



NEW YORK
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Department of
Financial Services

New York Domestic Insurers' Management of the Financial Risks from Climate Change

**AN ANALYSIS OF NAIC CLIMATE RISK DISCLOSURE SURVEY
RESPONSES AND OTHER REPORTING**

ISSUED IN JULY 2021

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Executive Summary

Introduction and Methodology

Climate change poses wide-ranging and material risks to the financial system. This is especially true for the insurance industry, where the physical and transition risks resulting from climate change affect both sides of insurers' balance sheet—assets and liabilities—as well as their business models. Climate change also presents tremendous opportunities for insurers, which play a critical role in the management of climate-related financial risks (“climate risks”) in their capacity as risk managers, risk carriers, and investors. Globally, there is an increasing focus on climate-related disclosure. Insurers are likely to face stronger disclosure requirements on climate risks.

To support the journey of New York domestic insurers (“insurers”) in managing climate risks, the New York Department of Financial Services (“DFS”) issued proposed [Guidance for New York Domestic Insurers on Managing the Financial Risks from Climate Change](#) (“Guidance”) in March and a report titled [An Analysis of New York Domestic Insurers' Exposure to Transition Risks and Opportunities from Climate Change](#) in June. In addition, DFS has analyzed insurers' 2020 responses to the National Association of Insurance Commissioners (“NAIC”) Climate Risk Disclosure Survey (“Survey”), as well as their Task Force on Climate-related Financial Disclosures (“TCFD”) reports, in order to share with the industry the current status of insurers' management of climate risks and examples of good practices adopted by insurers for managing those risks.¹ The analysis covered 121 insurer Survey responses and eight TCFD reports submitted in 2020 by a total of 93 groups and non-affiliated companies, representing insurers with annual countrywide premiums ranging from \$100 million to close to \$100 billion.

The NAIC adopted and first issued the Survey in 2010. Comprised of eight questions, the Survey was designed to serve as an insurer reporting mechanism to provide regulators with insight into the assessment and management of climate change risks by insurers across all lines of business.² The Survey instructions, questions, sub-questions, and responses can be accessed on the California Department of Insurance's [website](#). Six states, including New York, have been administering the Survey to all insurance companies licensed in these states that wrote at least \$100 million in annual premium. In 2021, eight more states and the District of Columbia began administering the Survey as well. Insurers within the same group can submit the same response. The Survey currently covers more than 1,000 insurers and captures more than 70% of the U.S. insurance market. Starting in 2019, insurers have been allowed to submit reports conforming to the TCFD in lieu of responding to the Survey. In 2020, eight insurance groups opted to do so.

DFS developed a framework to rate insurers' responses to each of the eight questions in the Survey, with input from the NAIC Center for Insurance Policy and Research. **Insurers were rated in one of four categories—“Yet to Start,” “Early Stage,” “Making Progress,” or “Good Progress”—and a numeric score was assigned to each rating.** The eight questions were grouped into five themes: risk culture and governance, risk management, modeling and scenario analysis, stakeholder engagement, and internal greenhouse gas (“GHG”) management. A composite rating for all the questions was calculated.

¹ As practices for managing climate risks are constantly evolving, we use the term “good practices” rather than “best practices” in this report.

² California Department of Insurance, [NAIC Climate Risk Disclosure Survey](#), Accessed March 8, 2021.

This report also provides examples of good practices for managing climate risks. In addition to the five themes above, practices relating to two additional themes, “Business Models and Strategies” and “Metrics and Targets,” are also included to align with the sections in the proposed Guidance and TCFD recommendations.

DFS intends to review insurers’ Survey responses and other disclosure materials to:

1. Understand insurers’ overall status in identifying, assessing, and managing climate risks,
2. Identify good practices that can be shared with the industry, and
3. Support risk-based supervision by identifying insurers that appear to lag, generally or in a specific area, compared to their peers.

Insurers’ ratings will be used only for DFS’s supervisory purposes and will not be publicly disclosed.

Current Status of Insurers on Managing Climate Risks

The 2020 responses to the Survey and the TCFD reports showed that insurers had a wide range of sophistication in their understanding, assessment, and management of climate risks. When weighted by premium, the composite ratings and the ratings for most of the themes covered by the Survey questions were around 3 in the “Making Progress” category, as shown in Figure A. Insurers were best at managing their internal GHG emissions relative to the other four themes. Property and Casualty (“P&C”) and Life insurers overall showed more awareness of and had taken more actions to manage climate risks than Health insurers, which had the largest percentage of groups/unaffiliated companies in the “Early Stage” and “Yet to Start” categories. P&C insurers were more advanced on modeling and scenario analysis than Life and Health insurers and, with few exceptions, large or international insurance groups were generally more advanced than small or U.S.-based insurers. This can be seen in Figures B and C, where the percentage of groups/unaffiliated companies in the “Good Progress” category based on numbers was smaller than the percentage of groups/unaffiliated companies in that category based on group countrywide premiums.

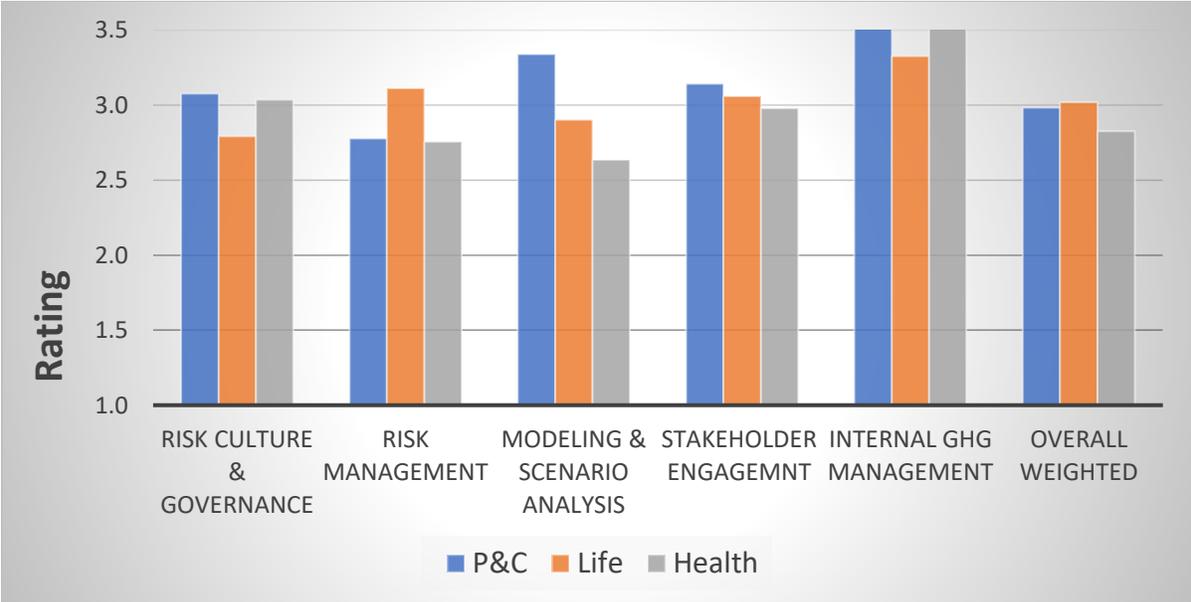


Figure A. Premium-Weighted Ratings for Insurers Across the Five Themes



Figure B. Composite Ratings Across Insurance Lines (Percentage of Groups/Unaffiliated Companies by Number)

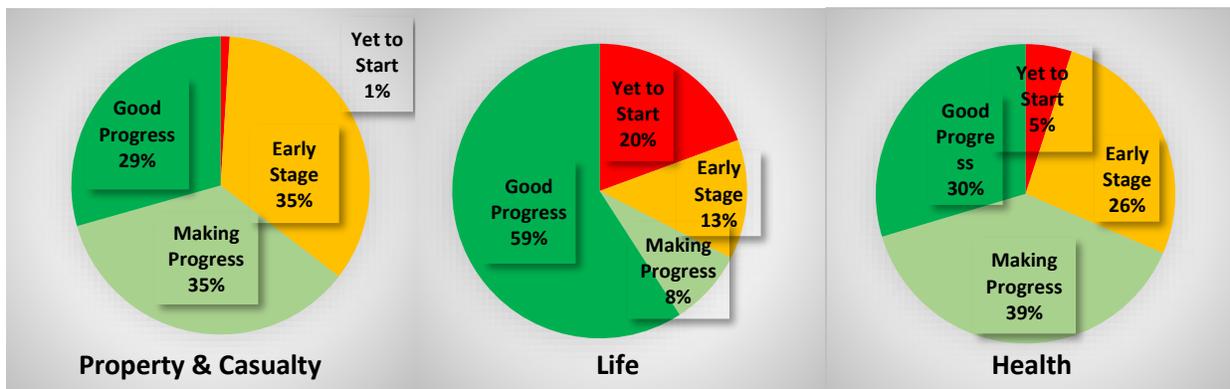


Figure C. Composite Ratings Across Insurance Lines (Percentage of Groups/Unaffiliated Companies' Aggregate Countrywide Premiums)

The more advanced insurers have already taken actions that are aligned with DFS's expectations as set forth in the proposed Guidance.

Risk Culture and Governance

Leading insurers designated appropriate committee(s) of the board and senior management function as responsible for climate risks, established internal cross-functional climate risk committees, brought climate expertise to the board, and used remuneration policies to align incentives.

Business Models and Strategies

Leading insurers viewed understanding, managing, and disclosing climate risks as an important part of maintaining their long-term profitability. Many of these insurers have established responsible investment or climate change investment strategies, which often include active ownership (i.e., engaging with investee companies to push them to be more sustainable), green bonds, and a comprehensive approach on environmental, social, and governance ("ESG") integration. Some viewed investments targeting climate change mitigation or adaptation activities as helpful in reducing climate risks through their targeted positive impact and offering a financial return commensurate with risks.

Risk Management

Leading insurers developed frameworks for identifying, assessing, monitoring, managing, and reporting climate risks as part of their enterprise risk management ("ERM") programs. The impact of climate

change on regulatory, strategic, physical, investment, and underwriting risks was evaluated regularly through these programs, including as part of the process for assessing emerging risks. Leading insurers considered both physical and transition risks on current and future investments, as well as the timeframe in which climate risks might manifest relative to the maturity of their fixed income investments.

Common practices for insurers in the “Good Progress” category in connection with their investments included:

1. Applying an internal or external ESG scoring process in their investment decision-making. For example, one group reported more than 89% of its equity, 95% of its corporate debt and sovereign debt, and 74% of its real estate investments had ESG scoring. Another group reported that it evaluated investments using a broad range of climate and carbon-related data and indicators.
2. For those that used external managers, requiring third-party asset managers to consider climate risks in their investment process and report back to the insurers on their policies and procedures related to the incorporation of climate or ESG risk factors. The process for managing climate/ESG risks was often considered when selecting third-party managers. Many of the third-party managers were signatories of the Principles for Responsible Investments, a United Nations-supported network of investors working to promote sustainable investment.
3. Making meaningful investments in climate solutions, such as renewable energy.
4. Offering ESG or responsible investment funds to its customers. Several insurers viewed the ESG lens as a competitive advantage.
5. Setting GHG emission reduction targets for their proprietary investment portfolios so that they are in line with science-based emission reduction targets as set forth by the Science Based Targets initiative, with all tradable proprietary investments structured as climate-neutral by 2050. This was done mostly by European groups.
6. Actively engaging with investee companies on their exposure to and management of climate risks. This was also done mostly by European groups.

Several groups also proactively helped customers and investee companies decarbonize.

Leading P&C insurers analyzed how both the transition and physical risks from climate change impact the various lines of their underwriting businesses, including property, general liability, directors and officers, environmental, aviation, marine, and energy insurance. One group recognized that, **in a transition scenario, sectors that are difficult to decarbonize could experience stranded assets, which could result in liquidity shortages that lead to a lack of maintenance**, with increasing rates of outages and equipment breakdowns, **translating into higher insurance losses**. In addition to implementing coal exclusion policies relating to their investments, several P&C insurance groups had exclusion policies on coal or oil underwriting. Some had a clear timeline of completely phasing out the underwriting of coal and the most carbon-intensive oil & gas companies. Leading P&C insurers also included climate risk analysis in their ORSAs and considered the correlation between the impact of climate risks on their assets and the impact on their liabilities.

Modeling and Scenario Analysis

Leading insurers, particularly P&C insurers, have been using sophisticated models and a broad range of data to assess climate risks. Some leading P&C insurers customized commercial catastrophe models to

be more forward-looking and analyze their underwriting scenarios over several decades. Several insurers conducted scenario analysis that considered the impact of physical and transition risks under various scenarios using both short- and long-term time horizons. These climate scenarios include:

- Foundational climate physics and socioeconomic models, including scenarios from [the International Panel on Climate Change](#) for carbon emission trajectories and associated global average temperature, [the International Energy Agency](#) (“IEA”) for global energy transition, and [Integrated Assessment Models](#) for linking temperature projections with socioeconomic factors.
- Financial supervisors’ scenarios, such as [Network for Greening the Financial System \(NGFS\) climate scenarios](#) and Bank of England’s [biennial exploratory scenario](#).³
- Government policy response scenarios, such as [The Inevitable Policy Response](#), which describes the likely government policy responses to climate change.

Some insurers used off-the-shelf tools, such as the [Paris Agreement Capital Transition Assessment](#), which integrates IEA scenarios into their investment portfolio analysis.

Metrics and Targets

Several European and Australian-headquartered groups are members of the [Net Zero Asset Owner Alliance](#), whose members commit to transition their investment portfolios to net-zero GHG emissions by 2050. These groups, as well as several U.S. groups, set **time-bound targets for investments** and **disclosed metrics**, such as:

- dollar amount in green investments, transition bonds, or other climate solutions,
- carbon footprint of investment portfolio (in tons of CO₂-equivalent/\$),
- tons of CO₂-equivalent emissions avoided (in tons of CO₂-equivalent),
- percentage reduction in carbon footprint of investment portfolio (in %),
- implied warming potential of the investment portfolio (in °C),
- transition risk cost as a percentage of revenue affected under certain temperature scenarios (in %),
- loss in the real asset portfolio due to physical risks such as floods and windstorms (in % or \$), and
- climate value at risk (\$ or % of portfolio).

Some insurers that have coal or oil sand exclusion or divestment policies also disclosed:

- percentage exposure in a certain industry, such as coal or oil sand, at a certain time,
- the amount of investment divested,
- the amount of gross written premium phased out, and
- the number of firms reviewed pursuant to those policies.

Leading insurers quantified and set targets related to their Scopes 1, 2, and 3⁴ emissions.

³ Since the submission of the Survey responses, both NGFS and Bank of England have updated their climate scenarios: [NGFS publishes the second vintage of climate scenarios for forward looking climate risks assessment](#), NGFS, June 7, 2021; [The 2021 Climate Biennial Exploratory Scenario](#), Bank of England, accessed on June 7, 2021.

⁴ Scope 1 covers direct emissions from owned or controlled sources. Scope 2 covers indirect emissions from the generation of purchased electricity, steam, heating, and cooling consumed by the reporting company. Scope 3 includes all other indirect emissions that occur in a company’s value chain. Source: [Briefing: What are Scope 3 emissions?](#), Carbon Trust, accessed on May 19, 2021.

Fewer P&C insurers set targets related to underwriting than they had for investments. However, several U.S. and international groups set targets such as:

- maximum threshold of revenue generated from underwriting coal-based businesses,
- revenue generated from sustainable solution products, and
- number of sustainable solution products.

Stakeholder Engagement

One good practice common across all insurers was to engage employees and third parties, including members of their supply chain and other business affiliates, on climate issues. Insurers recognized their unique role and responsibility to educate stakeholders and support individual “green” efforts. Several insurers discussed their annual sustainability publications or disclosure through [CDP](#) as a tool of engagement for policyholders, employees, and industry partners. Insurers also participated in various industry networks or organizations that promote awareness of climate risks by their constituents and the public. Some insurers even started these organizations.

P&C insurers are uniquely positioned to directly benefit from actions by policyholders to reduce losses from climate-influenced events and many of them incentivize their policyholders to take such actions. Several groups offered discounts for Insurance Institute for Business and Home Safety (“IBHS”) fortified homes, homes with hurricane shutters, and homes with high building code enforcement construction. Some insurers helped policyholders with disaster preparedness or collaborated with IBHS to educate insurance agents and policyholders on natural disasters and how to prepare for them.

Internal GHG Management

Insurers that were rated as “Good Progress” had internal GHG management plans in place that accounted for their operational needs and business structures, set goals for emissions, and tracked progress through specific metrics. Some also had teams or councils to oversee their GHG emissions reduction programs.

Climate Change, Human Health, and Health Insurers’ Status

Climate change is a threat not only to physical assets but to human life and health as well. The 2016 U.S. Climate and Health Assessment shows that climate change affects human health by:

- (1) changing the severity or frequency of health problems that are already affected by climate or weather factors, and
- (2) creating unprecedented or unanticipated health problems or health threats in places where they have not previously occurred, such as Lyme disease spreading to new areas that used to be too cold for ticks to survive.⁵

Out of the 16 Health groups/unaffiliated companies analyzed for purposes of this report, **only five recognized the impact that climate change might have on human health**, such as leading to sicker populations, an increase in the prevalence and spread of infectious diseases, and more cases of respiratory conditions. Of the five groups, only three had any detailed discussion on the point. Two of these groups also described actions to manage the potential risks from climate change on their liabilities, but these descriptions were much less detailed than those provided by P&C insurers. Health

⁵ Crimmins, A., et. al., [2016: Executive Summary. The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment](#), U.S. Global Change Research Program, Washington, DC.

insurers mostly saw climate change as creating operational risk, such as business disruption or higher costs to operate due to higher temperatures.

To broaden Health insurers' understanding of climate risks, this report provides examples of good practices that are specific to Health insurers, such as a health group's senior management's responsibilities on climate, health insurers' assessment of the impact of climate change on their liabilities, climate-related risk management, a partnership to improving a local community's health, and a multi-pronged approach to stakeholder engagement.

Conclusion

The 2020 responses to the Survey and TCFD reports showed that insurers had a wide range of sophistication in their understanding, assessment, and management of climate risks:

- The composite ratings indicate that most insurers were in the "Making Progress" category, with large or international insurance groups being generally more advanced than smaller or U.S.-based insurers and the more advanced insurers already taking actions that are aligned with DFS's expectations in the proposed Guidance.
- P&C and Life insurers overall showed more awareness of climate risks and had taken more actions to address them than Health insurers. P&C insurers were more advanced on modeling and scenario analysis than Life and Health insurers. Health insurers appeared to be the least focused on climate risks based on the percentage of groups/unaffiliated companies in the "Early Stage" and "Yet to Start" categories.
- Insurers as a whole were best at managing their internal GHG emissions relative to other areas of climate risk management.

This report provides examples of good practices that insurers can use to integrate their consideration of climate risks into their governance frameworks, risk management processes, business strategies, scenario analysis, and disclosure approaches.

DFS intends to continue to evaluate and support insurers' disclosure and progress on climate risk management.

1. Introduction

Climate change poses wide-ranging and material risks to the financial system. This is especially true for the insurance industry, where the physical and transition risks resulting from climate change affect both sides of insurers' balance sheet—assets and liabilities—as well as their business models. Climate change also presents tremendous opportunities for insurers, which play a critical role in the management of climate-related financial risks (“climate risks”) in their capacity as risk managers, risk carriers, and investors. These opportunities may present themselves in various forms, ranging from new products and services to new investment areas.

The New York Department of Financial Services (“DFS”) has established the expectation that New York insurers integrate the consideration of climate risks into their governance frameworks, business strategies, and risk management processes, and start developing a disclosure approach. To support insurers' journey in managing climate risks, DFS published proposed [Guidance for New York Domestic Insurers on Managing the Financial Risks from Climate Change](#) (“Guidance”) in March 2021. In addition, DFS issued a report, [An Analysis of New York Domestic Insurers' Exposure to Transition Risks and Opportunities from Climate Change](#), in June 2021 to provide insurers with an example of a tool that can help them analyze their transition risks and to outline investment-related strategies to mitigate those risks.

In response to feedback from insurers that they would benefit from having more information about how their peers manage climate risks, DFS developed this report to provide a snapshot of what New York domestic insurers (“insurers”) disclosed about their management of climate risks as of 2020. This report highlights examples of good practices that insurers had implemented, including practices that are applicable to all lines of insurance, as well as others that are more specific to certain business lines. This report also includes an Appendix that references resources that insurers used to manage climate risks and sets forth detailed examples of good practices that have been summarized in the body of the report.

DFS intends to review insurers' Survey responses and other disclosure materials to understand insurers' overall status in identifying, assessing, and managing climate risks; identify good practices that can be shared with the industry; and **support risk-based supervision by identifying insurers that appear to lag**, generally or in a specific area, compared to their peers. **Insurers' ratings will be used only for DFS's supervisory purposes and will not be publicly disclosed.**

2. NAIC Climate Risk Disclosure Survey

In 2010, the National Association of Insurance Commissioners (“NAIC”) adopted and issued the Insurer Climate Risk Disclosure Survey (“Survey”), an eight-question survey designed to serve as an insurer reporting mechanism to provide regulators with insight into the assessment and management of climate risks by insurers across all lines of business.⁶ The Survey asks insurers to describe how they incorporate climate risks into their mitigation, risk-management, and investment plans, as well as steps taken to engage key constituencies and policyholders on the topic of climate change. The Survey results allow

⁶ California Department of Insurance, [NAIC Climate Risk Disclosure Survey](#), Accessed March 8, 2021.

regulators, insurers, investors, and members of the public to identify climate-related trends, vulnerabilities, and good practices by the insurance industry. While insurers are not required to provide any quantitative information in response to the Survey, they are encouraged to do so to provide additional clarity and support for their responses. The Survey instructions, eight questions, sub-questions, and responses are housed on the California Department of Insurance's [website](#).

In 2012, California, New York, and Washington began administering the Survey to all insurance companies licensed in these states that wrote at least \$300 million in annual premiums, making the Survey mandatory and the results public. In 2013, the threshold was lowered to \$100 million and the list of states administering the Survey expanded to include Connecticut, Minnesota, and New Mexico.⁷ In 2021, eight more states and the District of Columbia began administering the Survey as well.⁸ As of 2020, the Survey covered more than 1,000 insurers and captured more than 70% of the U.S. insurance market. Insurers within the same group can submit the same response, which was done by all the insurers that were analyzed for purposes of this report. Starting in 2019, insurers have been allowed to submit reports conforming to the Task Force on Climate-related Financial Disclosures (“TCFD”) in lieu of responding to the Survey. In 2020, insurers in eight insurance groups opted to do so. The Disclosure Workstream of the NAIC Climate and Resiliency Taskforce has been considering whether and how to update the Survey and is expected to provide formal recommendations to the NAIC in 2021.

SUMMARY OF EIGHT SURVEY QUESTIONS AND SELECTED SUB-QUESTIONS

- Question 1: Management of greenhouse gas (“GHG”) emissions from the company’s operations.
- Question 2: Climate change policy with respect to risk management and investment management, including whether there is a dedicated point person or team, and the role of the board of directors in governing climate risk.
- Question 3: Process for identifying climate risks and impacts on the company’s business, including financial implications on liquidity and capital needs and limits, costs, and terms of catastrophe reinsurance, including reinstatement provisions.
- Question 4: Current or anticipated risks from climate change and how these risks could affect the company’s business, including business segments or products most exposed to climate-related risks and potential exposure to climate liability through Directors & Officers (“D&O”) or Commercial General Liability policies.
- Question 5: Impact of climate change on investment portfolios, including consideration of regulatory, physical, litigation, and competitiveness-related climate risks when assessing investments and implications of climate change for all investment classes (e.g., equity, fixed income, infrastructure, real estate).
- Question 6: Methods by which the company encourages policyholders to reduce climate-influenced losses, including price incentives, new products, or financial assistance to promote policyholder loss mitigation.

⁷ California Department of Insurance, [NAIC Climate Risk Disclosure Survey](#), Accessed March 8, 2021.

⁸ These eight states are: Delaware, Maine, Maryland, Massachusetts, Oregon, Pennsylvania, Rhode Island, and Vermont.

- **Question 7:** Methods by which the company engages key constituencies on climate change, such as supporting improved research and/or risk analysis on the impacts of climate change.
- **Question 8:** Use of computer modeling to manage climate risks, including catastrophe models for stress testing a wide range of plausible climate change scenarios, timescales, and geographies, as well as the perils of such stress tests.

3. Methodology

The analysis in this report relies mainly on the Survey responses of 121 insurance companies submitted in 2020 by a total of 93 groups and non-affiliated companies. The supporting documents cited in insurers’ responses were also reviewed. Other sources considered in refining the analysis include insurers’ sustainability reports, TCFD reports, and disclosures to organizations like CDP (formerly the Climate Disclosure Project).

As climate risk exposure differs among the different lines of insurance, insurers were grouped into Life, Property and Casualty (“P&C”), and Health. Because insurers within the same group submitted the same response and the enterprise risk management (“ERM”) function is usually done at the group level, the analysis results are shown at the group level and 2019 group countrywide premiums were used.

DFS developed a framework to rate insurers’ responses to each of the eight questions in the Survey. The framework describes the criteria used by DFS to classify a response in the following four categories: “Yet to Start,” “Early Stage,” “Making Progress,” or “Good Progress” (shown in Table 1). The NAIC Center for Insurance Policy and Research (“CIPR”) staff provided feedback on the framework and related insurers’ ratings.

Question	Yet to Start	Early Stage	Making Progress	Good Progress
Q1: Internal GHG emission management	Little effort made to reduce emissions.	No formal plan for emission reduction. Efforts made to reduce emissions. No targets or metrics to track progress.	Has a plan for emission reduction that accounts for operational needs and business structure. No clear emission targets or metrics to track progress.	Has a detailed plan for emission reduction that accounts for operational needs and business structure. Emission targets set and progress is tracked.
Q2: Climate policy and governance	No climate policy. Does not view climate change as a risk to the company and does not have analysis to support that position. Governance structure or senior management function (“SMF”) does	No climate policy but considers climate change in risk management. Board and SMF not engaged in accountability structure. Climate change is an ERM issue, but only as an operational risk. Has not established climate-related lines of responsibility below SMF.	Has a climate policy. Insurer or insurer’s group has designated a board member or committee, and a SMF, to be responsible for climate risks. Has an internal committee to identify and address climate risks, but committee is not fully cross-functional, or the committee structure is set up but still missing lines of responsibility for climate risks.	Has a clear and detailed climate policy. Insurer or insurer’s group has designated a board member or committee, and a SMF in risk, underwriting, and/or investments to be responsible for climate risks. Has an active internal cross-functional risk committee to identify and address climate risks that includes at least underwriting (for P&C) and investment functions. Climate risks fully integrated into ERM process.

	<p>not consider climate risks.</p> <p>Climate risks not part of ERM.</p>		<p>Limited information provided on climate-related lines of responsibility below SMF.</p>	<p>Details provided on climate-related lines of responsibility below SMF.</p>
<p>Q3: Process for identifying climate risks and impacts on your business</p>	<p>No process in place to identify or assess climate risks.</p> <p>Identification done ad hoc, or responsibility assigned to a third-party.</p>	<p>Process of risk identification and assessment is in place but unclear whether the process addresses climate risks, and details on the process are insufficient.</p> <p>Risk identification and management cover only physical risks or only liabilities for P&C insurers.</p>	<p>Process of climate risk identification and assessment is in place and imbedded in ERM.</p> <p>Some information provided on the process, data, and models used, and which business areas or product lines are considered.</p> <p>Risk identification and management cover only physical risks or only liabilities for P&C insurers.</p> <p>Broad recognition of physical and/or transition risks without linking them to its business.</p>	<p>Process of climate risk identification and assessment is in place and imbedded in ERM and the risk appetite framework.</p> <p>Details on organizational structure, processes, data, and models are provided.</p> <p>Describes how assessment of climate risks informs business strategies and risk mitigation strategies.</p> <p>Impacts of climate risks on branded risk factors beyond operational and reputational risks analyzed.</p> <p>Risk identification and management cover both physical and transition risks, and both assets and liabilities.</p>
<p>Q4: Current or anticipated climate risks</p>	<p>Climate risks not identified, and no explanation provided as to why climate change does not pose a risk to the insurer.</p>	<p>Impact of climate risks on some risk factors identified without providing details.</p> <p>Climate risks on investments not considered.</p> <p>Geographic information missing (for P&C insurers).</p>	<p>Some information on impact of climate risks on some branded risk factors and lines of business provided.</p> <p>Geographic information missing (for P&C insurers).</p> <p>Impact of climate risks on investments recognized.</p> <p>Limited information on measures taken to address climate risks provided.</p>	<p>Details on the impact of physical and transition risks on many branded risks factors and various lines of business provided.</p> <p>Geographic details provided (for P&C insurers).</p> <p>Impact of climate risks on investments articulated.</p> <p>Details on measures taken to address climate risks provided.</p>
<p>Q5: Climate risks on investment portfolio?</p>	<p>No consideration of climate risks in investments and no explanation provided as to why the investment portfolio is not exposed to climate risks.</p>	<p>Recognizes climate risks in investments but does not have a separate process for considering them or provides little information on process, data and model, and asset classes.</p> <p>Views climate risks to investments as playing out only in decades.</p>	<p>Considers climate risks in investments and provides some information on the process, data and models, and asset classes.</p> <p>No clear expectations for external managers (if used) regarding climate risks.</p> <p>No metrics or targets in measuring climate risks or opportunities.</p>	<p>Provides details on how climate risks are considered in the investment process and for different asset classes, and describes the data and models used.</p> <p>Has clear expectations for external managers (if used) regarding climate risks.</p> <p>Has metrics and targets in measuring climate risks or opportunities.</p> <p>Often considers interaction between underwriting and investments for P&C insurers.</p>

<p>Q6: Steps to encourage policyholders to reduce climate-related losses (only for P&C insurers)</p>	<p>Has not taken steps to encourage policyholders to reduce climate-related losses.</p>	<p>Provided limited information on steps taken to encourage policyholders to reduce climate-related losses without details on engagement methods or incentives.</p>	<p>Provided some information on steps taken to encourage policyholders to reduce climate-related losses with some information on engagement methods and incentives.</p>	<p>Provided details on steps taken to encourage policyholders to reduce climate-related losses with information on engagement methods and specific incentives. Often has a process for measuring the success of client mitigation efforts.</p>
<p>Q7: Steps to engage key constituencies on the topic of climate change</p>	<p>Has not taken steps to engage constituencies on the topic of climate change</p>	<p>Provided limited information on steps taken to engage constituencies on climate change.</p>	<p>Provided some information on steps taken to engage key constituencies, support research, and engage in public education on climate change.</p>	<p>Provided details on steps taken to engage key constituencies, support research, and engage in public education on climate change. Takes part in industry networks dedicated to the topic of climate change nationally and/or internationally.</p>
<p>Q8: Modeling and scenario analysis</p>	<p>Has not taken actions to model climate risks.</p>	<p>Provided limited information on the models used for assessing climate risks. No mention of forward-looking data or models.</p>	<p>Provided some information on the analytical, catastrophe (for P&C insurers), and risk modeling techniques to assess climate risks. Mostly relies on third-party data and model vendors. No mention of forward-looking data. Has not conducted climate-related scenario analysis or stress tests with a long time horizon.</p>	<p>Provided details on sophisticated analytical, catastrophe (for P&C insurers), and risk modeling techniques to assess climate risks. Systematically considers climate risks for various geographical locations of business or investments. Often forms its own view of climate risks rather than relying on third-party data and models. Used forward-looking data or models. Often conducted climate-related scenario analysis or stress tests with a long time horizon and provided details on results. Discussed impacts of climate risks on capital (for P&C insurers).</p>

Table 1. Framework for Rating Insurers’ Responses

To reflect insurers’ overall ratings, qualitative ratings were converted into numerical scores: Yet to Start = 1, Early Stage = 2, Making Progress = 3, and Good Progress = 4. **The scores for the eight questions were aggregated into the following five themes for ease of analysis.** These themes overlap with many of the sections in the proposed Guidance and were also used by a 2016 Ceres analysis of the Survey results.⁹

⁹ Messervy, M., [Insurer Climate Risk Disclosure Survey Report & Scorecard: 2016 FINDINGS & RECOMMENDATIONS](#), Ceres, October 2016.

- 1) Risk Culture and Governance (Question 2) – Policies and operating mechanisms that drive systems toward preventing, mitigating, or adapting to the risks posed by climate change.
- 2) Risk Management (Questions 3, 4, and 5)¹⁰ – The embedding of climate risk into ERM programs in a manner that anticipates, informs, and compensates for climate risks.
- 3) Modeling and Scenario Analysis (Question 8) – The use of sophisticated software and practices to address climate change risks, including scenario analysis and stress testing.
- 4) Stakeholder Engagement (Questions 6 and 7) – Steps taken to encourage and engage with policyholders and key constituencies on loss mitigation and other climate change topics. Question 6, on steps to encourage policyholders to reduce climate-related losses, does not apply to Life or Health insurers and is therefore not included in their composite ratings.
- 5) Internal GHG Management (Question 1) – Incorporation of a plan for measuring and managing emissions.

To create a composite rating, Questions 2, 3, 4, 5, and 8 were given a weight of 1. Questions 1, 6, and 7, which are not focused on risk management, were given a weight of 0.2 (except that Question 6 was given a weight of 0 for Health and Life insurers). The composite ratings were then categorized as: Yet to Start = 1-1.75, Early Stage= 1.75-2.5, Making Progress= 2.5-3.25, and Good Progress= 3.25-4.

This report also provides examples of good practices gleaned from the Survey responses and TCFD reports.¹¹ In addition to the five themes set forth above, practices related to the themes “Business Models and Strategies” and “Metrics and Targets” were included to align with TCFD recommendations and the proposed Guidance.¹² The examples related to these two themes, which are required as part of the TCFD framework, were based on insurers’ TCFD reports. As most insurers did not file TCFD reports, these themes were not considered in rating insurers’ responses or developing their composite ratings.

The proposed Guidance also covers public disclosure. Insurers’ status on public disclosure is generally reflected by their responses to the Survey and their TCFD reports and is not separately analyzed or rated in this report. However, because DFS’s analysis relies on the contents of insurers’ TCFD reports and responses to the Survey, insurers should make every effort to ensure that their TCFD reports and Survey responses are accurate and adequately capture the status of their climate risk management efforts.

As the analysis is based on responses submitted prior to the release of DFS’s Insurance Circular Letter No. 15 (2020) on [Climate Change and Financial Risks](#) and the proposed Guidance, DFS expects to review insurers’ subsequent responses to assess any changes.

¹⁰ As some of the responses to Question 2 also touched on risk management, certain examples of good practices related to this theme came from Question 2.

¹¹ Most of the examples of good practices came from the Survey responses and the TCFD reports of New York domestic insurers and their groups. A few were based on Survey responses by non-New York domestic insurers.

¹² Although there is no section specifically dedicated to metrics and targets in the proposed Guidance, the use of metrics is discussed throughout the proposed Guidance, especially in Section 3.5.1.2 “Risk Appetite, Tolerances, and Limits.”

4. Application of Disclosure Materials

DFS intends to review insurers' Survey responses and other disclosure materials to:

1. Understand insurers' overall status in identifying, assessing, and managing climate risks,
2. Identify good practices that can be shared with the industry, and
3. **Support risk-based supervision by identifying insurers that appear to lag**, generally or in a specific area, compared to their peers.

Insurers' ratings will be used only for DFS's supervisory purposes and will not be publicly disclosed.

DFS recognizes that the Survey has limitations. First, while the Survey has been issued for a decade, based on DFS's discussions with stakeholders, DFS understands that the responses have not been actively used in exams or by investors. For this reason, insurers may not have put much effort into responding to the Survey in a comprehensive way, resulting in responses that do not fully reflect insurers' practices. Second, while the Survey was pioneering when it was designed more than ten years ago, climate-related financial disclosures and risk management have evolved a great deal since then. In particular, TCFD now serves as a framework that is globally adopted and widely used, and DFS has encouraged insurers to submit TCFD reports in lieu of submitting responses to the Survey. As the Survey questions do not fit perfectly into the TCFD framework, responses to the questions may not provide all the information that DFS seeks.

Due to these limitations, DFS intends to use the Survey responses as a starting point for engagement with insurers and will update its ratings of insurers based on new information gathered outside of the analysis contained in this report.

5. Insurers' Status and Good Practices on Managing Climate Risks

5.1 Overview

Overall, based on Survey responses, insurers were aware of climate risks and had taken steps to integrate the consideration of climate risks into their governance frameworks, risk management processes, and business strategies to varying degrees, as shown in Figure 1. Insurers rated as “Good Progress” had, for the most part, already implemented practices similar to those described in the proposed Guidance. Examples of these practices are included in Section 5.2. Composite ratings, however, indicate that most insurers were in the “Making Progress” category.

P&C and Life insurers overall showed more awareness of climate risks, and had taken more actions to assess and manage them, than Health insurers. For example, P&C insurers were more advanced on modeling and scenario analysis than Life and Health insurers. This is unsurprising given that the physical impact of climate change has been evident for many years and climate change-related natural disasters directly impact P&C insurers' liabilities. Health insurers appeared to be the least focused on climate risks, with the largest percentage of groups/unaffiliated companies in the “Early Stage” and “Yet to Start” categories. This is also understandable as the impact of climate change on Health insurers is less direct given the shorter duration of their assets and, on the liability side, climate change is only one of many factors affecting human health. At the same time, Health insurers are exposed to transition risks on the asset side¹³ and, as described in Section 6.3 on Health insurers' status and good practices, climate change does have a direct impact on human health.

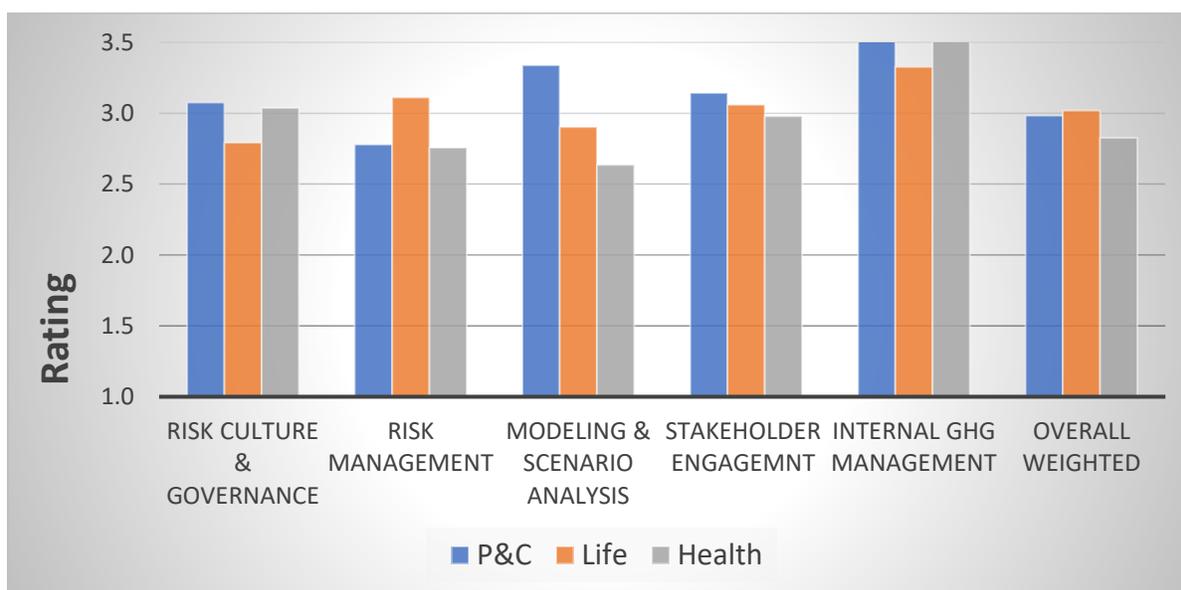


Figure 1. Premium-Weighted Ratings for Insurers Across the Five Themes

¹³ [An Analysis of New York Domestic Insurers' Exposure to Transition Risks and Opportunities from Climate Change](#), DFS, June 2021.

Across the five themes, insurers were best at managing their internal GHG emissions. Within risk management, some insurers described their ERM process without linking it to climate risks. A small portion of insurers recognized climate change’s impact on investments.

The ratings shown in Figure 1 are weighted by annual countrywide premiums of the groups/unaffiliated companies that responded to the Survey, which skews the results toward larger groups and companies that tend to be more sophisticated in managing climate risks.

Figure 2 and Figure 3 show the composite rating distributions for P&C, Life, and Health insurers, with the percentages based on the number of groups/unaffiliated companies that responded to the Survey and the annual countrywide premiums written by those groups/unaffiliated companies. The figures show that insurers were at different stages of awareness and sophistication in managing climate risks both within and across the three types of insurers. **Insurers in the “Good Progress” category tended to be part of larger groups. Those in the “Yet to Start” category tended to be part of smaller groups or unaffiliated companies.**



Figure 2. Composite Ratings Across Insurance Lines (Percentage of Groups/Unaffiliated Companies by Number)

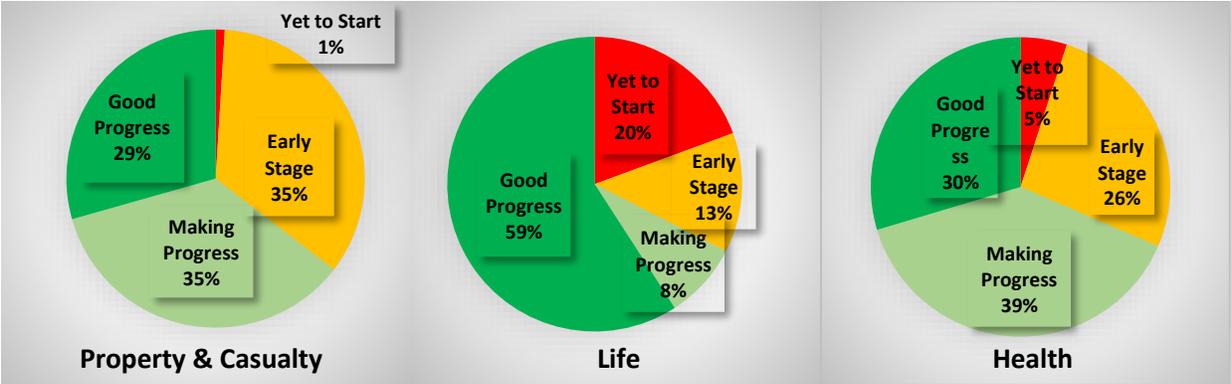


Figure 3. Composite Ratings Across Insurance Lines (Percentage of Groups/Unaffiliated Companies’ Aggregate Countrywide Premiums)

Despite the correlation between size and sophistication, there were large groups that were rated lower than their peers and smaller groups/unaffiliated companies rated higher than their peers. More details of the distribution of ratings can be found in the sections specific to each type of insurer.

5.2 Examples of Good Practices Applicable to All Insurers

To support insurers' journeys in managing climate risks, this report sets forth examples of good practices extracted from insurers' Survey responses and TCFD reports. While many of the examples are from large insurance groups, **DFS recognizes that not all insurers are able to implement all of the good practices highlighted in this report given their differences in size, complexity, business lines, and resources.** While some good practices highlighted in this report were found in small to medium-sized groups/unaffiliated companies, others may be applicable only to large groups with dedicated catastrophe risk-modeling teams or large in-house investment teams.

In addition to providing examples of good practices, this report also provides relevant text from the proposed Guidance in *italics*.¹⁴ As the Survey responses and other climate-related disclosures may not capture all of the actions that insurers take in managing climate risks, and this report does not contain an exhaustive list of good practices based on these disclosures, not all the expectations in the proposed Guidance have corresponding examples of good practices. The longer and more detailed examples that have been summarized in the body of this report can be found in their original text in Appendix 8.1.

Examples pertaining to underwriting are most relevant for P&C insurers and are included in Section 6.1.

5.2.1 Risk Culture and Governance

DFS Expectation – *Insurers should integrate the consideration of climate risks into their governance structures. An insurer's board should understand and be responsible for managing climate risks, which should be reflected in the company's risk appetite and organizational structure. [Overview of DFS Supervisory Expectations]*

DFS Expectation – *Insurers should designate a member or committee of the board, as well as a member of senior management most suited to the task within the insurer's organizational structure and given the insurer's climate risk profile, as responsible for the insurer's assessment and management of climate risks. [3.3.1 Board Governance, Paragraph 20]*

Example 1 – Board Governance on Climate Risks and Opportunities

One group charged its **Nominating and Corporate Governance Committee** (“NCGC”) of the Board with the primary responsibility of overseeing the establishment, management, and processes of the company's ESG activities and issues, including oversight of climate-related risks and opportunities, in line with the incorporation of the company's climate-related principles into its business strategy.

Another group's **NCGC** is chiefly responsible for and regularly reviews the company's position, policies, practices and reporting on sustainability and climate issues. Its **Risk and Capital Committee** (“RCC”) may be informed of climate risks insofar as its role and responsibility is to oversee and review the group's strategy and approach to managing those risks. The RCC reviews policies, procedures and practices used to manage the group's key risks (liquidity, credit, market, operational and insurance), which may be impacted by climate change.

¹⁴ As the public consultation period for the proposed Guidance ended shortly before the issuance of this report, comments received as part of the consultation process were not incorporated into this report.

Example 2 – Member of Senior Management Responsible for Climate Risks

One group's **Chief Risk Officer** ("CRO") is responsible for ensuring that the group has a risk framework across all major risks, one of which is climate change. The CRO is the chair of the group's Risk and Compliance Committee, responsible for identifying, assessing, monitoring, and reporting key risks, including climate risks.

Some groups designated board members or committees to oversee the groups' corporate citizenship programs. For example, one group's Governance and Corporate Responsibility Committee was responsible for the group's social investment program, as well as goals and strategies for contributing to health, education, civic, and cultural initiatives. While DFS applauds such corporate citizenship, corporate sustainability is not a substitute for assessing and managing climate risks.

A number of insurers tasked members of senior management with responsibility for climate, ESG, or sustainability issues. While some of these senior leaders managed risks, investments, or underwriting, others were in charge of communications or employee relationships. The former shows that the company regards climate change, ESG, or sustainability as a business and financial risk and opportunity, while the latter suggests that the company views these issues as a public relations or employee engagement risk and opportunity. The latter approach is appropriate only if climate risks were properly assessed and determined to be immaterial to the company.

***DFS Expectation** – As climate change could impact multiple business units and require expertise from multiple functions, one option is to have **an internal risk committee** of senior management charged with understanding the changing risk landscape and identifying potential ways to address climate risks. [3.3.1 Board Governance, Paragraph 20]*

Example 3 – Cross-Functional Committees on Climate Risks and Opportunities

One group created a **steering committee co-chaired by the Group Chief Risk & Investment Officer and the Group Head of Communication, Brand and Corporate Responsibility** to steer the group's role in climate, sustainability and inclusive insurance, and review all related material investment, underwriting, risk, operational and policy issues faced by the group. The **cross-functional Sustainability Council** of another group includes leaders from Enterprise Risk and Return, Protection Finance, Investments, and Claims. A third group established a **Corporate Responsibility Working Group** that reported directly to the Group Executive Committee and was dedicated to developing and implementing climate change policies that "place **more emphasis on risk reduction, preparedness and resilience**, rather than purely focusing on recovery and rebuilding." For more information, see Appendix 8.1.

***DFS Expectation** – Insurers should **develop the skill, expertise, and knowledge** required for the assessment and management of climate risks at the level of the board and employees, including senior management. [3.3.3 Organizational Structure, Paragraph 24, Item g]*

Example 4 – Board Expertise on Climate Risks and Opportunities

A group with life and P&C lines elected a renowned sustainable investment expert to its board.

DFS Expectation – Insurers should consider implementing **remuneration policies** to align incentives with the strategy for managing climate risks. [3.3.3 Organizational Structure, Paragraph 24, Item h]

Example 5 – Remuneration Policy to Align Incentives

A group’s **senior management remuneration is tied to the attainment of sustainability- and climate-related targets**, including the successful delivery of its climate change strategy and implementation of its different climate-related commitments (e.g., the [Net-Zero Asset Owner Alliance](#)). A particular focus lies on the quantitative reduction targets for GHG emissions.

5.2.2 Business Models and Strategies

DFS Expectation – When **making strategic and business decisions**, an insurer should consider the current and forward-looking impact of climate-related factors on its business environment in the short-, medium-, and long-term. [Overview of DFS Supervisory Expectations]

Example 6 – Drive Societal Change to Reduce Climate Risks

One group stated that, “if climate change continues on its current trajectory beyond 2°C, those effects will become more difficult, costly and even impossible to fully mitigate. Climate change will affect [the group’s] products, services and operations, creating new risks. But it will also create new opportunities. **Understanding, managing and disclosing those climate impacts, as well as other drivers of exposure, is an important aspect of maintaining [the group’s] long-term profitability...** That is why **the group is accelerating action to reduce climate risks by driving changes in how companies and people behave and supporting those most impacted.** [The group’s] dedication to limiting average global temperature rise to 1.5°C guides our climate strategy and has led us to commit to the goals of the Business Ambition for 1.5°C Pledge for our own operations and investment portfolio and become a founding member of the UN-convened [Net-Zero Asset Owner Alliance](#)... **This goal will be pursued through advocating for, and engaging on, corporate and industry action, as well as public policies, for a low-carbon transition of economic sectors in line with science and under consideration of associated social impacts...** While [the group’s] investment portfolio provides some opportunities to redirect capital toward a climate-neutral economy via divestments, sector reallocations and increased investments in climate solutions, **its investment strategy is rooted in fiduciary duty and asset-liability management requirements**, and hence, is dependent on access to a broad investment universe.”

Leading insurers have established responsible investment or climate change investment strategies, which often include active ownership (i.e., engaging with investee companies to push them to be more sustainable), green bonds, and a comprehensive approach on ESG integration. Some viewed investments targeting climate change mitigation or adaptation activities as helpful in reducing climate risks through their targeted positive impact and offering a financial return commensurate with risks.

5.2.3 Risk Management

DFS Expectation – An insurer should **incorporate climate risks into its existing financial risk management**, including by embedding climate risks in its risk management framework and analyzing the impact of climate risks on existing risk factors. Climate risks should be considered in the company’s ORSA. [Overview of DFS Supervisory Expectations]

DFS Expectation – Insurers and other entities that are required to have ERM functions are expected to **address climate risks through their existing ERM functions** and in line with their board-approved risk appetites... Insurers should have **a process in place** that identifies and prioritizes all reasonably foreseeable and relevant material risks, including climate risks. [3.5.1 Risk Management Framework, Paragraphs 28 and 29]

Example 7 – Climate-Related Risk Management Process

One group disclosed that “[c]onsideration of climate change risk is built into our risk management process. Such risks link to our defined risk universe and risk types for which risk appetite, risk limits and risk policies are set. Furthermore, relevant developments related to climate change (e.g., regulations) are tracked to assess their potential impacts and required responses...

The Climate Change Working Group (CCWG) ... **meets quarterly to evaluate climate related risks including regulatory, strategic, physical, investment, or underwriting risks**... If any risks are considered material, the CCWG can develop a mitigation plan and present it to the [Responsible Business and Investment Committee] which in turn reports to [the group’s] Management Board, of which the Chief Risk Officer (CRO) is a member... Furthermore, **elements of climate risk can and have been highlighted in the emerging risk process** (in the context of our Business Environment Scan) ... They are identified and analyzed on a semi-annual basis by a multidisciplinary team, including but not limited to expertise from financial risk, operational risk, actuarial, treasury and accounting. [The group] had measures to counter climate risk such as monitoring regulations and policy development, participating in consultations with policymakers, and new product offerings.”

DFS Expectation – All insurers, regardless of size, are expected to **analyze their climate risks on both the underwriting and investment sides** of their balance sheets. [3.1 Proportionate Approach, Paragraph 13]

For Question 5 on climate change’s impact on investments, all P&C insurance groups in the “Good Progress” category were large (\$10 billion or more in annual countrywide premiums) or had a European parent. Most of the life insurance groups in the “Good Progress” category had annual countrywide premiums of more than \$20 billion. One of the smaller life groups in the “Good Progress” category used both internal and external investment managers while the other relied purely on external managers. No health insurer received a “Good Progress” rating for Question 5 but a few were rated as “Making Progress.”

Common practices for insurers in the “Good Progress” category for investments include:

1. Applying an internal or external ESG scoring process in their investment decision-making. For example, one group reported that more than 89% of its equity, 95% of its corporate debt and sovereign debt, and 74% of its real estate investments had ESG scoring. Another group reported that it evaluated investments using a broad range of climate and carbon-related data and indicators.
2. For those that used external managers, requiring third-party asset managers to consider climate risks in their investment process and report back to the insurers on their policies and procedures related to the incorporation of climate or ESG risk factors. The process for managing

climate/ESG risks was often considered when selecting third-party managers. Many of the third-party managers were signatories of the Principles for Responsible Investments, a United Nations-supported network of investors working to promote sustainable investment.

3. Making meaningful investments in climate solutions, such as renewable energy.
4. Offering ESG or responsible investment funds to their customers. Several insurers viewed the ESG lens as a competitive advantage.
5. Setting GHG emission reduction targets for their proprietary investment portfolios so that they are in line with science-based emission reduction targets as set forth by the Science Based Targets initiative, with all tradable proprietary investments structured as climate-neutral by 2050. This was done mostly by European groups.
6. Actively engaging with investee companies on their exposure to and management of climate risks. This was also done mostly by European groups.

DFS Expectation – Insurers should **consider the effect of physical and transition risks on their current and future investments**, including whether and how these risks could lead to potential shifts in supply and demand for financial instruments (e.g., securities and derivatives), products, and services, with a consequent impact on their values. [3.5.2.4 Market Risk, Paragraph 41]

Example 8 – Management of Climate-Related Investment Risks by a Small Life Insurance Group Using Internal Managers

One small life insurance group disclosed that “[i]nternal investment decisions are held through in-depth credit discussions that encompass all areas of an issuer’s business including their exposure to climate change... Additionally, the majority of our external managers are signatories to the [Principles for Responsible Investment] and thereby are expected to factor in exposure to climate change in their investment decisions. [The group] measures our investment portfolio’s exposure to climate-related risks and opportunities by **giving every potential investment a ranking based on ESG considerations...** [The group] has **incorporated ESG factors into the credit underwriting process that is used to evaluate its internally managed fixed income investments...** As an investor, [the group’s] **ultimate goal is to fulfil the fiduciary responsibility to invest assets in a prudent manner to meet present and future policyholder obligations and to maximize the long-term financial return on invested assets.**” Decisions to reduce the group’s exposure to energy-intensive sectors “have been **strengthening the resilience of [the group’s] portfolio to climate-related risks** and diversifying the assets that [it has] under management.” For more information, see Appendix 8.1.

DFS Expectation – Given that a large portion of insurers’ investments are in **fixed income products**, insurers are encouraged to consider **the timeframe in which climate risks might manifest relative to the maturity of their investments**, including the possibility of sudden changes in asset values and credit ratings. [3.5.2.4 Market Risk, Paragraph 43]

Example 9 – Management of Climate-Related Investment Risks by a Small Life Insurance Group Using External Managers

One small life insurance group disclosed that it relied on an external investment manager and **one of the reasons that the group retained the investment manager was its approach to ESG and**

climate change. “While strategic and tactical asset allocation decisions are made on the portfolio by the insurance company management, our investment manager helps inform those decisions...” The external manager provided most of the Survey responses, which **covered the integration of climate change risks and opportunities within fixed income and examples of certain industries and companies where the investment manager considered climate change issues likely to be key risk and/or return drivers** (e.g., packaging, global auto OEM, P&C reinsurer, renewable energy). The responses also stated that the group recognized that, “as climate change themes evolve, they will impact sectors and issuers at different times and in different ways. As such **it is important to recognize which issuers are on the right (or wrong) side of these trends, and to align when the impacts of these trends will play out with investment time horizons.**”

Example 10 – Management of Climate-Related Investment Risks by a Large Group

A large European-headquartered insurance group disclosed that it **systematically integrated ESG considerations** – including factors such as “Carbon Emissions” or “Climate Change Vulnerability” – **across its entire investment portfolio and asset manager selection. All asset managers acting on behalf of the group are required to integrate ESG into their investment process. It applies its ESG scoring process to all its listed assets,** systematically assesses the ESG performance of individual issuers, and analyzes its investment portfolio with **a broad range of climate data and indicators** from a wide range of data providers.

For **unlisted investments** with ESG risk, a detailed assessment would be conducted to decide whether or how to proceed with a transaction. The group planned to measure and improve the ESG performance of its **real estate investments.** It also invested more than EUR \$23 billion in **renewable energy, certified green buildings, and green bonds.**

The group also had a systematic approach to engaging investee companies throughout its global portfolio on ESG topics. For more information, see Appendix 8.1.

Example 11 – Management of Physical Risks in Investments

One group analyzed the impact of climate change, weather, and water resources on its holdings in agriculture, timber, and real estate. For example, it disclosed that for agriculture, climate change impacts may bring challenging conditions such as climate variability and extreme weather, shifting agricultural zones, effects from rising temperatures and water stress that can compromise crop yields. For more information, see Appendix 8.1.

Insurers’ assessment and management of transition risk were most evident in their investment policies, as described in **Example 8** to **Example 10.** Beyond these examples, several insurers viewed the coal and oil sands sectors as particularly carbon intensive and transition-risk prone as such industries are nearing the end of their life cycles. One group had not invested in coal business (i.e., companies deriving 30% or more of their generated electricity from thermal coal or companies deriving 30% or more of their revenues from mining thermal coal) since 2015, with equity being divested and fixed income investments made before 2015 in run-off. The group planned to tighten the threshold over time, declining to 25% in 2022 and 0% by 2040 or earlier.

One way to manage transition risk is to proactively help customers and investee companies decarbonize. A few P&C insurers disclosed that they worked with their clients and brokers to help those in the non-renewable energy sector transition to sustainable energy.

Example 12 – Management of Transition Risks by Helping Investee Companies Decarbonize

Several groups are members of [Climate Action 100+](#), which works with the world’s largest corporate GHG emitters to curb emissions, strengthen climate-related financial disclosures, and improve governance on climate change.

5.2.4 Modeling and Scenario Analysis

DFS Expectation – *An insurer should use scenario analysis to inform business strategies and risk assessment and identification. Scenarios should consider physical and transition risks, multiple carbon emissions and temperature pathways, and short, medium, and long time horizons. [Overview of DFS Supervisory Expectations]*

DFS Expectation – *An insurer’s approach to managing climate risks should mature over time from being qualitative and using simple models to being quantitative and using sophisticated models. [3.1 Proportionate Approach, Paragraph 14].*

Example 13 – Use of Sophisticated Data and Modeling in Investments

One group applies its ESG scoring¹⁵ process to **all its listed assets** including sovereign bonds, corporate bonds and public equity: “We **systematically assess the ESG performance of individual issuers** using ESG data provided by our external data provider, MSCI ESG Research. We use this information to consider ESG criteria in our investment selection, leading to a more holistic steering of our portfolio and targeted management of ESG risks and opportunities. **Furthermore, we analyze our investment portfolio with a broad range of climate and carbon-related data and indicators** (e.g. carbon footprint information, fossil fuel reserves incl. potential emissions, carbon efficiency scores, carbon risk and risk management indicators, low-carbon opportunities scores, decarbonization targets, etc.) using data sources including but not limited to MSCI ESG, Transition Pathway Initiative, InfluenceMap, CarbonTracker, and the Science Based Targets initiative.”

DFS Expectation – *Scenario analysis should be used to explore the resilience and vulnerabilities of an insurer’s business model to a range of outcomes. DFS expects an insurer’s approach to scenario analysis to evolve and mature over time... Scenario analysis should consider:*

- a. *the impact of physical and transition risks;*
- b. *the evolution of climate risks under various scenarios, including multiple carbon emissions and temperature pathways, different transition paths to a low-carbon economy, as well as a path where no meaningful transition occurs;*
- c. *the fact that climate risks may not be fully reflected in historical data; and*

¹⁵ While ESG investments may seek to create positive ESG impacts through investments, which is different from DFS’s focus on managing the financial risks from climate change, ESG investment approaches can be useful in managing those risks.

- d. *how climate risks may materialize in the **short-, medium-, and long-term** depending on the scenarios considered. [3.6 Scenario Analysis, Paragraphs 54 and 55]*

Several insurers that have carried out some climate-related scenario analysis disclosed that they planned to further develop their scenario analysis to cover more asset classes, include underwriting, or include a new risk type (e.g., physical risks if they had only covered transition risks in earlier analyses).

Example 14 – Transition Scenario Analysis, Using Multiple Climate Scenarios and Long Time Horizon, on Both Investments and Underwriting

One group worked with an external consultant to understand the impact of sectoral trends in **2030 and 2050** to inform its strategic positioning over the coming years. “The analysis is based **on the Network for Greening the Financial System Orderly and Disorderly scenarios (REMIND model) and the Inevitable Policy Response Forecast Policy Scenario**. All three scenarios are consistent with keeping the increase in global temperatures to below 2°C. The scenarios are expressed relative to a baseline of current policies (3–4°C). The sectors most impacted by 2030 and 2050 by the transition to a low carbon economy include fossil fuel production and transport... For each scenario, **we have focused on the impact (by profit) on the most material sectors for our underwriting and investment portfolios... For some of the more affected sectors, we have started to respond through progressing our policy positions, engaging with our customers and undertaking due diligence.**” The group identified the **top three sectors that its underwriting business** was exposed to (by gross written premium) as construction, real estate and professional services, and the **top three sectors that its investments** were exposed to (by investment value) through its corporate credit portfolio as financial services, health and pharmaceuticals, and communications.

Common climate scenarios that insurers have used include:

- Foundational climate physics and socioeconomic models
 - o [International Panel on Climate Change](#) – these models are the foundational models that link carbon emission trajectories and associated global average temperature
 - o [International Energy Agency](#) – for global energy transition
 - o [Integrated Assessment Models](#) – for linking temperature projections with socioeconomic factors, such as demographics, gross domestic product growth, and energy mix
- Financial supervisors’ scenarios¹⁶
 - o [Network for Greening the Financial System \(NGFS\) climate scenarios](#) – include an orderly transition to net zero, a disorderly transition to net zero, and a hot house scenario where no transition happens
 - o [Bank of England’s Biennial Exploratory Scenarios](#) – consistent with the NGFS scenarios and downsized to include U.K. climate policy and physical risks
- Investment portfolio analysis

¹⁶ Since the submission of the Survey responses, both NGFS and Bank of England have updated their climate scenarios: [NGFS publishes the second vintage of climate scenarios for forward looking climate risks assessment](#), NGFS, June 7, 2021; [The 2021 Climate Biennial Exploratory Scenario](#), Bank of England, accessed on June 7, 2021.

- [Paris Agreement Capital Transition Assessment](#) (PACTA) – a bottom-up model using investment holdings and investee companies’ forward-looking capital plans to analyze the transition risk exposure of an investor’s portfolio
- Government policy response scenarios
 - [The Inevitable Policy Response](#) by [Principles for Responsible Investment](#) – describes the likely government policy responses to mitigate climate change

5.2.5 Metrics and Targets

The proposed Guidance references metrics in several places. For example:

DFS Expectation – *Climate risk indicators and metrics should be periodically reviewed by the board [as part of the risk management process]. Insurers should consider climate risks in setting their risk appetite, tolerance, and limits. Insurers may apply appropriate quantitative tools and metrics and qualitative statements to help establish clear boundaries and expectations for risks that are hard to measure. Insurers may use these metrics to compare and report actual assessed risk versus risk tolerances/limits, and track progress against their overall business strategy. DFS expects that these tools and metrics and qualitative statements will evolve and mature over time. [3.5.1.1 Risk Identification and Prioritization, Paragraphs 29 and 30]*

DFS Expectation – *For public disclosure, if an insurer deems climate risks to be material, the insurer is expected to disclose related figures, metrics, and targets as well as the methodologies, definitions, and criteria used to make that determination. [3.7 Public Disclosure, Paragraph 64]*

Example 15 – Setting Metrics and Targets in Investments

Several groups headquartered in Europe or Australia are members of the [Net Zero Asset Owner Alliance](#), whose members commit to transition their investment portfolios to net-zero GHG emissions by 2050. These groups, as well as several U.S. groups, **set time-bound targets for investments and disclosed metrics** such as:

- dollar amount in green investments, transition bonds, or other climate solutions,
- carbon footprint of investment portfolio (in tons of CO₂-equivalent/\$),¹⁷
- tons of CO₂-equivalent emission avoided (in tons of CO₂-equivalent),
- percentage reduction in carbon footprint of investment portfolio (in %),
- implied warming potential of the investment portfolio (in °C),
- transition risk cost as a percentage of revenue affected under certain temperature scenarios (in %),
- loss in the real asset portfolio due to physical risks such as floods and windstorms (in % or \$), and
- climate value at risk (\$ or % of portfolio).¹⁸

Some insurers that have coal or oil sand exclusion or divestment policies also disclosed:

- percentage exposure in a certain industry, such as coal or oil sand, at a certain time,

¹⁷ Most groups or companies that set carbon emission targets used the “[Science Based Targets](#)” approach, which has been used by more than 1,400 companies globally.

¹⁸ DFS recognizes that the methodologies of certain metrics, such as the implied temperature of a portfolio and climate value at risk, are still being refined.

- the amount of investment divested,
- the amount of gross written premium phased out, and
- the number of firms reviewed pursuant to those policies.¹⁹

Example 16 – Setting Metrics and Targets in Operations

Several insurers quantified and set targets related to their **Scopes 1, 2, and 3**²⁰ emissions. Some broke down their emission targets, such as per employee or mode of travel. Some had set time-bound targets to use 100% renewable power.

5.2.6 Stakeholder Engagement

While the proposed Guidance does not lay out expectations on stakeholder engagement, engaging with stakeholders to educate them on climate risks and incentivize them to reduce those risks is encouraged. The proposed Guidance points out that **insurers would benefit from greater climate-related disclosure in the wider economy and should therefore encourage such disclosure through their ownership of financial assets**. [3.7 Public Disclosure, Paragraph 63] No clear examples of this type of engagement were found in the 2020 Survey responses or TCFD reports.

One good practice that was common to all insurers was to engage employees and third parties, including members of their supply chain and other business affiliates, on climate issues. Insurers recognized their unique role and responsibility to educate stakeholders and support individual “green” efforts. Several Insurers discussed their annual sustainability publications or disclosure through [CDP](#) as a tool of engagement for policyholders, employees, and industry partners. Insurers also participated in various industry networks or organizations that promote awareness of climate risks by their constituents and the public. Some insurers even started these organizations.

Example 17 – Constituent Engagement on Climate Change

One group disclosed that “[the Group] insists that our suppliers adhere to the same strict standards that we set for ourselves... The objective of supply chain sustainability, and thus its measure of success, is to create, protect and grow long-term environmental, social and economic value for all stakeholders involved in bringing products and services to market... [The Group] engages consumers and customers on the topic of disaster preparedness through vehicles like the [Group’s] blog and [website], and the distribution of disaster preparation and awareness brochures to customers by [the Group’s] agency owners. [The group] publicly discloses all identified climate related risks through the CDP annually.”

¹⁹ Possible outcomes of such review include: (1) the customer being excluded (relationship terminated), (2) the customer cleared (relationship continued), or (3) engagement ongoing (the insurer continues to review the customer’s transition plans and the relationship is continued subject to evidence of the company’s actual movement toward certain climate-related targets).

²⁰ Scope 1 covers direct emissions from owned or controlled sources. Scope 2 covers indirect emissions from the generation of purchased electricity, steam, heating, and cooling consumed by the reporting company. Scope 3 includes all other indirect emissions that occur in a company’s value chain. Source: [Briefing: What are Scope 3 emissions?](#), Carbon Trust, accessed on May 19, 2021.

Another group **actively contributed “to external industry, regulatory and international agencies’ initiatives to improve climate risk assessments and disclosures**, including the UN Principles for Sustainable Insurance TCFD pilot, the UK PRA’s Climate Financial Risk Forum Guide and the UNEP FI Net-Zero Asset Owner Alliance. [The group] also led an effort by the CRO Forum to develop methodologies that apply the carbon footprint and intensity concepts to insurance portfolios. To improve its understanding of potential developments of climate change liability risks, [the group] is also part of a dedicated working group established as part of the UN Principles for Sustainable Insurance TCFD pilot.”

5.2.7 Internal GHG Management

As the insurance industry is not a large carbon emitter relative to carbon intensive industries, and DFS is focused on the industry’s management of climate-related financial risks, DFS’s proposed Guidance does not address internal GHG management.

Insurers in the “Good Progress” category had internal GHG management plans that accounted for their operational needs and business structures, set goals for emissions, and tracked progress through specific metrics. Some also had teams or councils to oversee their GHG emissions reduction programs.

Example 18 – Reducing GHG Emissions from Operations

One group “does not consider transition risks to be material for our own operations. However, low magnitude risks exist, for example, in the area of increases to energy costs or risks of new external carbon taxes or fees. To manage these risks, **[the group] takes advantage of opportunities, such as renewable electricity purchasing, carbon and energy reduction targets, travel reductions and moving to a more efficient real estate portfolio**. For example, in 2019 [the group] joined the RE100 initiative committing to move to 100 percent renewable power by end 2022. [The group] also conducts **an annual operational risk assessment** covering energy cost, high-risk locations, regulatory, operational supply chain, stakeholder expectations and employee safety.”

6. Status and Examples of Good Practices for Specific Types of Insurers

6.1 P&C Insurers

DFS analyzed the Survey responses of 48 P&C insurers (29 groups and six unaffiliated companies). 31% of groups/unaffiliated companies were given a “Good Progress” or “Making Progress” rating. When looking at the percentage by premium rather than the number of groups/unaffiliated companies, the number more than doubled to 64%, and the percentage of insurers in the “Yet to Start” category dropped to only 1%, as shown in Figure 4.

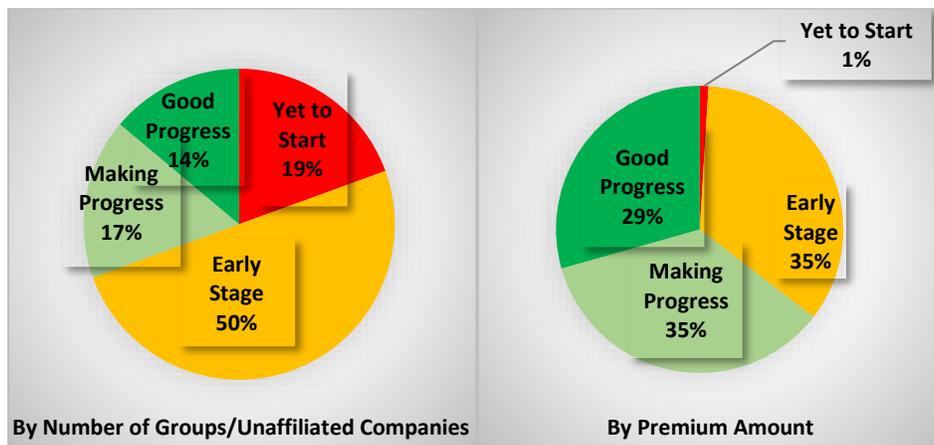


Figure 4. Composite Ratings of P&C Insurers

Figure 5 shows the distribution of ratings across P&C groups/unaffiliated insurers of different sizes. Larger groups tended to be rated more highly than smaller groups/unaffiliated companies. No groups with countrywide premiums greater than \$10 billion were in the “Yet to Start” category, but 33% were given an “Early Stage” rating.

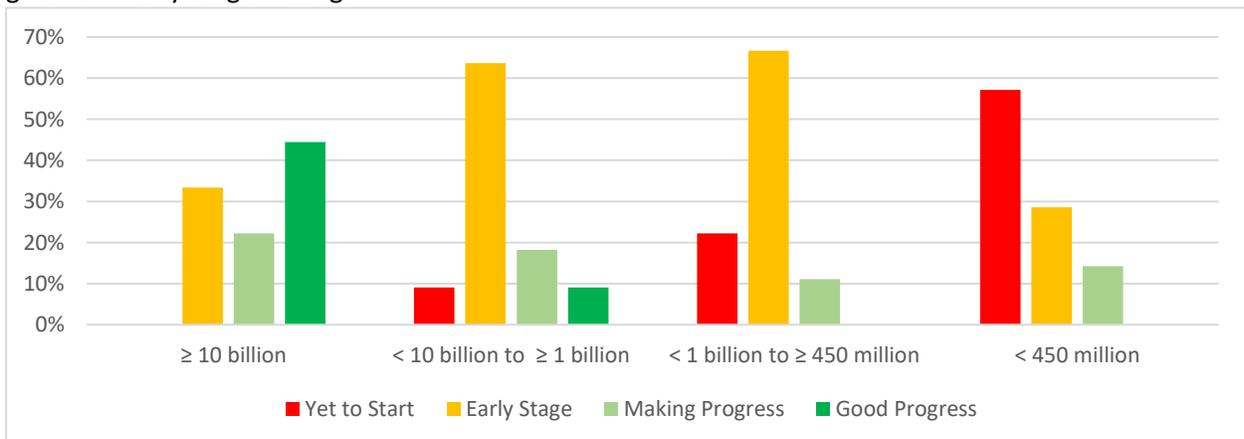


Figure 5. Composite Ratings of P&C Groups/Unaffiliated Companies by Size

6.1.1. Risk Culture and Governance

17% of P&C groups/unaffiliated companies were in the “Good Progress” category and 19% were in the “Yet to Start” category for Risk Culture and Governance. When weighting the ratings by premium, the percentage of groups/unaffiliated companies with a “Good Progress” rating grew to 44% while the percentage in the “Yet to Start” category dropped to 3%.

As the examples of good practices on Risk Culture and Governance in Section 5 apply to P&C insurers, no additional examples are provided here.

6.1.2. Business Models and Strategies - Climate-Related Opportunities

Many P&C insurers saw climate change as a source of opportunities and provided insurance solutions for commercial and residential renewable energy projects. Some had climate resilience advisory services to help clients understand how climate change might affect their operations, strategy, and financial position, and develop strategies to mitigate risks. A few developed parametric insurance policies for climate-related risks that were not insurable under traditional insurance policies. Several insurers offered products for (sub-)sovereigns to support climate resiliency or developed customized motor vehicle insurance solutions for customers of electric vehicles. One group created a policy for coral reefs that helps protect the developments behind the reefs from hurricane risks.

6.1.3. Risk Management

P&C insurers are highly exposed to climate risks in their underwriting. However, only 20% of groups/unaffiliated companies (or 47% when weighted by premium) were given a “Good Progress” or “Making Progress” rating for Risk Management. Those in the “Good Progress” category provided detailed descriptions of how climate risks impacted their product lines and the process and organizational structure that they used to manage the risks.

***DFS Expectation** – Insurers and other entities that are required to have ERM functions are expected to ... document in their written ERM and board risk reports the climate risks considered, including their **transmission channels**, and their impact on existing risk factors, and where appropriate, update existing risk management policies to reflect climate risks... [3.5.1 Risk Management Framework, Paragraph 28]*

Example 19 – Transmission Channels of Climate Risks in P&C Underwriting

One group analyzed the key climate risks of the insurance products it offered, as well as how it managed those risks, in the following lines of business:

- Property – Increased property damage and possible business interruption
- General Liability – Litigation against insureds for contributing either directly or indirectly to climate change or pollution
- Directors & Officers – Litigation against directors and officers for failure to adequately recognize, analyze, manage, or disclose environmental and/or climate risk
- Environmental – Litigation against companies emitting contaminants
- Aviation – Liability from aircraft emissions or suppliers of aircrafts
- Marine – Increased property damage due to natural catastrophes and liability from shipping emissions or ship builders
- Energy – Increased offshore energy property damage loss and liability exposure

- Equine, Livestock & Aquaculture – Exposure to losses from water scarcity, animal health and welfare, changing ocean temperature, acidification, and pathogens
- Accident & Health – Exposure to pandemics
- Crop – Impacts of climate change on agriculture, forestry, and rural areas

For more information, see Appendix 8.1.

Another group recognized that, “[i]n a transition scenario, sectors that are difficult to decarbonize could experience stranded assets, either of physical assets, or declining profitability and lack of refinancing. For some companies, the resulting liquidity shortages could lead to a lack of maintenance with increasing rates of outages and equipment breakdowns, translating into higher insurance losses.”

Managing Transition Risks in Underwriting

In addition to implementing coal exclusion policies relating to their investments, several P&C insurance groups had exclusion policies on coal or oil underwriting. For example, one group stated it “will no longer underwrite the construction and operation of new coal-fired plants or new risks for companies that generate more than 30% of their revenues from coal mining or energy production from coal. Insurance coverage for existing coal-plant risks that exceed this threshold will be phased out by 2022, and for utilities beginning in 2022.” Another group will no longer provide insurance coverage for the world’s top 5% most carbon-intensive oil and gas companies starting in July 2021. The 5% number will increase to 10% by July 2023.

DFS Expectation – As climate change impacts both the **liability and asset sides** of insurers’ balance sheets, DFS expects insurers to consider the **correlation between the two** in analyzing climate risks, and if necessary, mitigate risk due to the correlation. [3.5.2 Climate Change’s Impact on Existing Risk Factors, Paragraph 49]

Example 20 – Managing the Correlation Between Investment and Underwriting by a P&C Group

One group disclosed that its **correlated exposures of investment and (re)insurance risks**, such as within specific geographic zones, **were limited by its investment guidelines**.

Own Risk and Solvency Assessment (ORSA)

DFS Expectation – DFS expects the **ORSA to describe how the insurer identifies, categorizes, manages, and monitors climate risks**, as well as the climate-related assessment tools and methods of incorporating new climate risk information used by the insurer to monitor and respond to changes in the insurer’s risk profile due to economic changes, operational changes, or changes in business strategy. [3.5.3 ORSA, Paragraph 50]

Example 21 – Stresses Considered in a P&C Group’s ORSA

In 2020, the group began modelling specific climate change scenarios. The Deputy Chief Risk Officer developed a climate change scenario that was subsequently approved by the group’s ERM Committee. **The results of the climate change scenario will be included in the group’s ORSA.** This scenario contemplates the combination of the following stresses:

- Natural Catastrophe Risk
- Transition Risk
- Litigation Risk
- Pricing Risk
- Underwriting Risk

The group assesses the post-stress Risk Based Capital (“RBC”) (or Solvency Capital Requirement for companies regulated under Solvency II) ratio of each impacted entity. The ERM Committee has determined to maintain capital that is at least 300% of the “Authorized Control Level RBC” for each U.S. insurance company within the group. A ratio below 350% requires increased management monitoring and potential corrective action. A ratio below 300% would cause the group to re-examine its risk appetite, risk tolerance, and risk measures.

6.1.4. Modeling and Scenario Analysis

45% of P&C insurers by number of groups/unaffiliated companies (or 88% when weighted by premium) were given a “Good Progress” or “Making Progress” rating for Modeling and Scenario Analysis, with 11% (or only 1% when weighted by premium) in the “Yet to Start” category.

P&C insurers generally recognized that cyclones, windstorms, floods, and hurricanes may deviate substantially from historical trends due to changes in the hazard, such as the increase in sea surface temperature and rising sea levels from climate change. Insurers were also aware of the potential impact of climate change on tornados and severe convective storms.

Given that historical data do not capture potential future climate-related shifts of extreme weather events, one insurer combined catastrophe modeling with General Circulation Models (“GCMs”) to help understand the risk of future climate conditions. GCMs build representations of the Earth’s physical climate systems and therefore can provide model results for climatic scenarios beyond past events.

Insurers also recognized that scenario analysis and stress testing have been required by regulators, such as stress testing economic capital estimates for hurricane risks. Some insurers modeled hurricane risks in the Gulf Coast and North Atlantic. A few used a 1 in 500 years natural catastrophe risk scenario.

DFS Expectation – Given the **forward-looking** nature of climate risks and their inherent uncertainty, past experience will not necessarily be a good indicator of future conditions. [3.6 Scenario Analysis, Paragraph 54]

Example 22 – Customizing Commercial Catastrophe Models to be Forward-Looking by a P&C Group

A group disclosed that, “[a]s commercial catastrophe models are typically based on historical data and hence backward looking, they might not sufficiently account for climate risks already materializing. For this reason, [the group] is now building a view of climate change into its accumulation risk, peril-region modelling.

Models are adjusted in terms of frequency, severity and event uncertainty. Every catastrophe event provides an opportunity to learn from [the group’s] own claims experience and the modeling framework has been providing a place to capture the new insights... To ensure global

consistency, natural catastrophe exposures are modeled in the Group Risk Management function.”

DFS Expectation – *DFS expects climate change scenario analysis to be embedded in insurers’ corporate governance structures, risk management practices, and ORSAs... Insurers should **expand their current scenario analysis practices, which tend to focus on their investments, to also analyze impacts on their liabilities.** Scenario analyses should consider the impact of physical and transition risks... An insurer’s scenario analysis should include a long-term assessment of the insurer’s exposure, based on its current business model, to a range of different climate scenarios. DFS expects the **time horizon of this long-term assessment to be in the order of decades.** [3.6 Scenario Analysis, Paragraphs 54 and 55]*

Example 23 – Time Horizon for Scenario Analysis on Underwriting by a P&C Group

One group “**maintains a sophisticated mathematical Natural Catastrophe Model to understand the aggregate risk at the Group level.** It includes climate-related perils, such as tropical cyclones, extra-tropical cyclones, floods, and severe convective storms. The model is not purely relying on a single model vendor (e.g. Risk Management Solutions Inc.) but has the flexibility to use any vendor model’s output and implement proprietary adjustments to both the severity and frequency of events to reflect the '[Group’s] View' of risk. **[The Group] aims to understand the assumptions in the models, gain a multi-model view, compare to claims experience and use internal and external insight... The time scale of the changes projected is typically over a period of several decades.**”

Example 24 – A P&C Group’s Collaboration with External Climate Experts

A group “monitors emerging climate research through internal expertise and gains external insight through the Advisory Committee for Catastrophes, which is made up of world-class scientists, including an author from the Intergovernmental Panel on Climate Change.”

6.1.5. Metrics and Targets

DFS Expectation – *Insurers should consider climate risks in setting their risk appetite, tolerance, and limits. Insurers may **apply appropriate quantitative tools and metrics** and qualitative statements to help establish clear boundaries and expectations for risks that are hard to measure. [3.5.1.2 Risk Appetite, Tolerances, and Limits, Paragraph 30]*

Fewer insurers set targets related to underwriting than they do for investments. However, several U.S. and foreign groups had underwriting targets relating to:

- threshold of revenue generated from underwriting coal-based businesses,
- revenue generated from sustainable solution products, and
- number of sustainable solution products.

Example 25 – Climate-Related Natural Catastrophe Metrics of a P&C Group

A group’s “modelled Average Expected Losses (AEL) from climate-related natural catastrophes provide an indicator of [its] current exposure to perils that might be affected by climate change. The AEL analysis below reflects the current top 5 peril regions in the Group as of June 30, 2020

net of reinsurance, before tax and excluding unallocated claim adjustment expenses. This analysis helps [the group] manage risks related to insuring these perils, such as accumulation risk. Limits per peril are in place and exposure is currently within appetite.”

6.1.6. Stakeholder Engagement

Question 6 - Incentivize Risk Reduction by Policyholders

P&C insurers are uniquely positioned to directly benefit from actions by policyholders to reduce losses from climate-influenced events and many of them incentivize their policyholders to take such actions. This was covered by Question 6 of the Survey. More than half of the P&C groups/unaffiliated companies were given a “Good Progress” rating for this question when the ratings were weighted by premium. However, the percentage of groups/unaffiliated companies in the “Early Stage” or “Yet to Start” categories when the ratings were not weighted by premium was the largest among all the questions at 74%, indicating that medium to small-sized insurers are much less advanced than larger insurers on this topic.

Example 26 - P&C Insurers Incentivize Policyholders to Reduce Climate-Related Losses

Several groups offered discounts for Insurance Institute for Business and Home Safety (“IBHS”) fortified homes, homes with hurricane shutters, and homes with high building code enforcement construction. For wildfire risk, one group’s “risk engineering services work closely with clients that have exposure to wildfire risk to implement best practices to mitigate the impacts through vegetation management, defensible space, construction features, early warning systems, and more.”

While not directly linked to reducing losses, some insurers also had programs to **encourage policyholders to reduce GHG emissions**, such as discounts to encourage customers to purchase hybrid or electric vehicles, use energy-efficient equipment, and use environmentally friendly materials for home or commercial building repairs or upgrades.

Example 27 - A P&C Group Helps Policyholders with Disaster Preparedness

One group disclosed that **before, during and after severe weather events**, it might use any or all of the following to **encourage its customers to protect themselves against losses**:

- “Produce Public Service Announcements around severe weather conditions with information on how to minimize your risk of having a claim and how to file claims after an event for use by local radio stations.
 - Send e-mails to customers and agents with claims reporting information and safety tips.
 - Use social media tools (i.e., Facebook, Twitter, etc.) to reach broader audiences with claims reporting information and safety tips.
 - Provide payment leniency in some severe situations to customers who need it.
 - Deploy catastrophe response teams to affected areas to assist with claims. (Since the onset of the COVID-19 pandemic, we have shifted our approach to deploy catastrophe response teams virtually and, where possible, to affected areas to assist with claims.)
 - Inform employees about how they can assist with relief efforts.”
-

Question 7 - Engage Key Constituencies on Climate Change

As P&C insurers are in the business of helping policyholders recover from disasters, several insurers collaborated with IBHS on weather hazard research and building material improvements or supported climate adaptation efforts at the wider societal level.

Example 28 – P&C Groups Support Climate Adaptation at the Societal Level

One group was involved in the Rockefeller Foundation’s 100 Resilient Cities program, which assisted cities in identifying and managing the risks associated with climate change, as well as design and construction solutions to reduce or mitigate these risks. Through a partnership with the Insurance Development Forum—a public-private sector partnership bringing together the World Bank, the United Nations and the insurance sector—the group contributed to developing solutions in order to tackle low insurance penetration rates across jurisdictions through commercially viable means.

Another group worked with a university, industry associations, and the global insurance industry think tank The Geneva Association to promote climate change adaptation initiatives at all levels of government. These initiatives include developing tools for communities to assess their infrastructure’s vulnerability to climate change and prioritize investments in its modernization, including using nature-based solutions to manage the impacts of severe weather.

6.2 Life Insurers

Life insurers are exposed to climate risks primarily through their long-dated assets. DFS analyzed the Survey responses of 48 Life insurers (37 groups and four unaffiliated companies). 37% of groups/unaffiliated companies were given a “Making Progress” or “Good Progress” rating. When looking at the percentage by premium rather than the number of groups/unaffiliated companies, the number increased to 67%, as shown in Figure 6.

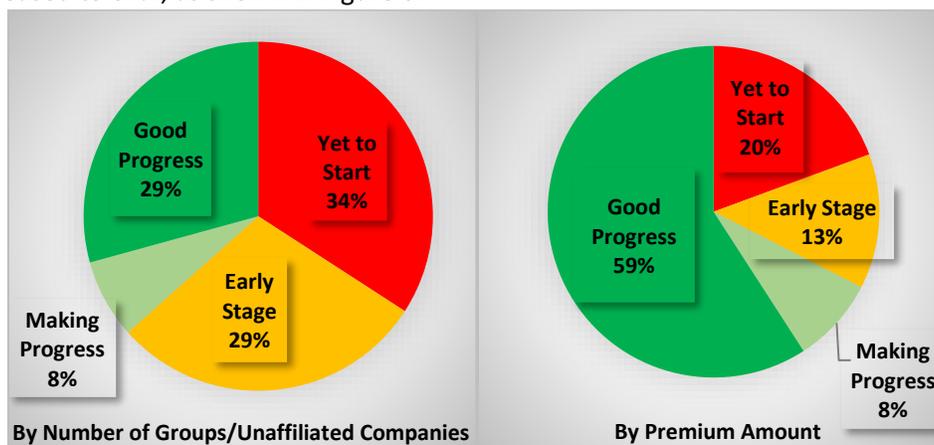


Figure 6. Composite Ratings of Life Insurers

Like P&C insurers, Life insurers with greater premium volume tended to be rated higher than those with less premium volume, as shown in Figure 7. At the same time, a few large groups were given a “Yet to Start” or “Early Stage” rating and a few smaller groups were in the “Good Progress” category.

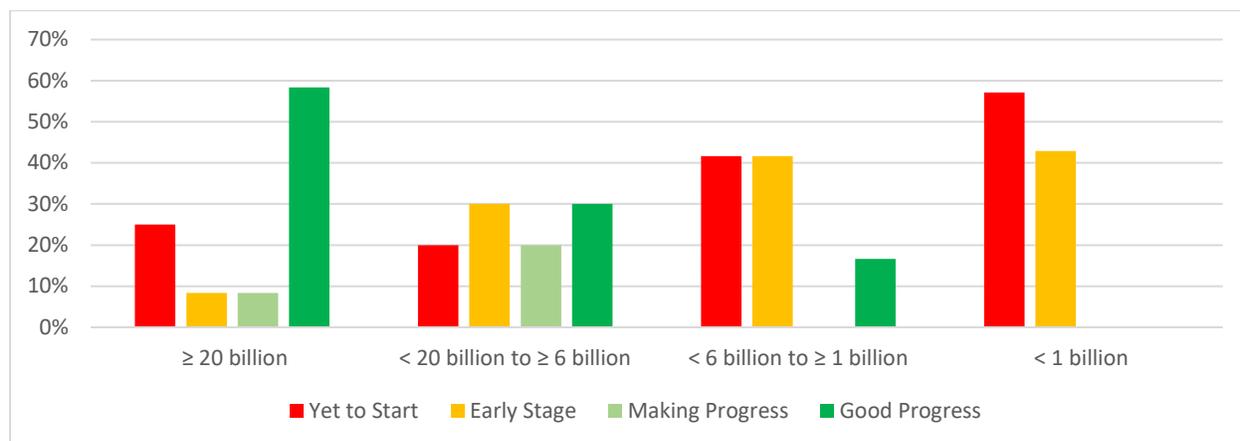


Figure 7. Composite Ratings of Life Groups/Unaffiliated Companies by Size

As the examples of good practices in Section 5 apply to Life insurers, only one additional example is provided here.

Example 29 – Climate Risk Management by a Life Insurance Group

A group stated: “[The Group] has identified that public opinion shifts and policy responses to climate change may impact certain of our investments and operations, but that the likelihood and timing of such a scenario are not known. With respect to its investment portfolio, **[the Group’s] investment discipline and risk management are executed at the asset class and strategy level by specialized teams, while overall portfolio exposures to the underlying asset classes are managed in a top-down manner through the enterprise risk management framework.** We have a process to identify and monitor emerging risks, including climate change. Top emerging risks are reviewed on a regular basis by the Enterprise Risk Management Committee. Individual investment teams identify and manage risks that apply to the specific assets that they oversee.”

6.3 Health Insurers

6.3.1 Climate Change and Human Health

Climate change is a threat not only to physical assets but also to human life and health. The 2016 U.S. Climate and Health Assessment shows that climate change affects human health by:

- (1) changing the severity or frequency of health problems that are already affected by climate or weather factors, and
- (2) creating unprecedented or unanticipated health problems or health threats in places where they have not previously occurred, such as Lyme disease spreading to new areas that used to be too cold for ticks to survive.²¹

²¹ Crimmins, A., et. al., [2016: Executive Summary. The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment](#), U.S. Global Change Research Program, Washington, DC.

For example, according to the 2016 U.S. Climate and Health Assessment, climate change can affect human health in the following ways:

- Higher temperatures result in an increase in heat-related deaths in the summer.
- Worsening air quality from rising temperatures, wildfires, and decreasing precipitation lead to increases in ozone and particulate matter, elevating the risks of cardiovascular and respiratory illnesses and death.
- Increased flood risk leads to drowning and injuries, as well as contaminated water, debris, and disruptions to essential infrastructure that can cause gastrointestinal and other illness.
- Earlier and geographically expanded tick activity due to warmer weather leads to wider spread of Lyme disease.
- Increase in temperature, humidity, and season length enables increased growth of pathogens, and seasonal shifts in incidence of *Salmonella* exposure, resulting in increased *Salmonella* prevalence in food.
- Changes in exposure to climate-related disasters and illness cause or exacerbate stress and mental health consequences.

Figure 8 is an excerpt from the 2016 U.S. Climate and Health Assessment illustrating the exposure pathways by which climate change affects human health. As recent record-breaking wildfires, hurricanes, and the COVID-19 pandemic have demonstrated, disruptions of physical, biological, and ecological systems anywhere in the world can significantly impact the health and well-being of people in the United States.²²

The center boxes list examples of the kinds of changes in climate drivers, exposure pathways, and health outcomes that are explored in this report. Exposure pathways exist within the context of other factors, set forth in the gray side boxes, that positively or negatively influence health outcomes. The box on the right lists factors that influence vulnerability for individuals and includes social determinants of health and behavioral choices. The box on the left lists factors that influence vulnerability on a larger scale, such as natural and built environments, governance and management, and institutions. All of these factors, which can affect an individual's or community's vulnerability through changes in exposure, sensitivity, and adaptive capacity, may be affected by climate change.

In addition to impacting health insurers' liabilities through impacts on human health, climate change can also impact health insurers' investments. DFS recognizes that the maturities of health insurers' investments tend to be short-dated, which helps to limit their exposure to climate risks.

²² [Climate Effects on Health](#). Centers for Disease Control and Prevention, March 2, 2021.

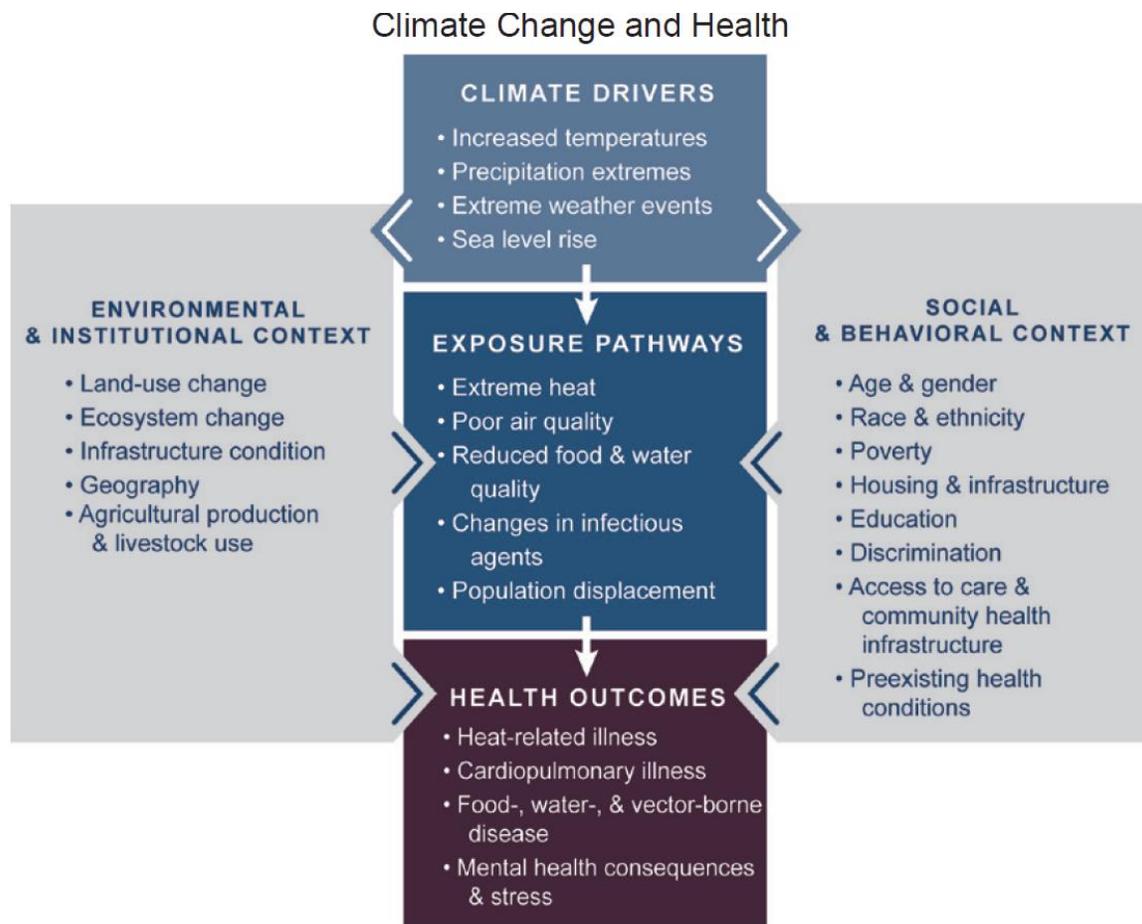


Figure 8. Climate Change and Human Health (Source: 2016 U.S. Climate and Health Assessment)

6.3.2 Health Insurers' Climate Readiness and Good Practices

DFS analyzed the Survey responses of 25 Health insurers (14 groups and two unaffiliated companies). 19% of groups/unaffiliated companies (or 69% when weighted by premium) were given a "Making Progress" or "Good Progress" rating, as shown in Figure 9. Although science has demonstrated the link between climate change and health, out of the 16 groups/unaffiliated companies that responded to the Survey, **only five recognized the impact that climate change may have on human health**, such as sicker populations, an increase in the prevalence and spread of infectious diseases, and more cases of respiratory conditions. Of the five groups, only three had any detailed discussion on the point. Two of these groups also described actions to manage potential risks from climate change on their liabilities, but these descriptions were much less detailed than those provided by P&C insurers. Health insurers mostly saw climate change as creating operational risk, such as business disruption or higher costs to operate due to higher temperatures.

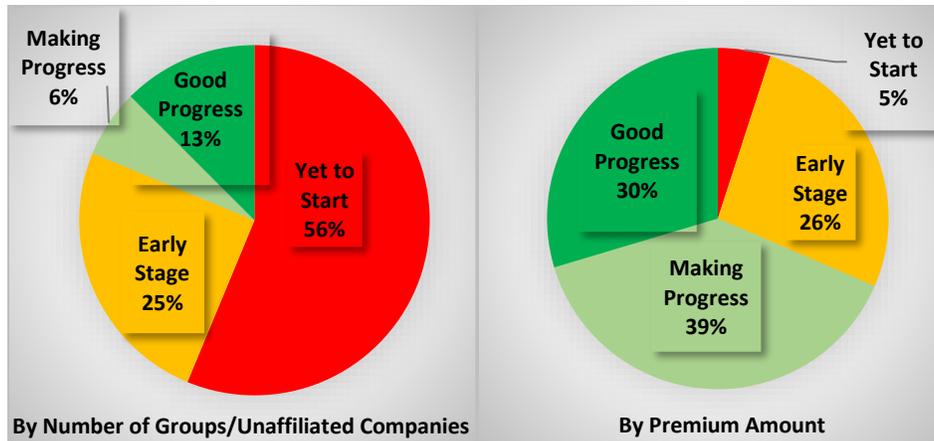


Figure 9. Composite Ratings of Health Insurers

Of the ten groups/unaffiliated companies with countrywide premiums of less than \$20 billion, one was given an “Early Stage” rating, while the remaining nine were all in the “Yet to Start” category. The larger groups with more than \$20 billion in countrywide premiums fared better, with three of the six groups in the “Good Progress” category, and no group in the “Yet to Start” category, as shown in Figure 10. When parsing the data by theme, groups/unaffiliated companies with less than \$20 billion in countrywide premiums were given an “Early Stage” or “Yet to Start” rating for all themes other than Internal GHG Management, except for one unaffiliated company that was rated as “Making Progress” for Risk Management. Some of the smaller groups/unaffiliated companies were rated as “Making Progress” for Internal GHG Management as well. Figure 16 shows the distributions of the composite ratings for Health insurers by number of groups/unaffiliated companies and by premium amount.

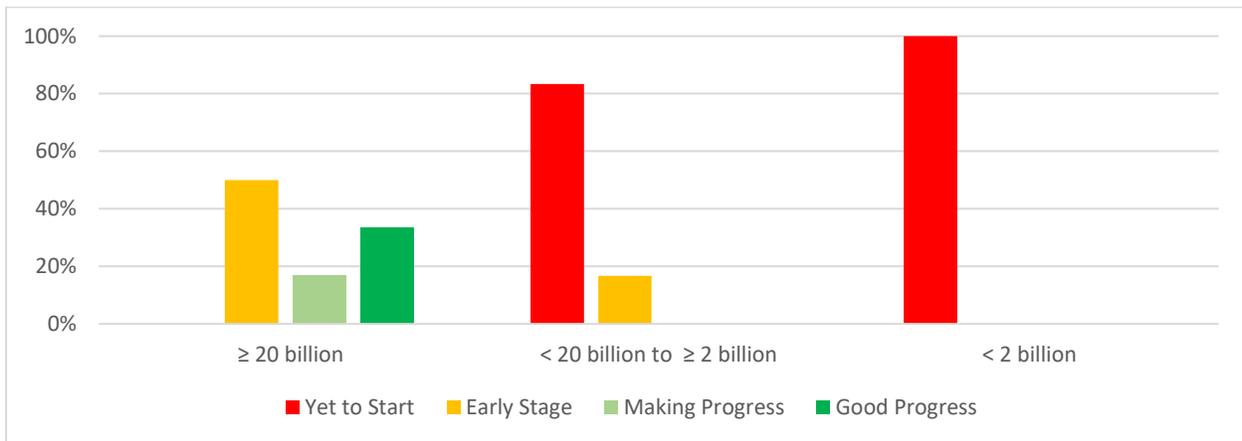


Figure 10. Composite Ratings of Health Groups/Unaffiliated Companies by Size

6.3.3 Risk Culture and Governance

Only one group out of the 16 Health groups/unaffiliated companies, or 6%, was given a “Good Progress” rating for Risk Culture and Governance. However, given the group’s larger premium volume, 15% of Health groups/unaffiliated companies were in the “Good Progress” category when the ratings were weighted by premium.

Although DFS's expectations on risk culture and governance apply to all types of insurers, given the large percentage of Health insurers that were not focused on the impact of climate change on their businesses, an example of good practices for Health insurers is provided here.

Example 30 – Responsibilities of a Health Group's Board and Senior Management on Climate

One group's "ERM governance structure consists of oversight from the **Audit Committee of the Board of Directors, Executive Management Team** (including the Enterprise Risk Management Committee (ERMC)), and a **three lines of defense model** to delegate responsibility for critical risk management processes across the business functions and operational areas, as well as risk management, compliance, and audit teams." Its **Chief Risk Officer encounters climate-related issues such as extreme weather events and environmental regulations that may contribute to those risks in the scope of the office's regular responsibilities**. Its Chief Administrative Officer has primary responsibility for the group's environmental-sustainability efforts. For more information, see Appendix 8.1.

6.3.4 Risk Management

Given most Health insurers' limited focus on climate change's impact on human health, DFS rated insurers in the "Good Progress" category if they had detailed their risk management structures and pointed out where climate risks could be identified. Five groups recognized that climate change could impact human health, two of which also described actions to manage the potential risks from climate change on their liabilities. One group identified potential climate risk factors for investments, such as changes in regulatory requirements (e.g., emissions controls), changes in supply/demand for fuel (e.g., oil, natural gas), developments in renewable energy sources, and effects of extreme weather events on industries and issuers. Another group mentioned the impact of climate change on its investments through its real estate investments and acquisitions.

Again, given the concentration of premium in the large health insurers, which tended to be more sophisticated on climate risks, the percentage of groups/unaffiliated companies when weighted by premium in the "Good Progress" category was 30% despite the small number of groups with that rating.

As Section 5.2 provides examples of good practices that are applicable to all insurers, this section only includes good practices that were unique to Health insurers.

Example 31 – Health Insurers' Assessment of Climate Change's Impact on their Liabilities

One group recognized that, "[f]rom a long-term perspective, the link between **climate change** and human health may present broader socio-economic impacts that could potentially **impact [the group's] cost structure** within the health services that we provide. For example, potential correlations have been observed between climate change with increased prevalence of **respiratory, bronchial and water-borne diseases**."

Another group disclosed that "[c]hanges in temperature and weather patterns across the US and the world have the ability to **influence disease vectors and the spread of infectious diseases as well as the frequency and the severity of chronic illnesses**... If [the group] did not prepare for changes in physical climate, **it is possible that [the group] could suffer a loss in market share due**

to lack of readiness as well as increased operational costs associated with more health-related claims being filed... Climate change risks may also affect [the group's] premium pricing, and therefore projected revenues associated with our services. Pricing and revenues are sensitive to several factors that may be impacted by climate change, including catastrophes or extreme weather events including public health epidemics or severe weather (e.g., hurricanes). We continually review estimates of future payments relating to benefit claims costs for services incurred and make necessary adjustments to our reserves, including premium deficiency reserves where appropriate.”

For more information, see Appendix 8.1.

Example 32 – Leverage Local Data to Understand Climate Risks by a Medium-Sized Health Insurer

A New York-headquartered insurer “utilized information provided by the New York State Department of Environmental Conservation (DEC), to identify climate change-related risks and impacts on our region... We also have a team of analysts that identify medical trends and can recommend actions to take to get ahead of, and react to, these trends... Warmer temperatures increase pollen production and ground ozone formation, which exacerbates asthma, allergies, and other respiratory conditions. Also, the change in climate favors the survival of insects and disease carriers, such as mosquitoes and ticks that may increase West Nile virus and Lyme disease diagnoses.”

For more information, see Appendix 8.1.

Example 33 – Climate-Related Risk Management by a Health Group

A group disclosed that it “maintains a Supply Chain and Drug Procurement organization that is responsible for pharmacy network contracting, pharmaceutical and wholesaler purchasing, and manufacturer rebate contracting for our health services business. Inflationary pressures associated with climate change could also potentially impact pricing within our health services business. In 2019, nearly 70% of our revenues was associated with our health services business. From a long-term perspective, the link between climate change and human health may present broader socio-economic impacts that could potentially impact [the Group's] cost structure within the health services that we provide.”

6.3.5 Modeling and Scenario Analysis

Given that most Health insurers perceive climate change as posing limited or no risks to their business, there was little investment in climate-related modeling and scenario analysis by Health insurers. No Health insurer was in the “Good Progress” category on Modeling and Scenario Analysis. The few companies that employed scenario modeling used it to manage risks associated with extreme weather events and operation costs.

6.3.6 Stakeholder Engagement

Health insurers were generally very engaged with their members in helping them improve their health. Many also provided philanthropic support for social and environmental causes. However, these causes were typically unrelated to climate risks. The two Health groups that were given a “Good Progress”

rating both had countrywide premiums greater than \$20 billion in 2019. All the groups/unaffiliated companies with countrywide premiums below \$20 billion were in the “Yet to Start” category, except for one that was “Early Stage.”

Example 34 – Partnership to Improving the Health of a Local Community by a Health Group

One group had an initiative to meaningfully improve the health of the communities it serves. As part of the initiative, the group **“engaged with partners to identify social determinants of health like the environmental triggers of asthma, widely acknowledged to be exacerbated by changes in climate and reduced air quality.”** The group partnered with a public-private collaboration “using technology, data analytics, and community collaboration to better understand the environmental triggers of asthma that afflicts almost 13% of the population in the city where [the group is] headquartered. The intention of this program is to identify the causes of asthma, which will then help [its] city leaders make smarter decisions about air quality.”

Example 35 – Multi-Pronged Approach in Stakeholder Engagement by a Health Group

One group disclosed it **engaged key constituencies on the topic of climate change** through the following:

- (1) reviewing potential new affiliations’ climate policy positions.
- (2) monitoring affiliates’ activities for consistency with its climate and energy strategy.
- (3) reviewing and assessing the public policy positions of trade associations on climate.
- (4) engaging with organizations that promote awareness about climate change.
- (5) promoting cross-industry dialogue on environmental and corporate responsibility.
- (6) educating customers and shareholders about climate risks.

For more information, see Appendix 8.1.

7. Conclusion

The 2020 responses to the Survey and TCFD reports showed that insurers had a wide range of sophistication in their understanding, assessment, and management of climate risks:

- The composite ratings indicate that most insurers were in the “Making Progress” category, with large or international insurance groups being generally more advanced than smaller or U.S.-based insurers and the more advanced insurers already taking actions that are aligned with DFS’s expectations in the proposed Guidance.
- P&C and Life insurers overall showed more awareness of climate risks, and had taken more actions to address them, than Health insurers. P&C insurers were more advanced on modeling and scenario analysis than Life and Health insurers. Health insurers appeared to be the least focused on climate risks based on the percentage of groups/unaffiliated companies in the “Early Stage” and “Yet to Start” categories.
- Insurers as a whole were best at managing their internal GHG emissions relative to other areas of climate risk management.

This report provides examples of good practices that insurers can use to integrate the consideration of climate risks into their governance frameworks, risk management processes, business strategies, scenario analysis, and disclosure approaches.

DFS intends to continue to evaluate and support insurers’ disclosure and progress on climate risk management.

8. Appendix

8.1 Detailed Examples of Good Practices

Example 3 – Cross-Functional Committees on Climate Risks and Opportunities

One group created a **steering committee co-chaired by the Group Chief Risk & Investment Officer and the Group Head of Communication, Brand and Corporate Responsibility** to steer the group's role in society strategy, e.g. climate, sustainability and inclusive insurance, and reviewing all related material investment, underwriting, risk, operational and policy issues faced by the Group. The authority of the committee covers all the group's operations. The committee meets on a quarterly basis and reports back to the management committee concerning material decisions taken and issues considered on which management committee guidance or decisions are needed. The company had earlier (2010) created a Group-level Responsible Investment Committee ("RIC"), chaired by the Group Chief Investment Officer. The RIC reports to the Group Investment Committee, co-chaired by the Group's Chief Financial Officer and Chief Risk and Investment Officer.

The **cross-functional Sustainability Council** of another group developed its approach to managing climate risk. The council includes leaders from a wide range of departments: Sourcing and Procurement, Corporate Relations, Law and Regulation, Corporate Administration and Real Estate, Product Operations, Enterprise Risk and Return, Protection Finance, Investments, Claims, Human Resources, and Information Security.

A third group established a **Corporate Responsibility Working Group** reporting directly to the Group Executive Committee dedicated to developing and implementing climate change policies that "place more emphasis on risk reduction, preparedness and resilience rather than purely focusing on recovery and rebuilding."

Example 8 – Management of Climate-Related Investment Risks by a Small Life Insurance Group Using Internal Managers

One life insurance group with premiums just a bit less than \$6 billion disclosed that "**Internal investment decisions are held through in-depth credit discussions that encompass all areas of an issuers business including their exposure to climate change.** This includes exposure from our investments in Oil & Gas companies, Utilities, P&C insurance companies, sovereign and municipal issuers, and other highly concentrated entities, among others. Additionally, **the majority of our external managers are signatories to the PRI [Principles for Responsible Investment]** and thereby are expected to factor in exposure to climate change in their investment decisions.

[The group] measures our investment portfolio's exposure to climate-related risks and opportunities by giving every potential investment a ranking based on ESG considerations. Scores take a balanced approach between "products sold" by a potential investee (e.g. oil & gas, electric vehicles, eco-friendly consumer products) and "internal processes" of the investee (e.g. renewable energy usage or recycling). The basis of the score is the business and financial impact via increased costs, sanctions, taxes, regulations, lawsuits, emerging competition, reputational

risk, exposure to natural disasters and/or customer demand declines, and whether management is pro-actively addressing these... These scores are viewed as supplementary data to the many financial metrics used in the credit underwriting analysis... Low ESG scores are addressed during the typical credit discussions with a particular emphasis on the impact that this might have on the issuer's credit quality and future cash flow generation.

[The group] has **incorporated ESG factors into the credit underwriting process that is used to evaluate its internally managed fixed income investments...**

As an investor, **[the group's] ultimate goal is to fulfill the fiduciary responsibility to invest assets in a prudent manner to meet present and future policyholder obligations and to maximize the long-term financial return on invested assets...** Specifically, [the group] continues to reduce its investments and exposure to energy intensive sectors such as coal, oil and gas, and minerals and mining, as these areas become riskier in the face of a low-carbon transition. This includes a reduction of oil & gas holdings of 32% since 2015, and a reduction in minerals & mining of 20% over the same timeframe. Additionally, the company is beginning to build out its responsible investment portfolio, inclusive of renewable energy projects and green bonds... **These decisions have been strengthening the resilience of [the group's] portfolio to climate-related risks, and diversifying the assets that we have under management."**

Example 10 – Management of Climate-Related Investment Risks by a Large Group

A large European-headquartered insurance group disclosed that it **"systematically integrate[s] ESG considerations** – including factors such as "Carbon Emissions" or "Climate Change Vulnerability" – **across our entire investment portfolio**, while incorporating long-term projections on the risks and opportunities of the transition to a low-carbon economy. Our core investment databases include climate and carbon data, which enables portfolio-wide analyses and measures. For our proprietary investments, the ESG Functional Rule for Investments provides the foundation of integrating climate-related issues. It comprises Asset Manager selection and systematic integration of climate and ESG factors into our investment decisions.

All asset managers acting on behalf of [the group] are required to integrate ESG into their investment process. [The group's] Investment Management closely monitors individual approaches to ensure they align with our expectations... As of the end of 2018, 99% of our assets under management were managed by asset managers... as a signatory of the UNEP-FI Principles for Responsible Investment, or who have an ESG policy in place...

We **apply our ESG scoring process to all our listed assets** including sovereign bonds, corporate bonds and public equity. We systematically assess the ESG performance of individual issuers using ESG data provided by our **external data provider**, MSCI ESG Research... Furthermore, we analyze our investment portfolio with **a broad range of climate and carbon-related data and indicators** (e.g. carbon footprint information, fossil fuel reserves incl. potential emissions, carbon efficiency scores, carbon risk and risk management indicators, low-carbon opportunities scores, decarbonization targets, etc.) using data sources including but not limited to MSCI ESG, Transition Pathway Initiative, InfluenceMap, CarbonTracker, and the Science Based Targets initiative.

[The group] continued rolling out our systematic approach to engaging investee companies throughout our global portfolio on ESG topics, with CO₂ emissions and management accounting for 24% of all engagement by topic.” The group prioritized companies based on its ESG scoring threshold. It submitted to the company questions on the identified ESG risks and engagement objectives. “If the company’s answers show significant action or willingness to improve their ESG risk management and/or to solve and avoid further ESG issues, the company engagement is closed. Should answers continually prove insufficient, the company shows no willingness to improve its ESG performance, or it does not respond to our engagement communications, the Chair of the Group ESG Board approves the restriction of that company from all proprietary portfolios based on the recommendation from [the group’s] Investment Management and the Group ESG Office.”

For **unlisted investments** such as real estate, infrastructure and private equity, upon detection of an ESG risk, the group asked its ESG office to conduct a detailed assessment whose outcome is used to decide either to proceed with a transaction, to proceed and require the mitigation and management of ESG risks, or to decline a transaction on ESG grounds. For its **real estate investments**, the group planned to measure and improve the ESG performance while applying ESG standards and performance as part of acquisition due diligence and our engagement with fund, asset and property managers.

“[The group] had invested EUR \$6.8 billion in **renewable energy** (including utility scale wind and solar power projects in the United States), \$13.3 billion in **certified green buildings**, and \$3.6 billion in **green bonds**. Through selected ESG-themed investments, we can generate stable returns and create long-term value for society.”

Example 11 – Management of Physical Risks in Investments

One group analyzed the impact of climate change, weather, and water resources on holdings in agriculture, timber, and real estate. It disclosed that for agriculture, climate change impacts may bring several challenges including climate variability and extreme weather, shifting agricultural zones, effects from rising temperatures and water stress that can compromise crop yields. Climate change can accelerate agricultural stresses such as low and declining soil fertility, soil and water degradation, and pest and disease incidence, and result in secondary impacts such as accelerated rates of soil erosion and land degradation, increased pest damage, loss of agro-biodiversity and higher rates of plant disease. As a result, a combination of deep due diligence on an asset-by-asset basis supplemented by a portfolio allocation strategy based on diversification is implemented to achieve appropriate risk-adjusted returns.

For timber investments, the group considered a major potential impact of climate change to be the decrease in natural precipitation in timberland growing areas. We deploy several strategies for managing precipitation shortfalls. A primary strategy is the hybridization and selection of tree varieties that are adapted to grow well where precipitation is low.

For real estate, the group considered its real estate portfolio to be sensitive to the effects of water scarcity and extreme weather events. The sustainability program has established the objective of

improving the efficiency of water consumption in the portfolio, mitigating the impact of restrictions in drought areas.

Example 19 – Transmission Channels of Climate Risks in P&C Underwriting

One group analyzed the key climate change risks of the insurance products it offered as falling into the following categories:

- “• Property – Increased first party property damage and possible business interruption related losses due to increased frequency / severity of weather events. We insure property globally, and this is addressed through underwriting, policy language, and our extensive use of catastrophe modeling.
 - General Liability – Potential litigation against insureds found liable for contributing either directly or indirectly to climate change or pollution. This is addressed through underwriting and policy conditions.
 - D&O – Potential D&O litigation based on how a company recognizes, analyzes, manages, and discloses environmental and/or climate risk. Potential litigation includes claims alleging breaches of fiduciary duties, claims under climate change legislation, and securities disclosure claims.
 - Environmental – Potential liability from companies emitting contaminants. This is addressed through underwriting and policy conditions.
 - Aviation – Potential liability from aircraft emissions, or companies that contribute to the manufacture of aircraft products.
 - Marine – Increased potential property damage exposure to natural catastrophe; potential exposure from opening up of arctic sea lanes where ‘new’ weather patterns emerge (new risks); potential liability from shipping emissions, or from companies that contribute to the manufacture of ship building. This is addressed through underwriting.
 - Energy – Potential increased offshore energy first party property damage loss / liability exposure.
 - Equine, Livestock & Aquaculture – Potential exposure to losses from water scarcity and animal health and welfare; aquaculture exposed to losses arising from changing ocean temperature, acidification of certain regions and pathogens. This is addressed through underwriting.
 - Accident & Health – Potential exposure to pandemics through the spread of vector borne diseases as regional climates shift.
 - Crop – The risks of climate change, such as higher temperatures, changes in precipitation, increased climate variability, and extreme weather events can result in significant impacts on agriculture, forestry, and rural areas. Climate change can affect growing seasons, precipitation, evaporation patterns, pest infestations, and weather variability all of which can impact the ultimate underwriting results. This risk is addressed through underwriting.”
-

Example 22 – Customizing Commercial Catastrophe Models to be Forward-Looking by a P&C Group

A group disclosed “**As commercial catastrophe models are typically based on historical data and hence backward looking, they might not sufficiently account for climate risks already materializing.** For this reason, [the group] is now building a view of climate change into its accumulation risk, peril-region modelling.

Models are adjusted in terms of frequency, severity and event uncertainty. Every catastrophe event provides an opportunity to learn from [the group’s] own claims experience and the modeling framework has been providing a place to capture the new insights. For severity, a set of 13 adjustment factors addresses potential losses from non-modeled property-related exposures or secondary perils to the extent not covered by the third-party models. Models and model adjustments are based on science, engineering and claims experience and expert judgement. Output from catastrophe models are subject to significant uncertainty, especially for rarely occurring but severe events. The level of sophistication and maturity of a model varies significantly by peril region. The amount of claims experience used for model calibration is an important factor. Also, the output may change over time for different reasons including exposure and vulnerability changes, model updates and exposure data quality.

To ensure global consistency, natural catastrophe exposures are modeled in the Group Risk Management function.”

Example 30 – Responsibilities of a Health Group’s Board and Senior Management on Climate

One group’s “ERM governance structure consists of oversight from the Audit Committee of the Board of Directors, [the group’s] Executive Management Team (including the Enterprise Risk Management Committee (ERMC)), and a three lines of defense model to delegate responsibility for critical risk management processes across the business functions and operational areas, as well as risk management, compliance, and audit teams.”

Its Chief Risk Officer (CRO) – “Given that risks evaluated at various operational levels includes pricing, operational, strategic, regulatory, and financial markets risks, **the CRO encounters climate-related issues such as extreme weather events and environmental regulations that may contribute to those risks in the scope of the office’s regular responsibilities.** [The group] therefore considers the CRO office to inherently have the highest level of management for climate-related issues... The CRO is responsible for overseeing the ERM framework on behalf of the Board of Directors, and ensuring the framework is appropriately implemented across the three lines of defense functions. The framework considers assessment and management of environmental risks that may be related to climate change.”

Chief Administrative Officer (CAO) – The CAO has primary responsibility for the group’s environmental-sustainability efforts such as the Workplace Solutions team for goal-setting and

tracking energy consumption and carbon emission, and operational environmental policies, including those around energy management and climate-change mitigation / adaptation.

Additional Ownership - All associates of the group are considered Corporate Social Responsibility (CSR) ambassadors with a responsibility to demonstrate their commitment to integrating sustainability into how they work. More than 4,000 associates are actively involved in the group's virtual social green network.

Example 31 – Health Insurers' Assessment of Climate Change's Impact on their Liabilities

One group recognized that “[i]nflationary pressures associated with climate change could also potentially impact pricing within our health services business... From a long-term perspective, **the link between climate change and human health may present broader socio-economic impacts that could potentially impact [the group's] cost structure within the health services that we provide.** For example, potential correlations have been observed between climate change with increased prevalence of respiratory, bronchial and water-borne diseases. [The group's] efforts to increase the quality and affordability of health care, such as our focus on preventive care and digital health, have the potential to also support climate change mitigation and adaptation.”

Another group disclosed that “[c]hanges in temperature and weather patterns across the US and the world have the ability to **influence disease vectors and the spread of infectious diseases as well as the frequency and the severity of chronic illnesses.** If this were to happen, it could lead to increased incidences of chronic illnesses and in the type of clinical services [the group] will need to offer its members. For example, ‘The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment’ published by the U.S. Global Change Research Program notes that climate change is already resulting in significant public health impacts which will continue to worsen if GHG emissions are not addressed.

If [the group] did not prepare for changes in physical climate, **it is possible that [the group] could suffer a loss in market share due to lack of readiness as well as increased operational costs associated with more health-related claims being filed.** It is difficult to assess the financial impacts of these risks given the complexity of climate change and population health, however we do not currently anticipate substantial bottom line impacts.

Climate change risks may also affect [the group's] premium pricing, and therefore projected revenues associated with our services. Pricing and revenues are sensitive to several factors that may be impacted by climate change, including catastrophes or extreme weather events including public health epidemics or severe weather (e.g. hurricanes). We continually review estimates of future payments relating to benefit claims costs for services incurred and make necessary adjustments to our reserves, including premium deficiency reserves where appropriate. However, these estimates involve extensive judgment, and have considerable inherent variability that is sensitive to claim payment patterns and medical cost trends. Senior level management will review pertinent information and have the ultimate authority to recommend changes in services offered and cost structures related to shifts in claims filed, or other company procedures in order to reduce impacts from these changes in customer claims and health trends related to changes in

climate. The results of our partner dialogues and regional trending will inform future decisions around services offered to mitigate these impacts.”

This group also evaluated the operating costs for its data centers from higher temperatures and potential disruption from natural disasters to its members and employees.

Example 32 – Leverage Local Data to Understand Climate Risks by a Medium-Sized Health Insurer

A northeastern New York headquartered insurer “**utilized information provided by the New York State Department of Environmental Conservation (DEC), to identify climate change-related risks and impacts on our region.** According to the NYS DEC, immediate impacts include: increase in average annual precipitation with more concentrated in the winter than the summer; increase in overall amount of precipitation during heavy events (downpours); and a decrease in the winter snow cover.

The expectation from NYS DEC is that more warming will occur in Northeastern New York. It’s predicted that by 2100 the growing season will be 1 month longer with intense summers (heat waves and extreme heat) and milder winters. Also predicted is a continual increase in precipitation...

We also have a team of analysts that identify medical trends and can recommend actions to take to get ahead of, and react to, these trends. **This is important, as the longer summers have brought with them an increase in health risks.** Warmer temperatures increase pollen production and ground ozone formation, which exacerbates asthma, allergies, and other respiratory conditions. Also, the change in climate favors the survival of insects and disease carriers, such as mosquitoes and ticks that may increase West Nile virus and Lyme disease diagnoses.”

Example 35 – Multi-Pronged Approach in Stakeholder Engagement by a Health Group

One group disclosed it **engaged “key constituencies on the topic of climate change** through the following:

- (1) Prior to entering into new affiliations or expanding the scope of current affiliations, an organization’s policy positions are among the several factors that we consider.
- (2) Through membership and committee participation, we are able to monitor whether their activities are consistent with our climate and energy strategy.
- (3) We utilize our annual disclosures to the CDP Climate Change program as an opportunity to further review and assess whether the public policy positions of trade associations for which [the group has an affiliation are consistent with our own climate change strategy.
- (4) [The group] is engaged in a number of organizations that promote awareness about climate change, including the Business Roundtable and the UN Global Compact...
- (5) [The group] is also engaged in other activities to promote the relationship between planetary health and human health. Our Corporate Responsibility team engages with

organizations and other companies through participation in events and conferences... to promote cross-industry dialogue on how to address environmental and corporate responsibility challenges and opportunities – including those related to climate change...

(6) [The group] educates customers and shareholders about climate risks through disclosures such as the company’s annual Corporate Responsibility Report.”

8.2 Climate Data Sources Used by Insurers

Below are climate data sources that insurers had used according to their Survey responses or TCFD reports. The data provided by these sources related to, among other things, carbon footprint information, fossil fuel reserves including potential emissions, carbon efficiency scores, carbon risk and risk management indicators, low-carbon opportunities scores, decarbonization targets, and warming potential. DFS does not endorse any service providers. The descriptions of the sources are from the sources’ websites.

Physical climate data

- [The Intergovernmental Panel on Climate Change \(“IPCC”\)](#): The IPCC is the United Nations body for assessing the science related to climate change.

Transition risks data

- [Carbon Tracker](#): An independent financial think tank that carries out in-depth analysis on the impact of the energy transition on capital markets and the potential investment in high-cost, carbon-intensive fossil fuels.

Company GHG emission and sustainability commitment data

- [CDP](#): CDP (formerly Climate Disclosure Project) is a not-for-profit charity that runs the global disclosure system for investors, companies, cities, states, and regions to manage their environmental impacts.
- [InfluenceMap](#) – for corporate lobbying: An independent think tank that provides data and analysis on how business and finance are affecting the climate crisis.
- [Science Based Targets initiative \(“SBTi”\)](#) – for companies to set science-based emissions reduction targets: The SBTi is a partnership between CDP, the United Nations Global Compact, World Resources Institute, and the Worldwide Fund for Nature that promotes and provides companies with resources and best practices in emissions reductions and net-zero targets that are in line with climate science.

Investment-related ESG and sustainability data

- [Beyond Ratings](#): Helps clients to better integrate new risk parameters embedded in energy, climate change, natural capital, environment, social and governance factors and therefore improve their internal processes and investment strategies regarding ESG integration. Insurers used it to evaluate the carbon intensity and warming potential of their sovereign debt portfolios.
- [MSCI ESG Research](#): ESG performance data for issuers. Insurers also referenced Carbon Delta, which was purchased by MSCI. Insurers used Carbon Delta to evaluate the warming potential,

physical and transition risks costs, and green revenues of their corporate bond and equity portfolios.

- [S&P Global Trucost](#): Helps corporations, financial institutions, and governments build resilience and get ahead in the transition to a low-carbon, sustainable and equitable future while also serving as the data and analytics engine that powers many of S&P Global's ESG solutions. Insurers used it to evaluate the carbon intensity of their corporate bond, equity, sovereign debt, and real asset portfolios.
- [Transition Pathway Initiative](#): A global, asset-owner led initiative that assesses companies' preparedness for the transition to a low-carbon economy. It provides data for ESG integration, active ownership, voting, production creation, and due diligence.

8.3 Industry Networks Utilized by Insurers

Below is a list of networks providing guidance, research, and engagement related to climate change and sustainability issues that insurers had participated in according to their Survey responses or TCFD reports. The list is not exhaustive, and the inclusion of any particular network does not constitute an endorsement by DFS. The descriptions of the networks are from their websites.

Insurance-Focused Networks

- [United Nations Environmental Programme Finance Initiative \(UNEP FI\) Principles for Sustainable Insurance \(PSI\) Initiative](#): UNEP FI PSI serves as a global framework for the insurance industry to address ESG risks and opportunities. DFS is a supporting institution of PSI.
- [Insurance Development Forum \(IDF\)](#): The IDF brings together private sector insurers, reinsurers, and brokers, together with the World Bank and the United Nations Development Program. The IDF aims to optimize 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.

Investor-Focused Networks

- [Ceres Investor Network](#): The Ceres Investor Network focuses on climate risk and sustainability, is comprised of 163 institutional investors around the world, and organizes regular corporate engagement on sustainability issues.
- [Global Impact Investing Network](#): Network powered by investors who are determined to generate positive social and environmental impact, as well as financial returns.
- [United Nations-Convened Net-Zero Asset Owner Alliance](#): An international group of institutional investors with a commitment to transitioning their investment portfolios to net-zero GHG emissions by 2050 consistent with a maximum temperature rise of 1.5°C above pre-industrial temperatures, taking into account the best available scientific knowledge, and regularly reporting on progress, including establishing intermediate targets every five years.
- [United Nations Principles for Responsible Investment](#): A set of six investment principles that offer a menu of possible actions for incorporating ESG issues into investment practice.

Corporate Leadership in Climate or Environmental Sustainability

- [Alliance of CEO Climate Leaders](#): A group of 50 CEOs set up by the World Economic Forum to actively engage in global efforts to create market opportunities for tackling climate change. Its goals are to promote strong climate action, including a commitment to reduce carbon

emissions, support the TCFD, support low-carbon solutions and finance, and promote adequate regulation.

- [Business Roundtable's Energy and Environment Committee](#): Supports policies that leverage America's strengths in technology and energy diversity to maximize our options and preserve environmental safety.
- [United Nations Global Compact](#): Corporate sustainability initiative encouraging companies to align strategies and operations with universal principles on human rights, labor, environment, and anti-corruption.