

NCOIL Special Environmental, Social, and Governance (ESG) Series

Part 1—Introduction to ESG and environmental aspects: An actuarial perspective

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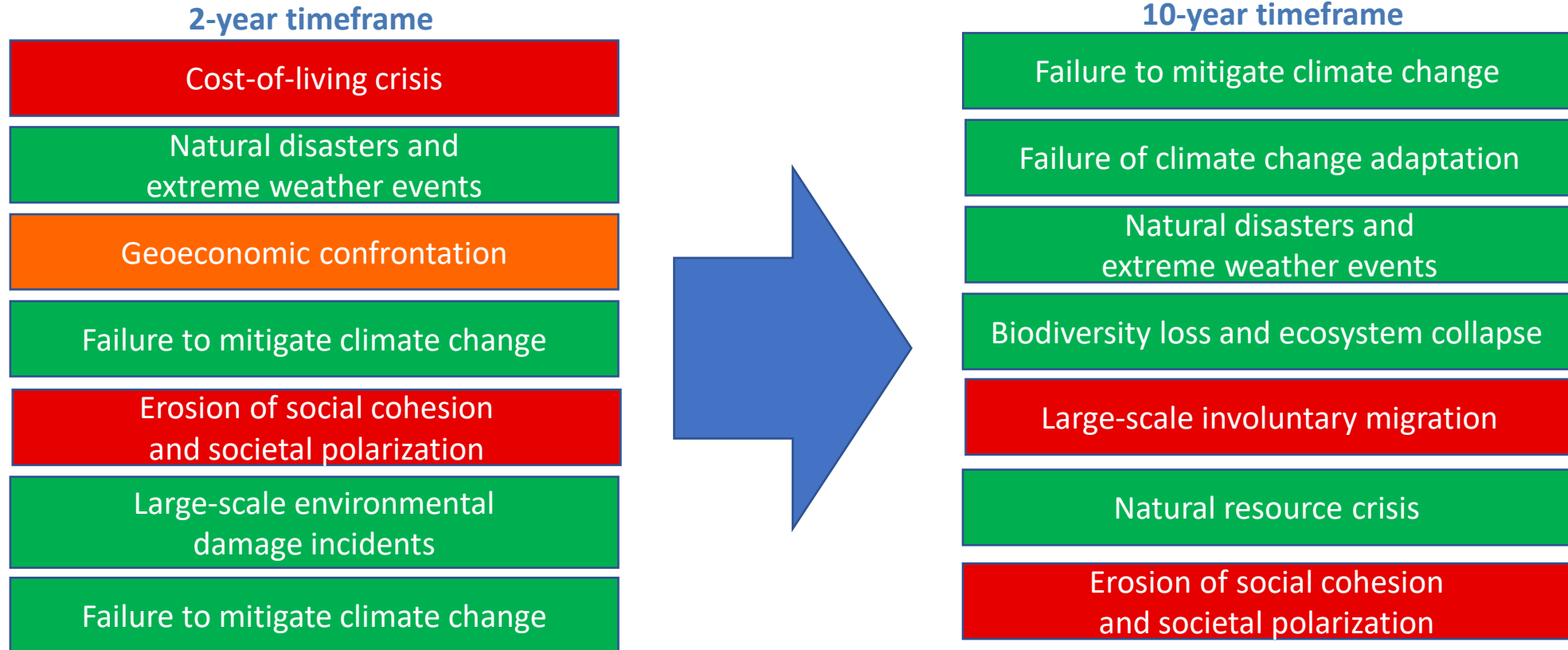
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Expected Growth in ESG Risk

Global risks ranked by severity over the short and long term (top 7)
 An increasing concern for environmental issues in a 10-year timeframe



Risk categories | Economic | Environmental | Geopolitical | Societal | Technological

Source: World Economic Forum Global Risks Perception Survey 2022-2023.



ESG, focusing on the 'E', and Risk Management

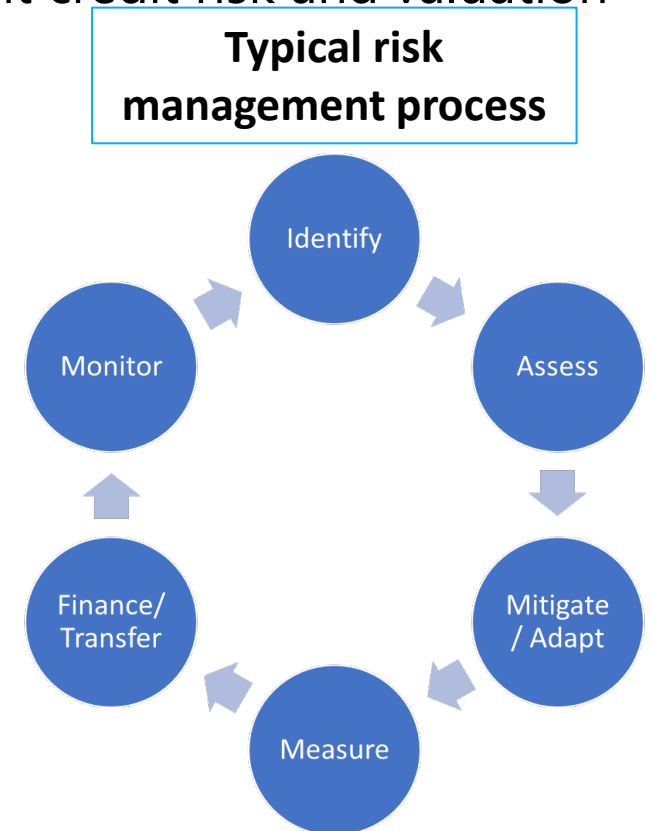
- Although ESG reporting is important
 - The management of these risks is more important for both sound and prudent financial management and long-term sustainability of a firm
- For an insurance company
 - Invested assets
 - Valuation of the effects of environmental risks
 - Insurance operations and liabilities
 - Coordination with the insurer's Own Risk and Solvency Assessment (ORSA)
- The involvement of a multi-disciplinary team optimizes planning and execution

ESG Factors

- ESG risks involve more than just climate
 - Environment, including stranded assets, fragile supply chains, ...
 - Social, including pay inequality, ...
 - Governance, including board inattention, reputation risk ...
- Actuaries have to pay attention to these risks, as they affect the entity to which they provide advice and the business problem addressed
 - In loss projections, scenario analyses, investment valuations, risk management, and disclosures
 - Product design and reinsurance design and protection
 - Benefits, costs, and effectiveness of mitigation and adaptation

ESG Risk Management

- These risks are different than those that actuaries have traditionally addressed
 - Hazards can affect insurance underwriting and interest/investment credit risk and valuation
 - Decarbonization risk can affect ultimate asset values
 - Climate/weather-related risks
 - Changes in their level and volatility
 - Sudden, e.g., Southeastern hurricanes and temperature volatility
 - Slowly developing, e.g., Southwestern droughts and sea-level rise
 - Business risks, e.g., interruptions and individuals



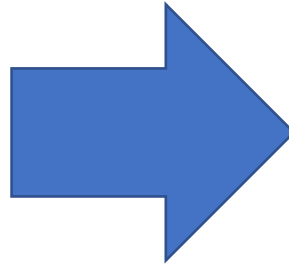
Actuarial Contributions

- Actuaries can contribute based on their experience and skillset
 - Modeling, approach to risk, study of heterogeneity, uncertainty, contributions to multi-disciplinary teams, insurance policy driven incentives, and both short and long-term time frames
 - Concern with indirect and consequential risks
 - Coordination between ESG risk analysis, ORSA preparation/analysis, and pricing/valuation of insurance products
- Data sources
 - Relatively new to most actuaries
 - Significant weather and other environmental data sources becoming available
 - Examples—National Oceanic and Atmospheric Administration (NOAA), Aqueduct (water risk), Climate Impact Explorer (cyclones, wildfires), Cross Dependency Initiative (XDI)
 - Scenario sources such as The 2022 IPCC 6th Assessment, The International Energy Agency (IEA), and The Network of Central Banks and Supervisors for Greening the Financial System (NGFS)

Applicable Actuarial Skillset

- Current

- Risk assessment and risk management
- Modeling
- Statistical and data analysis
- Uncertainty analysis
- Professional skepticism and curiosity



- To be further developed

- Climate and environmental change risks and damages
- Environmental data sources and catastrophe modeling (existing models will need adapting)
- ESG mindset
- Work with multi-disciplinary teams with a different set of team members

- Research resources – expanding number of papers, including the Actuaries Climate Index (<https://www.actuary.org/node/13308>)
- Continuing education programs, e.g., Society of Actuaries' new Climate Risk Certification program

Navigating Uncertainty

- Many significant sources of uncertainty in addition to normal challenges involved in peering into the future
 - Extent of climate change resulting from alternative emission levels
 - Level and effectiveness of adaptation
 - Extent of exposure, vulnerability, and insurance coverage
 - Extent and location of damages and losses
 - When tipping points will be reached
- Primary methods are stochastic modeling and scenario testing
 - Development of realistic alternative scenarios is the dominant approach

Social Discounting

A method for investment analysis

- In determining mitigation/adaptation action, priorities to allocate scarce resources need to be set
 - Present value of future costs and benefits may provide valuable framework
- A useful approach has been referred to as 'social discounting'
 - The long-term (market-based) discount rate should be reduced to reflect several factors, including
 - Externalities and co-benefits (e.g., effects of reduced pollution)
 - Significant uncertainties
 - May be irreversible
 - Certain difficult-to-quantify and qualitative issues, such as higher mortality/ill-health are rarely reflected
 - Intergenerational equity, sustainability concerns

Effects on Future Laws & Regulations

- Research being conducted, especially regarding effects on assets
 - NAIC surveys, New York and California insurance department data-gathering
- Upcoming standards and rules
 - Upcoming U.S. Securities and Exchange Commission (SEC) required disclosures
 - Upcoming International Sustainability Standards Board (ISSB) standards
 - Generally following voluntary recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD)
- Issues confronting insurers and their regulators
 - Voluntary vs. mandatory disclosures
 - Consistency vs. specific entity exposure
 - Cost of disclosure
 - Embedding climate risk management into insurer's operations
 - Importance of asset vs. insurance risk