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SUSTAINABLE INSURANCE FORUM

SUSTAINABLE INSURANCE

THE EMERGING AGENDA FOR SUPERVISORS AND REGULATORS

Inquiry: Design of a Sustainable Financial System

PSI Principles for Sustainable Insurance

August 2017

The Sustainable Insurance Forum

The Sustainable Insurance Forum (SIF) is an international network of leading insurance supervisors and regulators working together to strengthen their understanding of and responses to sustainability issues for the insurance business. The SIF is convened by UN Environment through its Inquiry into the Design of a Sustainable Financial System and its Principles for Sustainable Insurance Initiative. Launched in December 2016, the SIF is advancing a six-track work programme in 2017.

More information on the SIF is available at: *www.unepinquiry.org/sif* or from Jeremy McDaniels, SIF Programme Manager, at *jeremy.mcdaniels@unep.org*.

The UN Environment Inquiry

The Inquiry into the Design of a Sustainable Financial System has been initiated by the United Nations Environment Programme (UN Environment) to advance policy options to improve the financial system's effectiveness in mobilizing capital towards a green and inclusive economy—in other words, sustainable development. Established in January 2014, the Inquiry published its first global report, 'The Financial System We Need' in October 2015, with the second edition launched in October 2016. The Inquiry has worked in around 20 countries and produced a wide array of briefings and reports on sustainable finance.

More information on the Inquiry is at: *www.unep.org/inquiry* and *www.unepinquiry.org* or from:

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UN Environment's Principles for Sustainable Insurance

Endorsed by the UN Secretary-General and insurance CEOs, the Principles for Sustainable Insurance (PSI) serve as a global framework for the insurance industry to address environmental, social and governance risks and opportunities—and a global initiative to strengthen the insurance industry's contribution to building resilient, inclusive and sustainable communities and economies. Developed by UN Environment's Finance Initiative, the PSI was launched at the 2012 UN Conference on Sustainable Development (Rio+20) and is the largest collaborative initiative between the UN and the insurance industry. More than 100 organisations worldwide have adopted the PSI, including insurers representing more than 20% of world premium volume and US$14 trillion in assets under management.

More information on the PSI is available at: *www.unepfi.org/psi* or from: Butch Bacani, PSI Programme Leader (*butch.bacani@unep.org*) and and Olivia Fabry, PSI Programme Manager (*olivia.fabry.affiliate@unep.org*).

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SUSTAINABLE INSURANCE

THE EMERGING AGENDA FOR SUPERVISORS AND REGULATORS

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EXECUTIVE SUMMARY

Key sustainability factors are now recognized as potentially significant for the success, safety and soundness of the insurance sector – inspiring reactions by supervisors and regulators. In its role as risk manager, risk carrier and investor, the global insurance sector plays a cornerstone role in the management of sustainability-related risks and opportunities. The risk transfer tools of insurance along with the deployment of its long-term capital base are highly relevant for many of the 17 Sustainable Development Goals (SDGs) and the goals of the Paris Agreement on climate change. Of the range of interlocking sustainability challenges, three issues stand out as critical: i) natural hazards, where only 30% of losses are insured, and just 2% in low- and middle-income countries; ii) climate change, set to exacerbate physical risks and requiring investment in decarbonization; and iii) access and affordability, with insurance a critical element of basic economic resilience against environmental hazards and shocks.

The insurance sector is responding to sustainability challenges with strategic action across both underwriting and investment, including through the UN-backed Principles for Sustainable Insurance (PSI). Leading insurers are incorporating environmental factors into the provision of insurance coverage and their underwriting strategies, reallocating capital towards green assets, and integrating environment, social and governance (ESG) factors in asset allocation and stewardship activities. Such approaches are not, however, the norm: only 20% of global premium volume is covered by companies that have signed the PSI.

Policymakers are recognizing that reforms within the financial system as a whole can be helpful to effectively mobilize private capital to respond to sustainability challenges. Global momentum on sustainable finance policy and regulation has advanced significantly, with recent action at the international level such as Financial Stability Board's Task Force on Climate-related Financial Disclosures (FSB TCFD) and the G20's Green Finance Study Group (GFSG).

A growing number of insurance supervisors and regulators are beginning to incorporate sustainability into the way they oversee the sector. Over the last two years, there has been a noted shift in how supervisory and regulatory institutions are approaching sustainability issues, with a growing number of authorities taking action based on their core prudential mandates and extending these to new environmental threats.

- **Australia**: In 2017, Australia's financial regulator set out a new agenda for the consideration of climate change as a prudential risk, with plans to engage with firms and build internal capacity.
- **Brazil**: In 2016, Brazil's insurance regulator has engaged with firms to understand the management and strategic perception of environmental issues, informing supervision.
- **China**: In 2016, China released its guidelines for a green financial system, which included efforts to advance the framework for environmental liability insurance.
- **France**: As part of its 2015 energy transition plan, France has required institutional investors, including insurance companies, to report on the implications of ESG risks and climate alignment.
- **Morocco**: Following from a national sustainable finance roadmap launched at COP22, Morocco's insurance regulator is working to build a sustainable insurance strategy for its marketplace.

- **Netherlands**: Following an assessment of energy transition risks in 2016, the Dutch Central Bank is examining climate risks facing insurers, and integrating climate factors into stress tests.
- **Philippines:** In addition to a leading microinsurance regulatory framework, the Philippines is exploring disaster risk insurance mechanisms at the local government and sovereign levels.
- **Sweden**: In 2016, Finanspektionen released assessments of climate risks and financial stability, and an examination of its supervisory role in contributing to sustainable development.
- **UK**: In 2015, the Bank of England examined the impacts of climate change on the UK insurance sector, and is now advancing a bank-wide strategy on climate and green finance.
- **US – NAIC**: The US National Association of Insurance Commissioners introduced its first climate risk survey in 2009, and has integrated climate factors into supervisory toolkits.
- **US – California:** The Insurance Commissioner's 2016 Climate Risk Carbon Initiative set new requirements for insurers to disclose fossil fuel investments, with a request to divest from coal.
- **US – Washington State**: The Office of the Insurance Commissioner is taking a multi-stakeholder approach to build awareness of insurance and climate resilience issues, including land use.

Across this emerging body of experience, commonalities suggest a five-step framework for action:

I. **Initial Assessment:** Supervisors often start by assessing the materiality of sustainability issues for the insurance sector, and implications for core mandates, objectives and strategies.
II. **Deepening Risk Analysis:** Supervisors may explore how environmental factors can be better evaluated and integrated into routine supervisory oversight at the firm level, as well as system-level stress testing.
III. **Improving Information:** Supervisors may gather information form firms and promote enhanced disclosure through voluntary guidance, surveys, and implementation of mandatory requirements, as well as enhancing transparency for consumers.
IV. **Market Transformation:** Supervisors can support new insurance markets through product frameworks and partnership facilities, and encourage change in investment practice by building awareness, promoting green financial markets, and examining regulatory barriers.
V. **Making Systemic Linkages:** Finally, supervisors may explore connections between insurance and other financial sectors, real economy policy frameworks, and wider sustainable finance processes.

The goal of the Sustainable Insurance Forum (SIF) is to strengthen insurance supervisors' and regulators' understanding of and responses to sustainability challenges for the business of insurance. Convened by UN Environment, the SIF provides a global platform for knowledge sharing, policy dialogue, international collaboration, and identification of best practices. The Forum is working on a six-track work programme in 2017, focusing on disclosure, access and affordability, sustainable insurance roadmaps, climate risks to investments, disaster risk reduction and resilience, and capacity building.

The long-term vision of the SIF is of an insurance sector where sustainability factors are effectively integrated into the regulation and supervision of insurance companies. Looking forward from 2017 to 2020, the SIF will work to achieve this goal by facilitating voluntary action by supervisors, delivering practical content, expanding the SIF network, solidifying partnerships, and supporting implementation.

1 THE CHALLENGE OF SUSTAINABILITY FOR INSURANCE

Achieving the transition to sustainable development poses material capital allocation, operational and strategic challenges for the financial system – with special relevance for the insurance sector. In its role as risk manager, risk carrier and investor, the global insurance sector plays a cornerstone role in the management of sustainability-related risks and opportunities for individuals, households, firms, and public authorities. Four aspects are key:

- **Risk Management and Risk Protection:** The insurance sector helps communities understand, prevent and reduce sustainability risk. By pricing, sharing and carrying such risks, the insurance sector is an effective tool for managing interlinked sustainability challenges that are often covariant in nature – including natural hazards and climate shocks.
- **Capital Allocation:** Insurance firms need to generate long-term, stable returns linked to underwriting liability time frames. This capital base can be leveraged to support investments that respond to sustainability challenges, such as climate-resilient infrastructure.
- **Macroeconomic Resilience:** The availability and affordability of insurance is a critical enabler of economic activity and sustainable growth. In addition, at the household and enterprise levels, the financial resilience provided through insurance both protects assets and facilitates investments.
- **Financial System Linkages:** The insurance sector is critical for the resilience of the broader financial system, providing coverage against losses on real and financial assets. Through risk pricing, the insurance sector provides risk signals that influence capital allocation choices by other institutions.

1.1 Sustainability Priorities

Key sustainability factors are now recognized as potentially significant for the success, safety and soundness of the insurance sector (see Annex 1). The 2030 Agenda for Sustainable Development, agreed in 2015, sets out a global roadmap for addressing sustainability challenges worldwide – with 17 Sustainable Development Goals to be achieved by 2030. The SDGs present both a strategic risk management challenge and a major investment opportunity – estimated at some US$90 trillion between 2015 and 2030.[1] Critical challenges such as air pollution, degradation of natural capital and arable land, water availability and quality, nutrition, health and education are driving governments to take action in the financial system – including an increasing focus on the role of the insurance.[2] Three priority areas stand out:

- **Natural Disasters:** Between 1995 and 2015, over 90% of disasters were weather-related, causing average economic losses of between US$250-300 billion per year.[3] Disasters are becoming more frequent and more severe, with disproportionate impacts on vulnerable and poor populations in developing and emerging economies. The insurance sector has a critical role to play as a buffer against natural hazards, ranging from investments in prevention and resilience, to risk cover and transfer, to post-disaster recovery – recognized at the global level in the Sendai Framework for Disaster Risk Reduction.
- **Climate Change:** Climate change is having material impacts on environmental systems today, and is predicted to increase the frequency and intensity of extreme weather events such as floods and storms.[4] With the Paris Agreement on climate change, the governments of the world have set a target of holding global warming to well below 2°C, and set out steps to refocus the financial system

so that it responds to the climate challenge.[5] For the insurance sector, climate change has important implications for the demand for insurance products, the insurability of assets and associated changes in premium flows from underwriting businesses. Decarbonization also presents a range of opportunities and challenges for the insurance sector's investment allocations. While leading insurers and reinsurers exhibited notable leadership in decarbonizing investment portfolios, capital allocations by insurers to low-carbon assets remain small (see Annex 2).

- **Access and Affordability:** Ensuring access to adequate and affordable insurance is a recognized priority across the world – especially in emerging and developing economies, where penetration rates are low. Access to insurance has been taken up as a critical priority for broader financial inclusion efforts, with many countries implementing microinsurance regulatory frameworks.[6] Current and future climate impacts are also changing the access debate in developed countries – where heightened risk profiles in vulnerable areas (such as for coastal real estate) can lead to assets being rendered uninsurable.

1.2 Market Action

The insurance sector is responding to sustainability challenges with strategic action in both underwriting and investment businesses (See Annex 2). Sustainable insurance is a strategic approach to ensure that all activities in the insurance value chain are conducted in a responsible and forward-looking way, as encapsulated within the UN-backed Principles for Sustainable Insurance (PSI). This is achieved by identifying, assessing, managing and monitoring the risks and opportunities associated with ESG issues, developing innovative solutions, and improving business performance (Box 1).

Box 1: The Principles for Sustainable Insurance

1. We will embed in our decision-making environmental, social and governance issues relevant to our insurance business.
2. We will work together with our clients and business partners to raise awareness of environmental, social and governance issues, manage risk and develop solutions.
3. We will work together with governments, regulators and other key stakeholders to promote widespread action across society on environmental, social and governance issues.
4. We will demonstrate accountability and transparency in regularly disclosing publicly our progress in implementing the Principles.

Sustainability challenges for underwriting are evolving beyond disaster risks to a broad range of interlinked physical, economic and social issues (see Annex 2.1). Several major global insurance and reinsurance firms have implemented frameworks to integrate ESG risks and opportunities across lines of business, including exclusions for fossil fuels. Insurers are working collectively and with non-industry stakeholders to share expertise, including working directly with governments and civil society to enhance risk resilience and planning. Insurers continue to innovate in product design and delivery mechanisms to satisfy increasing demand for environmental insurance.[7,8] Attention is now shifting towards underwriting the new investments emerging from the low-carbon transition, such as renewable energy assets, energy efficiency, and zero-emissions vehicles.

With over US$31 trillion in assets under management globally, the insurance sector plays a significant role as an institutional investor – and many major insurance firms are global leaders in sustainable and responsible investment (see Annex 2.2). Portfolio decarbonization has emerged as a key priority, with several major firms committing to divest from fossil fuels and reallocate capital to green assets – including rapidly expanding markets for instruments like green bonds. Such strategies are far from the mainstream, however: recent research by Ceres has found that many leading insurance groups remain

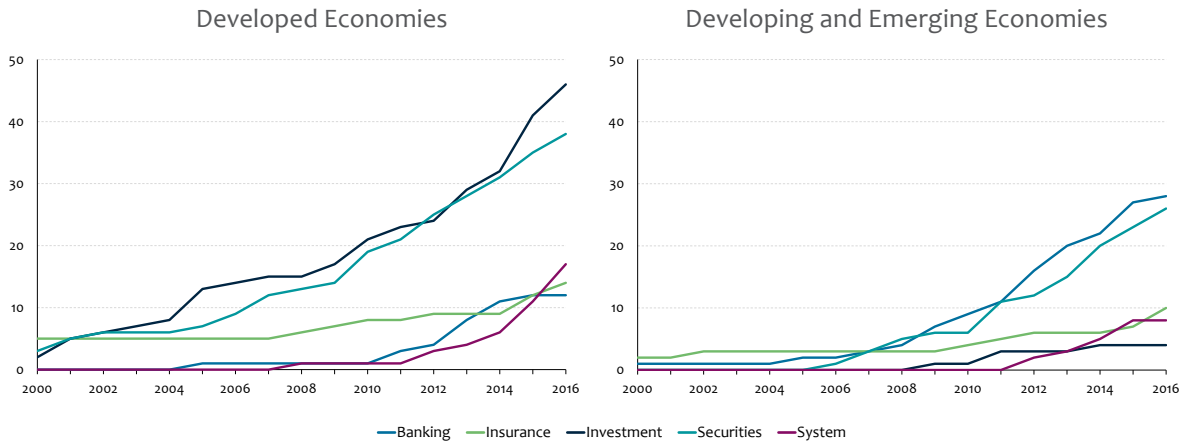
heavily invested in fossil fuels, with the collective investments of the top 40 US insurance groups totalling US$459 billion. In a survey of climate risk action by institutional investors, the Asset Owner's Disclosure Project[9] found that while nearly 60% of insurers recognize climate risk as an issue, two fifths of insurers are taking no action to protect their portfolios.

While there has been notable leadership on sustainable insurance from large firms comprising a significant share of global premium, the majority of the industry – including life and health businesses, auto insurance and smaller firms with fewer exposures to environmental liabilities – has taken relatively few steps to address sustainability challenges. A range of key barriers exist, including differing exposure to environmental risks across lines of business competitive disadvantages, misaligned market incentives, short-term time horizons and capacity constraints (See Annex 2.3).

1.3 Policy and Regulatory Action

Since 2015, global momentum on sustainable finance has advanced significantly[10,11] (Figure 1). Measures focused specifically on the insurance sector have increased, but comprise 10% of the total. Policy measures oriented towards transformation in other asset classes – including in investment and capital markets – are often also of primary relevance to insurance firms, such as efforts to support the development of markets for green financial assets and instruments (i.e. green bonds standards).

Figure 1: The Evolution of Policy and Regulatory Measures for Sustainable Finance



Source: UN Environment Inquiry, 2016

2016-17 saw the elevation of sustainable finance priorities to the international policy area, notably within the G20 and the Financial Stability Board. These related by independent processes have built consensus on the importance of environment and climate factors for the financial system – setting out new voluntary standards and policy options with immediate relevance to the insurance sector (For further information on the G20 GFSG and the FSB TCFD, please refer to Annex 3).

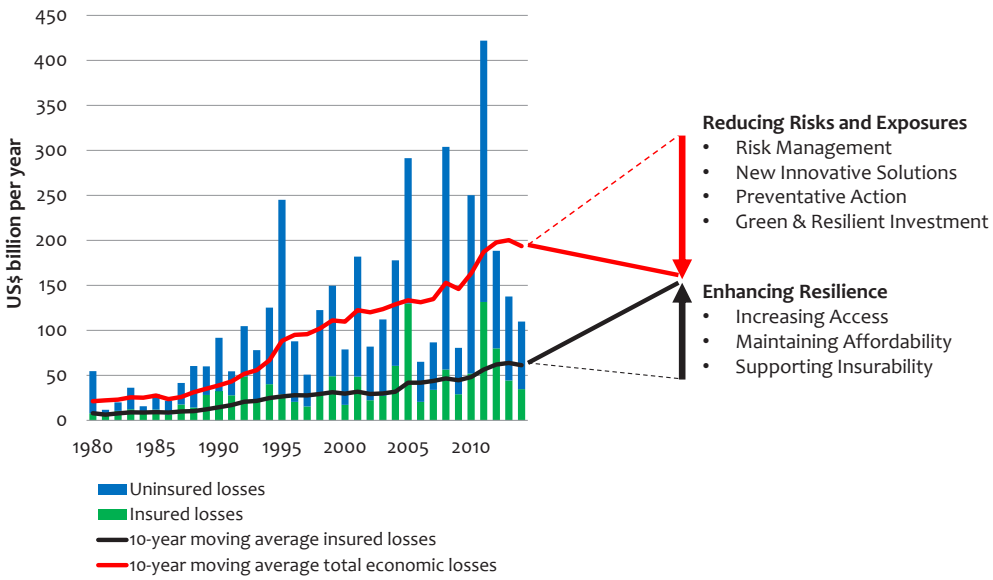
- **G20**: Under its 2016 G20 Presidency, China launched the Green Finance Study Group to develop options on how to enhance the ability of the financial system to mobilize private capital for green investment. At the 2016 Hangzhou Summit, G20 Heads of State for the first time recognized the need to "scale up green finance" and endorsed a set of options to achieve this goal. The 2017 GFSG synthesis report highlights the importance of the insurance sector in assessing and mitigating risks to households, firms, and financial institutions.
- **FSB**: Launched in December 2015, the Task Force on Climate-related Financial Disclosures was established by the FSB as a market-led effort mandated to develop voluntary, consistent climate-related financial risk disclosures for use by companies in providing information to investors, lenders, insurers, and other stakeholders.[12] The TCFD's final recommendations, released in June 2017, set out a

coherent framework for the disclosure of climate risks and opportunities – with specific guidance for the insurance firms as both underwriters and asset owners. In addition, The TCFD recommendations broke new ground by underscoring the critical importance of forward-looking disclosures – and the use of scenario analysis – as a way to provide decision-useful information for investors alongside reporting on past performance.[13]

1.4 The Challenge for Firms and Supervisors

Taken together, the challenge for firms and supervisors is to leverage the potential of insurance to support a smooth transition to a resilient, equitable, low-carbon future (Figure 2). A sustainable insurance system is one where the underwriting and investment practices of firms reduce risks and exposures, while enhancing resilience. The critical role for supervisors is to ensure the safety and soundness of firms, protection of policyholders, and maintenance of efficient markets in the transition to sustainable development.

Figure 2: The Sustainable Insurance Challenge



Source: UN Environment, based on data from Swiss Re

2 SUSTAINABLE INSURANCE: THE RESPONSE BY SUPERVISORS AND REGULATORS

Sustainability factors are emerging as material issues for insurance supervision. Over the last two years, there has been a noted shift in how supervisory and regulatory institutions are approaching sustainability issues, with a growing number of authorities taking action based on their core prudential mandates and extending these to new environmental threats.

Actions range from policies to enhance corporate and financial sector disclosure of climate risks and assessments of systemic risks to action on pollution, access to insurance and resilience to natural hazards. The following examples are presented alphabetically by jurisdiction – and are by no means exhaustive, fully comprehensive or representative of all actions being taken.

2.1 Australia: Considering Climate as a Prudential Risk

The Australian Prudential Regulation Authority (APRA) is the regulator of the financial services industry, including insurance companies. In February 2017, APRA Executive Board Member Geoff Summerhayes delivered a speech on climate change to the Insurance Council of Australia, setting out a new agenda for APRA's consideration of climate as a prudential risk.[14] Three key developments both within Australia and internationally inspired APRA's motivation to take action on climate risk: the Paris Climate Agreement, establishing a binding global commitment to limit global warming; the recommendations of the TCFD, and the release of an influential legal opinion in Australia on the legal obligations of company directors to consider the impacts of climate change.[15]

APRA has indicated that it plans to engage with regulated entities on how physical and transition-related climate risks may affect the range of financial, operational, reputational and liability risks facing firms, and how climate risks may differ across regulated entities beyond the insurance sector. Going forward, APRA's strategy will be to provide clear supervisory expectations and encourage improvement, while avoiding premature regulatory action. APRA has also indicated that will consider climate risks within stress testing for organizational and systemic resilience – and engage in a wider conversation around climate risk issues.

"While climate risks have been broadly recognized, they have often been seen as a future problem or a non-financial problem (…) this is no longer the case. Some climate risks are distinctly 'financial' in nature. Many of these risks are foreseeable, material and actionable now. Climate risks also have potential system-wide implications that APRA and other regulators here and abroad are paying much closer attention to."

Geoff Summerhayes, APRA

2.2 Brazil: Validating Market Conduct on Environmental Challenges

In Brazil, insurance regulator SUSEP has been working to ensure that the issues addressed in the PSI are introduced in the insurance market to encourage risk management and innovation – including through becoming a PSI-supporting institution. In November 2016, SUSEP launched a survey process with regulated entities to obtain data and information about market practice on sustainability issues, gathering responses from 75% of Brazil's 172 insurance companies.

Overall, the survey found that while 80% of Brazilian insurance firms consider environmental issues to be important to their overall business strategy, very few have implemented policies or mechanisms to consider and mitigate the impacts of climate change within underwriting policy, risk management or investment decision-making. While firms are more active on the product design side – with some leading companies providing insurance products to support low-carbon activities, or implementing corporate or underwriting policies linked to environmental aspects – less progress has been made on the incorporation of ESG risks into underwriting process, and within the investment space.

SUSEP has indicated it intends to engage with the insurance firms and with the Brazilian insurance market association (CNseg) to encourage greater action on these priorities. Going forward, SUSEP has indicated that it may seek to explore guidelines related to sustainable insurance priorities, aiming to:

- Improve disclosure through enhanced reporting;
- Encourage companies to develop products to support low-carbon activities;
- Incentivize green investments;
- Promote the integration of environmental risks into underwriting policy; and
- Raise awareness of policyholders, intermediaries, business partners about sustainability issues.

2.3 China: Environmental Liability to Green Financial System Guidelines

China has sought to tackle sustainability challenges through the financial system as a way to address gaps in the enforcement of environmental regulations – including with mandatory requirements for environmental pollution liability insurance. Starting in 2013, a pilot programme targeted firms in highly polluting sectors to participate in a liability insurance system to ensure they can provide compensation for environmental damages caused. More recently, insurance has been taken up as part of system-wide efforts to advance green finance in China – including new Guidelines on establishing a green financial system released in September 2016 alongside the G20 summit.[16] The guidelines contain a set of specific provisions relating to green insurance, including:

- Advancing the regulatory and legal framework around environmental liability insurance to address challenges in implementation;
- Encouraging insurance institutions to develop green insurance products and services, including for catastrophe risks, environmental technologies and equipment, and liability insurance for low-carbon product quality and safety; and
- Engaging with insurance firms to take a more active role in disaster prevention.

2.4 France: Article 173 of the Energy Transition Law

Perhaps the most ambitious set of reporting requirement for financial institutions related to climate change risks and opportunities was implemented under the French Energy Transition law, passed in August 2015. The provisions of its Article 173 require institutional investors (more than 800 entities, including insurance companies) to disclose information on their risk management of climate change consequences and to take into account their environmental footprint in their investment policy. Implementation measures have subsequently been clarified, through the adoption of a Regulatory Decree (2015-1850) published in December 2015. The Decree modifies both the content and modalities of information disclosure by insurance companies:

- For smaller entities, with total assets below EUR500 million (considered for the group or solo entities), the disclosure requirements include: a full description of their investment policy related to ESG issues; a description of information practices of individual investors/subscribers on this investment policy;

information on a potential voluntary adherence to a specific code of conduct related to those issues; a description of internal risk identification and management processes related to those issues.

- In addition to the requirements mentioned above, larger entities with total assets above EUR500 million are notably requested to provide a detailed description of applied criteria, the information computed (financial, non-financial information, internal or external analysis, etc.), the methodology applied, assumptions and results, and how these results are taken into account in investment policy. The institution should notably describe how its investment policy has been affected by the outcome of the analysis process, and how it will contribute to the overall objective of limiting global warming.

The French government has allowed considerable freedom in how investors can meet this new reporting requirement, and considers this flexibility as critical to inspiring a comprehensive approach to risk thinking among investors in terms of their alignment with high-level transition goals. In October 2016, global insurer AXA received the top award for the best investor climate-related disclosures contest organized by the French Ministry of Environment.[17] An assessment by the government of the new disclosure framework regarding insurance companies is planned by the end of 2018.

2.5 Morocco: Insurance as Part of the National Sustainable Finance Roadmap

At COP 22 in November 2016, Morocco released a national Roadmap for aligning the Moroccan financial sector with sustainable development.[18] Developed in collaboration with the central bank and regulatory authorities, including insurance regulator ACAPS, the Roadmap sets out a strategic vision for Morocco's financial centre around five axes:

I. The extension of risk-based governance to social and environmental risks;
II. The development of sustainable financial instruments and products;
III. Promoting financial inclusion as a driver for sustainable development;
IV. Capacity building in the field of sustainable finance; and
V. Disclosure (transparency and market discipline).

The roadmap confirms that as a source of financing and investors, insurance companies and other stakeholders have a major role to play in providing sustainable or "green" financing instruments and products for sustainable development projects. It also sets out a number of proposed targets for the insurance and other sectors, including:

- Systematic assessment of the sustainability impacts of financing and investment decisions,
- Integrating sustainability factors into risk management and assessment systems,
- Assessing the potential for carbon risks to investment portfolios,
- Scaling up capital allocation toward green assets, with a projected target of MAD6 billion over a 5-year timeframe, and
- Developing new insurance solutions for environmental risks, such as climate change.

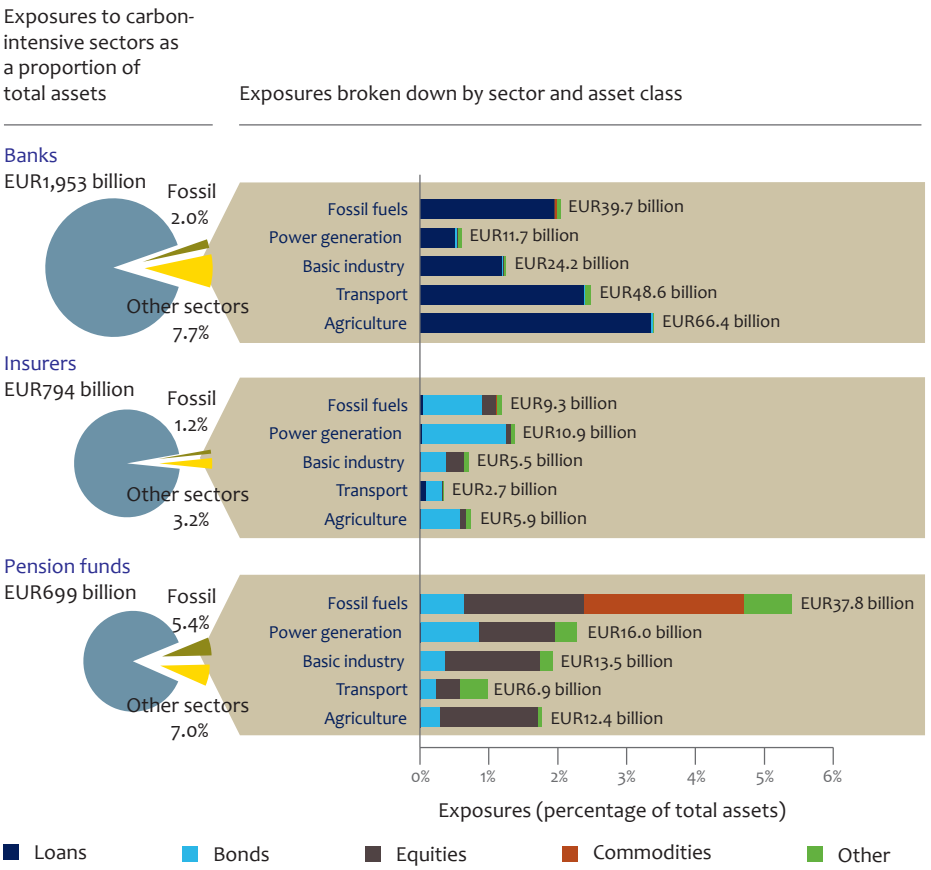
ACAPS is now designing a strategic approach to implement the system-level Roadmap into the insurance sector (see Section 4.2).

2.6 Netherlands: Assessing the Impacts of the Energy Transition

DNB, the Dutch central bank, first examined issues financial risks relating to climate change in 2014, in response to a request from Parliament. In 2016 it completed a deeper assessment of the macroeconomic implications of the energy transition – considered by DNB to be "one of the greatest challenges that the economy faces in the long term." For the study, DNB undertook primary research based on survey data from three major banks, five insurers, and three pension funds dominant in each market segment.

Gathering this data enabled DNB to quantify the capital exposure of insurance firm to carbon-intensive sectors – looking across asset equity, debt, and other holdings (Figure 3).

FIGURE 3: RESULTS OF DNB EXPOSURE ANALYSIS



Source: DNB, 2016[19]

In its study, DNB advocates a long-term policy ensuring a timely and controlled transition, highlights the importance of increasing transparency on climate risks – requiring unambiguous and broadly applied standards. Detailed carbon footprint reports and energy transition plans will make it easier for financial institutions to factor in climate risks and will help put a realistic price on such risks.

Currently, DNB is advancing new research into the impacts of physical and transition-related climate risks for financial institutions and supervision. This includes a report on climate risks to the financial sector investigating both transition and physical elements. On transition risks, this includes a data request into exposures of financial institutions, supplemented with a qualitative survey, asking institutions what risks they perceive and how they are managed. Such a data request was necessary as relevant exposure data is only partially available in DNB's systems. The report will also examine two aspects of physical risks: i) the impact of climate change on insurers' liabilities; and ii) the impact of climate change on the assets of financial institutions, with a particular focus on flood risk in the Netherlands. This research is based on quantitative data gathered from a survey of the six largest insurance companies (covering most of the market), with questions on shares of expected losses and reinsurance costs that are driven by climate related factors, as well as qualitative data from interviews with various stakeholders. Key findings will be formulated during summer 2017, after which a report will be published.

In addition, DNB carries out a stress test on the general insurance sector, including climate factors, more specifically two windstorm scenarios and one extreme weather scenario. DNB decided to perform this stress test as an individual action to determine the resilience of the general insurance sector, which is under

some competitive pressure over the last years. As the stress test is a bottom-up exercise, these scenarios are defined by DNB and send out to the participating institutions for them to fill out. Next to that, DNB is currently modelling and stress testing climate risks for the Dutch economy and financial sector.

"De Nederlandsche Bank believes it can – and must – contribute to sustainable development. It follows from our legal mandate. And it follows from our mission, which is to contribute to the sustainable prosperity of the Netherlands by safeguarding the financial stability."[20]

Klaas Knot, Governor, DNB

2.7 Philippines: Developing Markets for Disaster Risk Insurance

In the Philippines, microinsurance has played a significant role as a channel for recovery of communities and livelihoods in the face of significant disasters in recent years, including the devastation wrought by Super Typhoon Haiyan in 2013. The implementation of a specific regulatory framework for microinsurance in the Philippines has been critical to increasing the microinsurance penetration rate – which, at over 20%, is the highest in the Asia-Pacific region. Beyond the Philippines' success in promoting microinsurance, the government is exploring climate and disaster risk insurance mechanisms at the local government and sovereign levels. In this vein, the government is also active in international discussions on climate and disaster risk insurance through intergovernmental platforms such as Vulnerable Twenty Group of Ministers of Finance (V20), for which the Philippine finance minister was the founding Chair, and the Asia-Pacific Economic Cooperation's (APEC) Technical Working Group on Disaster Risk Finance and Insurance, for which the Philippines is the current chair.

2.8 Sweden: Assessing the Supervisor's Role in Contributing to Sustainable Development

In Sweden, the Government has taken several steps to align the financial system with sustainable development, including commitments to stimulate increased knowledge on sustainability factors within financial institutions and public authorities, encourage the development of transparency in financial actors' sustainability information, support development of methods for monitoring, measuring and evaluating sustainability efforts, and consider sustainability within legislative and regulatory proposals.[21]

In 2015, the Swedish government commissioned the integrated financial regulator Finanspektionen (FI) to investigate how sustainability issues may affect the financial sector, leading to a report released in March 2016 exploring links between climate change and financial stability.[22] In 2016, the government then requested FI to examine how the financial sector could contribute to sustainable development – and what role FI itself could play in supporting this objective.[23] In November 2016, FI released two combined reports in response to this request:

- A report describing how financial firms, including insurance companies, account for how they approach sustainability challenges, with a particular focus on climate-related issues.[24] Based on a qualitative survey approach, the report concluded that sustainability is an increasingly important strategic priority for financial firms, responding to growing client demand and concerns of transition-related climate risks, such as stranded assets.
- A broader assessment of how the financial sector in Sweden could contribute to sustainable development, and the role FI as a financial supervisor in this area.[25] This report recognized the importance of financial supervision and regulation in ensuring appropriate management of environmental risks by firms, as well as supporting real economy policy frameworks.

In its response to the government, FI notes that it seeks to approach climate and sustainability issues within the framework of existing supervisory goals of ensuring financial stability, consumer protection, and well-functioning markets. FI confirms that improved flows of sustainability information will be key

for financial markets to appropriately price risks, and recommends that financial firms should develop methodologies for managing and disclosing how they may be affected by the climate transition – including through the application of international guidelines. Finally, FI will seek to investigate the emerging area of sustainability-labelled financial products from a consumer protection perspective.

"Climate changes mean changes to the finance sector's external conditions. They therefore create new risks – and new business opportunities – for firms. Firms need to monitor and manage these risks; otherwise, quite simply, they are not doing their job. FI, in turn, must monitor what the firms are doing and not doing – otherwise FI is not doing its job. FI therefore needs to follow how climate risks and the firms' sustainability work affect the risks in the financial sector."

Finanspektionen

2.9 UK: Reviewing the Impacts of Climate Change for the UK Insurance Sector

In 2014, the Bank of England's Prudential Regulation Authority (PRA) began to review the impact of climate change on its mandate to promote the safety and soundness of insurance firms, following an invitation from the Department for Environment, Food and Rural Affairs (DEFRA) to produce an adaptation report under the 2008 UK Climate Change Act.[26] Under this provision, the PRA examined the impacts of climate change in line with its statutory objectives of promoting the safety and soundness of insurance firms, and securing an appropriate degree of policyholder protection.

Box 2: The PRA's Climate Risk Framework

The PRA reviews primary risk factors through which climate change could impact the insurance sector:

- **Physical Risks**, including direct impacts from extreme weather events and natural disasters, as well as indirect impacts such as natural capital degradation or disruptions to trade, which may challenge insurance markets and overarching industry business model.
- **Transition Risks**, primarily financial risks stemming from disruptive economic and policy changes affecting markets. On the investment side, such risks may directly or indirectly affect carbon-intensive securities, resulting in capital market volatility, while underwriting business may be slightly affected by reduced premiums from certain sectors.
- **Liability Risks**, including the costs of climate change damages being passed onto insurers through third-party liability policies such as personal indemnity or corporate director's and officer's insurance. The transformation of low-probability risks into large, unforeseen liabilities to insurers – such as the case of losses from asbestos – could be caused by, or significantly exacerbated, through dangerous climate change.

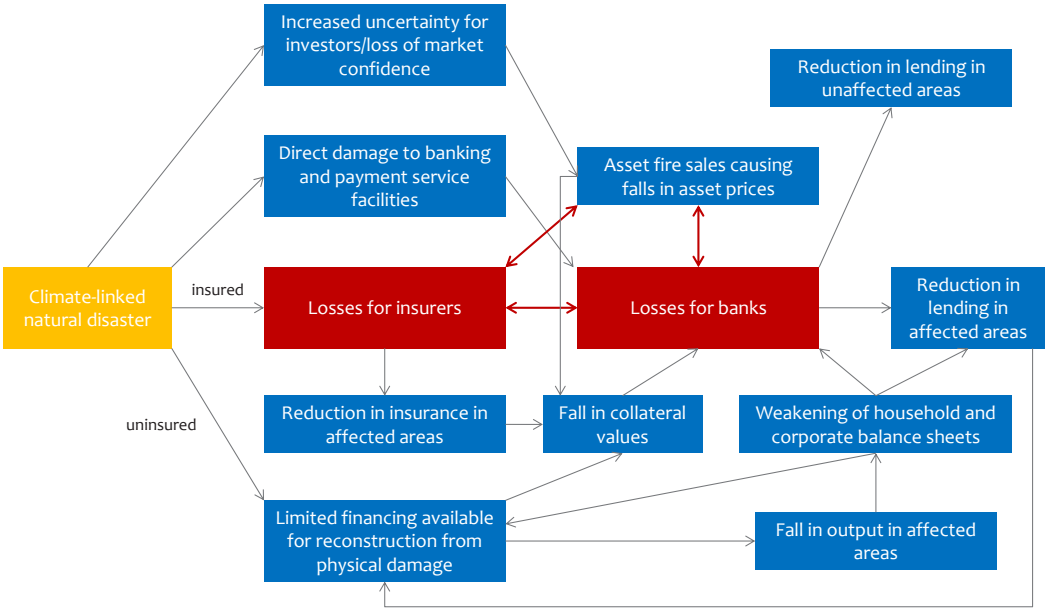
"Firms are reasonably well-equipped to manage the current level of physical risks. Looking further ahead, increasing physical risks could present meaningful challenges to insurance business models and the full range of risks from climate change identified in this report will be important to consider."

PRA

Following from the climate change adaptation report, the PRA has started work to assess how best to incorporate climate risk factors into its existing framework and supervisory approach. At the firm level, this includes building climate factors into the existing Business Model Analysis framework for supervisory engagement, and review of Own Risk and Solvency Assessment (ORSA) filings from firms to assess whether climate change factors are being appropriately identified and assessed. In its review, the

PRA notes that its role as an insurance supervisor, where issues with longer timelines are more relevant in comparison to banking or capital markets, brings "challenges such as climate change much more clearly into focus," providing "a natural starting point for the Bank's work examining the impact of systemic environmental risks."[27] Under its One Bank research agenda, the Bank of England released a follow-up study assessing how climate change could affect a central bank's ability to meet its monetary and financial stability objectives,28 including an assessment of the linkages between insured and uninsured losses on insurance firms and other financial institutions, such as banks (Figure 4).

FIGURE 4: HOW INSURED AND UNINSURED LOSSES MAY CASCADE RISKS THROUGH THE FINANCIAL SYSTEM



Source: Bank of England, 2016[29]

Most recently, the Bank of England has articulated an institution-wide strategy on climate change and green finance, described in its Quarterly Bulletin released in June 2017.[30]

2.10 US – NAIC: CLIMATE RISK DISCLOSURE SURVEY

In the US, the National Association of Insurance Commissioners (NAIC) introduced the world's first climate risk disclosure survey for the insurance sector in 2009. The impetus for this effort emerged from a coalition of leading state regulators, including Washington State, Nebraska and California, starting with a public hearing on the implications of climate change on insurers and insurance consumers in 2005. In 2008, the NAIC released a white paper examining the effects of climate change on insurance underwriting practice, investment decisions and required disclosures, followed by the decision to advance a survey

BOX 3: RATING PERFORMANCE OF US INSURERS ON CLIMATE RISK

One of the only comparative surveys of sustainability risk performance of insurers has been undertaken by Ceres, a US-based non-profit. Focusing on climate change, the survey analyzes responses from firms to the NAIC Climate Risk Disclosure Survey. In 2016, the survey covered responses from 148 insurance companies, collectively representing about 71% of the US insurance market in terms of 2014 direct premiums written. 22 insurers (including 13 based in the US), or 16% of the total 148 companies scored by Ceres earned a 'High Quality' rating, more than double the nine companies that earned a top rating in Ceres' 2014 report. However, 64% of the total insurers earned Low Quality or Minimal ratings.

mechanism. The survey contains eight questions to assess insurer strategy and preparedness with regard to investments, mitigation, financial solvency (risk management), carbon footprints and consumer engagement. Implementation of the survey is voluntary at the state level insurance commissioner discretion, and, following the first reporting year, has had comparatively low geographic penetration across the US. With participating states in 2015 including California, Connecticut, Minnesota, New Mexico, New York and Washington, the survey captures approximately 77% of the US insurance market. Survey results have been summarized by Ceres, and are made publicly available by the California Department of Insurance (Box 3).

2.11 US – California: Climate Risk Carbon Initiative

The California Department of Insurance (CDI) has taken independent steps to implement a new disclosure regime for insurance companies under its Climate Risk Carbon Initiative (CRCI). Announced by Commissioner Dave Jones in January 2016, the Climate Risk Carbon Initiative includes:

- A request that California-licensed insurance companies report on the amount of their thermal coal enterprise holdings and that they voluntarily divest from thermal coal enterprises, applicable to all California-licensed insurers ("CDI Thermal Coal Divestment Request"), and;
- Required financial disclosures by insurers of their investments in fossil fuel (thermal coal, oil, gas, and utilities) enterprises through a survey or "data call", which is applicable to California-licensed insurers with 2015 direct written premiums equal to or greater than US$100 million nationwide ("CDI Fossil Fuel Data Call").

This independent action, made on the basis of research and evaluation of the potential solvency risks of thermal coal investment, is understood by Commissioner Jones to arise from a statutory responsibility to make sure that insurance companies address potential financial risks in the investments and reserves they hold to pay future claims. The identification of investments subject to the disclosure requirement is based on Department-set thresholds linked to the amount of annual revenue that a fossil fuel enterprise derives per fossil fuel type (thermal coal, gas, or oil), and the fossil fuel type used by energy utility companies to generate their electricity.[31] Revenue thresholds were chosen as the metric for disclosure because of the greater degree of consistency and certainty and availability of data on revenues.

The CDI released the results of its 2016 data call under the CRCI in January 2017.[32] Key findings include:

- Insurers surveyed have US$528 billion in fossil fuel-related investments,[33] US$10.5 billion of which is invested in thermal coal enterprises.
- Insurers have divested more than US$4 billion in thermal coal and fossil fuel investments, and have committed to disposing of an additional US$1.2-1.4 billion in thermal coal investments.
- 303 insurers reported having already analysed the risk of carbon investments in their portfolios, with 81 insurers have committed to analyse carbon risks to portfolios over the next 12 months.
- 670 insurers reported having divested some or all of their coal holdings, or had no coal to divest. 325 insurers acknowledged that they would refrain from future investments in thermal coal.

The CDI has made results of the CRCI publicly available online[34] in a database that indicates whether each insurance company divested from thermal coal, and whether it has agreed to refrain from making future thermal coal investments, and identifies all fossil fuel investments held by insurance companies. The intent is that policyholders, other regulators, insurers, and the public use this data to better understand the potential financial risks insurers face from holding fossil fuel assets, if any, and to thus manage their own risks. Going forward, the Department will use this information alongside routine examinations, its review of ORSA reports by insurers, and disclosure required under the NAIC to obtain information about insurers' identification of and responses to climate risk. CDI expects to use data obtained through the CRCI and what is learned from it as it undertakes individual financial engagement with insurance companies on to risks they face.

"I do not want to sit by and then discover in the near future that insurance companies' books are filled with stranded assets that have lost their value because of a shift away from the carbon-based economy, jeopardizing their financial stability and ability to meet their obligations, including paying claims to policyholders."

Commissioner Dave Jones, California Department of Insurance

2.12 US – Washington State: Building Awareness of Climate Challenges

The Office of the Insurance Commissioner of Washington State (OICWS) has a long history of action on climate change challenges under the leadership of Commissioner Mike Kriedler – including from within the NAIC's climate change working group. As an extension of this effort, the OICWS has led on the development of guidance for other state regulators to use when evaluating insurers' climate change risks and investments during financial examinations. More recently, the OICWS has led engagement to advance the debate on climate change in the state of Washington, including jointly hosting a summit with industry and civil society stakeholders ("Break in the Ice: Climate Risk and the Insurance Industry") in Seattle in June 2016.[35] The OICWS has also focused attention on expanding consumer engagement and literacy on climate change and insurance challenges.[36]

Box 4: International Action: Risk Pooling Initiatives

International risk pooling facilities have proven very successful in reducing covariant risks such as natural catastrophe exposures through collaboration across national borders. Several regional insurance facilities are in operation, including the African Risk Capacity (ARC), the Caribbean Catastrophe Risk Insurance Facility (CCRIF), and the Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI). Focused primarily on natural disaster risks, some are expanding scope to consider a broader range of risks and territories:

- **Caribbean Catastrophe Risk Insurance Facility:** In 2007, the CCRIF was formed as the first multi-country risk pool in the world, and was the first insurance instrument to successfully develop parametric policies backed by both traditional and capital markets.[37] It was designed as a regional catastrophe fund for Caribbean governments to limit the financial impact of devastating hurricanes and earthquakes by quickly providing financial liquidity when a policy is triggered. In 2014, the facility was restructured into a segregated portfolio company (SPC) to facilitate expansion into new products (such as excessive rainfall cover) and new geographic areas. In April 2015, the CCRIF signed a memorandum of understanding with the Council of Ministers of Finance of Central America, Panama and the Dominican Republic (COSEFIN) to enable Central American countries to formally join the facility.
- **African Risk Capacity:** The ARC was established as a specialized African Union agency to help member states improve capacities to prepare for and respond to extreme weather events and natural disasters. In doing so, this partnership aims to deliver a Pan-African disaster response system that increases the efficiency and timeliness of disaster response. The ARC provides support for prevention activities in the form of a catastrophe bond, with payouts to fund pre-approved, peer-reviewed payments to communities to fund adaptation and resilience projects. Recent projects have included actions on outbreak and epidemic insurance for sovereign states, in the aftermath of the Ebola crisis.[38]

Climate resilience insurance has been taken up at within the context of the G7 through its **InsuResilience** initiative, launched in 2015. According to recent estimates, only about 100 million people in developing countries and emerging economies are currently covered by climate risk insurance. The InsuResilience initiative aims to increase access to direct or indirect insurance coverage against the impacts of climate change for up to 400 million poor and vulnerable people in developing countries by 2020. G7 states and two new partners (the European Commission and the Netherlands) pledged additional funds for InsuResilience at COP22, increasing the initiative's funding volume to US$550 million. The InsuResilience initiative has already enabled existing insurance schemes (such as the ARC and the CCRIF) to be expanded in terms of risks and territories covered, and is developing new approaches to humanitarian assistance and direct insurance solutions.

3 INSIGHTS FROM PRACTICE: TOWARDS A FRAMEWORK FOR ACTION

Looking across jurisdictions, some commonalities emerge in how supervisors and regulators are seeking to address sustainability challenges. This review suggests five key steps for action:

- **Initial Assessment:** Supervisors often start by assessing the materiality of sustainability issues for the insurance sector, and implications for core mandates, objectives and strategies.
- **Deepening Risk Analysis:** Supervisors may explore how environmental factors can be better evaluated and integrated into routine supervisory oversight and stress testing.
- **Improving Information:** Supervisors may gather information form firms and promote enhanced disclosure through voluntary guidance, surveys, and implementation of mandatory requirements.
- **Market Transformation:** Supervisors can support new insurance markets through product frameworks and partnership facilities, and encourage change in investment practice by building awareness, promoting green financial markets, and examining regulatory barriers.
- **Making Systemic Linkages:** Finally, supervisors may explore connections between insurance and other financial sectors, real economy policies, and wider sustainable finance processes.

3.1 Initial Assessment

A key first step for supervisors and regulators is to understand how sustainable insurance challenges relate to their core institutional objectives – including potential risks to the solvency of firms, policy holder protection or broader implications for financial stability (Figure 5).

Figure 5: Core Objectives, Implications, and Responses

Core objective	Sustainable Insurance Implications	Responses
Solvency and stability of insurance firms	Potential for sustainability-related issues to pose risks for solvency of individual firms, stemming from underwriting practices and portfolio allocations	• Assessing impacts on firms, and at sector level (UK) • Disclosure requirements (CDI)
Conduct and Consumer protection	Maintaining fair markets for sustainable insurance products, product transparency, consumer financial literacy, conduct and compliance	• Assessment of firm conduct on ESG issues (Brazil) • Supporting consumer awareness and literacy
Market development, Access and affordability	Ensuring that consumers can access insurance for environmental risks, delivering enabling conditions for insurance product development	• Microinsurance policy frameworks (Philippines) • Engagement with other policymaking bodies (OICWS)
System level stability	Potential for sustainability-related issues to pose systemic risks to the financial system and macroeconomy	• Assessments of systemic risk (DNB) • Alignment of investments with climate goals (France)

The impetus for initial action varies across jurisdictions, reflecting differences in institutional architecture. Often, action is taken on the basis of core statutory obligations, stemming from legislation, requests, and interpretation of core mandates.

- **Legislation:** In the UK, the institutional architecture leading to the PRA's 2014-15 review was established through the adaptation reporting power introduced as part of the UK Climate Change Act 2008. Under this provision, government departments – in the PRA's case, DEFRA – were enabled to request climate change adaptation reports.
- **Requests from Government:** In Sweden, FI's assessment of its supervisory role in contributing to sustainable development responded to a request from the government.
- **Interpretation of mandates:** In the Netherlands, DNB has taken action to assess climate risks in line with its refined mission to "safeguard financial stability and thus contribute to sustainable prosperity" in the Netherlands.
- **Managing policy uncertainty:** APRA has expressed that the risks of staying silent on climate change outweighed the potential risks of clarifying a position. According to APRA, "It's unsafe for entities or regulators to ignore risks just because there is uncertainty, or even controversy, about the policy outlook."

3.2 Deepening Risk Analysis

From a supervisory perspective, it is becoming clear that a broad range of sustainability risks may be material for the solvency of firms, including through physical and financial channels. This prospect is inspiring responses from supervisors in a number of areas.

3.2.1 New Frameworks

An increasing number of insurance supervisors are seeking to deepen their understanding of how environmental challenges may affect financial stability at the firm and system levels, with a particular focus on climate change. Several jurisdictions (including the UK, Sweden and the Netherlands) have set out frameworks to understand how climate factors may affect the insurance sector – with convergence around the taxonomy of physical and transition-related risks set out by the FSB TCFD. This framework has been reinforced by the G20, which has confirmed the importance of an integrated approach to assessing environmental risk within the financial system.[39]

Figure 6: G20 Environmental Risk Taxonomy

		Financial risks			
		Business	Legal	Credit	Market
Environmental triggers	Physical • Climatic •Geologic •Ecosystems				
	Transition •Policy •Technology •Sentiment				

Source: G20 GFSG, 2016[40]

A key insight from several jurisdictions is that environmental risks – most notably physical and transition risks associated with climate change – should be considered within the mainstream framework risks facing insurance firms, rather than a discrete external risk driver. By considering such risks across the

range of credit, market, liability and investment risks facing insurance firms, as well as other operational, strategic, reputational risks that may affect safety and soundness, supervisors are better able to take action in line with core prudential mandates.

3.2.2 Firm-level Prudential Oversight

Supervisors are taking action to integrate sustainability factors into routine supervisory oversight of firms, to better understand how such risks may bear on firm-level safety and soundness in the face of both shocks (such as natural disasters) and longer-term trends (such as climate change).

In the US, the NAIC integrated climate change factors into national-level supervisory standards through revisions to Financial Condition Examiners Handbook in 2013. The revisions provide guidance on supervisory questions to ask insurers regarding potential impacts of climate change on solvency, and the consideration of climate risk in the development of a diversified and stable investment portfolio.[41] In addition, supervisors in certain US states – such as California – are considering how climate change may be considered within mainstream insurance supervision tools, such as Own Risk and Solvency Assessment and Enterprise Risk Report filings (Box 5). In jurisdictions such as Australia, supervisors are beginning to examine how climate factors may bear on the mainstream assessment framework used to evaluate risks.

Box 5: ORSA as a Tool to Assess Climate Risk

The International Association of Insurance Supervisors (IAIS) Insurance Core Principle 16 on Enterprise Risk Management for Solvency Purposes sets supervisory standards for requirements on insurers to address all relevant and material risks.42 Under ICP 16, the IAIS suggests that supervisors require firms to conduct ORSAs as a way to assess current and future risks and solvency conditions in order to inform a supervisor's view of a firm's capacity to withstand financial stress. Supervisory bodies in Europe (EIOPA), the United States (NAIC), and South Africa have implemented ORSA into mainstream supervisory frameworks. Several supervisors have expressed interest in utilizing the ORSA structure to engage with firms on their consideration of climate change risks, setting expectations for how firms should undertake internal assessment.

The key challenge now is to learn lessons from these initial efforts – to see if and how supervisory actions are deriving robust responses from firms, and where gaps may exist. For instance, research suggests further work is required to fully integrate climate risk factors into existing catastrophe models used by service providers and internally by firms.[43] Certain supervisors in Europe are now exploring how these gaps and others may relate to consideration of material risks under the Solvency II framework.

3.2.3 System-level Oversight

Large-scale natural catastrophes (such as earthquakes) have proven to be a threat to insurance sector stability, inspiring supervisors to conduct 'stress tests' against specific disaster scenarios to assess exposure to risks, estimate losses, and identify impacts on firm solvency. A critical priority for supervisors and regulators is clarifying how best to capture new complex risks – such as climate change – within system-level stress testing exercises. In the UK, the PRA has developed two climate-related scenarios examining clustered natural perils exacerbated by climate change (such as windstorms and flooding), relying on the expert judgement of specialist risk modelling firms, academic partners, and other government institutions. In the Netherlands, research is being undertaken to assess the potential for a broader range of large-scale climate events, such as flooding. As physical climate impacts may be non-linear and involve high uncertainty, it is important to examine if the boundaries of existing stress tests appropriately correspond to the range of future risks facing policyholders and firms.

On the investment side, several supervisors are examining the potential for transition risks to cause sector and system-level impacts. A first step is often an assessment of the exposure of investment portfolios to high-carbon holdings, as was done in the Netherlands in 2016. Examining financial exposures at the appropriate level of detail (in terms of the type and tenor of financial holdings, or structure of underwriting contracts) is necessary to understand what macro-level dynamics may pose risks to firms. In the UK, the PRA is seeking to undertake a more detailed analysis of firm-level exposures to transition risks, including exploring the use of asset-level data.[44] The results of such analyses can usefully feed back into firm-level supervision and engagement, by comparing portfolio exposure and alignment results across the sector. Looking beyond, data on adaptive capacity and environmental performance can be helpful to clarify 'net' impacts at the portfolio level.

3.2.4 Policy Signalling

By signalling institutional strategies to market participants through public statements and contributions to international processes, supervisors and regulators can stimulate debate on critical sustainability issues within the insurance sector. Speaking at the launch of the PRA's climate adaptation report, Bank of England Governor Mark Carney highlighted the strategic challenge of climate change as 'the tragedy of horizon' for the financial sector – noting that "once climate change becomes a defining issue for financial stability, it may already be too late." In Australia, APRA has taken a similar approach – using a high-level speech as a way to clarify its position on climate change, and start a conversation with regulated entities.

3.3 Improving Information

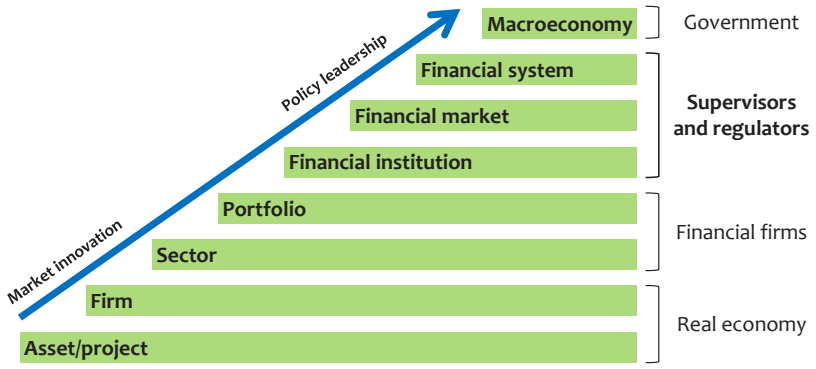
3.3.1 Enhancing Disclosure of Portfolio Risks

If it is deemed that sustainability factors may pose material risks to firms (on the basis of demonstrated exposures, acknowledgement of uncertainties, etc.), supervisors may then seek to enhance flows of sustainability information to and from insurance firms to increase transparency and market efficiency.

Looking across this evolving disclosure landscape, three dimensions are emerging as key:

- **Forward-looking:** The focus of disclosure has shifted from only presenting historic results and past performance to emphasizing the centrality of forward-looking material, which will be critical to enabling clients, investors and other stakeholders to understand how well the institution is grappling with competing future trajectories. One striking result from the consultation undertaken by the TCFD was that "96% of respondents see scenario analysis as a key component of disclosure".[45]
- **Multiple Users:** The increasing institutional focus on disclosure is leading to a realization that the users of reported information will not just be clients and investors within the financial system, but also policymakers who are looking to glean insights into potential real economy implications, such as consequences for fiscal policy, as well as the effectiveness of energy, environmental and economic policy.
- **Linking Disclosure Levels:** Disclosure is needed at multiple levels to enable effective decision-making (Figure 7). Consistency in scenarios and methodologies will be necessary to enable each successive level of analysis to be decision-useful for corporations, financial firms, and regulators.
  - I. **Asset/project**: the specific climate challenges facing a new project or investment,
  - II. **Firm**: the implications for a specific firm as requested by a growing number of investors,
  - III. **Sector**: enabling a comparative view across companies in the same sector,
  - IV. **Portfolio**: providing the basis for a cross-sectoral analysis at the portfolio level,
  - V. **Financial institution**: portfolio implications aggregated across an entire financial institution,
  - VI. **Financial market**: for supervisors, the overall implications for the insurance sector,
  - VII. **Financial system**: exploring potential for firm-level disruptions to spiral into system-level impacts,
  - VIII. **Macroeconomy**: Finally, impacts on macroeconomic factors such as growth, employment and prices, fiscal and trade balances, social inequality and environmental health.

FIGURE 7: LINKING DISCLOSURE LEVELS



Source: UN Environment Inquiry, 2016

Looking across these levels, insurance supervisors have varying influence across these various levels – but coherence is important to ensure that the disclosures from insurance firms accurately reflect risk profiles of real economy investments.

While mandates differ, many supervisors are actively seeking to support improved flows of sustainability information through the insurance system – from stakeholder engagement and survey processes in the Netherlands, to data requests in California, and the implementation of a new disclosure framework in France. Supervisors have noted that initiating such conversations with the industry can have catalytic effects on internal assessment processes. Looking beyond, supervisors can explore ways to support improved flows of information from corporate sectors through the investment chain, including with reference to the FSB TCFD recommendations.

3.3.2 ENHANCING TRANSPARENCY FOR CONSUMERS

While the primary focus of recent actions on disclosure practice has been risk-based, focusing on investment portfolios, increased transparency within insurance markets can have important benefits for the end users of insurance products – including households. One aspect of this is increasing clarity around the sustainability dimensions of specific financial products – for instance, socially responsible investment (SRI) and energy transition labels for investment products in France. In the insurance sector, public disclosure of investment portfolios is taken up as a way to promote improved consumer choice in the insurance sector – responding to increasing interest among consumers on the sustainability performance of financial firms.

Supervisors are starting to explore these areas, including from a conduct perspective. In Brazil, the motivation for SUSEP's survey of environmental practices was to see if firms – many of which are PSI members – are actually meeting their commitments to ESG factors under the four principles. Increasing information on social elements of insurance sector performance alongside environmental factors can help build consumer trust in insurance markets – a critical issue in countries like South Africa where insurance penetration is low.

3.4 MARKET DEVELOPMENT AND TRANSFORMATION

3.4.1 UNDERWRITING

Supervisory guidance and regulatory support can play a crucial role in increasing access to sustainable insurance, from the provision of basic property microinsurance to support livelihood resilience in the advent of catastrophes, to the development of specialized insurance solutions for specific environmental risks (such as index-based agriculture insurance).

Evidence from rapidly expanding markets for microinsurance attests to the benefits of strong engagement and clear guidance from regulators. The Philippines' leading regulatory framework covers virtually all aspects of the microinsurance marketplace, from licensing and product development, to the opening new markets, establishment of new providers, and processes for claims and complaints.

Beyond the micro scale, supervisors can take an active role in partnering with international financial institutions to structure specific disaster insurance and re-insurance facilities. In Morocco, ACAPS has worked with the World Bank to develop a National Catastrophe Risk Insurance Programme as part of a national effort to promote disaster risk management.[46] This objective of the programme is to support coverage for both victims of catastrophes and destroyed assets, funded on the basis of multi-hazard catastrophe extension of guarantee in property, automobile and third-party liability policies as well as the creation of a dedicated fund to compensate uninsured victims, including poor households.[47]

Supporting innovation in the underwriting process and the design of insurance products is not only a priority in emerging markets – but also a priority in highly developed and sophisticated markets, which may be highly exposed to specific environmental risks (such as earthquakes).

3.4.2 Investment Practices

Financing a sustainable economy will require significant reallocation of capital by the world's institutional investors, including the insurance sector (see Annex 1). Many major insurers and reinsurers are rising to this challenge, allocating investment portfolios to sustainable or responsible investment options, or increasing capital flows to long-term assets (see Annex 2). However, it is unclear if market momentum alone will be sufficient to mobilize the necessary capital at the scale and speed required to meet investment needs – while ensuring that the transition away from high-carbon investments is smooth. Supervisors are seeking to address this gap in different ways, including:

- **Building awareness:** Supervisors can engage with firms to raise the profile of sustainability as an investment concern – including the range of market opportunities associated with rapidly growing green asset segments, and the range of benefits that can be associated with reallocating capital away from high-carbon assets.
- **Promoting green financial markets:** Beyond awareness raising, supervisors can play a useful role in encouraging market development that can facilitate further diversification and strengthening of insurance investment portfolios. A fundamentally risk-based approach to sustainability issues can reinforce efforts to build up markets for low-carbon assets – such as green bonds – as a way to enable efficient rebalancing. As rules governing financial markets are beyond the purview of insurance, supervisors may seek to engage with other bodies seeking to support growth of green financial markets – including as part of national processes.
- **Examining regulatory barriers:** Creating a supportive enabling environment for sustainable investment requires coherence between real economy policies and industrial strategies, the use of public finance, and regulatory frameworks within the financial system. The debate is ongoing on the potential for existing or new prudential measures – including capital requirements associated with specific asset classes – to create unintended barriers for insurance firms seeking to scale up sustainable investments, which are often longer-term, illiquid, and may be considered as higher risk. Recently, as part of the Capital Markets Union Action Plan, the European Commission amended regulations to reduce capital charges associated with insurer investments in infrastructure. Going forward, supervisors in other jurisdictions could explore the need to engage with other authorities on how regulatory frameworks may pose unintended consequences for sustainability objectives.

3.5 Making Strategic Linkages

Finally, insurance supervisors and regulators can pursue integrated, strategic approaches to sustainable insurance – working both within and beyond the insurance sector. This can involve linkages between insurance and other financial sectors, real economy policy frameworks, and wider sustainable finance strategies, as well as engaging internationally.

Checking for alignment: Financial policy and regulatory bodies in different countries are implementing an increasingly diverse array of measures to raise capital for long-term investments necessary to achieve the sustainability transition. In many cases, such instruments are the remit of government ministries, but insurance supervisors can indeed play an important role, including with respect to policy alignment. In France, under Article 173 of the Energy Transition Law, insurance firms as investors are required to disclose the contribution of investment portfolios to the international climate objectives of the Paris Agreement and the objectives of the French national energy transition strategy. Analysis of carbon asset exposure and the alignment of portfolios with low-carbon scenarios (i.e. in the UK and Netherlands) could be usefully applied to understand the scope for investors to finance national green investment needs. At the EU level, the interim report of the High-Level Expert Group on Sustainable Finance has called for the development of national capital raising plans as a way to connect these strands – and supervisors can play and important role in translating information from the market into useful insights for policymakers.

Stakeholder convening: Supervisors can utilize their power to advance strategic processes with market institutions, civil society stakeholders, and other public authorities on sustainable finance. In the Netherlands, DNB established a new Platform on Sustainable Finance in 2016, which formed the basis for the first-ever discussion between EU finance ministers on finance for the low-carbon transition as part of the Netherlands' presidency in 2016.[48]

Leveraging insurance insight: Within the financial system, supervisors can translate insights from the insurance sector into support broader efforts to mainstream environmental risks and opportunities into financial policy and regulation. In several jurisdictions, the insurance sector has been a first point of entry for issues such as climate risk, due to its higher exposures and advanced risk management expertise. For instance, the PRA is now moving to conduct research on climate risk to the UK banking sector, working from its experience in insurance in 2015.

Engaging beyond the financial sector: Supervisors can play an important role in the development of integrated policy frameworks to manage environmental risk beyond the financial sector, such as national disaster risk management and climate adaptation planning. Supervisors can work with market actors to leverage the use of insurance industry information and expertise in policy design, including the use of catastrophe models. By bringing a risk perspective, supervisors can work with other public authorities to reduce risk in the built environment by engaging in land use planning processes and strategies for investment in disaster prevention and resilient infrastructure. Finally, insurance supervisors can build awareness of environmental risks within civil society to help raise the profile of insurance considerations relating to property purchasing and other consumption choices.

Strategic Roadmaps: Supervisors can take the lead on developing and implementing strategic policy roadmaps for insurance sector development, situating sustainability factors at the core of guiding principles, policy reforms, and desired outcomes. If supervisors or different authorities undertake a range of concurrent activities related to sustainability (such as disclosure, disaster risk management, or investment practice), risks of inefficiency and competing policy objectives can arise. Looking around the world, evidence from the UN Environment Inquiry suggests that integrated and comprehensive approaches – looking across a range of priorities, and responding to national conditions – can be most successful in rapidly realigning financial systems with sustainability. Morocco is now taking such an approach by implementing its national roadmap for sustainable finance into the insurance sector.

4 THE SUSTAINABLE INSURANCE FORUM: A NEW PLATFORM FOR INTERNATIONAL COLLABORATION

4.1 Objective and Design

Understanding how sustainability issues may affect the business of insurance is clearly a strategic priority for insurance regulators and supervisors. However, key constraints – including available institutional capacity and expertise, data gaps, and the lack of a shared knowledge base – have been a barrier to progress. The idea of a forum for supervisors to cooperate on sustainability issues was first proposed in 2015, as a recommendation of UN Environment's Insurance 2030 document,[49] and was supported by the PRA's 2015 report on climate risk and the insurance sector.[50]

The design of the SIF started in early 2016, based on engagement with leading regulators and a global consultation that generated responses from over 30 regulators from around the world. This confirmed the need for a new platform to tackle sustainable development challenges in insurance regulation, supervision and policy.

The inaugural meeting of the Sustainable Insurance Forum was held in December 2016 in San Francisco, co-hosted by Commissioner Dave Jones of the California Department of Insurance, and Assistant Secretary-General Elliott Harris of UN Environment. The meeting was attended by insurance supervisors and regulators from nine jurisdictions,[51] as well as representatives of the International Association of Insurance Supervisors, including Secretary-General Yoshihiro Kawai.

The goal of the SIF is to strengthen insurance supervisors' and regulators' understanding of and responses to sustainability challenges for the business of insurance, initially focusing on environmental dimensions such as climate change. The primarily focus of the SIF is on the supervisory dimensions of these challenges, related regulatory and policy issues, and how insurance supervisors and regulators may affect change in these areas.

The SIF is convened by UN Environment, drawing on its policy and sector experience generated through its Inquiry into the Design of a Sustainable Financial System and the Principles for Sustainable Insurance. The SIF has an initial three-year working horizon to 2020, starting with a one-year mandate in 2017.

4.2 Work Streams and Activities

Following the launch of the SIF, participating jurisdictions have initiated a six-track work programme of activities with the support of the SIF Secretariat.

Work Stream 1: Disclosure

In February 2017, the SIF delivered a coordinated response to the FSB Task Force on Climate-related Financial Disclosures Recommendations report consultation. This was the only joint submission to the TCFD made by a group of regulators. The response focused on three dimensions:

- **Understanding role of insurance supervisors as users of disclosure:** The SIF believes that better climate disclosure will enable insurance firms both to improve the underwriting of key risks and also strengthen the management of their investment assets. Insurance supervisors and regulators can use climate-related disclosures and other information to support core mandates, including the safety and soundness of insurance firms, access to insurance and consumer protection, and contribute to managing system-wide exposures to climate-related risks.
- **Amendments to the recommendations.** The SIF suggested amendments to the TCFD recommendations, including extending guidance on carbon risk disclosure for insurers as investors, encouraging insurers and investors to disclose how they take into account climate-related issues into overall investment policy, and encouraging the use of a range of representative scenarios for analysis for future climate risks.
- **The role of supervisors in supporting adoption.** The SIF believes that insurance supervisors and other public authorities, consistent with their mandates and policies, can play an important role in strengthening, operationalizing and promoting widespread adoption of the recommendations. Options to achieve this may include:
  - Promoting awareness of the TCFD recommendations among regulated firms.
  - Working with market actors to build capacity and share tools for scenarios and metrics.
  - Incorporating insights from climate disclosures in regular supervisory activities.
  - Developing Sustainable Insurance Roadmaps, integrating climate disclosure,
  - Endorsing or authorizing the Task Force recommendations, or appropriate aspects, as a regime to be followed in insurers' climate-related financial disclosures.[52]

Looking ahead, the SIF will work to identify practical ways that insurance supervisors and regulators can support the implementation of the TCFD's final recommendations.

Work Stream 2: Access and Affordability

The SIF is working to deepen the understanding of how environmental risks may affect the related challenges of insurance access and affordability, focusing on developing and emerging market economies. Increasing access to insurance continues to be a long-standing priority for supervisors, with a mature constellation of institutions – including the A2ii, the Microinsurance network, the ILO Impact Insurance Facility – seeking to tackle access challenges through research, engagement and capacity building. The SIF will focus beyond micro- or individual levels, examining issues of access and affordability of insurance against environmental risks for small- and medium-sized enterprises (SMEs), communities, cities, and sub-national bodies, as well as at the sovereign and regional levels. This work will draw on other research being undertaken across the SIF (including Work Stream 5), and aim to maximize synergies through engaging with other institutions working on these and related challenges.

Work Stream 3: Sustainable Insurance Roadmaps

A growing number of countries are recognizing the value of a system-wide approach to sustainability issues. As part of this, insurance supervisors may wish to promote a sustainable insurance roadmap that includes both market and policy steps. The Secretariat is supporting the development of Sustainable Insurance Roadmaps through country-level engagement and knowledge-sharing, drawing in the PSI to provide support to insurance firms.

ACAPS, Morocco's insurance supervisor, is working with the SIF Secretariat to develop a Sustainable Insurance Roadmap. Following from a national-level sustainable finance strategy announced as part of COP22, ACAPS is bringing together the market association and leading firms to identify strategic policy imperatives to leverage existing strengths and close market gaps, integrating sustainability as a component of insurance market development in Morocco. The final strategy will be completed by the end of 2017.

Work Stream 4: Climate Risks to Investment and Reserves

Regulators, central banks, and governments in several jurisdictions have recognized the importance of physical and transition climate-related risks within the financial system, including the insurance sector. Critical questions are emerging on how firms should best analyse and disclose current and future climate-related risks – as well as how public authorities should perform sector- and system-level analysis utilizing such disclosures, and other information.

Several SIF member jurisdictions (including California, the Netherlands, and the UK) are seeking to assess climate-related risks to insurance investment portfolios, including transition risks posed by high-carbon assets. Leading SIF members are now comparing experience and sharing lessons, identifying best practices for supervisors seeking to examine such risks in their own jurisdictions. This will lead to the identification of best practices for supervisors on emerging issues, including methodologies and approaches for portfolio climate risk assessment such as alignment analysis, scenario analysis, and stress testing, as well as strategies for engaging with firms on transition risk topics.

Work Stream 5: Disaster Risk Reduction and Resilience

Insurance supervisors may take different approaches to promoting disaster risk reduction and resilience, both within and beyond the insurance system. Beyond market intervention and the provision of public insurance facilities, supervisors may seek to raise public awareness of disaster risks, encourage firms to support disaster risk strategies, or engage with public policy institutions governing land use, urban planning, zoning, building codes, disaster preparedness, early warning systems, and emergency services.

Through research and collaborative engagement with other institutions, the SIF will seek leverage the knowledge, expertise, and capacities of insurance supervisors and firms to support the mitigation and reduction of exposure to disaster risk. This will involve an assessment of case studies from around the world, and an identification of best practices for supervisors.

Work Stream 6: Capacity Building for Supervisors

SIF members recognize the need to build capacity within their own institutions on sustainable insurance issues, including integrating consideration of environmental risks to underwriting and investment as part of mainstream supervisory activity. The SIF is working to develop capacity building tools for supervisors on sustainable insurance issues, including a review of existing supervisory toolkits, and the development of training materials.

4.3 Long-term Vision

The long-term vision of the SIF is of an insurance sector where sustainability factors are effectively integrated into the regulation and supervision of insurance companies. Looking forward to 2020, the SIF will work to achieve this goal by facilitating voluntary action by supervisors, including delivering practical content, expanding the SIF network, solidifying institutional partnerships, and building capacity and supporting implementation.

ANNEX 1: THE CHALLENGE OF SUSTAINABILITY FOR INSURANCE

Key sustainability factors are now recognized as potentially significant for the success and soundness of the insurance sector. The 2030 Agenda for Sustainable Development sets out a global roadmap for addressing sustainability challenges worldwide, looking across 17 areas – which can be broadly grouped into core social and environmental categories (Figure 8). This agenda encapsulates a broad range of issues that are having material impacts today. For instance, environmental pressures increasing across a range of indicators:

- Natural capital has declined in 116 out of 140 countries.[53]
- Air pollution from the energy system results in 6.5 million premature deaths every year.[54]
- 21 of the world's 37 largest aquifers have passed their sustainability tipping point.[55]
- One third of the world's arable land is jeopardized by land degradation, triggering economic losses of US$6.3-10.6 trillion per year.[56]

FIGURE 8: OVERVIEW OF THE SDGS

Source: UN, 2015

Key challenges such as air pollution, the degradation of natural capital and arable land, water availability and quality, nutrition, health and education are driving governments to take action through policies both in the real economy and the financial system – including an increasing focus on the role of insurance.[57] In 2014-15, the PSI and the UN Environment Inquiry carried out the first-ever global consultation on how insurance policy and regulation could better support sustainable development. After convening a multi-stakeholder global roundtable with Swiss Re in May 2015, the PSI and the Inquiry launched the report "Insurance 2030: Harnessing insurance for sustainable development", identifying the breadth of social environmental, and economic sustainability issues relevance to the business, strategies, and operations of insurance firms.[58] Three key interlocking challenges stand out: natural disasters, climate change, and access and affordability.

A 1.1 NATURAL DISASTERS

Disasters are becoming more frequent and more severe – with increasing exposure, population growth, urbanization and climate change all expected to contribute to increasing losses from natural disasters over the coming decades. The implications are stark:

- Between 2005 and 2015, over 700,000 people died, over 1.4 million were injured and approximately 23 million were made homeless as a result of disasters, with more than 1.5 billion people affected.[59]
- Since 2008, an average of 26.4 million people have been displaced from their homes by natural disasters every year – equivalent to one person every second.[60]
- Total economic losses from natural disasters in the last decade were more than US$1.3 trillion, with total direct losses in the range of US$2.5 trillion so far this century.[61]
- Only 30% of losses from natural disasters are insured; this falls to just 2% in low- and middle-income countries.[62]

Critically, natural disasters have a disproportionate impact on vulnerable and poor populations in developing and emerging economies. Assessments of the costs of disasters often focus on financial losses stemming from damage to buildings or infrastructure – but often fail to account for impacts to low-income communities that have little or nothing of material value to lose, who suffer much more than affluent social groups. Analysis from the World Bank Group finds that the impact of extreme weather on poverty is more devastating than previously understood, responsible for annual consumption losses of US$520 billion and pushing 26 million people into poverty every year.[63]

Investment in disaster risk reduction can lead to lower economic, social and environmental losses, safer and more resilient communities and economies, and ultimately less public and private funding allocated to disaster relief and recovery. Recent research has shown that sufficiently insured natural catastrophe events have inconsequential impacts on economic output, supporting faster recovery, whereas uninsured losses can have significant long-term impacts.[64]

Agreed in 2015, the Sendai Framework for Disaster Risk Reduction – which sets out global policy agenda for prevention and reduction of disaster risk – specifically recognizes the role of insurance in terms of reducing exposure, increasing preparedness and building resilience.[65] Article 31 (c) of the Framework calls on financial institutions and regulators to motivate efforts to integrate disaster risk management into business models and practices; engage in awareness-raising and training; support research and innovation; and actively support knowledge-sharing efforts on best practices for disaster risk management.

A 1.2 Climate Change

Climate change represents a significant concern for insurers globally, as the short- and long-term physical impacts to insured assets become increasingly material. In the past decade, 80% of natural disasters were climate-related,[66] and climate change is predicted to increase the frequency and intensity of extreme weather events such as floods and storms.[67] In January 2017, the World Meteorological Organization confirmed 2016 as the hottest year on record, with global temperatures approximately 1.1°C above pre-industrial levels.[68]

With the Paris Agreement on climate change, the governments of the world have set a target of holding global warming to well below 20C, ideally to just 1.50C above pre-industrial levels. The practical implication of this is the need to bring net emissions from fossil fuels down to zero well before the end of the century.69 In a net-zero world, for every ton of carbon dioxide released, a ton must be permanently removed from the atmosphere. Decarbonization was thus confirmed as a mega-trend that would reshape the world's capital markets, throwing into doubt conventional financial projections that extrapolate today's energy system into the future. However, today's commitments will reduce emissions by no more than a third of the levels required by 2030, risking warming of up to 3.4°C.[70]

The Paris Agreement also set out steps to refocus the financial system so that it responds to the increasing impacts of climate change, particularly in developing countries. A new alliance of finance ministers from developing countries formed the Vulnerable 20 group (V20) in October 2015. Chaired by the Philippines, the V20 brought together countries from all continents – from Afghanistan through Kenya to St Lucia

and Tuvalu. Their collective experience was stark: climate shocks were already exceeding their national capacity to respond, bringing annual losses from climate change of at least 2.5% of their GDP. Financial losses were estimated at US$45 billion a year since 2010 – a number expected to increase nearly tenfold to close to US$400 billion by 2030.[71] Based on existing regional initiatives in Africa and the Caribbean (see Box 4), the V20 committed to create a new climate risk pooling mechanism. This focus on blending private expertise from the insurance sector with public purpose was ultimately reflected in the Paris Agreement itself.[72] In addition, all major national and international financial institutions were asked to report on the incorporation of climate-proofing measures.[73]

Article 2 (c) of the Paris Agreement specifically sets out a goal of "making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development."[74] For the insurance sector, climate change has important implications for the demand for insurance products, the insurability of assets and associated changes in premium flows from underwriting businesses. Decarbonization also presents a range of opportunities and challenges for the insurance sector's investment allocations. While leading insurers and reinsurers exhibited notable leadership in decarbonizing investment portfolios, capital allocations by insurers to low-carbon assets remain small (see Section 1.2).

Several new initiatives have been established to harness the expertise of the insurance industry to address climate challenges, including the UN Secretary-General's A2R Climate Resilience Initiative (Anticipate, Absorb and Reshape). The UN Framework Convention on Climate Change (UNFCCC) is moving ahead with a new insurance and risk transfer "clearing house" under its Loss and Damage Mechanism.[75] In addition, the UNFCCC Standing Committee on Finance has increased its focus on insurance and risk transfer instruments, such as insurance, catastrophe and resilience bonds, contingency finance, forecast-based finance and social protection mechanisms.[76]

A 1.3 Access and Affordability

Ensuring access to adequate and affordable insurance is a recognized priority across the world – most notably in developing countries, where insurance penetration rates are low and available products unsuitable for client needs.

Mandatory requirements to hold insurance coverage for natural catastrophe risks have a long history in many countries, where state-owned funds and reinsurance entities have been established.[77] Mandatory coverage mechanisms have also been introduced as a way to respond to risks to the broader public posed by environmental pollution, as is the case in China[78] and South Korea.[79] Efforts to facilitate the provision of natural disaster insurance in high-risk jurisdictions have faced coverage and financing challenges.

In developing and emerging economies, access to insurance is a critical priority for broader financial inclusion efforts. In the decade since the first microinsurance regulations were established in India in 2005, at least 18 insurance supervisors have adopted specific policy microinsurance frameworks – with a further 23 countries in the process of developing similar policies to enhance access (including Nigeria, Pakistan, South Africa and member countries of the Inter-African Conference on Insurance Markets).[80] In the Philippines, microinsurance has played a significant role as a channel for recovery of communities and livelihoods in the face of significant disasters in recent years. Policies mandating the provision of insurance products – including client quotas – are implemented as a way to facilitate access for underserved populations. The Access to Insurance Initiative (A2ii), established in 2009 as a specialized body of the IAIS, has been critical to the development of this agenda.[81] The work of A2ii points to the broad range of co-benefits achieved from the provision of basic insurance products for low-income people or microinsurance.[82]

At the corporate level, access to insurance is critical for businesses to function – underwriting counterparty risks is central to project finance transactions, trade flows and infrastructure development.

The availability and affordability of insurance has important implications for future investment choices across sectors, which may impact sustainable development outcomes. Taking the energy sector as an example, the affordability of underwriting higher-carbon assets may change in response to policy decisions including actions under the Paris Agreement.

This constellation of pricing and access questions that will arise from new sustainability risks points to the need for coordination where conflicting policy agendas – such as land use planning and building codes – may lead to the assets being rendered uninsurable. Within the financial system, interlinkages between insurers, banks and other financial institutions create channels through which environmental risks could "cascade" – raising questions on the potential for systemic risks to arise.

ANNEX 2: INDUSTRY LEADERSHIP ON SUSTAINABLE INSURANCE

Sustainability challenges for insurers are evolving beyond the management of physical risks in underwriting to a broad range of interlinked physical, economic and social challenges. The insurance sector is exhibiting leadership on sustainability priorities through strategic action across both underwriting and investment activities.

A 2.1 Underwriting

The insurance sector has long been at the forefront of efforts to better understand the financial implications of environmental risks and associated losses. Significant investments in developing advanced risk modelling techniques following Hurricane Andrew in 1992,[83] the restructuring of contract parameters, and regulation of solvency capital requirements to reflect 1-in-200-year return periods[84,85] have all contributed to the resilience of the insurance sector against natural disasters of increasing frequency, severity, and magnitude.

A 2.1.1 Enhancing Risk Management: Risk Models and ESG Frameworks

The insurance sector has significantly increased its technical capacity to manage environmental risks – principally in terms of the physical risks posed by natural disasters. The challenge now is to expand the scope of models to consider a broader range of risks, including contingent and interrelated risks brought on by climate change. A Lloyd's[86] report shows that the majority of catastrophe models – while significantly improved – do not explicitly consider climate change risks, and require calibration against historical data that do not adequately portray potential future impacts.

Recent initiatives such as the Oasis Loss Modelling Framework have brought together insurance industry stakeholders to develop open source modelling tools to reduce the transaction costs and build connectivity with a broad range of user groups.[87] In 2016, Oasis proposed a new platform for catastrophe and climate risk assessment to further broaden the applicability of catastrophe risk models, ultimately seeking to expand insurance coverage.[88]

Beyond climate change, insurance firms are seeking to better understand how new policy, technological and other risk factors resulting from the transition to sustainable development may affect the value of real and financial assets. Several major global insurance and reinsurance firms have implemented frameworks to integrate ESG risks and opportunities across lines of business, in line with their commitments to implement the Principles for Sustainable Insurance and the Principles for Responsible Investment (PRI):

- **Allianz:** Allianz's overarching ESG approach considers sustainability risks across insurance and investment areas. In underwriting, this includes ESG guidelines on sensitive business areas, and the development of strategies to engage corporate customers on ESG issues.[89] A global ESG directive for investments was implemented in 2014.[90] To support these efforts, Allianz has worked to integrate ESG risks into global training for underwriters and investment officers.
- **AXA:** In May 2015, AXA became the first global financial institution to divest from companies most exposed to coal-related activities, amounting to EUR500 million. It also committed to tripling its green investments to more than EUR3 billion by 2020, mainly in clean technology, green infrastructure and green bonds. Moreover, in April 2017, AXA became the first global insurer to disengage from underwriting insurance for coal-intensive businesses, in line with its commitment to implement the PSI.

- **Munich Re:** To manage ESG risks and seize new business opportunities, Munich Re has a systematic group-wide ESG approach to its insurance business applying to its underwriting processes and products and services. Integration of ESG issues into core business is included in the targets of the Parent Board of Management and Strategy Committee, and has led to incorporating the PSI into its group-wide risk management manual, which serves as a general basis for their group underwriting guidelines, and the development of ESG criteria, questionnaires and country ratings applicable to insurance and investment activities. Training programmes on ESG issues are conducted for staff members around the world and are included in client seminars.
- **Swiss Re**: Swiss Re's Sustainability Risk Framework is a group-wide risk management methodology, consisting of eight policies on sensitive sectors or issues, a process for sensitive business risks in due diligence, and company and country exclusions.[91] The framework is applied to all business transactions – importantly, to underwriting activities as well as investments.
- **Others**: Other players such as Peak Re (based in Hong Kong)[92] and SulAmérica and Terra Brasis Resseguros (both based in Brazil) are implementing ESG frameworks, also in response to shareholder requests, including requirements from international financial institutions such as the IFC.

A 2.1.2 Building Resilience: Industry Collaboration and Collective Action

The insurance industry has taken steps collectively to share knowledge and support public-private collaboration on sustainability challenges. The risk management expertise of the insurance industry can support the resilience of communities and governments through direct engagement, capacity building and the provision of targeted products. Some firms are committing to work directly with governments – for example, Swiss Re offers to support sovereigns and sub-sovereigns on climate risk.[93] Multi-stakeholder partnerships on disaster resilience, including the Australian Business Roundtable for Disaster Resilience & Safer Communities[94] and the Partners for Action (P4A) initiative on flood risk in Canadian cities,[95] are prominent examples of industry-initiated collaboration with civil society and government leading to meaningful improvements in disaster resilience planning.

Within the industry, the PSI is collaborating with many firms and key stakeholders to drive new initiatives that address critical challenges, such as natural disaster risk mapping and modelling, inclusive insurance, urban infrastructure development, ESG integration across lines of business and industry sectors, city resilience and sustainability, climate risk insurance and sustainable marine insurance.

- **Global Risk Map**: A specific effort from the insurance industry to offer its expertise to public policymakers in better understanding and managing disaster risks, combining insurance data with 115 years of global natural disaster statistics.
- **Inclusive insurance:** Insurance networks are collaborating to distil good practices that help make inclusive insurance work in developing countries, spanning clients and impact metrics, distribution and technology, health, SMEs and value chains, agriculture and climate risks, and insurance regulation.
- **City Innovation Platform for African Infrastructure Risk and Resilience**: Launched at the end of 2015, the City Innovation Platform brings together insurance experts, the private sector and the city's leadership to prototype solutions to major infrastructure and resilience challenges in Africa. A pilot phase has been completed in Dar es Salaam (Tanzania) as part of a process to develop methods that make infrastructure projects more insurable, resilient and sustainable.
- **ESG underwriting guidelines across lines of business**: A pioneering collaborative initiative is under way to develop insurance industry-wide ESG underwriting guidelines across lines of business and industry sectors (such as infrastructure), with first outputs expected in 2018.
- **Insurance Development Goals for Cities**: A landmark collaboration by insurers and local governments is under way to create Insurance Development Goals for Cities based on the targets of the SDG on cities (for example, implementing by 2020 integrated policies and plans addressing inclusion, resource efficiency, climate change mitigation and adaptation, and disaster resilience), to develop

city-level sustainable insurance roadmaps, and to convene insurance industry CEOs and city mayors in 2018 to accelerate global and local action on urban resilience and sustainability

- **Climate risk insurance for vulnerable countries:** Efforts are under way to explore how the insurance sector and governments can work together to close the insurance protection gap in climate-vulnerable countries, addressing both climate change adaptation and mitigation needs.
- **Sustainable marine insurance:** Efforts are under way exploring how marine insurers can support the SDG on oceans and marine resources.

A 2.1.3 Product and Delivery Innovation

By the end of 2015, the global market capacity in environmental insurance is estimated to be more than US$600 million.[96] Demand for environmental insurance coverage continues to increase in response to changing risk profiles, client demand and regulatory changes – while the frequency of environmental claims continues to rise by 20-30% each year.[97] Meanwhile, the size of the outstanding catastrophe bond market by mid-2016 rose to a record US$26.5 billion.[98]

As coverage for environmental damage increases, attention is now shifting towards underwriting implications emerging from the low-carbon transition. On the upside, this includes the development of new insurance products for green infrastructure (such as renewable energy construction and delivery, energy efficiency insurance, usage-based insurance for vehicles), introducing differential pricing for low-carbon alternatives (such as green buildings and low-emission cars), and clarifying the risk and claims performance of higher-performing assets such as energy efficient buildings (Box 6).

Box 6: Flexing Insurance Products for Environmental Performance – 'Green Tagging'

Interest is increasing in utilizing publicly available information to better understand the financial performance of loans and credit to higher-performing assets – such as "green mortgages" provided to energy-efficient buildings. Such an approach could potentially be taken in insurance to better understand the claims performance of sustainable assets, and the potential for differential pricing of low-carbon alternatives. While there may be clearer records of claims associated with climate-vulnerable or poorly performing buildings, there is little data on underwriting performance of A-grade buildings.

Starting with home and automobile insurance, the key innovation would be to tag claims linked to the asset's energy performance, fuel efficiency or environmental standards that already exist in a growing number of countries. For example, 20 countries now have energy performance standards for buildings (including the EU as one unit). Similarly, 10 countries and markets accounting for 75% of vehicle sales have fuel economy or greenhouse gas automobile labelling.

Expanding the knowledge base on underwriting risks associated with environmental and energy performance – and working across the financial system, including bank loans – could support a step change in financing for energy efficient, low-carbon assets, including

- Increasing transparency and visibility the flows of finance to energy-efficient products and their associated risks
- Generating useful information on the portfolios of energy-efficient assets that could be packaged as insurance-linked securities

Finally, evaluating the systemic risk implications of underwriting and investment in energy-efficient asset vs. their lower performing alternatives.

A 2.2 Investment

With over US$31 trillion in assets under management globally, the insurance sector plays a significant role as an institutional investor, especially in fixed-income markets.[99] Along with pension funds, insurance companies have been among the leaders in the development of sustainable and responsible investment strategies. At an industry level, the Principles for Responsible Investment have become the recognized standard for the integration of ESG factors through the investment chain: over 1,700 institutions (including many insurance companies) now support the PRI, accounting for US$73 trillion in assets under management.[100]

Across the G20, recognition of the importance of ESG factors for long-term value creation for institutional investors, including insurers, is increasing. Overall, 63% of meta-analyses find a positive correlation between ESG and corporate financial performance, with a strong correlation between ESG and corporate financial performance in emerging markets.[101] Similarly, client demand for investment products linked to sustainability outcomes is increasing. This is inspiring a shift in the understanding of core institutional investor responsibilities with respect to environmental factors: a recent global investor survey found that over 65% of respondents agreed that acting on the goals aligned with their fiduciary duties.[102]

Overall, climate change is taken up as the most significant sustainability challenge for investors, including insurance firms – both in terms of portfolio risk and strategic asset allocation.

A 2.2.1 Reducing Carbon Risks

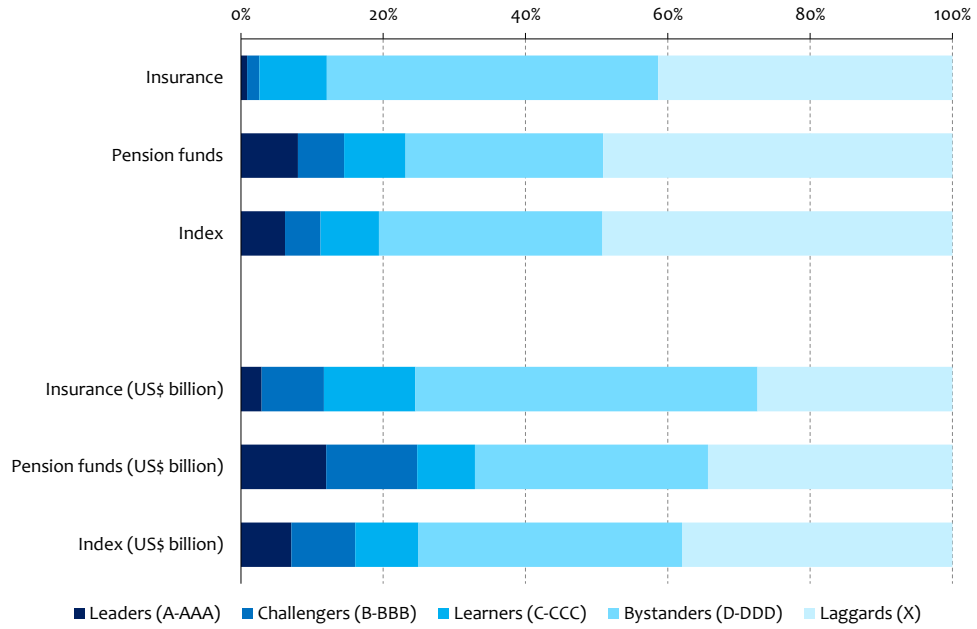
Decarbonization poses long-term investment risks for high-carbon sectors, notably fossil fuels. Research by Barclays has estimated that a 2°C pathway could reduce the revenues of the upstream fossil fuel industry globally by a cumulative US$33 trillion by 2040.[103] Concerns that assets could become 'stranded' in the transition have prompted an increasing number of investors to assess their carbon exposure and then take action to reduce it.[104] Institutions with over US$10 trillion in assets have committed to publishing a 'carbon footprint' of their portfolios.[105] A leading group is going further by taking action to cut the emissions across US$600 billion of assets,[106] including insurance firms such as Allianz and Storebrand.

Action among investors increased significantly in the lead-up to COP21 in December 2015, with insurers such as AXA and Allianz making industry-leading commitments to divest from fossil fuels – focusing on coal assets. AXA's disengagement from underwriting insurance for coal-intensive businesses shows the considerable influence the insurance sector can have in the low-carbon transition – including in terms of risk profiles of fossil fuel assets for investors. Insurance firms have also been active in debates at the global level, with three leading insurers (Aviva, Aegon and Amlin) issuing a joint statement calling on G20 leaders to end fossil fuel subsidies by 2020, five years ahead of the projected "medium-term" target.[107]

Recognition is increasing within the market and in public institutions of the potential for significant losses to insurance reserves stemming from high-carbon assets stranded by the low-carbon transition. Beyond carbon, leading financial institutions are also seeking to better understand how other sustainability risks – such as water scarcity – may affect investment portfolios and other holdings.

Progress with regard to portfolio decarbonization is far from mainstream, however – reflecting both a lack of consensus among like-minded firms on the best approach, and a lack of action by the broader industry. Recent research by Ceres has found that many leading insurance groups remain heavily invested in fossil fuels – with the collective investments of the top 40 US insurance groups totalling US$459 billion. In a survey of climate risk action by institutional investors, the Asset Owner's Disclosure Project,[108] found that while nearly 60% of insurers recognize climate risk as an issue, two fifths of insurers are taking no action to protect their portfolios – potentially exposing US$4.2 trillion of assets to climate-related risks (Figure 9).

FIGURE 9: ASSET OWNER'S DISCLOSURE PROJECT RATING OF INSURANCE FIRMS



Source: AODP, 2016[109]

A 2.2.2 REALLOCATING CAPITAL TOWARDS GREEN ASSETS

Importantly, any effort to decarbonize portfolios by insurers needs to be substantiated with a concomitant reallocation to green assets. Achieving the SDGs will require an unprecedented mobilization of both public and private finance, some US$90 trillion between 2015 and 2030.[110] The potential is enormous: developing and emerging economies are set to create green and climate-smart investment opportunities projected to reach US$23 trillion by 2030.[111]

Within the investment world, green investments are small, but growing. The Low Carbon Investment Registry, a global public online database created by investors, aims to capture and share low-carbon and emissions reducing investment examples, with over US$50 billion in entries. Investments registered include not only wind, solar and hydropower, but also green buildings, energy efficiency, national rail and freight systems, and forestry. The registry was launched in 2015 and investors are still making entries.[112]

Particular attention is being focused on the 'green bond' market, where proceeds are ring-fenced for green investment projects. The market is growing fast, with issuance so far this year of US$65 billion, up from barely US$11 billion in 2013. Investors want to buy green assets, and countries such as China, India, Morocco and Nigeria see green bonds as offering a new tool to finance their ambitions for sustainable development.

Currently, however, institutional investor capital allocation to long-term green assets such as infrastructure is extremely low, at less than 1% of portfolios.[113] A key challenge is to focus investor sentiment in unaddressed areas, including building resilience and adapting to environmental shocks. According to the Global Adaptation & Resilience Investment Working Group (GARI), 78% of 101 surveyed investors and other stakeholders thought evaluating the physical risk from climate change was "very important", while 70% would consider making investments that supported adaptation to climate change or climate change resilience now.[114]

A 2.3 BARRIERS AND EMERGING CHALLENGES

While there has been notable leadership on sustainable insurance from large firms comprising a significant share of global premiums, the majority of the industry – including life and health businesses,

auto insurance and smaller firms with fewer exposures to environmental liabilities – has taken relatively few steps to address sustainability challenges. Several issues are key:

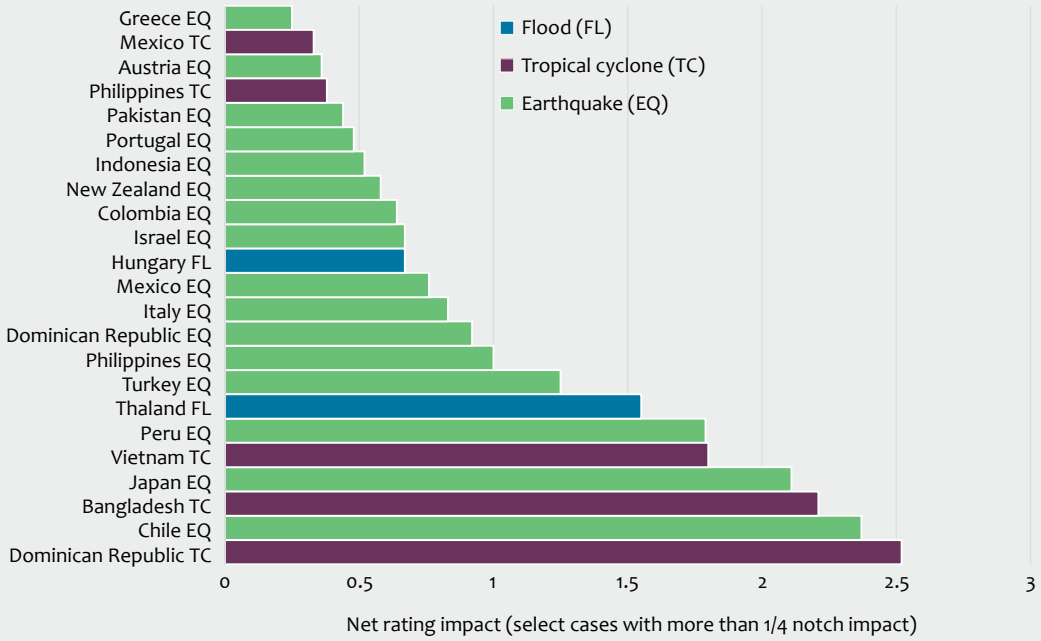
- Leadership in underwriting is concentrated among large diversified insurers with higher levels of exposure to physical risks to non-life lines, and reinsurers operating at global scales.
- Management and interpretation of sustainability issues vary from company to company, making comparability across approaches difficult.
- In certain markets, actions seeking to address sustainability issues can present a competitive disadvantage for insurers – as the implementation of frameworks to consider ESG risks may present new barriers in place of mainstream business opportunities.
- The relevance and application of sustainability priorities varies significantly across lines of business. For instance, select insurers are only beginning to examine how ESG may affect life and health businesses.
- There is a lack of alignment across the insurance value chain on sustainability priorities. Central to this is the role of brokers in channelling demand for sustainable insurance products, liaising between clients and insurers as well as with the reinsurance sector.

Other key barriers to mainstreaming include misaligned market incentives, short-term time horizons and capacity constraints. Finally, many of the measures described above are relatively new, and as such difficult to evaluate. In addition, integrating environmental factors into financial decision-making could also crystallize risks – for example, in terms of the credit ratings of sovereign bonds issued by vulnerable countries (Box 7).

Box 7: Sovereign Credit Ratings

Environmental shocks could result in downgrades of sovereign bond ratings of vulnerable developing countries. This could bring serious financial and associated economic implications – including a higher cost of capital for government borrowing – unless preventive action is taken to invest in measures to strengthen resilience to threats such as natural disasters, or macroeconomic shocks such as food price spikes. Based on a sample of 48 countries, Standard & Poor's and Swiss Re conclude that natural disasters, which can be expected once in every 250 years, can weaken sovereign ratings – with tropical cyclones potentially leading to downgrades of up to two notches[115] (Figure 10). While ratings changes directly resulting from natural perils have been rare, extensive damage from natural disasters often has stark macroeconomic impacts that directly hit ratings indicators. In fact, the comparative lack of rating actions stemming from natural events may be misleading – may major catastrophes have hit countries that at the time did not have sovereign ratings – or linked to other risk drivers.

Figure 10: Net Rating Impact by Peril



Source: Standard & Poor's and Swiss Re

What could be needed are additional measures to anticipate these shocks, which both mobilize public and private investment in the underlying resilience of vulnerable countries and also ensure that these adaptation measures are rewarded by rating agencies and investors.

ANNEX 3: GLOBAL MOMENTUM ON SUSTAINABLE FINANCE

Policy and regulatory actions on sustainable finance are increasing. A survey of measures conducted by the UN Environment Inquiry identified 217 measures taken in nearly 60 countries by mid-2016, with emerging and developing countries increasing their share from 29% of the total in 2010 to 38% by the end of 2016.

G20 and Green Finance

Under its 2016 G20 Presidency, China launched the Green Finance Study Group, co-chaired by China and the UK, with UN Environment as the secretariat.[116] The GFSG was established to "*develop options on how to enhance the ability of the financial system to mobilize private capital for green investment.*" To build a platform of common understanding on the opportunities and challenges facing green finance, it focused on five research areas: greening the banking system, greening the bond market, greening institutional investment, risk analysis and measuring progress.[117] Its 2016 synthesis report acknowledged the positive momentum, but also recognized that many challenges remained.[118] At the 2016 Hangzhou Summit, G20 Heads of State for the first time recognized the need to "scale up green finance" and endorsed a set of options to achieve this goal.

The GFSG has continued under the 2017 German Presidency of the G20, with two research tracks focusing on Environmental Risk Assessment and Publicly Available Environmental Data. The GFSG released its 2017 synthesis report in July 2017, alongside the Hamburg leaders' summit.

The Financial Stability Board and Climate Disclosure

Building on nearly 20 years of climate disclosure and growing mainstream recognition of the importance of improved transparency, the FSB TCFD marks the first dedicated focus of the FSB on the financial implications of an environmental issue. The TCFD's final recommendations were published in June 2017,[119] setting out a framework for climate-related financial disclosures structured around four thematic areas: Governance, Strategy, Risk Management, and Metrics and Targets (Figure 11).[120]

Insurance companies have a twofold role to play in terms of disclosure. First, they are users of disclosures from other companies to enable informed investing and underwriting decisions – and rely on consistent reporting from across the economy to enable effective risk pricing and inform investment decisions. Second, they are also producers of reports themselves – and as such, provide information relevant for supervision and regulation.

As part of its recommendations, the TCFD released supplementary guidance for the implementation of the recommendations into different corporate and financial sectors – including insurance. In addition to the guidance for all sectors, two categories of supplementary guidance are relevant for insurance companies – those targeted to insurers specifically, as well as guidance for asset owners. The guidance sets out practices to describe the potential impacts of climate-related risks and opportunities with respect to insurers' strategy, risk management, metrics and targets.

- **Strategy:** "Insurance companies should describe the potential impacts of climate-related risks and opportunities, as well as provide supporting quantitative information where available, on their core businesses, products, and services"
- **Risk Management:** "Insurance companies should describe the processes for identifying and assessing climate-related risks on re-/insurance portfolios by geography, business division, or product segments" including physical, transition, and liability risks. Insurers should also "describe

key tools or instruments, such as risk models, used to manage climate-related risks in relation to product development and pricing", as well as "the range of climate-related events considered and how the risks generated by the rising propensity and severity of such events are managed."

- **Metrics and Targets:** Insurance companies should "provide aggregated risk exposure to weather-related catastrophes of their property business (i.e., annual aggregated expected losses from weather-related catastrophes) by relevant jurisdictions."

FIGURE 11: RECOMMENDATIONS OF THE FSB TCFD

Governance Disclose the organization's governance around climaterelated risks and opportunities	Strategy Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material.	Risk Management Disclose how the organization identifies, assesses, and manages climate-related risks.	Metrics and Targets Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.
Recommended Disclosures			
a) Describe the board's oversight of climate-related risks and opportunities.	a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term	a) Describe the organization's processes for identifying and assessing climate-related risks.	a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.
b) Describe management's role in assessing and managing climate-related risks and opportunities	b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	b) Describe the organization's processes for managing climate-related risks.	b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.
	c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.

Source: FSB TCFD, 2017

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