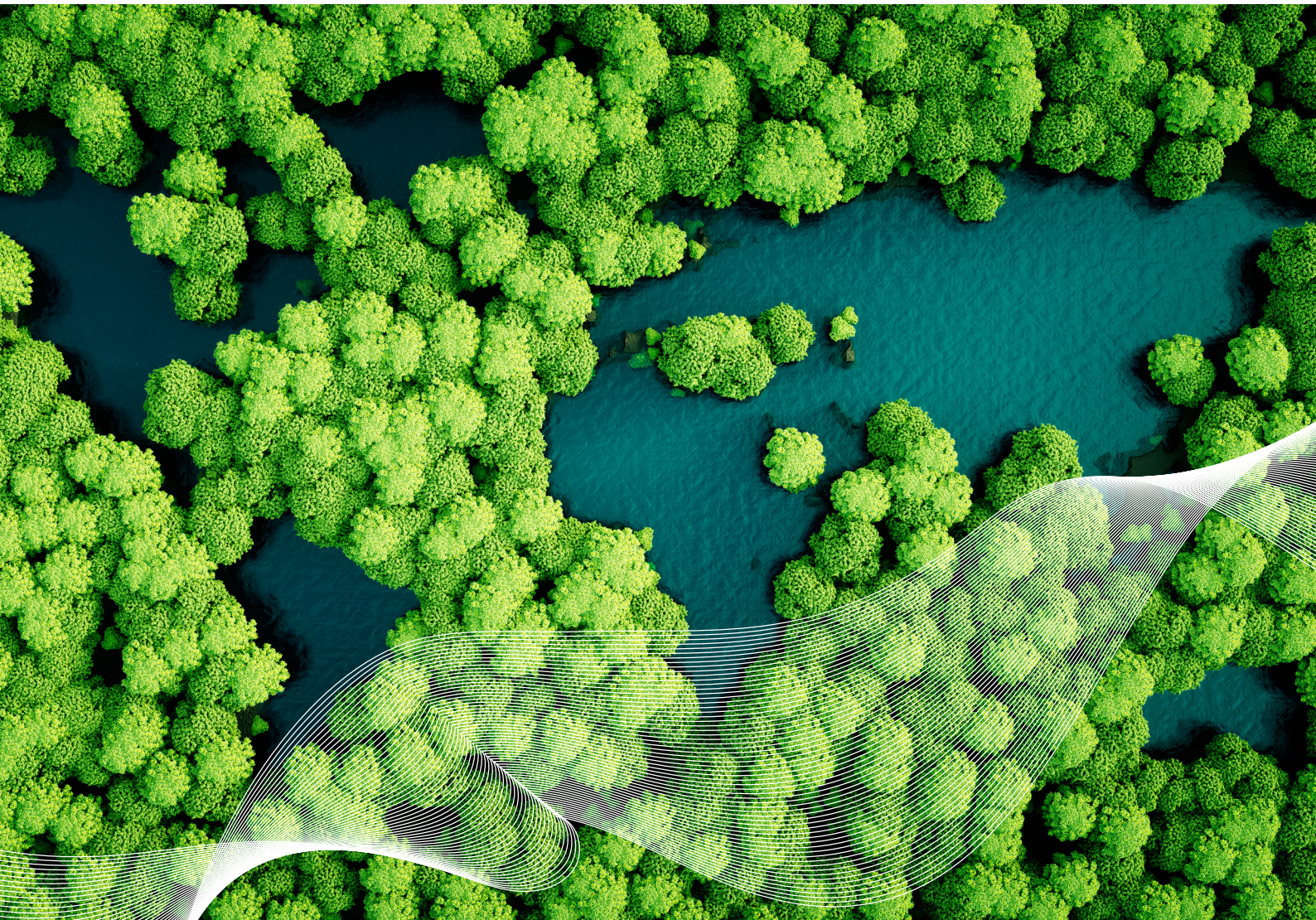


ClimateWise Report

2020/2021



Climate change is one of the biggest issues affecting global society. MS Amlin believes the (re)insurance industry must play a key leadership role in understanding the risks, promoting the response and increasing the world's resilience to climate change. Being a founder signatory to the ClimateWise initiative, MS Amlin continues to value the opportunity to collaborate with other industry practitioners to support the climate change agenda and has reported annually against the ClimateWise Principles as one of the ways to demonstrate its contribution and proof of progression year on year.

Report contents

Principle 1
Be accountable p3

Principle 2
Incorporate climate-related issues into our strategies and investments p5

Principle 3
Lead in the identification, understanding and management of climate risk p10

Principle 4
Reduce the environmental impact of our business p12

Principle 5
Inform public policy making p19

Principle 6
Support climate awareness amongst our customers/ clients p21

Principle 7:
Enhance reporting p22

Principle 1:

Be accountable

1.1 Ensure that the organisation's Board is working to incorporate the Principles into business strategy and has oversight of climate risks and opportunities.

The MS Amlin Underwriting Limited (MS AUL) Board recognises that climate change is one of the highest profile topics driving political, social and economic decision making across many countries and most markets. The Board has overall responsibility for business performance, risk management, setting and overseeing the implementation of the strategy, and ensuring high standards of corporate governance are maintained. It is through careful management in each of these critical aspects that MS AUL can achieve its objectives and manage the risks and opportunities arising from climate change.

During 2020-21 the Board commissioned a strategic review to assess MS AUL's approach to climate risk, and approved an operational response, covering a 12-24 month timeline. This response will support MS AUL in its delivery against the ClimateWise principles and regulatory requirements, and align climate risk strategy to the existing risk appetite and exposure management framework. The outcome of this review has provided the Board with targets and performance measures to ensure effective governance and an ownership matrix that assigns accountability to key individuals for delivery.

The strategic review also agreed a climate risk management strategy statement confirming the approach and strategy MS AUL will take towards tackling climate risk.

The statement was approved by the Board in Q1 2021:

"We at MS Amlin are committed to making transparent, sustainable financial decisions and to actively managing the long term financial risks of climate change, in partnership with our customers as we transition together towards to a low carbon future."

To ensure effective governance and keep the Board informed of the ever-evolving landscape surrounding climate change, a Directors' training session was held in April 2021. The session identified climate change as a financial risk and included a long term view outside of standard business planning horizons. The objective for the session was to increase Board awareness of this topic and educate members on their responsibilities, allowing them to make informed decisions on climate change risks and opportunities.

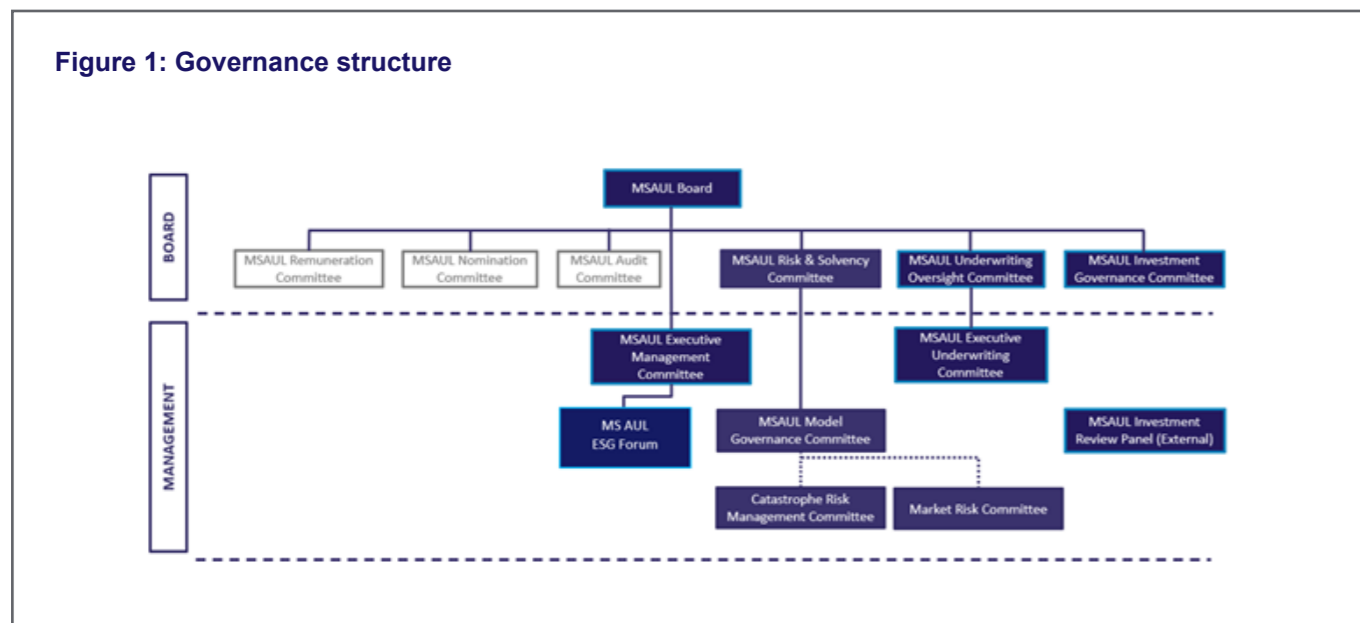
The MS AUL Board member responsible for Climate Change is Strategy & Transformation Director, Martyn Rodden. Martyn represents MS AUL on the ClimateWise Insurance Advisory Council, is Chairman of the newly formed ESG Forum, and is the named executive with regulatory responsibility for climate change.

The Board has a number of committees, to which it delegates oversight and decision making powers in accordance with documented Terms of References (see figure 1 overleaf).

The Board Level Committee with the highest level of engagement in Climate Change is the MS AUL Risk and Solvency Committee which approves the business appetite and tolerance limits, receiving regular reports from the risk function to ensure the approved appetites and limits are monitored and the risk profile is understood. This includes risks associated with climate change.

Each quarter the Board also receives a specific report from the ESG Forum (see principle 1.2) for discussion.

Figure 1: Governance structure



1.2 Describe management's (below board-level responsibility) role in assessing and managing climate-related issues.

The Board is briefed by each of the Management-level Committees which provide regular board papers alongside details of climate related initiatives, compliance requirements and research.

Risk types which are impacted by climate change are regularly reviewed by a dedicated Catastrophe Risk Management Committee (CRMC) at least two times per quarter. The purpose of the CRMC is to provide an effective control framework over the management and reporting of current annualised catastrophe risk. The Committee reviews the suitability of the current catastrophe model suite to real-world conditions. The Committee also directs any research into where the catastrophe models diverge from current scientific understanding or our own loss experience.

The CRMC recommend to the Model Governance Committee (which oversees the capital Internal Model) any changes to our view of risk, observations or areas of concern that relate to risk impacts by climate change.

In 2021 the Board established a dedicated ESG Forum to consider all aspects of Environmental, Social & Governance matters as they impact MS AUL. While the forum has multiple priorities across ESG related topics, climate change has been the overriding priority for this reporting period. The purpose of the forum is:

- To enable MS AUL to measure and report the real sustainable and societal impact of its business activities
- To consider and initiate climate risk and ESG related activities
- To oversee compliance with PRA, Lloyd's & other regulatory requirements
- To oversee MS AUL's commitment towards ClimateWise and TCFD principles
- To ensure ESG approach is consistent with MS&AD and MSIJ ESG commitments and targets
- To be the advocate for MS AUL on ESG principles

The forum meets monthly and includes three Board members: Strategy & Transformation Director, Chief Risk Officer, and Director of Underwriting Performance, alongside senior level representatives who have authority, influence and motivation to prioritise climate change on MS Amlin's strategic agenda. These include, Chief Investment Officer, Assistant Investment Manager,

Head of Risk Analytics, Head of Risk and Governance, Head of Property Services, and Head of Procurement.

These forum members work actively in their business-as-usual roles to respond to regulatory requirements, to take account of stakeholder interests and concerns, to be familiar with the latest relevant scientific research and modelling techniques, to be aware of industry developments, and in particular are tasked with delivering components of the company's strategic plan and Risk Framework relating to climate change. They are also supported by the Head of Internal Comms, Strategy and Marketing teams, to ensure that effective internal and external engagement for climate change issues are coordinated and communicated effectively. In addition, MS AUL continues to align its climate and ESG work through charitable initiatives, such as Shelter Box.

This report has been written by members of the ESG Forum, and each question has been answered both with reference to their specific management role and with reference to their ESG Forum strategic participation.

Principle 2

Incorporate climate-related issues into our strategies and investments

2.1 Evaluate the implications of climate change for business performance including investments) and key stakeholders.

The Risk Framework

Activity performed in 2020-2021 has seen climate risk move from what has previously been considered an emerging risk to an integral part of the risk framework, with an Environmental, Social and Governance (ESG) risk being added to the Risk Register in Q4 2020. The next steps MS AUL has taken is to understand the actions needed to integrate climate considerations into everything the company does. This activity combines both the expectations of SS3/19, the PRA Supervisory Statement on the financial risk of climate, inclusion in the upcoming Bank of England Climate Biennial Exploratory Scenario (CBES) and our continued commitment to ClimateWise.

Taking this into consideration, MS AUL embarked on a scoping exercise in Q1 2021, working closely with key stakeholders over a 4 week period to:

- review compliance with SS3/19 and ClimateWise principles;
- deliver an overarching climate risk management strategy statement;
- deliver a pragmatic operational response including relevant measures of success, risk & opportunity statements and an ownership matrix aligned to the existing governance;

- align MS AUL's Climate Risk Strategy with its existing risk appetite and exposure management framework; and
- deliver a high level 12-24 month timeline which would support MS Amlin in delivering against the recommendations made in the operational response document.

A key outcome of the review was to identify the steps required to manage Physical (P), Transitional (T) and Liability (L) risks across the existing Risk Register. MS Amlin have acknowledged the areas of the risk register that require the most effort to identify the financial impacts of climate as outlined in SS3/19, with Insurance, Market and Strategic risks identified as high impact risk categories.

The roadmap has received approval from the whole Executive team and whilst the efforts will be co-ordinated by the Director of Strategy & Transformation, the risk owners will take ownership and accountability for the impacts across their respective Risk Categories.

With regards to climate scenario analysis, MS AUL ran the ESG scenario as part of the General Insurance Stress Test (GIST) activity in 2019 and will do so again for the CBES activity due to commence in June 2021. Whilst there is no dedicated climate scenario in the most recent ORSA, MS AUL will draw on experience to date in this regard

through the other stresses and will see climate related scenarios being incorporated into the 2022 document.

It is also worth noting that over the past few years MS AUL has exited a number of predominately non-CAT exposed business, leading to potentially greater volatility in the remaining book. In turn, this business would be more at risk from higher frequency of losses which may be a leading indicator of climate change. This further outlines the importance of understanding the impacts of climate on our financial exposures. Next steps on the roadmap include the incorporation of the financial impact of climate risk within MS AUL's underwriting appetite at a class level, to be developed during the underwriting class reviews in H1 2021.

Underwriting Risk

MS AUL has a well-established exposure management framework, used to measure and manage natural catastrophe loss probability. This framework includes a rigorous process of exposure data capture and governance related to insurance policies issued by MS AUL, including controls mitigating risk due to lack of data and/or data quality issues. The portfolio of exposed policies is then modelled by country and peril, to estimate loss probabilities from events such as cyclones, windstorms, severe convective storms, earthquakes, floods, bushfire, and other hazards. MS

AUL is heavily exposed to North American perils due to business strategy decisions, adding to the imperative for the business in understanding the impact of climate change on the frequency and severity of natural catastrophe in this region. The contribution of individual policies in key exposure classes is modelled prior to underwriter acceptance of risk.

Modelling is undertaken using both externally supplied software (RMS, AIR, JBA, and RQE) and in-house expertise with the whole portfolio reassessed on a quarterly basis. The climate-related risks monitored in this way are windstorm, severe convective storm, flood, storm surge, tropical cyclone and related secondary hazards. The modelling assesses historic events, and models probabilistically extremes of events across relevant geographic regions. Climate signals are intrinsic to the parameterisation of the models used, and the Risk Analytics Research Manager has continuous dialogue with the model vendors and other external scientific and research groups to consider the appropriate methodologies for understanding the potential change in parameterisation as climate science develops.

The models are tested for sensitivity, and stress tested against MS AUL's historic claims experience. The models are licensed from firms staffed by scientific experts, and incorporate analysis of trends from hundreds of years of data on climate-related hazards. With increasing focus from Regulators on climate change, scenario testing against models is becoming more critical in understanding the robustness of the assumptions used for the modelled perils. MS AUL is one of the selected firms, chosen by the PRA, to participate in the Climate Biennial Exploratory Scenario (CBES) to explore the financial risks posed by climate change. A CBES Working Group meets to discuss and escalate actions

arising in the production of the CBES. Outputs from this exercise feed in to the newly formed ESG forum and onto relevant Board Committees where relevant, helping to inform strategic decision making going forward.

MS AUL's Risk Analytics function produce a range of metrics to assess cat exposures ranging from the 1 in 30 to the 1 in 200 annual exceedance probability tail value at risk. These are tracked quarterly and monitored against tolerances used to manage the level of risk authorised by the Board. Understanding potential losses at the tail is imperative for a heavily exposed catastrophe Syndicate such as MS AUL, hence work is underway to further improve our understanding of the impact of climate change at the tail. The Risk function are also in the process of updating the Risk Management Framework to reflect the pervasiveness of climate change across the Risk Register, this falls under the ESG risk category that will be built up to include other relevant elements over time. Included within this will be a full assessment of controls and gaps to be mitigated for each risk, as well as the production of a set of metrics to regularly track, monitor and report on the impact of climate change.

MS AUL have set up the Environmental Social Governance (ESG) Forum covering a wide range of work streams. With climate change becoming a more material impact on the balance sheet, and a driver of changes to the risk profile, the ESG Forum ensures the appropriate members are in place to bring climate-related initiatives (alongside other workstreams) into being an integral part of management of business performance. Internally, MS AUL is aware that climate change related changes to the global environment, societies and economies will have a wide-ranging impact on its business, and these impacts can be viewed through a tripartite prism of

transition risks, physical risks, and liability risks. MS AUL expects these impacts to be felt, albeit to different levels of materiality, across its seven risk categories and 37 sub-risk categories.

Investments

Within the three legal entities of MS Amlin's insurance and reinsurance business, MS Amlin has an investment portfolio in excess of GBP £6billion, consisting of Fixed Income (Bonds Duration and Absolute Return Funds), Equity, Real Assets and Cash. MS Amlin manages investments on a multi-asset, multi-manager basis, appointing external managers to implement security selection.

As long term investors focusing on asset allocation, MS Amlin is aware of the importance of stewardship and sustainability alongside integrating ESG into the governance structure, which involves the inclusion of Environmental, Social and Governance factors into investment analysis. Whilst MS Amlin has a holistic approach to investing, it actively engages with external managers encouraging disclosures detailing their ESG activities and assessments of climate risks when choosing their investment strategy, which is monitored on a regular basis via annual and investment stewardship reports. There has been increasingly more information provided by MS Amlin's external managers, compared to previous years, on the extent to which ESG factors (and specifically climate risk) are integrated into their investment strategies. This is an area MS Amlin will continue to promote.

MS Amlin believes that climate risk is an extremely vital component within the wider ESG discussion. There is an initiative within MS Amlin Investments to acquire more detailed data and research in this area, with the view to integrating it into the front office portfolio monitoring architecture (leveraging

our in-house expertise). The aim is to incorporate the analysis into the investment decision making process and improving communication on this important topic to MS Amlin's legal entity boards. The aim is to cement both climate risk and ESG factors into MS Amlin's governance structure and risk culture. This work builds on other regulatory submissions MS Amlin has made (i.e. PRA GIST).

Our observations lead us to define:

- **Short term** as 0-5yrs, where our immediate focus is on listed securities (equity and credit), where total returns will be reflective of immediate risks or opportunities from climate related factors (emissions, coal, low-carbon technology)
- **Medium term** – defined as 5-20yrs. Here, MS Amlin focuses on allocation to real assets which include Property, Farmland and Infrastructure investments (renewable energy)
- **Long term** – defined as 20yrs+. MS Amlin focus efforts on identifying long term shifts and trends, more likely characterised through broader government securities and

associated yield movements (carbon neutral targets, green bonds)

The majority of MS Amlin's external managers are signatories to the UN Principles of Responsible Investment (PRI) which encourages managers to incorporate ESG issues, including climate change, into their investment selection process. MS Amlin's external managers believe that sustainable investing is synonymous with good fund management practice and that strategies incorporate changes in consumer views, investors' expectations and economic trends which all tend towards a more climate-aware and sustainable world (i.e. renewable energy, zero-carbon economy). MS Amlin's parent company, MS&AD Insurance Group, is also a UNPRI signatory.

MS Amlin believes that the identification of these trends is crucial when considering its stance as a long term investor. There is a focus on data acquisition alongside investment impacts with regards to short/medium-term effects from distinct meteorological events (such as hurricanes). These events are

also thought of in the context of medium/longer term increased frequency and intensity as much as their immediate impacts.

MS Amlin have partnered with Sustainalytics, a leading independent ESG data and research provider, to further strengthen our ESG data ecosystem. This has facilitated the inclusion of composite ESG risk scores in our fund and entity board reporting.

MS Amlin continues to engage positively when meeting the increasing supervisory expectations and regulatory submissions in the area of climate risk. MS Amlin is an active participant in the 2021 Bank of England Climate Biennial Exploratory Scenario (CBES) which will greatly expand on our previous work with the inaugural climate scenario in the PRA 2019 General Insurance Stress Test (GIST).

Paul Amer, MS Amlin's Chief Investment Officer and member of ESG Forum, is leading and promoting further use of climate risk and ESG factors into the investment process.

2.2 Measure and disclose the implications of climate-related issues for business performance (including investments) and key stakeholders

Underwriting

The increase in frequency and severity of claims (physical and liability) could cause deterioration of loss ratios, if not factored into pricing and risk selection, plus increased aggregation risk in particular sectors, geographies and asset classes.

MS AUL, operates through six underwriting departments, with each one hosting a variety of classes. Potential impacts from climate risk on the underwriting portfolio were assessed as part of the climate risk strategic review and are summarised in the table below. Factors contributing to the

level of risk include increased physical damage claims, due to changes in frequency and severity of extreme weather, and liability claims as businesses are expected to meet new standards on corporate responsibility combined with pressures from governments and regulators.

Department	Potential impacts from Climate Risk	Climate risk type
Property	HIGH	Physical and Transition
Natural Resources	HIGH	Physical and Transition
Reinsurance	HIGH	Physical and Transition
Casualty	MEDIUM	Liability
Marine	MEDIUM	Physical, Transition and Liability
Crisis Management	MEDIUM	Physical & Transition

Annual policy renewals allow underwriters the opportunity to regularly assess risks for short-tail business. In addition to the regular renewal process MS AUL conducts an annual strategic review for each class. In 2021 underwriters were required to complete a PESTEL analysis to gauge macro-environmental factors to assess how they influence the operating environment. The PESTEL analysis was deliberately chosen as it explicitly calls out the 'Environment' as one of the six factors for review. Underwriters were asked to consider what environmental risks might influence their portfolios and determine mitigation strategies. This review has encouraged underwriters to develop an individual and careful assessment of the situation and how climate risk influences their specific class of business. Underwriters will harness this insight so that they are able to design a suitable strategic response.

Investments

Driven by a wide range of investment stakeholders implementing new ESG criteria, asset valuations are expected to be volatile. Plus, physical risk will impact assets and business performance, resulting in a loss of asset value.

MS Amlin Investments have used the set of climate change impacts, supplied for the climate risk section of the 2019 PRA General Insurance Stress test (GIST), to form the basis for the development of a climate risk module that is being integrated into existing investment architecture and reporting. MS Amlin are also actively engaged in preparing for the Climate Biennial Exploratory Scenario (CBES). It is anticipated that the work done in completing this regulatory submission will prove invaluable in further shaping

our investment architecture and reporting. MS Amlin expects its ability to disseminate a variety of climate related data sources to be of particular use with the CBES submission, given the indications that it will be a less prescriptive activity than the GIST with a greater emphasis on in-house climate risk analysis and data interpretation.

The infrastructure includes a database as well as several proprietary in-house tools and dashboards that provide an overview at a legal entity level, and asset class risk allocations alongside additional analysis. It is an area under continual development and more metrics will be available in the coming year. More recently MS Amlin Investments have expanded the analysis to illustrate climate risk on a country and sector allocation basis, which can now isolate individual holdings. The analysis also encompasses monthly historical trend analysis for the past three years.

The "No Further Action" scenario (GIST 2019 Physical Scenario C) value is highlighted as a key climate risk metric to be monitored within our proprietary dashboards. This conservative "BAU" scenario reflects a failure to drive any worldwide improvements in climate policy, with the modelled result being a temperature increase in excess of 4°C (relative to pre-industrial levels) by 2100.

The results of applying the other Physical and Transition risk scenarios from the PRA GIST to MS Amlin's portfolios are also included in the dashboards along with further supporting climate metrics based on publicly available climate risk data and research from various sources. These additional metrics are typically given as exposure weighted absolute values.

The additional metrics include:

- **Country by country climate risk vulnerability analysis** based on the "Fragile Planet" climate research performed by HSBC. As well as a broad climate vulnerability score each country is assessed according to their likelihood to experience physical risk from climate change and their readiness to cope with it.
- **Water stress metric** calculated using data obtained from the World Resources Institute who publish yearly water usage figures as a percentage of the amount introduced into an individual countries water cycle. This is useful as a proxy measure of the ability of a country to deal with sudden drought conditions.
- **Coastal flood risk metric** calculated using data obtained from Climate Central (a non-profit organisation bridging the scientific community and the public). They provide an average displacement figure for each country per year in thousands of people. This provides a useful measure for the effects of rising sea levels.
- **River flood risk analysed** using data from the Deltares Aqueduct river flood model. This is also provided as a population affected figure for each country.
- **Wildfire risk** monitored using damage per country (in \$m) data obtained from the Centre for Research on Epidemiology of Disasters (CREED) "EM-DAT" database.
- **Carbon Emissions.** Calculated per country as a percentage of total global emissions.

In-house research continues not only into further supporting climate risk metrics suitable for inclusion

into existing architecture, but also into how the existing data can be blended with additional economic and policy measures. This will allow our investment tools to reflect the climate risks facing companies and countries in our portfolios and their strategy in tackling them.

At present climate-related metrics are not explicitly incorporated into the remuneration policies of MS Amlin's external managers and are not a factor in major allocation/de-allocation decisions. Significant improvements in the coverage and consistency of data would be required before such policies could appropriately be introduced.

With the data analysis and policy formation still in its infancy, MS Amlin are not yet ready to describe associated performance and targets. Whilst it may be acceptable to set very high targets, they must not only be achievable, but also realistic. Once the data has been gathered and fully analysed, MS Amlin will be much better placed to respond.

2.3 Incorporate the material outcomes of climate risk scenarios into business (and investment) decision making

Business

In addition to the scenarios related to the 2019 PRA GIST, MS AUL is developing further scenarios as part of the 2021 PRA CBES exercise, and reviewing methodologies for applying these scenarios to our existing natural catastrophe modelling frameworks. As part of our response to the PRA Supervisory Statement 3/19 these scenarios will be appended to existing strategic class review and governance processes, to set underwriting guidelines and risk appetite. Discussion continues in the Technical Pricing Steering Committee about the methodology and parameters required to embed scenarios into the existing Technical Pricing Framework.

Investments

MS Amlin Investments has developed a series of climate change scenarios in-line with the 2019 PRA General Insurance Stress test. These scenarios were used to quantify the potential impacts of climate change on portfolios from both a transition risk and physical risk perspective. The three scenarios reflect varying response to the Paris agreement targets:

- Scenario A: Sudden disorderly transition. Temperature increase below 2 degrees Celsius.
- Scenario B: Long-term orderly transition. Temperature increase below 2 degrees Celsius.
- Scenario C: Failed future improvements in climate policy. Temperature increase in excess of 4°C.

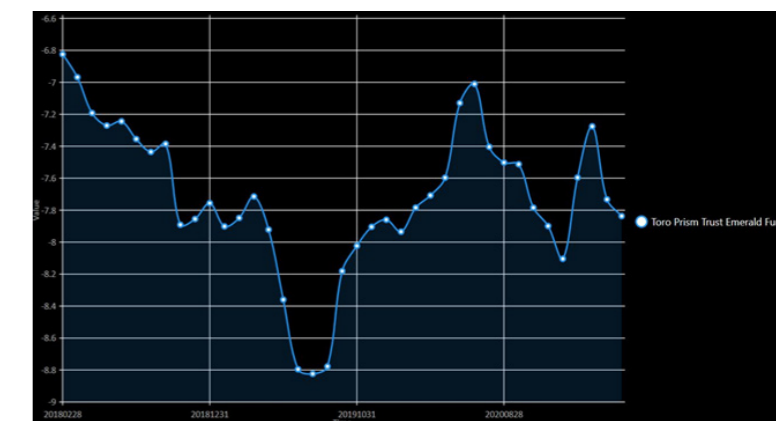
The scenarios have been used as the basis for the development of a climate risk framework that has been integrated into existing infrastructure. MS Amlin expects these scenarios to be further developed according to the findings from the CBES submission.

The physical risk figure from Scenario C is the main climate stress figure that has been incorporated (being potentially the highest risk outcome) and which is intended for inclusion into entity board reporting. It is understood that this metric is the most straightforward and conservative figure to use to communicate with boards.

The first screenshot below shows the climate risk module in one of our investment management tools, which illustrates the climate stress figures from the PRA GIST (and other supporting climate risk metrics) applied to our equity fund as of 01/06/21:



The second screenshot from the management tool presents a time series showing the changing impact of the Physical Risk Scenario C:



Principle 3:

Lead in the identification, understanding and management of climate risk

3.1 Ensure processes for identifying, assessing and managing climate-related risks and opportunities are integrated within the organisation (including investments).

During the 2021 annual Own Risk and Solvency Assessment (ORSA, a key reporting output of the Solvency II regulatory framework) process, MS AUL has identified climate change as a significant risk for the firm. Potential impacts to MS AUL's balance sheet is likely to manifest widely across insurance receivables, claims reserving practices, and financial assets held for investment. Furthermore, recent years' poor performance in terms of non-cat losses across the industry exacerbates the threat and elevates the need for (re)insurers to fully identify, assess and manage the financial impact climate change has on the balance sheet.

In response, the PRA has released SS3/19 which intends to guide firms in having a minimum standard in place to understand the impact of climate change on the company. Within MS AUL, Risk team members are regular attendees at the ESG Forum, carrying out both a second line oversight and a workstream delivery role. Through actions agreed upon at this forum, the Risk function are coordinating the risk management elements outlined in SS3/19 as well as supporting the other workstreams through real-time assurance.

In addition, regular discussions held between the first-line functions and the Risk function allows for the identification and consideration of potential emerging threats, including those related to climate developments. Emerging risks which have a sufficiently high likelihood of materialisation, and a high severity of impact if materialised, are escalated to the appropriate Committee for the business function concerned, and where necessary to the Board.

The Risk function undertakes regular updates to risk categories and risk drivers described within the Risk Register. This process also enables us as a business to capture and monitor risks associated with climate change. An immediate example of this in the last 12 months is that ESG Risk has been added as a distinct category to our Risk Register, which then facilitates the creation and formalisation of a set of metrics and controls to manage and mitigate this risk. These metrics, which are under ongoing development and refinement, will also include those that allow the business to monitor quantitative financial impact in line with SS3/19 guidance.

MS AUL licenses a number of sophisticated natural catastrophe risk models for a range of different region and perils, and the output from these models is used to assess the risk from the annualised climate-related perils to the insurance portfolio. As part of

MS AUL's quarterly reporting, the most significant modelled perils and regions are ranked based on materiality. The materiality ranking is one of the ways the Company identifies the climate-related risks that are most relevant to the business.

MS AUL employs a 'fit for purpose' framework to decide whether a model needs to be reviewed and a number of areas are considered within this framework:

1. A review of the current external validation of a model is undertaken following a model version change. The extent of the validation will be based on proportionality of the model upgrade and the materiality of the peril/ region to MS AUL.
2. If the materiality of a region/ peril significantly increases for MS AUL as result of a changing portfolio (increasing exposures, riskier business etc.), a review of the catastrophe model external validation should be undertaken.
3. Re-validation of a model should occur if a natural catastrophe event for that peril/ region featured significant 'loss-causing factors' which are beyond the current model's scope.
4. A review of MS AUL's use and acceptance of a model will be triggered if expectation of the materiality of a peril/ region fundamentally changes following post-event analysis.
5. Academic consensus is contrary to any of the vendor's

model assumptions or there is significant challenge from the scientific/ academic community to the current catastrophe model, a review of the external validation will be triggered.

MS AUL's proprietary portfolio simulation model allows the flexibility of adjusting the frequency of events to align with current understanding of climate-risk and establish MS AUL's own view of risk. In 2021, MS AUL is participating in the PRA CBES exercise and aims to have assessed and embedded the scenarios by early 2022. Outcomes from the scenarios will be used to inform parameterisation changes to the model going forward. A working group has been established to oversee the CBES activity, with the final report due to undergo appropriate committee and board approval before submission to the PRA via Lloyd's.

The ability to make adjustments to its own view of risk allows MS AUL to react independently to external changes in current and future understanding of climate risk, rather than waiting for a third-party's model version change.

MS AUL's catastrophe modelling resource and processes are graded as "Established" under the Lloyd's Catastrophe Risk Operational Framework ranking, which is the second highest ranking, and reflects the maturity of the embedding of the resource and processes into all relevant aspects of the business and its management.

Investments

With such a rapidly evolving topic as climate risk, the influence of regulators in ensuring the embedding of the necessary governance oversight and data architecture is very important, and welcomed by MS Amlin. MS Amlin investments found the PRA GIST Climate Scenario extremely useful in beginning to shape its research

and technical infrastructure capabilities, and believe the CBES to have even greater potential in this regard. The Assets section of the CBES submission will ultimately be the responsibility of the MS Amlin Investments team to complete.

3.2 Support and undertake research and development to inform current business strategies (including investments) on adapting to and mitigating climate-related issues.

Risk Analytics

Nature Climate Change journal published in April 2021 a comment article by three members of the Risk Analytics team, titled "Normative approach to risk management for insurers". The article debated whether exploratory scenarios, particularly those concerned with climate change, are best suited for business strategies and decisions, and instead proposed the use of normative scenarios relevant to impact thresholds chosen by an insurer as important for the adaptation of its business. The article has attracted significant comments from the scientific and insurance community. MS AUL will continue to develop the normative scenario approach, and is actively engaged with two modelling firms to establish projects to bring quantification to such scenarios in the business context.

The MS AUL Risk Analytics team is engaged with the MS&AD group research company, InterRisk, in their project with Jupiter Intelligence to produce localized climate change impact data for use in risk planning, for strategic and underwriting purposes. Jupiter Intelligence (<https://jupiterintel.com>) is part-funded by MS&AD Venture Capital and is one of the leading climate risk analysis companies working across many sectors.

InterRisk has also carried out a collaborative project with Tokyo University, to produce a global flood map designed to analyse and display the changing frequency of flood events globally as impacted by climate change. This web-based map is free to use https://www.irric.co.jp/risksolution/sustainability/prediction_map/index.php

MS AUL is currently undertaking research into climate change scenarios for use in the PRA 2021 CBES exercise. The Research Manager leading this project is a glaciologist and has previously worked at post-doctoral level in climate change projects at Oxford University.

The MS AUL Research team will publish later in 2021 a chapter in a book, titled Hurricane Risk in a Changing Climate, which is also sponsored by MS AUL and the modelling firm RMS. The book has replaced a symposium with the same title which was due to be held in Miami, for which the organizing committee contains several of the world's leading meteorologists and climate scientists. The main objective of the symposium is to support communication among scientists, engineers, and insurers in order to increase understanding of and better ways to deal with tropical cyclone risks, and this objective will be continued with the book publication. The MS AUL chapter (see appendix) is titled "Downwards Counterfactual Analysis in Insurance Tropical Cyclone Models: a Miami case study", and this looks at new techniques to explore historic events in "worse-case" mode for better risk management and business planning.

MS AUL is a member of the ClimateWise Net Zero Underwriting Taskgroup, which has the objective to investigate the suitability of vendor tools to support the achievement of net zero underwriting. The Taskgroup

will produce a report on its findings to be published around COP26.

In conjunction with the Lighthill Risk Network, MS AUL is sponsoring two research projects to provide data to support business strategies:

1. Tom Philp: A Decision Theoretic Framework for writing Intra-Annual Reinsurance Backup Covers: A NAHU Test Case.
2. Steve Jewson: Converting the Knutson et al. (2020) Tropical Cyclone Climate Change Projections to a Format the Insurance Industry Can Use.

These projects are due to complete in 2022, and are both intended to produce data which can be directly applied to modelling, risk frameworks, and business planning.

Additionally, Risk Analytics has undertaken a number of initiatives previously reported to ClimateWise and noted here for completeness:

- December 2019: MS Amlin CUO participated in roundtable discussions with UK Research and Innovation, covering research needs of the insurance industry including climate change.
- March 2020: supported research report on Scenario Analysis in collaboration with the Lighthill Risk Network and the University of Cambridge.
- June 2020: held Academic Advisory Panel on impacts of climate change on catastrophe modelling.
- 2020: review of RMS European Windstorm model and AIR US Hurricane model, for impact of current climate conditions, leading to an EU WS model adjustment.
- 2020: hosted Lighthill Risk Network workshop on climate change to discuss research initiatives and the development of a climate change data hub for the insurance market.

Investments

Within the Investments team at MS Amlin there is an on-going initiative to obtain and assimilate alternative datasets to inform and enhance the investment process. For reasons of efficiency and transparency, this generally consists of utilising free, publicly available research and data. Climate risk data has been an important recent addition in this area as part of our wider ESG data initiative.

MS Amlin has obtained datasets and research from various sources including the World Resources Institute, HSBC, Climate Central and CRED. The team is in the process of integrating them into the governance framework and investment decision making process. In addition, MS AUL is also working with our custodian to

further develop our understanding of the full climate risk research landscape and data market place.

One of the main data challenges that MS Amlin has faced is, while possible to obtain country-level data readily for a wide variety of metrics, it has proven to be considerably more challenging (and costly) to obtain company specific data. There is also a need to overlay the raw climate risk data with appropriate economic data and other measures that permit critical analysis of a company or countries ability to respond to the risks and opportunities of climate change. Extensive resources are needed to discern the broad forward-looking individual climate risk strategies of the full investment universe of worldwide entities.

into the organisation. The code of conduct includes a statement on Environmental Standards, requiring suppliers to comply with applicable laws and regulations.

MS Amlin's supplier due diligence process includes questions about a supplier's compliance with environmental laws and regulations and a review of supplier's environmental policy. Should this due diligence highlight any concerns, MS Amlin would address these with the supplier with a view to resolving or potentially selecting an alternative supplier.

In addition, MS Amlin continues to align its climate and ESG work through its conscious selection of charitable partners. A key partner is ShelterBox, who work with disaster-hit families around the world, offering emergency shelter and other essential items to support them in rebuilding their lives.

4.2 Disclose our Scope 1 and Scope 2 GHG emissions and Scope 3 GHG emissions using a globally recognised standard.

4.2.1. Disclosing greenhouse gas emissions

Responsibly managing the environmental impact of MS Amlin entities' global office portfolio is one of the key pillars of our operating approach, recognising that the operation of offices includes the generation of carbon emissions, in addition to other key environmental impacts.

MS Amlin quantifies and reports its greenhouse gas emissions (GHG) according to the Greenhouse Gas Protocol Corporate Standard, the International Energy Agency (IEA) emission factors, and the UK Government 2019

1. Scope 1 includes direct carbon emissions from our use of energy from fuels and refrigerant gas refills of office HVAC systems. Scope 2 include indirect emissions from the use of purchased electricity across our own buildings in the portfolio. Scope 3 includes indirect emissions from business related travel (incl. air, rail, vehicle and hotel stays), employee work-related commuting, waste generation, paper and water consumption.
2. Represents location-based emissions.

Environmental Reporting Guidelines. The organisational boundary is consolidated according to the operational control approach. In cases where data was not available, this has been estimated using either extrapolation of available data using floor area from the current reporting period or data from the previous year as a proxy.

This year for the first time, MS Amlin complied with the UK Streamlined Energy & Carbon Reporting (SECR) regulations 2019. This legislation requires quoted and unquoted UK-based organisations to publish annual energy consumption and emissions in the director's report on an annual basis. The graphs below indicate the emissions categories included in the Scope 1, 2 and 3 carbon

emissions and our performance during the reporting year ended 31st December 2020¹. In 2020, MS Amlin's total Scope 1, 2 and 3 emissions were 3,458 tCO₂e. Of this:

- Scope 1 emissions (direct emissions from the combustion of fuels and through fugitive emission releases from the portfolio) equated to 508 tCO₂e (15%);
- Scope 2 emissions (electricity purchased for our own use) equated to 1,020 tCO₂e² on a location-based approach and 179 tCO₂e on a market-based approach;
- Scope 3 emissions from our purchased goods and services, business travel and employee commuting amounted to 1,931 tCO₂e.

Principle 4

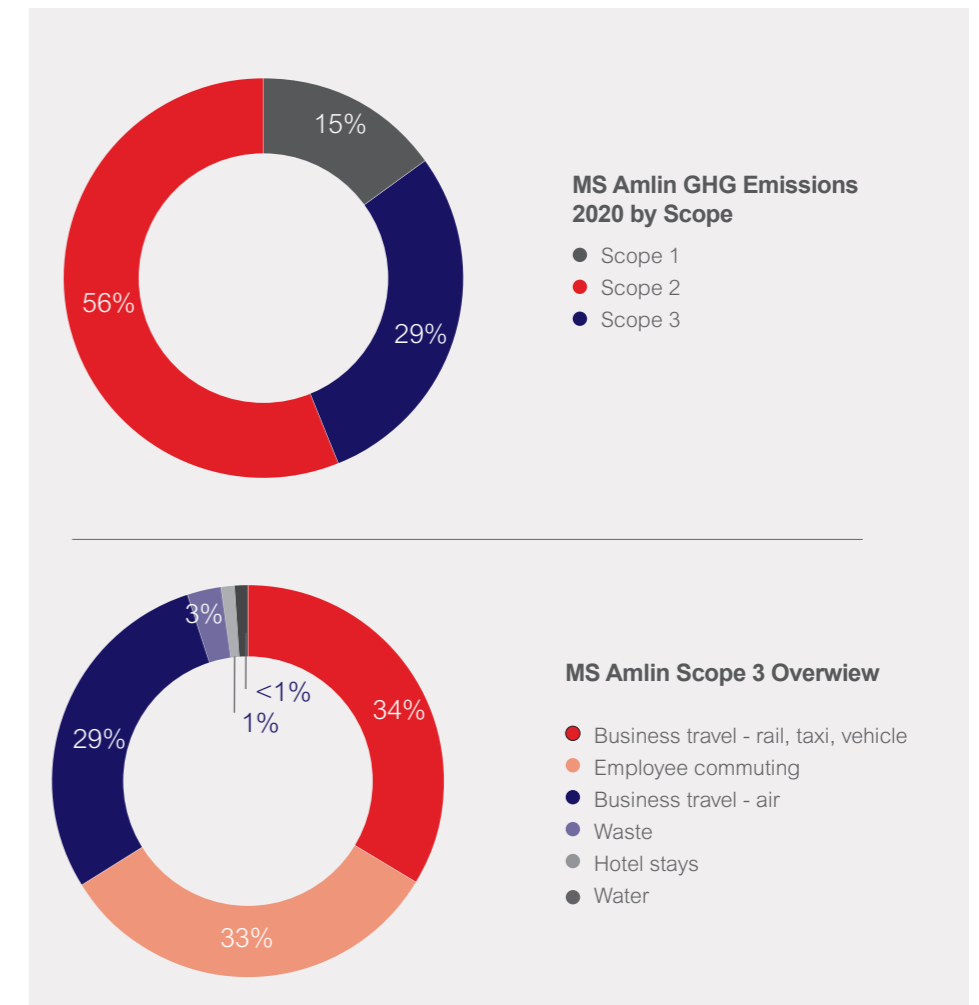
Reduce the environmental impact of our business

4.1 Encourage our suppliers to improve the environmental sustainability of their products and services, and understand the implications these have on our business.

MS Amlin aims to work with suppliers that have sound environmental principals and during the past 12 months has enhanced its procurement policy, standards and processes to develop that aim. The MS Amlin Procurement Policy and Standard contains requirements to include environmental considerations when selecting suppliers to provide goods and services.

MS Amlin have also enhanced the due diligence process to consider environmental issues in tender activities and are reviewing material supplier's environmental statements and policies to ensure they align to expectations.

MS Amlin Procurement has a supplier code of conduct which is put in place with important suppliers as they are on-boarded



Compared with 2019, our total Scope 1 and 2 emissions reduced by 24%, whilst our combined Scope 1,2 and 3 emissions reduced by 59%. Much of these savings come as a result of the disruption to our operations by the ongoing Covid-19 pandemic. MS Amlin's office portfolio was fully closed between March 2020 - July 2020; facilities teams were still accessing the offices during this time, but all staff were based at home. As a result, activities were significantly curtailed, especially international business travel, hotel stays and employee commuting.

Key trends in 2020 were driven by the following:

Scope 1 and 2

- A significant reduction in the consumption of natural gas (-17%) and electricity (-22%), especially in Singapore, France and Switzerland;
- Reduced emissions from electricity consumption across our global portfolio, using in-country decarbonised electricity sources and benefitting from decreased grid emission factor intensity.

Scope 3

- 70% decrease in emissions from employee commuting;
- 40% reduction in total waste generated;
- 83% reduction in emissions from air travel;
- 89% reduction in paper consumption.

Portfolio

- Consolidation of our floorspace to mirror our operational requirements across the portfolio, including the disposal of office space in London resulted in total floor area decreasing by 15% compared with 2019, whilst employee headcount remained relatively stable.
- Reduced demand for energy in-turn led to successful reductions in these reported intensity metrics.
- MS Amlin continues to closely monitor carbon emissions performance annually to track future performance against strategic reduction targets set to benchmark and support the management of its environmental impact.

Table 1: Historical carbon emission performance metrics

	2020	2019	2018	2017	2020 Scope 1, 2 & 3, as % of Total emissions	2020 vs 2019 change
Scope 1 emissions (tCO2e)	507	591	558	499	15%	-16%
Scope 2 emissions (tCO2e)	1,022	1,418	1,503	2,076	29%	-28%
Scope 1 & 2 emissions (tCO2e)	1,529	2,009	2,061	2,575	N/A	-24%
Scope 3 emissions (tCO2e)	1,875	6,340	7,549	10,930	56%	-70%
Total Scope 1, 2 & 3 emissions (tCO2e)	3,405	8,349	9,610	13,505	N/A	-59%
Employee Headcount – FTE	2,025	2,132	2,780	2,761	N/A	-5%
Floor Area – m2	31,786	37,211	37,742	43,555	N/A	-15%
Scope 1 and 2 intensity FTE/CO2e	0.82	0.94	0.73	0.93	N/A	-20%
Scope 1 and 2 intensity m2/CO2e	0.05	0.05	0.05	0.06	N/A	-11%
Scope 1, 2 and 3 intensity FTE/CO2e	1.68	3.92	3.44	4.89	N/A	-57%
Scope 1, 2 and 3 intensity m2/CO2e	0.11	0.22	0.25	0.31	N/A	-52%

Table 1 above highlights MS Amlin's progress on minimising overall carbon impact from the global office portfolio.

4.3 Measure and seek to reduce the environmental impacts of the internal operations and physical assets under our control.

4.3.1. Internal governance

MS Amlin's ESG Forum has senior management representation from across the business. This group, which meets monthly throughout the year provides executive oversight of:

- The impact that climate-related issues may pose to the risk profile of operations, insurance and re-insurance businesses, and
- The corporate response to enhance the resilience of business to related environmental risks.

During 2020, MS Amlin performed an in-depth review of its environment reporting programme. This review sought to solve the challenges faced with growing environmental reporting obligation, greater recognition of the important role that environmental stewardship has in reducing climate risk in the insurance industry, along with enhanced external scrutiny of environmental performance.

A key step identified that was missing in MS Amlin's environmental reporting programme was an effective management information platform, which meant there was limited ability to trend data, monitor performance against targets, benchmark against peers and the industry.

MS Amlin went to the market to identify possible software solutions and commissioned the Building OS platform. which features a secure cloud-based portal, managed by our facilities

management partners Cushman & Wakefield, that can be accessed by authorised personnel anywhere – on laptop, tablet and mobile. It is a fully bespoke, user-friendly platform that makes it easier and faster to turn building data into actionable insight, which leads to cost and carbon savings, through optimising performance.

4.3.2 Environmental performance in 2020

As show in Table 2, key highlights of our performance include:

- Energy usage: Total energy usage was down across the vast majority of properties in the portfolio – in addition to improving data oversight and prioritising energy efficiency where possible, this reduction should be viewed in respect to the fact that majority of our offices was closed between March-July 2020 due to Covid-19.
- Paper usage: In 2020, MS Amlin continued to roll out digital document and communication solutions to support the responsible use of paper across our offices and to support colleagues to reduce their overall paper usage.
- Water: There was a significant reduction in the volume consumed across our portfolio and whilst improving data visibility and promoting water saving where we can, this reduction should be viewed in respect to the fact that the majority of our office portfolio was closed between March-July 2020 due to Covid-19.
- Waste management: In 2020, on average, over 85% of waste generated across our portfolio was diverted from landfill, up from 55% in 2019. Total waste arisings have fallen; however, this reduction should be viewed in respect to the fact that majority of our office portfolio was closed between March-July 2020 due to Covid-19 and therefore most MS Amlin staff were working from home.

- Employee commuting: Between May-June 2021, MS Amlin administered an employee commuter travel and homeworking survey to our employees globally. The survey garnered 562 responses (a response rate of 28%), with the aim of understanding behaviors pre-, during and post-pandemic. Key insights identified include:
 - o A marked shift in primary working location and commuting frequency – >90% of staff respondents used offices more than three times per week prior to the pandemic, which fell to zero or less than once a week during;
 - o Pre-pandemic, walking (33%) and rail journeys (26%) represented our employee's most popular mode of travel to work;
 - o The shift seen in commuter habits is likely to remain as staff opt for a more hybrid working approach, using the office only several days per week going forward. Cycling has become more popular as people avoid rush hour public transport.

This insight will enable us to monitor the return to the office and where possible promote more sustainable behaviours brought about by the pandemic.

Table 2: Historical environmental performance metrics

	2020	2019	2020 vs 2019 change
Energy			
Energy use from combustion of gas and other fuels (kWh)	2,434,974	2,925,275	-17%
Energy use from consumption of electricity purchased for own use (kWh)	4,319,334	5,549,479	-22%
Paper			
Total paper usage (kgs)	4,024	32,030	-89%
Waste			
General waste to landfill	30	111	-39%
Waste diverted from landfill – Incineration	31	65	-52%
Waste diverted from landfill - Recycled	127	161	-73%
Total waste disposed of (tonnes)	188	337	-40%
Water			
Total water consumption (m³)	13,872	21,452	-35%

4.3.3. Emissions reductions and environmental targets

In-line with MS Amlin's commitment to support society's response to the impact of climate-related issues, the company undertook a strategic evaluation of the global office portfolio in 2020 to identify opportunities in support of reducing the company environmental impact, and strengthen alignment with the sustainability ambition of our parent company MS&AD.

These were developed in consultation with internal MS Amlin stakeholders.

The outcome of the exercise was the development of a suite of draft short-, medium- and long-term energy and carbon emission targets up to 2030. These aim to guide our efforts to reduce emissions through the efficient operation of our estate and adapting the workplace behaviour of our employees

across MS Amlin's global portfolio. At this stage of our sustainability journey, MS Amlin aims to set achievable short-term targets aligned with industry best-practice through the development of an internal sustainability programme overseen by MS Amlin's Group Property Services. Material environmental impacts have been reviewed and efforts made to set key targets across a wide range of environmental metrics within our direct control.

These draft environmental targets are summarised in Table 3 below. These draft targets have been issued to MS Amlin Entity Boards and are currently under review for approval. Throughout 2020, our priority has been to develop a process of measuring performance against these draft short-term targets on an annual basis and rollout corresponding initiatives across our office portfolio.

The draft short-term reduction targets include a 5% reduction in our overall energy consumption across our portfolio by the end of 2021. MS Amlin also recognises that business-related travel represents a significant source of emissions associated with our business. Consequently, a draft short-term travel focused target to achieve a 10% reduction in air travel emissions by end of 2021 has been prepared. This reduction target is complemented by MS Amlin's commitment to support employees to reduce emissions associated with their work-related commuting.

The medium- and long-term draft targets build on the aspiration of the short-term targets to achieve the following reductions:

- A 20% reduction in energy consumption across portfolio by end of 2025.
- Further aiming to reduce the impact of our air travel, with a 20% reduction in air travel emissions by end of 2025.
- Support Amlin employees to achieve a 10% reduction in emissions associated with

- commuting to work by end of 2025, and
- Our long-term aspiration to achieve a 40% reduction in Scope 1 & 2 carbon emissions across portfolio by end of 2030, whilst setting of a net-zero emissions reduction target up to 2030.

MS Amlin anticipates rolling out these targets out across our portfolio over the next two years. The development of our draft long-term Scope 1 & 2 emission reduction target was informed

by the Science Based Targets initiative (SBTi) methodology and is aligned with the decarbonisation pathway required for the well below 2°C climate scenario. MS Amlin will explore the submission of our emission reduction targets to the SBTi for approval within the next two years.

Even though not all the targets have been fully adopted, MS Amlin has still seen progress made against them in 2020. Table 3 provides our annual progress update for 2020.

Table 3: Draft environmental targets, designed to manage the environmental impact of our global portfolio

Target timeframe	#	Draft environmental targets	Progress in 2020	Achieved/on track
Short-term, up to 2021	1.1	By end of 2020, aim to source at least 90% of paper consumed from recycled or sustainable sources, where a supply contract is in-place.	Complete	Achieved
	1.2	Remove single-use plastics from offices across portfolio by end of 2021.	Underway	On track
	1.3	Ensure office-based recycling amenities available across all portfolio assets, by end of 2021.	Underway	On track
	1.4	Establish internal network of sustainability champions across portfolio by end of 2021 to drive sustainability performance across the assets.	Workstream to be initiated in Q3 2021	On track
	1.5	Commit to ensuring that 100% of portfolio assets to have dedicated environmental sustainability plan by end of 2021.	Workstream to be initiated in July 2021	On track
Medium-term, up to 2025	2.1	40% reduction in Scope 1 & 2 carbon emissions across portfolio by end of 2030	-24%	On track
	2.2	Set net-zero emissions reduction target up to 2030		In planning
	2.3	Adopt paperless approach across all portfolio assets by 2030		In planning
	2.4	Achieve at least 90% waste diversion from landfill, through primary disposal route, by 2030	-84%	On track
Long-term, up to 2030	3.1	40% reduction in Scope 1 & 2 carbon emissions across portfolio by end of 2030	-24%	On track
	3.2	Set net-zero emissions reduction target up to 2030		In planning
	3.3	Adopt paperless approach across all portfolio assets by 2030		In planning
	3.4	Achieve at least 90% waste diversion from landfill, through primary disposal route, by 2030	-84%	On track

The objectives underlying our long-term response to manage our environmental impacts are captured in Table 4 overleaf.

4.3.4. Roadmap to guide progress and achieve emissions reductions

To support the realisation of our draft short, medium, and long-term energy & emission reduction targets, MS Amlin has begun developing a clear roadmap that will guide the proposed actions needed to achieve these commitments.

The roadmap for our draft long-term Scope 1 & 2 emission reduction targets considers:

- Implementing all energy savings opportunities identified through compliance with the EU's Energy Efficiency Directive; and
- Exploring energy decarbonisation opportunities across our portfolio.

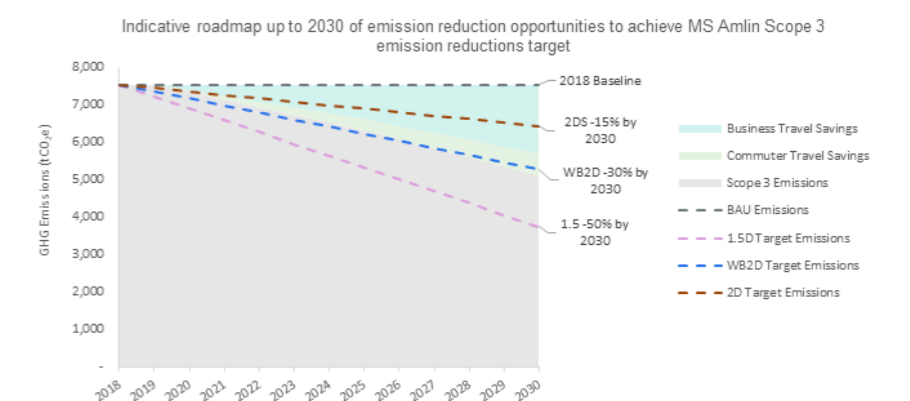
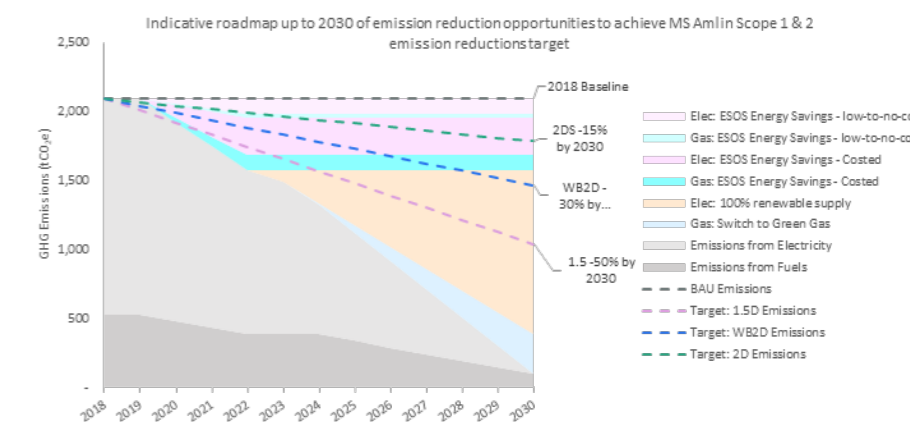
The graph below demonstrates some of the suite of opportunities that could be adopted to reduce our Scope 3 travel-related emissions from business travel and commuter travel. The indicative roadmap will be complemented by a series of initiatives to support our employees to reduce emissions from their business travel and employee commuting.

This will be complemented by the active implementation of our travel policy for business travel, through a centralised travel partner. This policy mandates the selection of lower carbon-intensive flight modes for business travel and restricts Business Class flights to journeys of more than 8 hours. In parallel, MS Amlin also continue to invest in and roll-out of standardised digital and video conferencing technologies across the office portfolio. This ensures employees have the tools to adapt their approach to engage colleagues and clients.

Employee commuting remains an on-going focus. MS Amlin will continue to address this through regular internal engagement to encourage the reduction of commuting and adoption of alternative travel options. These include, for example:

Table 4: Long-term environmental sustainability objectives

Pillar	Objectives
Leadership	Investigate the feasibility of developing a pathway for MS Amlin to 'net-zero' by the end of 2030
Benchmarking & Disclosure	Continue to voluntarily disclose our environmental performance to key stakeholders annually against industry benchmarks, where applicable
Compliance	Manage our compliance risks, going beyond minimum requirements
Stakeholder Engagement	Ensure our staff are engaged and appropriately trained on strategic environmental priorities, with clear accountability to do the right thing. Ensure our supply chain partners clearly understand our sustainability priorities. Ensure our customers are engaged on climate-related issues that may present risks & opportunities for consideration.
Asset improvement	Rollout action plans to enable a robust programme of environmental initiatives across the portfolio with environmental impact reported and monitored.



- Promoting flexible working arrangements through our "Work Life Better" initiative.
- Where commuting journeys are essential, employees are encouraged to adopt alternative modes of transport (e.g. greater use of public transport and maximising off-peak travel commuting).

In-line with the Greenhouse Gas Protocol Scope 3 Standard, MS Amlin will continue to review the activities of the business on an on-going basis to identify additional Scope 3 emission categories that may be relevant. MS Amlin will determine how to appropriately include these as part of on-going climate-related disclosures, and target setting.

4.4 Engage our employees on our commitment to address climate change, helping them to play their role in meeting this commitment in the workplace and encouraging them to make climate-informed choices outside work.

Based on MS Amlin's parent group mission "Contributing to the development of a vibrant society and help secure a sound future for the planet, by enabling safety and peace of mind through the global insurance and financial services business.", the MS&AD Insurance Group has set a goal of Net Zero CO2 emissions by FY 2050 to resolve the global risk of climate change. In order to achieve the goal, the parent group has also set 2030 interim targets for CO2 emission reduction and renewable energy to be achieved across the group.

It is only with the support of the company's employees, who play a vital role in addressing climate change in the workplace and by making informed broader lifestyle choices, that this commitment can be achieved.

Ongoing activities to engage employees and help them play their role in meeting climate change commitments include:

- Communications**
 Internal channels such as the intranet, email and Yammer are used for employee communications and information sharing on climate related events, research, reports and stories. The senior leadership team also host quarterly Townhall meetings and 'Connect with the Exec' sessions, where sustainability and MS Amlin's response to climate change are a regular agenda item and discussion topic. The communications team are currently working to develop a comms and engagement plan to support the evolving ESG strategy and engage employees.
- Remote working**
 MS Amlin has communicated to all employees that the future approach to office/homeworking will be a hybrid model. This means each employees has a choice about how, when and where they work. The benefits to employees is a better work/life balance and with less time spent commuting and for the company, scope 3 emissions will be reduced.

- Technology**
 MS Amlin continues to invest in and roll-out digital and video conferencing technologies across the office portfolio. During 2020-2021 all employees also received new, more efficient, laptops to ensure they have the tools to adapt to new working practices, including conducting remote meetings without the need to travel.
- Waste and paper**
 MS Amlin continues to promote the adoption of digital working methods and has begun to cut down the number of printing/photocopy machines to discourage unnecessary printing. Paper currently used is sourced from sustainable sources. MS Amlin also continues to rollout a recycling programme across all offices, encouraging staff to separate materials for recycling and therefore divert waste from landfill. Disposable plastics such as cups, straws and cutlery have all been removed with employees encouraged to use water taps and reusable bottles/coffee cups to reduce waste.



Principle 5:

Inform public policy making

5.1 Promote and actively engage in public debate on climate-related issues and the need for action. Work with policy makers locally, regionally, nationally and internationally to help them develop and maintain an economy that is resilient to climate risk.

MS Amlin is a member of The Reinsurance Association of America (RAA), one of the leading trade associations of property and casualty reinsurers doing business in the United States. The RAA is an active advocate for reinsurance interests before state regulators and legislators, who directly regulate the insurance business. At the federal level, the RAA actively lobbies on insurance and reinsurance regulatory issues, engaging in a variety of activities that serve its members and affiliates by representing their collective interests, as well as providing information and analysis to audiences outside the industry.

MS Amlin is a member of the Insurance Development Forum which aims to optimise and extend the use of insurance and its related risk management capabilities to build greater resilience and protection for people, communities, businesses, and public institutions that are vulnerable to disasters and their associated economic shocks.

In addition to the main IDF Steering Committee, MS Amlin is represented on the IDF Risk Modelling Steering Group, giving practical advice to the RMSG development of a non-profit Risk Modelling Alliance, including commentary on operations,

strategy, research, governance, and data. The Risk Modelling Alliance is intended to fast-track the availability of newly developed hazard models for developing and "protection gap" countries (ie where insurance penetration is very low), enabling governments in these regions to respond rapidly to climate change impacts by arranging risk transfer products where traditional insurance is unavailable. In the last century, the development path for new models and risk transfer products was beset with intellectual property ownership issues, conflicts of interest, and lack of operating structure, which meant, in some cases, that it could take more than a decade for the first practical outcome on a particular project. The Risk Modelling Alliance as a non-profit group is able to remove or substantially reduce these barriers, and reduce the development path to years or even months.

MS Amlin is a member of The Disaster Risk Facility (DRF) consortium, a group formed of Lloyd's syndicates, which offers insurance and reinsurance capacity against natural catastrophe for protection gap countries and regions. The consortium provides access to the collective underwriting expertise of Lloyd's members to help developing economies build resilience to disaster, climate and weather risks.

The key benefits of the facility:

- Up to \$445m of capacity on a per risk, per region basis
- Ease of access to the pooled knowledge, expertise and resources of the consortium members

- Local contacts through Lloyd's global platforms

MS Amlin is represented on the Lloyd's Market Climate Risk working group (CRWG). The primary aim for the CRWG is to coordinate stakeholder groups that contribute to the Lloyd's market's ability to demonstrate an understanding of the facets of the financial impacts that may arise from climate change and to liaise with the other applicable LMA Committees and Working Groups to encompass key market issues. These include regulatory disclosure, scenario development and best practice guidance, where appropriate, in relation to climate change-related issues. The CRWG also acts as a conduit with LMA's ESG Working Group and the Corporation of Lloyd's to facilitate market input into Lloyd's market guidance and external stakeholder engagements and public positions.

The MS AUL Research Manager is a member of the Cat Risk Climate Change Group established in 2021, which is a group of Insurance Research Managers and Risk Managers dedicated to research initiatives and engagement with the industry and the scientific community.

Additionally, Risk Analytics has undertaken a number of initiatives previously reported to ClimateWise and noted here for completeness:

- December 2019: MS Amlin CUO participated in roundtable discussions with UK Research and Innovation, covering research needs of the insurance industry including climate change.

- March 2020: supported research report on Scenario Analysis in collaboration with the Lighthill Risk Network and the University of Cambridge.

MS Amlin is also represented on key Lloyd's Market Association (LMA) committees with high engagement in climate change challenges. Our purpose on the LMA committees is to actively contribute to the ongoing conversation and help identify and resolve issues facing the market. This work is very much done in partnership with Lloyd's and the other market associations to influence initiatives and outcomes. Julian Samuel (Head of Natural Resources) is a member of the Lloyd's Sustainability sub-committee working group, which is seconded to the Joint Rig Committee, representing the interests of insurers writing offshore energy risks in London, but looking to find solutions suitable to a multi class audience. Matthew Radbourne is currently the Deputy Chairman of the LMA Joint Power Committee and a member of the LMA Renewable Energy Sub-committee. He also sits on the Sustainable Underwriting Group Committee which is working with other Lloyd's members to put a framework around the Corporation's future strategy.

5.2 Support and undertake research on climate change to inform our business strategies and help to protect our customers' and other stakeholders' interests. Where appropriate, share this research with scientists, society, business, governments and NGOs in order to advance a common interest.

As outlined in Section 3.2, MS Amlin is involved in a number of climate change research activities including:

- Supporting and funding climate change research via the Lighthill Risk Network (<https://lighthillrisknetwork.org/>)
- Supporting academic research and collaboration via the MS Amin Academic Advisory Panel.
- The development of bespoke view of catastrophe (and climate) risk through the evaluation and adjustment of catastrophe models
- Publication in leading scientific journals and books.

Highlights from the last 12 months and ongoing projects include:

- Nature Climate Change journal published in April 2021 a comment article by three members of the Risk Analytics team, titled "Normative approach to risk management for insurers" (see appendix). The article debated whether exploratory scenarios, particularly those concerned with climate change, are best suited for business strategies and decisions, and instead proposed the use of normative scenarios relevant to impact thresholds chosen by an insurer as important for the

adaptation of its business. The article has attracted significant comments from the scientific and insurance community. MS AUL will continue to develop the normative scenario approach, and is actively engaged with two modelling firms to establish projects to bring quantification to such scenarios in the business context.

- The MS AUL Research team will publish later in 2021 a peer-reviewed chapter in a book, titled Hurricane Risk in a Changing Climate, which is also sponsored by MS AUL and the modelling firm RMS. The book has replaced a symposium with the same title which was due to be held in Miami, for which the organizing committee contains several of the world's leading meteorologists and climate scientists. The main objective of the symposium is to support communication among scientists, engineers, and insurers in order to increase understanding of and better ways to deal with tropical cyclone risks, and this objective will be continued with the book publication. The MS AUL chapter (see appendix) is titled "Downwards Counterfactual Analysis in Insurance Tropical Cyclone Models: a Miami case study", and this looks at new techniques to explore historic events in "worse-case" mode for better risk management and business planning.
- In conjunction with the Lighthill Risk Network, MS AUL is sponsoring two research projects to provide data to support business strategies:
 1. Tom Philp: A Decision Theoretic Framework for writing Intra-Annual Reinsurance Backup Covers: A NAHU Test Case.
 2. Steve Jewson: Converting the Knutson et al. (2020) Tropical

Cyclone Climate Change Projections to a Format the Insurance Industry Can Use.

These projects are due to complete in 2022, and are both intended to produce data which can be directly applied to modelling, risk frameworks, and business planning.

Additionally, Risk Analytics has undertaken a number of initiatives previously reported to ClimateWise and noted here for completeness:

- December 2019: MS Amlin CUO participated in roundtable discussions with UK Research and Innovation, covering research needs of the insurance industry including climate change.
- March 2020: supported research report on Scenario Analysis in collaboration with the Lighthill Risk Network and the University of Cambridge.
- June 2020: held Academic Advisory Panel on impacts of climate change on catastrophe modelling.
- 2020: review of RMS European Windstorm model and AIR US Hurricane model, for impact of current climate conditions, leading to an EU WS model adjustment.
- 2020: hosted Lighthill Risk Network workshop on climate change to discuss research initiatives and the development of a climate change data hub for the insurance market.

Principle 6:

Support climate awareness amongst our customers/clients

6.1 Communicate our beliefs and strategy on climate-related issues to our customers/clients.

MS AUL's parent group, MS&AD, announced an initiative in May 2021 to achieve Net Zero by 2050 for the Group. The initiative refers only to MS&AD's direct carbon footprint, while the definition and practical implications surrounding a Net Zero Underwriting commitment remain part of an ongoing assessment. The initiative does however seek a "Reduction in CO2 Emissions in Society working with Stakeholders". With a commitment to continue to engage with stakeholders to promote risk recognition, provide solutions to reduce CO2 emissions, and provide adaptation measures to cope with the effects of climate change, and create a more resilient society.

Full details can be found in the statement on the MS&AD Group press release and website <https://www.ms-ad-hd.com/en/csr.html>

The Natural Resources team at MS AUL has begun working on a measurement matrix through which it can assess the progress of clients on their transition journey. The aim of this matrix is to facilitate open discussion, encouraging positive changes to

help support all our clients on their journey. A key part of MSAUL's climate strategy is to work with closely with our clients, so the business understands how best it can assist them, as their insurer, in their transition towards a zero carbon future.

6.2 Inform our customers/clients of climate-related risk and provide support and tools so that they can assess their own levels of risk.

In June 2021, MS Amlin shared research with customers/clients by publishing a statement overview of the 2021 hurricane season forecasts. The report correlated forecast data from more than 20 research groups, private companies and universities which (on 9 June 2021) called for an above average season, with a mean forecast of 17 named storms, 8 hurricanes and 4 major hurricanes. All reports on atmospheric perils published by MS Amlin, including this one, now automatically include commentary on the potential impact of climate change to the perils in question.

MS Amlin continues to develop the Chart Magazine area on its website which features articles, interviews and insights from a variety of sources on topical issues and future innovations for businesses,

people and society. Climate change is a key theme for content and in the past 12 months research and articles have been shared that cover thought-provoking topics such as:

- **Why are grey whales starving?**
- A 2020 study found a correlation between a reduction of sea ice in the Bering Sea and grey whale calving rates in Mexico
- **Imminent disaster in the Red Sea** - Urgent action is needed to stop a million barrels of oil spilling from an abandoned vessel into the Red Sea.
- **High-tech ship's hull coatings** - New ship's hull coatings promise to increase speed, reduce fuel consumption and eliminate marine growth.
- **The next generation of solar panels** - A new type of solar panel – lighter, more efficient and easier to manufacture – threatens to disrupt the renewable energy industry.
- **Bamboo as a steel replacement**
- A radical new treatment for bamboo could see this natural product used instead of steel in the transport and construction industries.
- **Why are they filling New York Harbour with a billion oysters?**
Pollution had stripped New York Harbour of its native oyster population. Now volunteers are working to bring them back. A billion of them.

In addition to being hosted on MS Amlin's website, content is also shared with customer/clients across social media platforms, and through direct email communications.

Principle 7:

Enhance reporting

7.1 Submission against the ClimateWise Principles.

Being a founder signatory to the ClimateWise initiative, MS Amlin continues to value the opportunity to collaborate with other industry practitioners to support the climate change agenda and since 2007 has reported annually against the ClimateWise Principles as one of the ways to demonstrate its contribution and commitment year on year.

MS Amlin's submission report for the ClimateWise Principles is currently made via the Lloyd's umbrella ClimateWise membership, but from 2022 it will be reporting independently.

7.2 Publish a statement as part of our annual reporting detailing the actions that have been taken on these principles. own levels of risk.

MS Amlin publishes a copy of its ClimateWise report on its website <https://www.msamlin.com> and employee intranet to demonstrate ongoing commitment to the ClimateWise Principles

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