the large study scope, both in terms of perils and geographically, the frequency-severity method was chosen as model outputs are available for current climate conditions which then allows us to estimate what this might look like under future temperature scenarios.

Through 2021 and 2022, AXA XL built upon on these stress test exercises to expand the methodologies and processes developed to consider climate change scenarios, including scenarios above and below a 2°C global temperature increase, based on current exposure profile.

Currently AXA XL discloses its risk management approaches and climate scenarios in its Own Risk & Solvency Assessment reports ("ORSA") each year.

#### 4.3.1 Insights from stress tests

Changing exposure or vulnerability was not factored into the CBES' exercise, and from internal analysis we know that exposure changes over the past few years have been significant, relative to any hazard changes that we have seen over the same period. This is important when thinking about risk now, and into the future, as it is a combination of hazard, exposure, and vulnerability that we need to consider when assessing changing nature of risks we face. As a result of this analysis and due to the changing nature of exposure, we will continue to focus on the impact that exposure change is having on risk whilst continuing to monitor the change in hazard that will emerge over the longer time horizon.

In order to start this we worked on developing future climate conditioned views of our natural peril risks. These views include North Atlantic Windstorm, European Windstorm, and other relevant perils for AXA XL across its geographies. As appropriate, the analysis in this process is assisting in considerations to include climate change impacts for physical risk into our pricing and capital modelling work.

It is clear that under rising temperature scenarios there will be increases in the physical risk that we are exposed to through hazard changes, but that uncertainty around these changes is large and driven by uncertainty in the science, as well as society's emissions trajectory.

## 4. Risk Management

### 4.4. Catastrophe modelling & future conditions driven by climate change: understanding hazard uncertainty

AXA XL is continuously working to develop a view of perils and areas that will most likely be impacted by climate change and refine its analysis. AXA XL works closely with catastrophe modelling firms and has in-house scientific expertise to integrate the latest understanding on climate risks. As the catastrophe modeling firms are closely tied to the climate science community, they work to integrate new views and tools into their products that allow insurers to adapt to changes in risk. Our in-house science team assesses the models in terms of being fit-for-purpose and has a structured framework to perform model evaluations.

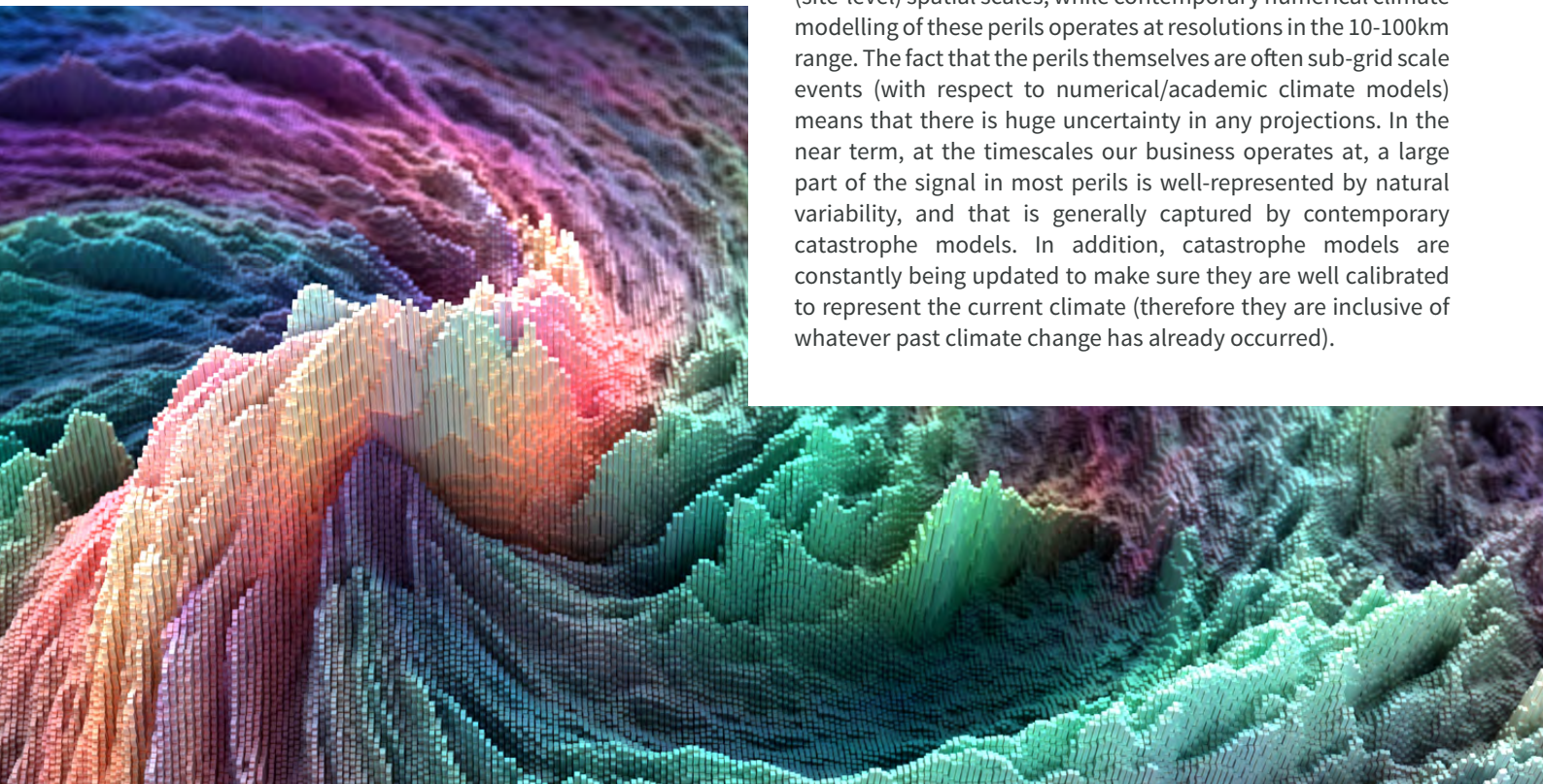
As explained in [AXA Group's Climate & Biodiversity report](#), there is scientific consensus that the hazard is changing for different climate-related perils due to anthropogenic climate change. However, scientific evidence suggests that over the long-term, the direction and order of magnitude of such change may be slow and, in many instances, highly uncertain.

When discussing the impact of climate change on (re)insurers, it is important to distinguish between weather and climate: climate refers to average weather over longer time horizons (typically 30+ years) and low resolutions. Weather refers to short-term, relatively regional events. While climate change is global, its impact will manifest through extreme localized weather events. There continues to be significant uncertainty around how climate change will influence the frequency and severity of many of these atmospheric climate-linked hazards. Despite this uncertainty, AXA continues to endeavor to understand the impact that a changing hazard will have on the risk AXA faces as a reinsurer.

There is a great deal of inherent uncertainty in the risk assessment process. Uncertainty cannot be eliminated from such work, and it is appropriate to acknowledge it and, where possible, assess it. To complicate matters further, uncertainty is greatly increased when introducing climate change into risk assessments. There are different types of hazard uncertainty to consider: uncertainty in system response (for example, future global temperature scenarios, time horizon of focus); uncertainty in assessment tools (for example, uncertainty in catastrophe models, uncertainty in the current view of risk); and uncertainty in Climate Change attribution (natural variability versus climate change). This uncertainty does not mean that we should not attempt to understand, implement, and model the impact of a changing hazard on the risk it faces as a reinsurer. This is an ongoing effort.

Unfortunately, there are not simultaneously accurate and generic/simple narratives that exist for climate change impacts to the extreme atmospheric perils that have the potential to cause catastrophic impacts to the re/insurance industry. While anthropogenic climate change is indisputable, how it impacts these perils is incredibly complex, and often beyond the scope of reliable science. The impacts are likely to be highly non-linear and may well act to increase the risk of certain aspects of the hazard, while decreasing other aspects of it.

For example, best estimates of North Atlantic hurricane activity show an increase in intensity as a result of climate change, while a decrease in overall frequency. How these aspects combine to change the risk on the ground is difficult to answer and requires very detailed and sophisticated hazard and vulnerability modelling to assess accurately. Further, risk occurs at very local (site-level) spatial scales, while contemporary numerical climate modelling of these perils operates at resolutions in the 10-100km range. The fact that the perils themselves are often sub-grid scale events (with respect to numerical/academic climate models) means that there is huge uncertainty in any projections. In the near term, at the timescales our business operates at, a large part of the signal in most perils is well-represented by natural variability, and that is generally captured by contemporary catastrophe models. In addition, catastrophe models are constantly being updated to make sure they are well calibrated to represent the current climate (therefore they are inclusive of whatever past climate change has already occurred).





## 4. Risk Management

### 4.5. Managing climate-related risks

#### 4.5.1. Time horizons

Without coordinated and effective action, society will face extensive long-term challenges as a result of climate change. That being said, assessing climate change impacts at a shorter time horizon and at a local spatial scale is highly complex. Unfortunately, there are no simultaneously simplistic and accurate narratives.

Regarding reassessing climate change-related risks, assessments are done at time horizons which are borderline for the period that we manage our business. AXA XL has conducted several assessments looking at time horizons such as 2050 or 2100, informed by those set by regulators in climate stress tests, or developing and evolving regulatory guidance in this area.

As explained in [AXA's Climate & Biodiversity Report](#) (section 5.6), these projections are certainly useful in understanding how the climate will change in the distant future at continental scales and above. However, from an annual underwriting, business and capital planning perspective, AXA requires high-resolution climate and weather results, and at shorter time horizons.

Since first party property risks are most often priced and written on an annual basis, by subscribing to the most current modeling technology, we are reflecting and managing the risk of potential changes in frequency and severity of weather events in the present day.

#### 4.5.2. Engaging with Underwriting and Claims

We engage with our underwriters, actuaries and claims colleagues to understand how these changes may manifest in the lines of business they are responsible for, in order to react to the risks and opportunities that will emerge. We believe that this is very much a process of evolution as the risks and opportunities will evolve, so regular dialogue and interaction is necessary. During 2021 and into 2022 we established this through our annual Business Unit Strategy work, starting the discussions around the level of understanding related to climate risk and opportunities and market preparedness per line of business. We established a Climate Network with representation from all product lines, functions, and regions across AXA XL to ensure that they hear about the work we are doing and the implications for their business, along with being able to hear from them around what they are experiencing in their areas of the business.

AXA XL Property Risk Consultants also play an active role in the management of risks. They evaluate policyholders' property exposures and provide recommendations to reduce the potential for property losses from natural catastrophe events (including hurricane, storm surge and flood events).

Underwriting rules and guidelines assist in evaluation of exposure to certain classes of business. This is a vitally important process in our business model and part of our regular strategic and business cycle. Risks and opportunities arising from a changing climate are assessed by underwriters in much the same way. Additionally, if the threat of hurricanes increases, an underwriting team will assess the additional demand for coverage in conjunction with the increased risk and price changes on an annual basis.

## 4. Risk Management

### 4.4.3. Climate impacts on claims

The science around the exact impacts from changes in extreme weather phenomena is not clear in certain geographies and locations, but research has been done to try to estimate these changes whilst providing a view on the certainty of these changes. Some examples are referred to in the [AXA Climate & Biodiversity report](#) (section 5.6), as shown in the table below, based on an AXA analysis of the IPCC's Sixth Assessment Report, purely for the purposes of illustration (comments are general and generic): (i) increases in red; (ii) decreases in blue; and (iii) left in black conclusions without a clear or certain trend.

Hazard	Past Observed Change	In Cat-Models	Future Projected Change in Warmer Climate
<b>Tropical Cyclones (TCs): Basin-wide Activity</b>	<i>[Likely]</i> that the proportion of major TC intensities (CAT4&5) and the frequency of rapid intensification events have increased over past 40 years <i>(Globally)</i>	Generally YES - Note that past changes refer to basin-wide, while no detectable trends at landfall	<i>[Likely]</i> that the global frequency of TCs over all categories will decrease or remain unchanged <i>(Globally)</i> <i>[Very Likely]</i> that the average peak TC wind speeds and the proportion of Cat4-5 TCs will increase <i>(Globally)</i> <i>[Very likely]</i> that TC rain-rates will increase <i>(Globally)</i>
<b>Coastal Flood/ Sea Level Rise/ Storm Surge</b>	<i>[High confidence]</i> Heating of the climate system has caused global mean sea level rise through ice loss on land and thermal expansion from ocean warming <i>(Globally)</i>	Depending on model vintage as well as lags between model release and model use	<i>[Very likely to virtually certain]</i> that regional mean relative sea level rise will continue throughout the 21st century. Approximately two-thirds of global coastline has a projected regional relative SLR within $\pm 20\%$ of the global mean increase (medium confidence).
<b>Extratropical Cyclones (ETCs)</b>	<i>[Low confidence]</i> in any recent changes in the total number of ETCs over both hemispheres <i>(Globally)</i>	N/A <sup>(1)</sup>	<i>[Medium confidence]</i> that future changes in the intensity of ETCs will be small, although changes in the location of storm tracks could lead to substantial changes in local extreme wind speeds <i>(Globally)</i>
	<i>[Medium confidence]</i> in a poleward shift of the ETCs storm tracks over both hemisphere since the 1980s <i>(Globally)</i>	YES – considering the historical data used to build the models	<i>[High confidence]</i> that average and max. ETCs precipitation-rates will increase <i>(Globally)</i>
<b>Severe Convective Storms (SCSs)</b>	<i>[Medium confidence]</i> that the mean annual number of tornadoes in the United States has remained relatively constant since 1970 <i>(U.S.)</i>	N/A <sup>(1)</sup>	<i>[High confidence]</i> that average and max. SCSs rain rates in the U.S. will increase <i>(U.S.)</i>
	<i>[Low confidence]</i> in changes in the number of SCSs due to insufficient data records and varying definitions between regions <i>(Globally)</i>	N/A <sup>(1)</sup>	<i>[High confidence]</i> that environments will become more favourable for SCSs development in the Tropics and sub-tropics, potentially increasing SCS frequency <i>(Globally)</i>
	<i>[Medium confidence]</i> in an increased number of detected tornadoes in Europe <i>(Europe)</i>	N/A <sup>(1)</sup>	<i>[Medium confidence]</i> that the frequency of springtime SCSs in the USA will increase, lengthening the SCS season <i>(U.S.)</i>
<b>Heavy Precipitation Over Land</b>	<i>[Medium confidence]</i> in an increase in globally average precipitation over land since 1950 <i>(Globally)</i>	Generally YES - considering the historical data used to build the models	<i>[Virtually certain]</i> that heavy precipitation will become more frequent and more intense <i>(Globally)</i>
<b>Flood</b>	<i>[Low confidence]</i> in observed changes in the magnitude or frequency of floods globally <i>(Globally)</i>	N/A <sup>(1)</sup>	<i>[Medium confidence]</i> that flood frequency and magnitude in SE and N. Asia and India, E. and tropical Africa, and northern North America will increase <i>(Regionally)</i>
	Some regions have experienced increases and some decreases in flood magnitude and frequency	Generally YES – considering the historical data used to build the models	<i>[High confidence]</i> that flood frequency and magnitude in central and E. Europe and the Mediterranean, parts of South America, S. and central North America, and SW Africa will decrease <i>(Regionally)</i>
<b>Wildfires</b>	<i>[Medium confidence]</i> that weather conditions promoting wildfires have become more probable in southern Europe, northern Eurasia, the USA, and Australia over the last century <i>(Globally)</i>	YES (U.S.) – we believe the influence of climate change on near-term wildfire activity exists within the natural variability of models.	<i>[Medium confidence]</i> in projected increases in the frequency and duration of fire weather (hot, dry, windy conditions), making extreme wildfires more likely for some regions, dependent on fuel availability and ignition sources <i>(Globally)</i>

\* By the end of the century.

(1) N/A = Not applicable due to no observable or a highly uncertain historical climate trend



## 4. Risk Management

### 4.6 Climate risk and AXA XL operations

AXA XL has a mature Global Operational Resilience and Business Continuity Management Program, which is designed to ensure the continuation of critical operations in the event of a business disruption (or threat of one) due to natural, technological, man-made or public health emergency/pandemic events. Business continuity and disaster recovery plans are in place for all physical office locations and data centers and, in certain jurisdictions, these plans are shared with regulators of our legal entities. Natural hazard, terrorism and pandemic risks to physical office locations are assessed on an annual basis and communicated to management.

We conduct environmental due diligence when securing new office space or renovating existing premises and consider risks associated with natural catastrophes as part of our Operational Resilience and Business Continuity Management planning. Examples of specific processes include:

- Locating data centers in multiple regions to create operational redundancy
- Enabling employees to work in other offices/work remotely if one particular office is inoperative or if an extreme weather event prevents safe commuting
- Using risk modelling tools and data to understand if any of our offices are in zones which are at heightened risk for natural catastrophes and considering this risk when evaluating new office locations. For example, our Bermuda office (owner occupier) was constructed to withstand hurricane and tropical storm conditions, to minimize business disruption and safeguard staff in the event of a significant storm.

AXA XL has a Recovery Plan in place that identifies plausible actions that the company can take to restore its financial position and viability in the case of a severe stress event, including catastrophic events. This includes a full menu of potential recovery options that could be followed, such as de-risking measures (e.g., (re)insurance purchase) and capital/liquidity management actions (e.g., drawing on credit facilities, canceling dividends). Scenario analysis (including natural catastrophe stress events) is performed to assess the credibility and feasibility of the recovery options. AXA XL also regularly performs liquidity stress tests to ensure that obligations could be met even under a stressed environment with simultaneous insurance and capital market events. Investment portfolio leverage is controlled through limits imposed by Risk Management.



# 5. Metrics and Targets

## 5.1 Our operational carbon footprint

AXA XL is committed to reducing our operational carbon footprint. We proactively measure material carbon emissions generated through our business activities (primarily air travel and fuels to heat and cool office buildings). This allows us to monitor any footprint changes and target areas for future emissions reduction. We calculate our annual footprint using a full year of collected data (January – December) and report on this the following year. For this report, we are including detail related to our 2021 footprint as well as the data from the past three years:

tCO <sub>2</sub> e	Scope 1	Scope 2 (location based)	Scope 2 (market based)	Scope 3 (location based)	Scope 3 (market based)
<b>2018</b>	2,970	6,829	7,559	44,769	44,936
<b>2019</b>	1,838	5,727	6,155	37,944	38,149
<b>2020</b>	1,639	4,345	4,784	12,138	12,436
<b>2021</b>	858	5,409	4,992	16,583	17,043

AXA XL is responsible for the internal management controls governing the data collection process. Our independent environmental software providers, Ecometrica, manage the data aggregation, any estimates and extrapolations applied and GHG calculations performed.

Avieco, our carbon consultant, was commissioned to independently verify 100% of our greenhouse gas (GHG) emissions to a limited level of assurance, as defined by the standard ISO 14064 – part 3. An agreed materiality threshold of 5% at emissions source, and/or global emissions level, was applied.

For our 2021 footprint, there was an increase of 26% compared to 2020. The increase was expected due to rebounding activity from the COVID-19 pandemic. The primary drivers of AXA XL's emissions increases were found within scope 3 emissions, with waste, energy from leased assets and homeworking emissions all seeing a significant increase. Homeworking data is based on a verified methodology developed by Ecometrica, our third-party environmental reporting partner, specifically related to energy emissions and heating and cooling. This was calculated based on the numbers of remote working days completed by full-time employees, per site and per country across 2021. Furthermore, in 2021 to improve AXA XL's performance, initiatives such as research into AXA XL's digital footprint and establishing regional roadmaps and 'champions' were implemented.

Historically, the largest emissions source for AXA XL has been business travel. Even though our overall emissions increased in 2021, air travel was 61% lower and business travel 70% lower than in 2020 as the COVID-19 pandemic continued to impact performance.

We publish our carbon footprint in our annual Sustainability Report, which we share on [axaxl.com](https://axaxl.com).

We offset our Scope 3 emissions by working with our carbon offsetting partner, The Nature Conservancy.



## 5. Metrics and Targets

### 5.2 Our carbon reduction strategy

AXA XL is committed to reducing its direct impact on the environment. Our 2021-2025 carbon reduction strategy aims to limit the contribution of our own operations to global warming to 1.5°C, aligning us with industry-practice decarbonisation.

Our overarching target is to reduce the total carbon footprint of our own operations by 25% by 2025 (compared to 2019). Our carbon emissions are, however, only one measure of our environmental impact. Resources such as paper, water, and waste have a low carbon intensity but are environmentally important. We have therefore included resource consumption targets for paper, water, and waste.

### Sub-targets:

**38%**

reduction in the emissions from how we light, heat and cool our buildings



**40%**

reduction in carbon emissions from the centers that store our data



**25%**

reduction in carbon emissions from our business air travel and hotel stays



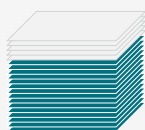
**19%**

reduction in carbon emissions from business car travel



**20%**

reduction in paper use per colleague



**11%**

reduction in water use per colleague



**10%**

reduction in waste production per colleague



#### 5.2.1 Carbon tax for air travel

Air travel is consistently the biggest contributor to our carbon footprint, so since January 2020 a “Green Contribution” charge of USD \$100 per tonne of CO<sub>2</sub> emissions has been applied to each AXA XL traveler’s corporate budget for all business flights. This funds internal initiatives across AXA XL to reduce our environmental footprint, as well as the purchase of carbon credits to offset our travel emissions.

In 2021, the Green Contribution funded the development of a carbon reduction modelling tool and training for regional users. After users input a set of carbon reduction initiatives (for example, switching to renewable energy), the tool will calculate the carbon savings and determine whether the initiatives collectively will achieve their set regional goals.

In 2022, we are exploring installing water meters at our London office to improve understanding and reporting on water usage, installing a bike repair station at our Paris office to encourage colleagues to cycle to work, and funding a paper reduction campaign in our Dublin office which will also contribute to tree planting through The Nature Conservancy as an incentive for reductions made in paper usage.

## 5. Metrics and Targets

### 5.3 Decarbonizing our Underwriting portfolio

As part of the Net Zero Insurance Alliance (“NZIA”), AXA is required to transition its underwriting portfolio to Net Zero in 2050 in line with the Paris agreement, which is aiming to keep temperatures at or below an increase in global temperatures of 1.5°C. The methodology to estimate Insurance Associated emissions (“IAE”) was published in November 2022, highlighting the in-scope lines of business, and also providing a method for companies to use to estimate their IAEs. Separately, a working group from the NZIA is developing a document outlining a target setting protocol for NZIA members.

It is likely that targets from the protocol will include: emissions reduction targets (absolute or intensity); engagement levels; and targets around developing business to encourage the transition to a low-carbon economy. Founding NZIA members will be required to set interim targets on the journey to Net Zero by 2023 with regular annual reporting and an interim target date of 2028. While a methodology and target setting protocol exists, there are limitations due to data availability across all clients and this will be brought into consideration when determining the scope of the targets and the expected impact of the targets being set.





### Cautionary statement regarding forward looking statements and important legal information

This AXA XL 2022 Climate Report may include statements with respect to future events, trends, plans, expectations or objectives and other forward-looking statements relating to AXA XL's future business, financial condition, results of operations, performance and strategy as they relate to the climate objectives and other goals set forth herein. Forward-looking statements are not statements of historical fact and may contain the terms "may", "will", "should", "continue", "aims", "estimates", "projects", "believes", "intends", "expects", "plans", "seeks" or "anticipates" or words of similar meaning. Such statements are based on Management's current views and assumptions and, by nature, involve known and unknown risks and uncertainties; therefore, undue reliance should not be placed on them. In particular, the actual achievement of the climate-related and other goals set forth in the AXA XL 2022 Climate Report may differ materially from those expressed or implied in such forward-looking statements. Furthermore, many of the factors impacting the achievement of our climate goals may be more likely to occur, or more pronounced, as a result of catastrophic events, such as weather-related and other catastrophic events, including pandemic events.

Actual results may differ from those set forth in the forward-looking statements due to a variety of factors, including those described in Part 5 – "Risk Factors and Risk Management" of the Universal Registration Document of AXA S.A., the ultimate parent of AXA XL, for the year ended December 31, 2021 (the "2021 Universal Registration Document"), available on AXA S.A.'s website ([www.axa.com](http://www.axa.com) [axa.com]). AXA XL assumes no obligation to update or revise any of these forward-looking statements, whether to reflect new information, future events or circumstances or otherwise, except as required by applicable laws and regulations. This AXA XL 2022 Climate Report and the information included herein were prepared on the basis of data made available to AXA XL as of the date of this Report. Unless stated otherwise in the AXA XL 2022 Climate Report, this Report and the information included herein are current only as of such date.

The inclusion of information in this AXA XL 2022 Climate Report should not be construed as a characterization regarding the materiality or financial impact (or potential impact) of that information, or its significance for any other purpose, including for purposes of applicable securities laws.



Contact: [Sustainability@axaxl.com](mailto:Sustainability@axaxl.com)