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Beyond Risk Transfer: Exploring Reinsurance as a Catalyst for Sustainability in the Insurance Sector

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Abstract
With a global population exceeding eight billion, the insurance industry faces significant risks from environmental changes, dynamic economies, and critical business processes. Increasingly, insurers are addressing Environmental, Social, and Governance (ESG) issues to enhance accountability and transparency. This study explores the integration of ESG principles into insurance operations, emphasizing the role of reinsurance in promoting sustainable practices. Reinsurance methods such as quota share, excess of loss, stop loss, catastrophic bonds, and sidecars are crucial for managing catastrophic risks and ensuring financial stability. The study highlights the industry's efforts to incorporate ESG factors into underwriting and investment decisions, fostering innovation and long-term viability. Partnerships with governments, NGOs, and businesses, alongside regulatory mandates for ESG disclosures, are driving this shift towards sustainability. Ultimately, reinsurance supports the insurance industry's commitment to a resilient and inclusive society, aligning risk management with broader environmental and social goals.

Keywords: Risk Management, Sustainable Insurance, ESG, Climate risk, Reinsurance, Sustainability

Introduction

The world is facing serious risks due to environmental changes, dynamic economies, and critical businesses processes. People now expect more accountability and transparency from governments and companies, seeking policies and products that address new challenges and opportunities. The insurance industry's main role is managing risk, and more insurers are now addressing environmental, social, and governance (ESG) issues. Under the Principles for Sustainable Insurance, insurers are turning these goals into actions. This includes integrating ESG issues into their operations, collaborating with clients, suppliers, and governments to raise awareness, and creating new risk management products and services.

Sustainable insurance demands a strategic approach where every facet of the insurance value chain operates responsibly and with a forward-looking perspective. It involves the identification, managing and monitoring of risks and opportunities related to environmental, social, and governance (ESG) issues. The goal of sustainable insurance is to mitigate risk, foster innovation, enhance business performance, and contribute to environmental, social, and economic sustainability.

The United Nations Environment Programme (UNEP) Financial Initiative launched the Principles for Sustainable Insurance (PSI) at the 2012 UN Conference on Sustainable Development. These principles serve as a global framework for the insurance industry to address ESG risks and opportunities, representing the largest collaborative effort between the UN and the Insurance sector.

The insurance industry's fundamental purpose is to understand, manage, and bear risks, relying on the trust placed in it by society to fulfil its obligations. By preventing and reducing risks and spreading them across a broad base, the insurance industry helps safeguard society, stimulate innovation, and support economic development, thus contributing to a well-functioning and sustainable society.

In the face of accelerating environmental, social, and governance challenges, the insurance industry recognizes the need to adapt its risk management practices. ESG issues increasingly intersect with traditional risk factors and can significantly impact the industry's viability. Therefore, resilient risk

management must incorporate holistic and forward-thinking considerations of ESG issues. As stewards of risk and investors, the insurance industry plays a crucial role in promoting sustainable economic and social development. Effective management of ESG issues strengthens the industry's contribution to building a resilient, inclusive, and sustainable society.

Addressing many ESG issues requires widespread societal action, innovation, and long-term business solutions. Hence, the insurance industry aspires to build upon its existing foundation in support of a sustainable business model. To achieve this vision, the industry commits to implementing the Principles for Sustainable Insurance within its spheres of influence, while adhering to applicable laws, regulations, and duties to shareholders and policyholders.

Reinsurance is a crucial component of the insurance industry with significant economic implications. While past research on risk management has explored the impact of reinsurance, there is a growing interest in recent years in the intersection of sustainability and ESG concerns and their effects on reinsurance practices. This study examines how insurers leverage reinsurance to navigate complex risks and enhance sustainability. The Reinsurance methods mitigate risks, ensures financial stability, and expands capacity, fostering innovation and expertise. By effectively utilizing reinsurance, insurers can adapt to climate risks, uphold responsible practices, and create long-term value while addressing societal and environmental concerns.

Literature review

This literature review aims to assess the effectiveness of Reinsurance process and strategies in attaining Sustainable Insurance goals by analysing existing research in the field. It seeks to explore the feasibility of utilizing reinsurance to promote sustainability within the insurance industry.

Sustainable insurance integrates environmental, social, and governance (ESG) considerations into the insurance value chain, promoting long-term economic, social, and environmental sustainability. Research by the United Nations Environment Programme Financial Initiative (UNEP FI) highlights the Principles for Sustainable Insurance (PSI), which guide insurers in addressing ESG risks and opportunities (UNEP FI, 2012).

Friede, Busch, and Bassen (2015) conducted a meta-analysis on the relationship between ESG criteria and corporate financial performance. Their findings intimate that incorporating ESG factors into investment portfolios can lead to better long-term returns for insurers. This allies with the growing trend of responsible investing in the insurance sector (Friede, Busch, & Bassen, 2015).

ESG factors and sustainable insurance will influence all business operations of insurers and pension funds, especially impacting investment activity, risk management, product management, and the valuation of assets and liabilities. (Kiran Sood et al 2024)

Research by Weber (2014) point out the integration of Environmental, Social, and Governance (ESG) factors into insurance underwriting processes. The study emphasizes that insurers incorporating ESG criteria can better assess risks and contribute to sustainable development. This approach not only aligns with regulatory expectations but also enhances the insurer's reputation and risk management practices (Weber, 2014).

Sustainability practices help minimize financial risks for insurance firms and support the development of effective policy frameworks. Beiragh et al. (2020) explored how sustainability-related decision-making models influence the performance of insurance companies. A key gap identified in their research is the inadequacy of existing decision models used to evaluate insurers, which affects the accuracy of financial valuations. To address this, the study recommends the use of Principal Component Analysis (PCA) to reduce valuation inconsistencies, supplemented by the Analytic Hierarchy Process (AHP) to overcome the limitations inherent in PCA. The findings suggest the necessity of adopting innovative valuation techniques that enable insurers to derive more precise financial metrics for strategic planning. Furthermore, corporate governance and sustainability practices, as highlighted by Al Hammadi and Nobanee (2019), play a crucial role in determining a

company’s sustainability performance. This insight forms the foundation of this report, which examines the impact of sustainability strategies on the insurance sector’s performance.
A study by Kolbel and Busch (2020) investigates that how ESG considerations impact insurance claims and overall risk management. Their research specifies that insurers who actively manage ESG risks tend to experience fewer and less severe claims, highlighting the importance of ESG in underwriting and risk assessment (Kölbel & Busch, 2020).
Studies have shown that incorporating ESG factors into underwriting and investment decisions can enhance risk management, foster innovation, and improve overall business performance (Geneva Association, 2020). Additionally, sustainable insurance practices contribute to broader societal goals, such as climate change mitigation and social inclusion (Allianz SE, 2021).
The PSI ESG Guide for non-life insurance (UNEP FI, 2020a, 2020b) is the first of its kind to address ESG issues in the insurance sector, aiming to enhance awareness of the potential advantages of integrating ESG considerations into the insurance business model (Gatzert & Kosub, 2016, pp. 1357–1358).
Reinsurance plays a pivotal role in sustainable insurance by providing risk mitigation, financial stability, and increased capacity for primary insurers. According to research, reinsurance supports the development of sustainable business models by helping insurers manage catastrophic risks and adapt to changing environmental conditions (Swiss Re Institute, 2019). It also fosters innovation and expertise in addressing emerging sustainability challenges, aligning with ESG goals (Munich Re, 2020).
Reinsurance is crucial in today's insurance landscape, providing risk transfer, financial stability, and increased underwriting capacity for primary insurers. Recent studies highlight the growing complexity of global risks, such as climate change, cyber threats, and pandemics, necessitating sophisticated reinsurance strategies (Swiss Re Institute, 2023). Research underscores the importance of reinsurance in managing catastrophic risks, which are becoming more frequent and severe due to climate change (Munich Re, 2022). Effective use of reinsurance enables insurers to navigate uncertainties and uphold responsible practices, thus contributing to long-term viability and societal well-being (Lloyd's of London, 2021).
Denial by Apollo Lloyd’s for the underwriting of Adani’s Carmichael coal mine in Australia following the expiry of the policy in 2021, shows that reinsurers around the world are displaying a deep interest in ESG issues (Debevoise & Plimpton 2021).
Furthermore, reinsurance is adapting to new regulatory environments and economic uncertainties, ensuring insurers remain resilient in the face of emerging challenges (Lloyd's of London, 2023). Innovations in reinsurance, such as the use of data analytics and alternative capital, are enhancing the industry's ability to predict and manage risks more effectively (Aon, 2023).

Need of the study

This study focuses on the evolving reinsurance practices in which insurance companies leverage the expertise of reinsurance firms to navigate complex risks. This collaboration creates an environment where insurers can strengthen risk management strategies, with a particular focus on sustainability. The key question is how reinsurance, as a strategic tool, intersects with sustainability goals in the insurance sector. It examines how utilizing reinsurance can not only mitigate risks but also promote sustainable business practices. By exploring these emerging reinsurance models, the study aims to highlight the interconnectedness of reinsurance and sustainability objectives. It aims to demonstrate how these practices enhance the financial resilience of insurers while aligning with broader environmental, social, and governance (ESG) priorities. Ultimately, the research aims to emphasize the essential role reinsurance plays in shaping a sustainable future for the insurance industry, where risk management is both robust and socially and environmentally responsible.

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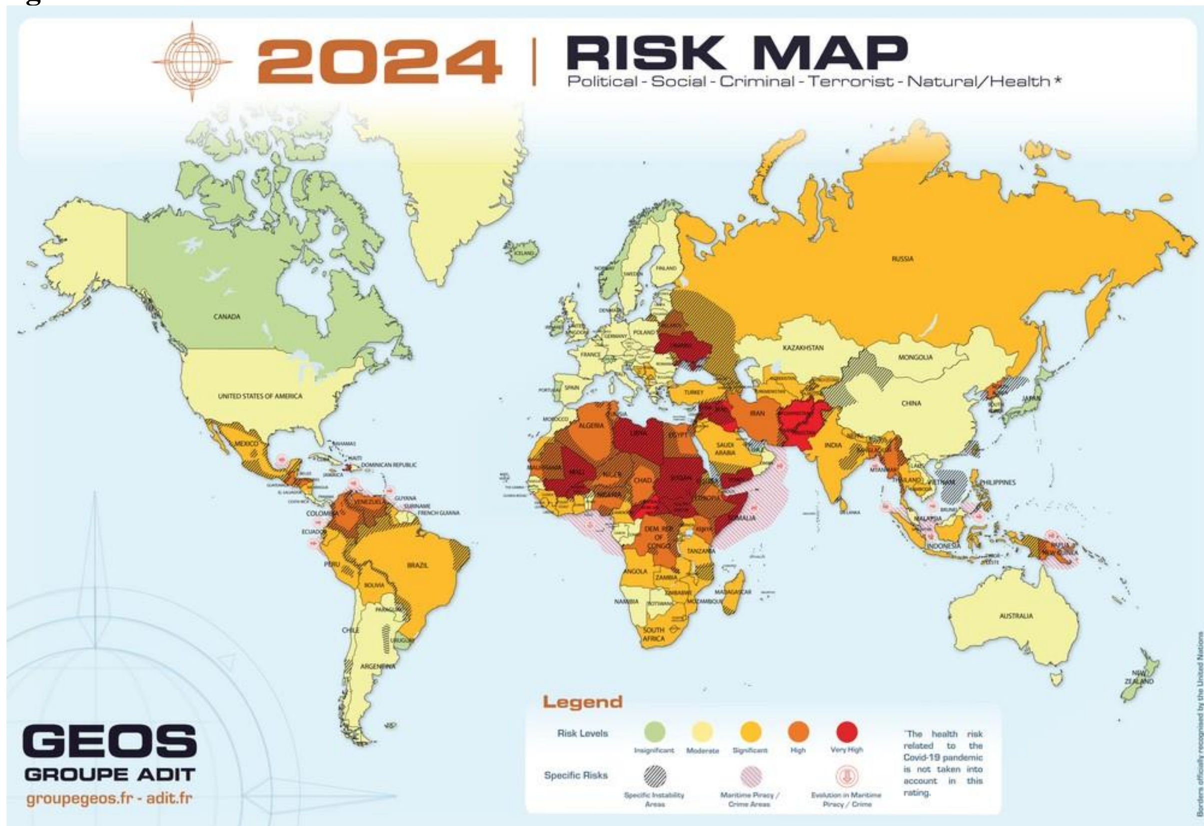
Research Methodology

This study used secondary sources of information to explore the Reinsurance business model to achieve Sustainable insurance, A through literature review conducted to identify and gather relevant secondary sources of information. These sources include academic journals, books, industry reports and online databases. The process involved organizing the information, categorizing it into relevant themes, and developing a framework to study the reinsurance as a model for sustainable Insurance.

The global assessment of risks



Source: GEOS Groupe Adit Risk Map 2024 -Figure1

The GEOS 2024 risk map (Figure 1) rates countries based on five main parameters: political situation, social conditions, crime, terrorism, and natural risks. After COVID-19, considering the impact of health risks, it has been added for the consideration. The map also highlights unstable areas and tracks piracy and maritime robbery trends in different regions. Natural risks are emerging globally in diverse forms. The above figure illustrates the weight of various risk and classify the regions based on the severity of the risks worldwide.

The Atlantic faces hurricanes, causing widespread damage along coastal areas. The Pacific Rim experiences frequent earthquakes and tsunamis, threatening lives and infrastructure. Africa grapples with severe droughts, impacting agriculture and water supply. Australia and California are increasingly vulnerable to wildfires, exacerbated by climate change, leading to massive destruction and loss of biodiversity. Southeast Asia frequently endures devastating floods and typhoons, displacing populations and disrupting economies. India is highly susceptible to the impacts of climate change, With agriculture accounting for 18% of its GDP and employing nearly half of the population, significant climate-related effects could severely impact the workforce and the economy.

Each region's unique environmental threats require specialized risk management strategies to mitigate their impacts and enhance resilience against these growing natural hazards.

Insurance companies categorize risks based on severity into five types: critical, high, moderate, low, and negligible. While they effectively manage negligible, low, and moderate risks, handling high and critical risks, including natural catastrophes and environmental threats, is crucial for sustainability therefore they transfer critical risk and a sum of risks over retention limit to reinsurance companies.
To address critical and high risks, insurers transfer them to reinsurance companies. Reinsurers, incorporating Environmental, Social, and Governance (ESG) factors, manage these risks in accordance with business contracts. This approach aligns with the global framework established by the United Nations Environment Program (UNEP) under the Principles for Sustainable Insurance. By doing so, reinsurance companies ensure that ESG risks and opportunities are effectively addressed, supporting the insurance industry's commitment to sustainable practices and resilience in the face of environmental challenges.

The strategic approach:
Insurance companies use various methods to share excessive risks, either as individual risks (facultative risks) or as groups of risks in each category (quota or surplus share) with reinsurance companies. By using these tools, they develop a sustainable model to determine their retention limit for each category and transfer excess risks, especially in high and critical risk categories. Different methods, as shown in the figure 2, help transfer excess risks to reinsurance companies. This model aids in managing environmental and social risks, such as significant human losses due to natural catastrophes or catastrophic business losses from Acts of God. For example, the figure demonstrates how insurance companies employ several techniques to transfer risk to reinsurance companies, ensuring a robust business model that mitigates the impact of these risks. This approach enables insurance companies to maintain stability and resilience in the face of potential large-scale losses.
Quota share reinsurance involves the primary insurer and the reinsurer agreeing to share premiums and losses in a fixed percentage. This method spreads risk evenly between the insurer and reinsurer, making it suitable for moderate risk levels. It helps insurers manage climate and catastrophic risks by maintaining proportional exposure, contributing to sustainable practices through predictable financial planning.

Figure 2: Reinsurance methods to maintain sustainability

Excess of loss reinsurance covers losses that exceed a specified amount. It protects insurers from severe, unpredictable risks, such as significant natural disasters. This approach is critical for managing high-severity climate and catastrophic risks, ensuring insurers can sustain operations and support recovery efforts without bearing the full financial burden of extreme events.
Stop loss reinsurance limits the total losses an insurer can incur over a period, typically a year. It is designed to protect against cumulative high losses, ensuring financial stability. This method is

particularly useful for managing aggregated climate and catastrophic risks, supporting sustainable practices by capping potential financial exposure and maintaining solvency.

Catastrophic bonds (cat bonds) are risk-linked securities that transfer specific risks to investors. They provide insurers with capital if a defined catastrophic event occurs, such as a major hurricane or earthquake. Cat bonds help manage severe climate and catastrophic risks by diversifying risk away from insurers to global capital markets, promoting financial resilience and sustainability.

Sidecars are financial structures that allow insurers to share risk with investors through a separate entity. These entities take on a portion of the insurer's risk, often related to catastrophic events. Sidecars help insurers manage high-severity risks by accessing additional capital and spreading risk, supporting sustainable practices through enhanced financial flexibility and capacity to handle large-scale losses.

Emerging Reinsurance Practices in Sustainable Insurance

ESG (Environmental, Social, and Governance) considerations are increasingly important in reinsurance underwriting. Let’s see how the Reinsurance industry is responding to these changes:

Net Zero Commitments: To keep global warming not more than 1.5°C – as called for in the Paris Agreement – emissions need to be reduced by 45% by 2030 and reach net zero by 2050.

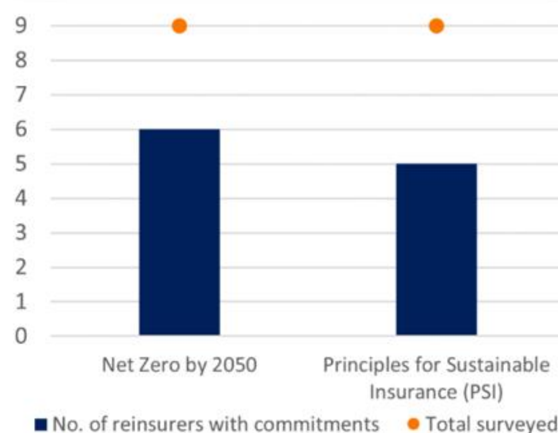
European reinsurers have set net zero commitment targets by 2050, applicable to operations, underwriting, and investment. North American reinsurers, however, have not made similar commitments (Peak-Re).

Underwriting Strategies:

Reinsurers screen and exclude high ESG risk companies and assets from their portfolios. Some reinsurers support ‘Just Transition’ in emerging markets, implementing stewardship plans for companies or projects with high ESG risks. Data accessibility issues within treaty portfolios make ESG commitments challenging (Peak-re).

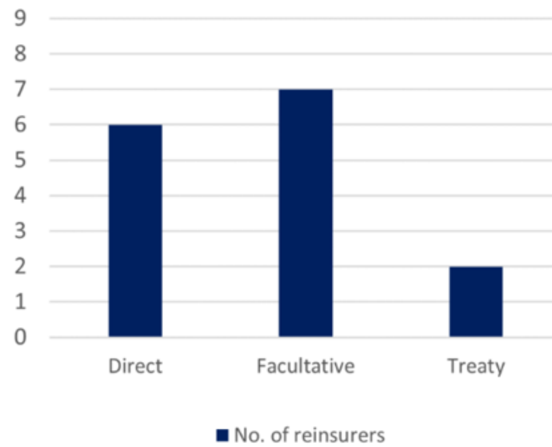
Environment-Related Underwriting Restrictions: Reinsurers are adopting restrictions related to environmental risks, reflecting the industry’s commitment to sustainability.

Figure 3: Number of reinsurers with net zero commitments (Data as of May 2023)



Source: Reinsurance broker reports, Reinsurance companies’ sustainability reports

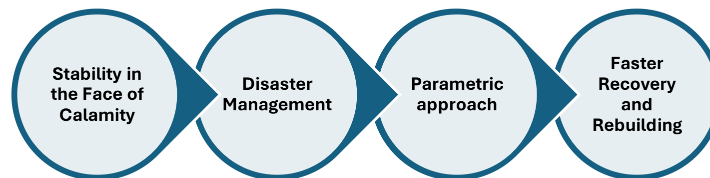
Figure 4: Type of underwriting business with ESG restrictions (Data as of May 2023)



Source: Reinsurance broker reports, Reinsurance companies' sustainability reports

Industry which are involved into thermal coal, oil sands. oil and gas and Arctic drilling business etc are the target for underwriting restrictions.
Reinsurance companies can advance sustainable insurance by first aligning their strategies with ESG principles, integrating environmental, social, and governance considerations into their risk assessment and underwriting processes.
They should actively engage in collaborative initiatives with insurance partners to develop innovative solutions for managing emerging sustainability challenges. Thirdly, promoting transparency and disclosure regarding their ESG practices and performance enhances accountability and builds trust with stakeholders.
Finally, leveraging their expertise and resources to support sustainable development projects and initiatives further demonstrates their commitment to sustainability while contributing to societal well-being.

Figure 5: Social Reinsurance

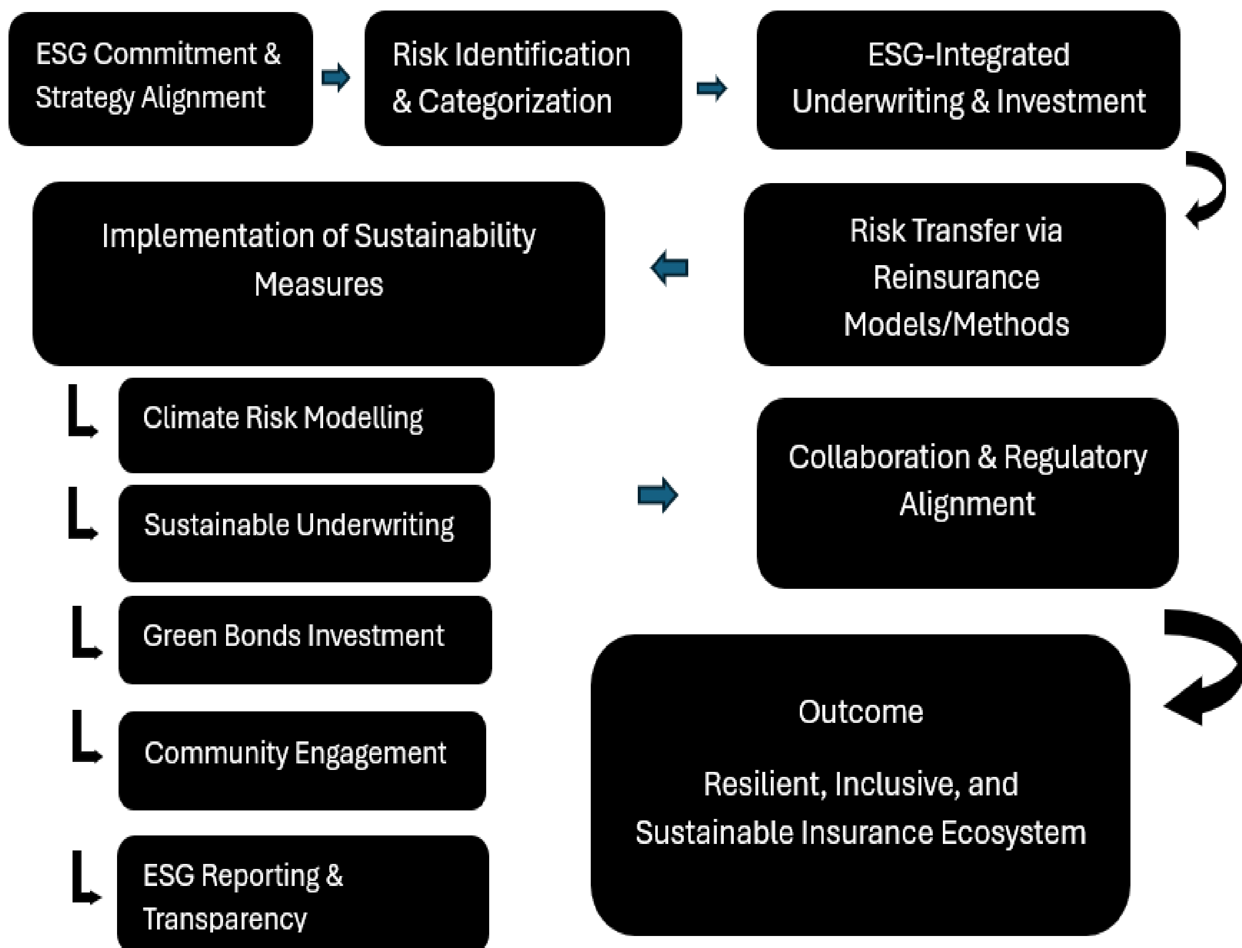


The social reinsurance outlines the steps and measures taken by reinsurance companies to minimize risks to human lives and assist in rebuilding after a loss event. This model emphasizes proactive risk management and support for recovery efforts following disasters or significant adverse events.
Stability in the Face of Calamity: A major disaster can devastate a local economy, causing businesses to struggle, job losses, and reduced tax revenue. Reinsurance provides necessary funds to local insurance companies, allowing them to pay claims. This helps businesses repair, employees receive income, and essential services like hospitals and schools remain operational.
Disaster Management: Reinsurance acts as a safety net, encouraging insurance companies to offer coverage in high-risk areas. This increases the availability and affordability of insurance for residents, ensuring they have financial protection to safeguard their lives and property.

Parametric Insurance Approach: This method provides funds before an insured event occurs by covering the probability of a predefined event happening rather than the actual loss incurred.
Faster Recovery and Rebuilding: After a disaster, like a tornado damaging a Plant, reinsurance ensures quick fund flow, enabling swift repairs and a return to service. This leads to quicker community recovery, stronger businesses, and a faster return to normalcy, making the community more resilient to future challenges.

Proposed SURE Framework - *Sustainable Underwriting and Reinsurance for ESG Integration*
- **S**ustainable commitment
- **U**nderwriting aligned with ESG
- **R**einsurance as a risk-transfer tool
- **E**SG-driven implementation & evaluation

This name reflects the model's goal of creating a *sure*, resilient, and forward-looking insurance ecosystem by combining ESG strategy with robust underwriting and reinsurance practices.



This ESG model begins with top-level commitment and alignment of insurance company strategies with ESG goals. Risks are identified and categorized to guide ESG-integrated underwriting and investments. Reinsurance techniques (like quota share, stop loss, cat bonds, etc.) are applied to transfer high-severity risks. The model incorporates climate risk modelling, green investments, and community engagement as part of sustainable action. It promotes regulatory compliance (PSI, ESG

disclosures) and fosters a resilient, socially responsible insurance sector. This end-to-end flow ensures long-term sustainability and value creation for both insurers and society.

Implementation of the Sustainable Insurance practices:

Sustainable Underwriting: Reinsurers integrate ESG criteria into their underwriting processes to support environmentally and socially responsible projects. This includes avoiding investments in industries that harm the environment or violate human rights.

Swiss Re has implemented a sustainable underwriting framework, which includes criteria for excluding coal-based risks and promoting renewable energy projects. They avoid insuring projects that significantly contribute to environmental degradation or human rights abuses.

Climate Risk Management: Reinsurers are enhancing their climate risk models to better understand and mitigate the impact of climate change on insured assets. They also support initiatives to improve climate resilience in vulnerable communities.

Munich Re has developed advanced climate risk models and collaborates with governments and businesses to enhance climate resilience. Their NatCat (Natural Catastrophic) SERVICE database helps in understanding and mitigating the impacts of natural disasters linked to climate change.

Investment in Green Bonds: Many reinsurance companies are investing in green bonds and other sustainable financial instruments that fund projects aimed at reducing carbon emissions and promoting renewable energy.

ESG Reporting and Transparency: Reinsurers are increasing transparency by publishing ESG reports that outline their efforts and progress in addressing environmental, social, and governance issues. This helps stakeholders understand their commitment to sustainability. Hannover Re publishes comprehensive ESG reports detailing their sustainability strategies, including environmental impact, social initiatives, and governance practices. This transparency helps stakeholders assess their commitment to ESG.

Community Engagement: Reinsurers engage with communities and stakeholders to promote ESG awareness and education. This includes supporting social programs, disaster preparedness initiatives, and community resilience projects.

AXA XL actively engages with communities by supporting disaster preparedness programs and resilience-building projects. They collaborate with local organizations to educate and prepare communities for natural disasters.

Collaboration and Advocacy: Reinsurance companies collaborate with industry peers, regulators, and global organizations to advocate for policies and standards that promote ESG principles across the insurance sector.

Lloyd's collaborates with various industry groups and regulators to advocate for ESG policies. They are part of the UN's Principles for Sustainable Insurance (PSI) initiative, which promotes sustainable insurance practices globally.

New initiatives:

Increasing interest in ESG Insurance Products- Customers are increasingly demanding insurance products specially in western countries that align with their values and cover ESG-related risks, such as climate change and social unrest. This trend reflects a growing awareness and prioritization of environmental, social, and governance issues in personal and business insurance decisions.

Enhanced Incorporation of ESG in Investments- Insurers are integrating ESG considerations into their investment strategies to improve returns and manage risks more effectively. This shift includes moving away from investments in fossil fuel companies and redirecting funds towards renewable energy projects, aligning their financial practices with sustainable principles.

Cooperation and Alliances- Insurers are forming partnerships with governments, NGOs, and businesses to address ESG-related risks and opportunities. These collaborations aim to develop

sustainable insurance products and initiatives that support and promote ESG causes, enhancing the industry's role in fostering sustainability.

Promotion of ESG Policies by Regulators- Insurance regulators are introducing disclosure requirements that mandate insurers to report on their ESG policies and progress towards sustainability. These regulations require insurers to include this information in their financial reports, promoting transparency and accountability in the industry's ESG efforts.

Conclusion:

Policy makers are actively pursuing the establishment of unified ESG and sustainable regulatory standards and are working on creating standardized classifications to define sustainable activities. However, considering current situation, re/insurers must take proactive steps to articulate their perspectives on which frameworks best align with ESG ambitions and sustainable principles. Actions undertaken by insurance companies, facilitated by reinsurance arrangements, are crucial for swiftly attaining ESG objectives while maintaining sustainable insurance practices. Additionally, rating agencies should consider the ESG frameworks adopted by the industry when assigning final ratings to insurance or reinsurance companies. Embracing a collaborative approach will ultimately aid in achieving ESG and Sustainable goals.

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