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Principles for  
Sustainable Insurance

# **New risks, new opportunities:** Harnessing environmental pollution liability insurance for a sustainable economy

A global study by UN Environment Programme's Principles for  
Sustainable Insurance Initiative

June 2022



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# About UN Environment Programme's Principles for Sustainable Insurance Initiative

Endorsed by the UN Secretary-General and insurance industry CEOs, the Principles for Sustainable Insurance (PSI) serve as a global framework for the insurance industry to address environmental, social and governance (ESG) risks and opportunities—and a global initiative to strengthen the insurance industry's contribution as risk managers, insurers and investors to building resilient, inclusive and sustainable communities and economies on a healthy planet.

Developed by UN Environment Programme's Finance Initiative, the PSI was launched at the 2012 UN Conference on Sustainable Development (Rio+20) and has led to the largest collaborative initiative between the UN and the insurance industry. As of June 2022, more than 220 organisations have joined the PSI, including insurers representing about one-third of world premium and USD 15 trillion in assets under management, and the most extensive global network of insurance and stakeholder organisations committed to addressing sustainability challenges. The PSI also hosts the Net-Zero Insurance Alliance and the Sustainable Insurance Facility of the Vulnerable Twenty Group of Finance Ministers (V20).

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“The Principles for Sustainable Insurance provide a global roadmap to develop and expand the innovative risk management and insurance solutions that we need to promote renewable energy, clean water, food security, sustainable cities and disaster-resilient communities.”

**UN Secretary-General**  
(PSI launch, 2012 UN Conference on Sustainable Development)



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## Project sponsors

**Seok Ryu**  
Executive Director  
DB Insurance

**Kim Hyun-yong**  
DB Insurance

## Project team

### Project Lead & Chief Editor

**Butch Bacani**  
Programme Leader, UNEP Principles for  
Sustainable Insurance Initiative

### Project Manager & Primary Author

**Dylan Bryant**  
Project Manager, Environmental  
Pollution Liability Insurance  
UNEP Principles for Sustainable  
Insurance Initiative

### Project Supervisor

**Yuki Yasui**  
Asia-Pacific Coordinator  
UNEP Finance Initiative

### Project Coordinators

**Dae-Woong Lim**  
Korea Coordinator  
UNEP Finance Initiative

**Diana Diaz**  
Programme Supervisor  
UNEP Principles for Sustainable  
Insurance Initiative

### Project Advisors

**Peggy Lefort**  
Pollution & Circular Economy Lead  
UNEP Finance Initiative

**Alice Merry**  
Project Manager, Plastic Pollution  
UNEP





We wish to thank the following experts for their invaluable inputs to this global study (in alphabetical order, by organisation name):

- **Iain Henderson**, Managing Director, Sustainable Finance, ADM Capital (China)
- **Peter Jarvis**, Head of International Environmental, AIG (UK)
- **Jota Shohtoku**, President—Asia-Pacific, Allied World (China)
- **Lauren Clarke-Weist**, Innovation & Co-Creation Lead, Enterprise Client Group, Aon (Singapore)
- **Veronica Benzinger**, National Practice Leader, Environmental Services Group, Aon (USA)
- **Rodney Taylor**, Managing Director, Environmental & Construction Liability, Aon (USA)
- **Catherine O’Leary Smith**, Chief Broking Officer—Environmental, Aon (USA)
- **John O’Brien**, Executive Vice President, Head of Environmental, Ascot (USA)
- **Rea O’Malley**, Senior Business Development Executive, Axco Insurance Information Services (UK)
- **Jayne Cunningham**, Environmental Underwriter, Beazley (USA)
- **Eric Vanhalle Feprabel**, CEO, Belgian Association of Insurance Intermediaries (Belgium)
- **Ben McQuhae**, Founder, Ben McQuhae & Co (China)
- **Hans-Georg Jenssen**, CEO, Bundesverband Deutscher Versicherungsmakler (BDVM) (Germany)
- **Debra Tan**, Director & Head, China Water Risk (China)
- **Jamie Wolfson**, Head of Commercial Strategy, Coherent (China)
- **James Rees**, Founder, Eagle Hawk Advisory (USA)
- **Duncan Spencer**, Director, EDIA Limited (UK)
- **Rebekka De Nie**, EU Policy Manager, European Federation of Insurance Intermediaries (BIPAR) (Belgium)
- **Charles Low**, Head of EU Affairs, Federation of European Risk Management Associations (Belgium)
- **Anneliese Campbell**, A.R.T. & Insurance Solutions, Gallagher Insurance (UK)
- **Daniel Fairweather**, Executive Director of Livestock, Aquaculture & Fisheries, Gallagher Insurance (UK)
- **Mathew Hussey**, Environmental Liability Director, Gallagher Insurance (UK)
- **Nils Hellberg**, Head of Liability, Credit, Marine, Aviation, Accident & Legal Expenses Insurance, Assistance, Statistics, German Insurance Association (GDV) (Germany)
- **Karl Ortmann**, Senior Executive—Liability & Aviation Insurance, German Insurance Association (GDV) (Germany)
- **Chris Croft**, CEO, London & International Insurance Brokers’ Association (LIIBA) (UK)
- **Cristina Fabra**, Policy Advisor, Insurance Europe (Belgium)
- **Thomas Gelin**, Policy Advisor, Insurance Europe (Belgium)
- **Nicolas Jeanmart**, Head of Personal & General Insurance, Insurance Europe (Belgium)
- **Hanne van Voorden**, Senior Policy Advisor, International Association of Insurance Supervisors (Switzerland)
- **Vlad Gololobov**, Vice President, International Council of Insurance Agents & Brokers (USA)
- **Stuart Mitchell**, Partner, Lane Clark & Peacock LLP (UK)



- **Antonio Grimaldi**, Partner, McKinsey & Company (UK)
- **Sylvain Johansson**, Partner, McKinsey & Company (UK)
- **Leesa Ridgwell**, Partner, McKinsey & Company (UK)
- **Dallas Booth**, CEO, National Insurance Brokers Association (Australia)
- **Kasia Zatorska**, Senior Manager, Sustainable Investment Consulting, Ogier Global China)
- **Anthony Cheung**, Managing Director of ESG, PAG Polymer Capital Management (China)
- **Eckart Roth**, Chief Risk Officer, Peak Re (China)
- **Phil Bell**, Group Casualty Director, RSA Insurance (UK) (subsequently retired)
- **Valerie Fogleman**, Consultant, Stevens & Bolton LLP (UK)
- **Cherie Gray**, Global Lead Sustainability & Market Development, Public Sector Solutions, Swiss Re (Australia)
- **Paul Zhu**, Senior Product Manager, Swiss Re (China)
- **Thomas Haller**, Head South East Asia & East Asia Public Sector Solutions, Swiss Re (Singapore)
- **Alex Pui**, Head Nat Cat & Sustainability (Asia-Pacific), Swiss Re Corporate Solutions (Japan)
- **Katherine Sales**, PhD candidate, University Paris 1 Pantheon-Sorbonne (France)
- **Isabelle Heuinckx**, Policy Adviser, World Federation of Insurance Intermediaries (Belgium)
- **Nic De Maesschalck**, Director, World Federation of Insurance Intermediaries (Belgium)
- **Stuart Beavis**, Regional Lead, Dutch Fund for Climate and Development (Asia), WWF-Hong Kong (China)
- **Jean-Marc Champagne**, Head of Environmental Finance, WWF-Hong Kong (China)
- **John Scott**, Head of Sustainability Risk, Zurich Insurance Group (UK)
- **Jay Benton**, experienced insurance professional and consultant (Singapore)



# Executive summary

The findings of this study on environmental pollution liability insurance are based on a three-pronged research methodology involving a literature review, a global survey, and interviews with insurance practitioners and key stakeholders.

At a certain stage in a country's economic development, there is recognition that in order to achieve sustainable development, society requires more robust legal liability frameworks for environmental damages. This is a serious issue which has led to major problems in both developed and developing countries. The pressure to develop brownfield sites and to dispose of industrial waste responsibly makes this a continuing challenge.<sup>1</sup>

Following large pollution events more than 40 years ago, insurers started to limit coverage by excluding pollution under traditional general liability policies. This led to the development of a specialist environmental pollution liability insurance line of business in the succeeding years and decades, with a focus on high-risk industries such as those involved in petrochemical storage, production and distribution, and other chemical and waste processing and storage facilities.

Environmental pollution liability insurance continues to be highly influenced by the underlying legal and regulatory frameworks present in each jurisdiction. Examples of legal frameworks for environmental liability are the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in the US (also known as "Superfund"), the Environmental Liability Directive in the EU, the Prevention and Integral Management of Wastes in Mexico, the Act on Liability for Environmental Damage and Relief Thereof in the Republic of Korea, and the Environmental Protection Law in China. While the purchase of environmental pollution liability insurance is voluntary in most markets, it is worthwhile to note that both the Republic of Korea and China have compulsory insurance schemes.

As a niche line of business, annual global premiums for environmental pollution liability insurance is estimated at less than USD 3.5 billion,<sup>2</sup> with more than half—about USD 2 billion<sup>3</sup>—coming from the US market alone. The estimated 3.5 billion translates to just 1.64% of global liability premiums (excluding motor premiums) of USD 214 billion in 2020.<sup>4</sup>

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1 UNEP FI Insurance Working Group (2007): Insuring for sustainability—Why and how the leaders are doing it [unepfi.org/fileadmin/documents/insuring\\_for\\_sustainability.pdf](https://www.unepfi.org/fileadmin/documents/insuring_for_sustainability.pdf)

2 This estimated figure is based on Axco data, underwriters' reported gross written premiums, Aon Environmental Insurance Market Update 2019, NAIC figures, and feedback from interviewees

3 US National Association of Insurance Commissioners (NAIC) (2021): Environmental insurance [content.naic.org/cipr-topics/environmental-insurance](https://www.naic.org/cipr-topics/environmental-insurance)

4 Swiss Re Institute (2021): sigma 4/2021—More risk: The changing nature of P&C insurance opportunities to 2040 [swissre.com/institute/research/sigma-research/sigma-2021-04.html](https://www.swissre.com/institute/research/sigma-research/sigma-2021-04.html)





Six themes emerged from the research conducted:

## **Theme 1: Risk management: The bedrock of the insurance business**

### **a. Loss prevention and risk reduction measures**

One of the most fundamental actions that the insurance industry can take to advance environmental risk management is the continued investment in and support for environmental risk assessments (e.g. environmental impact assessments, strategic environmental assessments), risk surveys and risk reduction strategies which can be conducted by in-house experts or external organisations. One example from the property insurance market is the boiler inspection process that exists in many jurisdictions where the boiler insurer is required to undertake the inspections. This approach leads to the alignment of interests and a strong commitment from both the insured and insurer to prevent a dangerous and potentially lethal boiler explosion. By aligning environmental risk assessments in a similar way, there is an opportunity for insurers and insureds to reduce environmental risks. Technology will also play an important role, such as risk monitoring systems with sensors that can detect pollution and improve remote and continuous soil, air and groundwater monitoring.

Reinsurers have a key role to play in helping expand the risk management capabilities for environmental risks. In developing markets with limited underwriting and risk capacity, the reinsurance market will play an important role in transferring best practice, underwriting capabilities and expertise, along with vital reinsurance capacity to support the development and growth of the environmental pollution liability insurance market. As aggregators of risk, reinsurers will be able to support further through the aggregation of data, and the analysis and insights this will provide to insurance market participants and regulators in developing the environmental pollution liability insurance market. This will also provide helpful information to policymakers who need to determine if relevant legislative actions are having the desired impact.

Given the emergence of new risks related to climate change, biodiversity loss, ecosystem degradation and plastic pollution, it will be important to innovate and explore ways to develop the environmental pollution liability insurance market. In this regard, there is a need for greater collaboration on this matter between environmental regulators, insurance regulators, insurance market participants and companies in the real economy. It is crucial that all parties create a culture of prevention and a vibrant and supportive insurance ecosystem that can enable environmental pollution liability insurance to grow and support businesses in their endeavours while better understanding, preventing and reducing pollution risks and other environmentally-damaging events.



## **b. Total balance sheet approach**

The insurance industry's role in leading the mobilisation of capital for sustainable investments over the next decades cannot be understated. Insurers can pivot their investment portfolios towards sustainable asset classes, companies and projects. For example, there is considerable investments already moving into the development of sustainable real estate to reduce energy use and carbon emissions and prevent pollution and waste during both construction and operations. Investing in sustainable companies and infrastructure projects offers opportunities for environmental pollution liability insurance coverage. As investors, insurers can engage with investee companies on their environmental risk management practices and sustainability performance.

Furthermore, it was clear from the vast majority of survey respondents (92%) that in order to reduce environmental risks, there is a need for greater alignment between the asset (investment) and liability (underwriting) sides of an insurer's balance sheet in addressing sustainability issues. Majority of respondents also believe there is a need to align core business activities—particularly investments, underwriting, risk management, and group strategy (at least 70% of respondents for each activity)—with the aims and targets of global sustainability frameworks such as the UN Sustainable Development Goals, Paris Climate Agreement, and Post-2020 Global Biodiversity Framework.

## **Theme 2: Policy and regulation: Insurance schemes, potential negative impacts, key benefits**

Historically, liability insurance policy terms and insurance markets have emerged in response to specific policy and regulatory requirements. Various insurance lines today are designed to meet regulatory requirements. For example, motor third party liability insurance (for bodily injury or property damage) and workers' compensation (for workplace injury) are insurance policies that generally address a regulatory requirement.

On balance, there is considerable difference of opinion on compulsory and voluntary insurance schemes.

More than half of survey respondents (56%) favour compulsory insurance schemes for environmental pollution liability risks, but a significant proportion (31%) prefer voluntary insurance schemes.

54% of respondents from insurance companies have the view that buying environmental pollution liability insurance should be compulsory, while 100% of respondents from insurance regulatory authorities believe it should be. Meanwhile, only 20% of respondents from insurance associations and 50% of respondents from academia and NGOs indicated their support for compulsory schemes.

Several interviewees highlighted the need for the insurance industry to invest in the required technical expertise for environmental pollution liability insurance prior to the inception of any compulsory scheme. It can take years to train underwriting, marketing, claims and risk engineering teams to handle the increased demand for risk surveys and site inspections, quotations, policy administration, and claims handling.



In some jurisdictions, the premium pool and risk quality have been below insurers' expectations, resulting in a smaller and less efficient environmental pollution liability insurance market. This can put at risk the sustainability of the product line itself.

Regulators and the insurance industry need to work together to ensure that the any scheme for environmental pollution liability insurance, whether compulsory or voluntary, truly meets the goals of preventing and reducing pollution to begin with. Loss prevention and effective remediation measures in the event of a loss are integral to making environmental pollution liability insurance solutions fit for purpose and help address potential unintended consequences and negative impacts.

The study was not meant to assess the pros and cons of compulsory and voluntary insurance schemes in the context of environmental pollution liability risks. Further research needs to be conducted for such a specific purpose.

In terms of potential negative impacts of environmental pollution liability insurance, moral hazard and perverse incentives for policyholders, allowing polluters to remain financially viable, and denial of cover and policy exclusions were the top three answers from survey respondents.

In terms of key benefits, the top three answers from survey respondents were protecting communities and natural ecosystems, better risk identification, and better risk management and hazard reduction.

Policymakers, regulators and the insurance industry need to take into consideration such potential negative impacts and key benefits in their decision-making, regardless of whether the insurance scheme is compulsory or voluntary.

## Theme 3: The need for more and better data

Data is vital for the insurance industry to identify, assess, quantify and price risks, and environment-related insurance policies would benefit from access to and use of new and innovative data sources.

The survey showed how respondents ranked many data points missing that insurers need in order to scale up their environmental pollution liability insurance capabilities. The top five missing data points are preventative measures taken to mitigate pollution and contamination (1<sup>st</sup>), Scope 3 operational greenhouse gas emissions (2<sup>nd</sup>), Scope 2 operational greenhouse gas emissions (3<sup>rd</sup>), storage of pollutants (4<sup>th</sup>), and business input sources and their sustainability (5<sup>th</sup>).

Survey respondents indicated that they would be willing to purchase data from third party data providers to help in the underwriting of environmental pollution liability insurance policies. With the growth of ESG disclosure and the emergence of new and innovative data sets, there is potential to incorporate these into the underwriting process. Additionally, with the prospect of the insurance industry as a customer, third party data providers may be more willing and able to invest in the collection of environmental risk data from the perspective of both risk exposure and historical event loss data.



The preparedness to use third party ESG data to assist underwriters was an interesting insight, with 71.5% of respondents working for an insurer answering “yes” to paying for such data, and 44% of insurance association respondents. Brokers were less interested in paying for third party data with 27.7% of respondents indicating preparedness.

Existing data providers could therefore expand their coverage to support these new data needs, or other financial ESG data providers could enter the insurance industry and provide data directly to insurers and intermediaries.

Improvements in underwriting processes and incorporating data analytics have the potential for considerable efficiency gains along with incorporating new and real-time data into the risk transfer process.

## **Theme 4: Building the required technical expertise**

The consistent feedback from participants in the interview process was the relatively small number of underwriters and intermediaries (brokers and agents) across all regions with the required technical expertise and experience to underwrite environmental pollution liability risks and manage claims. Therefore, there is a real need and a major opportunity for all insurers and intermediaries to develop the talent pipeline for environmental pollution liability insurance.

The environmental pollution liability line of business is reliant on experts with specific skillsets to understand, underwrite and service these risks across a range of economic sectors. During the interview process, it became clear that many of the underwriters and intermediaries working in the environmental pollution liability marketplace have diverse backgrounds, with the common theme that almost all started their careers outside insurance with engineering, environmental and/or scientific backgrounds.

Interviewees stressed the need for new and diverse expertise to grow and expand the underwriting and broking capabilities across all regions, including a structured approach to attracting talent with the necessary scientific and engineering backgrounds to the insurance industry. Interviewees also highlighted certain issues in some jurisdictions when there was a shift from a voluntary insurance purchase regime to a compulsory regime. For example, relevant policy and legislative changes have led to a large increase in demand for insurance coverage without necessarily building first the required expertise to properly underwrite the risks and support policyholders.

The growth of the environmental pollution liability insurance market will require the relevant technical skills and knowledge in risk management and underwriting, data availability and quality, and other resources in order to reduce environmental risks and support insurance clients and the communities in which they operate.



## Theme 5: Alignment between environmental and insurance regulators

According to survey respondents, the top five challenges in mainstreaming environmental pollution liability insurance globally are the lack of legal and regulatory frameworks for environmental pollution liability (1<sup>st</sup>), lack of demand and awareness of environmental pollution by customers (2<sup>nd</sup>), low or insufficient penalties for violations of laws and regulations (3<sup>rd</sup>), low or poor enforcement of laws and regulations (4<sup>th</sup>), and lack of national or state published data on environmental liability insurance premiums and claims (5<sup>th</sup>).

These are fundamental challenges that need to be addressed by policymakers, environmental regulators and insurance regulators, including engagement with and input from the insurance industry.

A key issue that was raised both in the survey and in the interviews was the lack of data from regulators on pollution actions and historical events. While this will differ from jurisdiction to jurisdiction, a clear positive outcome for the industry and governments in the drive towards achieving sustainability goals will be the disclosure of past events to better inform underwriters on the types of risks they are exposed to and to help risk engineers prevent future losses and reduce potential adverse impacts.

Since environmental pollution liability insurance specific data is not published at the national level in virtually all jurisdictions reviewed, it is difficult to identify premium, policy or coverage growth. Given this context, there is a unique opportunity for insurance regulators and environmental protection regulators and agencies within governments to collaborate to support the development of environmental pollution liability insurance, help companies and communities better manage environmental risks, and promote environmental sustainability.

Insurance regulators can ensure there is proper data collected in their jurisdictions (e.g. number of policies issued, premiums written, the number of claims, claims paid, loss reserves). This will promote greater transparency on the breadth and depth of the environmental pollution liability insurance market. Requiring the reporting of granular data is a first step that insurance regulators can take to help quantify the size of the environmental pollution liability insurance market. This will enable insurance market participants to develop clear strategies and plans for innovation and growth and improve data availability, access and quality. For example, research is currently underway in the UK to produce a standard classification system for pollution events. This would replace the thousands currently in operation and would allow underwriters to draw meaningful comparisons between users and accurately price their future pollution risks based on using standardised data sets.

For environmental regulators and agencies, this data will be valuable to determine the scale of environmental pollution liability protection provided by insurers and if the coverage is sufficient based on their assessment of needs. The data would also provide a quick reference for environmental regulators wanting to understand the purchase uptake following changes in environmental legislation, regulation and





enforcement. By understanding the environmental risk management performance of companies and industries following legislative, regulatory or enforcement changes, any increase in the uptake of environmental pollution liability insurance and the associated risk management activities could provide useful evidence for environmental regulators on the effectiveness of their activities. Conversely, if there were to be no associated increase in insurance uptake, then this could be a red flag for regulators. It could indicate poor risk quality and insurability and highlight a large insurance protection gap.

With such granular reporting, it could be possible for environmental regulators to set targets for the growth and development of environmental pollution liability insurance as a risk management instrument to help achieve environmental protection goals and ensure environmentally sustainable industries.

Another key issue that was raised by interviewees pertain to the importance of environmental impact assessments (EIAs) and strategic environmental assessments (SEAs) to risk management and underwriting decision-making on environmental pollution liability insurance. Ensuring these assessments are properly and thoroughly carried out is an important source of information that enable underwriters to identify, quantify, price and carry risks.

## **Theme 6: Closing the protection gap: Potential opportunities to develop and expand insurance solutions**

During the interviews and literature review for this report, a number of potential opportunities were identified that could enable insurance policies to better protect the environment. Environmental pollution liability insurance has traditionally been used within a relatively narrow and confined scope—to assist with the remediation of an affected site and indemnify third party losses.

The survey data showed that the lack of legal and regulatory frameworks and poor enforcement are major barriers to the growth of the traditional environmental pollution liability insurance market. This presents a real opportunity for policymakers, regulators and enforcement agencies to collaborate with each other, and to engage with the insurance industry.

Furthermore, survey respondents highlighted that the most useful elements of existing environmental pollution liability insurance policies include the coverage it provides for clean-up and remediation costs, and sudden and accidental loss events.

While pre-loss risk management activities such as site inspections, risk reduction measures and environmental assessments were ranked lower in the survey, during the interviews with leading underwriting experts, their feedback was this is the most important step in their decision-making process and that improvements in this area have the potential to significantly reduce environmental risks. It may not be surprising that the loss prevention impacts of insurance can be overlooked or not valued as highly as the risk coverage provided and claims payments made. However, there is a need for



clients and key stakeholders to understand the fundamental importance of loss prevention and risk reduction measures as they will help make insurance solutions become more affordable, accessible and sustainable.

Interviewees also commented that the lack of technical risk management and underwriting expertise in many markets for this highly specialised insurance line is holding back its growth and development.

Another key insight from the survey is the view by the majority of respondents (75%) that they expect more environmental-related litigation in their country or region in the next five years. Only 3% indicated they expect less environmental litigation, while the balance of about 21% expect the same litigation as today.

On the premise that there will be appropriate legal and regulatory frameworks, strong enforcement of environmental protection laws and regulations, and good corporate risk management practices, there is a major opportunity for the insurance industry to innovate and expand the use of environmental pollution liability insurance to cover a broader range of sustainability risks and clients.

The survey identified a number of opportunities that environmental pollution liability insurance coverage can potentially expand into including ecosystems degradation or destruction (24%), climate change (18%), air pollution (18%), plastic pollution (18%), harmful materials, substances or products (17%).

As the interviews with environmental pollution liability insurance practitioners progressed, participants opened up to the opportunities presented by a reinvigorated strategy and investment and realigned policy wordings that would place this insurance line at the centre of the insurance industry's core activities in supporting the transition to a sustainable economy.

The survey and interviews shed light on explore potential insurance solutions spanning the following areas as well as relevant actions:

- a. Carbon emissions and air pollutants
- b. Natural ecosystems and biological diversity
- c. Nutrient pollution
- d. Plastic pollution
- e. Crisis management
- f. Alignment with the broader financial sector
- g. Alignment with global sustainability frameworks



As risk managers, insurers and investors, there is a clear opportunity for the insurance industry to play a leading role in preventing pollution, reducing greenhouse gas emissions, protecting biodiversity and ecosystems, and supporting the transition to a sustainable economy.

Environmental pollution liability insurance has been around for several decades but its full potential to address both traditional pollution risks and a broader range of new and emerging environmental risks remains largely untapped.

This report highlights the fundamental importance of appropriate legal and regulatory frameworks; the proper enforcement of environmental protection laws and regulations; strong loss prevention and risk reduction measures by companies; and environmental pollution data availability, accessibility and quality in order to support the development and expansion of environmental pollution liability insurance markets worldwide.

All these efforts require developing the appropriate policy, legal, regulatory and supervisory frameworks to tackle environmental pollution risks; the relevant risk management and underwriting expertise to insure such risks; and continued research on new and emerging environmental risks in order to support the development of loss prevention measures and insurance solutions.

There is an urgent need for collaborative and strengthened efforts between insurance market participants, insurance regulators and supervisors, environmental regulators and policymakers, civil society organisations and other key stakeholders in advancing the shared aim of environmental protection.

By reimagining the role environmental pollution liability insurance can play in protecting the natural environment that underpins communities and economies, the insurance industry will be able to provide more tailored and innovative services and solutions that support economic, social and environmental sustainability—in other words, sustainable development.



# 1. Background on environmental pollution liability insurance

At a certain stage in a country's economic development, there is recognition that in order to achieve sustainable development, society requires more robust legal liability frameworks for environmental damages. This is a serious issue which has led to major problems in both developed and developing countries. The pressure to develop brownfield sites and to dispose of industrial waste responsibly makes this a continuing challenge. The best example is asbestos—many years after it was banned from use, it is still claiming new victims among family members of workers, tradespeople and demolition workers. Another case is MTBE (methyl tertiary butyl ether), a gasoline additive which has leaked out from underground storage tanks and polluted water sources in many places. UNEP itself is the sponsor of the Basel Convention on the Transboundary Movement of Hazardous and Other Wastes and their Disposal.<sup>5</sup>

Over the years, the insurance industry has been responding to the rise of these liabilities through the development of products such as environmental pollution liability insurance, which evolved from commercial general liability insurance policies. Following large pollution events more than 40 years ago, insurers started to limit coverage by excluding pollution under traditional general liability policies. This led to the development of a specialist environmental pollution liability insurance line of business in the succeeding years and decades.

Environmental pollution liability insurance continues to be highly influenced by the underlying legal and regulatory frameworks present in each jurisdiction. Examples of legal frameworks for environmental liability are the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in the US (also known as “Superfund”), the Environmental Liability Directive in the EU, the Prevention and Integral Management of Wastes in Mexico, the Act on Liability for Environmental Damage and Relief Thereof in the Republic of Korea, and the Environmental Protection Law in China. While the purchase of environmental pollution liability insurance is voluntary in most markets, it is worthwhile to note that both the Republic of Korea and China have compulsory insurance schemes.

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5 UNEP FI Insurance Working Group (2007): Insuring for sustainability—Why and how the leaders are doing it [unepfi.org/fileadmin/documents/insuring\\_for\\_sustainability.pdf](https://unepfi.org/fileadmin/documents/insuring_for_sustainability.pdf)



Although there are differences across jurisdictions, environmental pollution liability insurance policies typically cover losses or damages involving pollution or other contaminants that result in bodily injury, property damage, clean-up costs or business interruption. In some markets, such as the US, the coverage extends to costs of mitigation and emergency response, public relations and crisis containment expenses or costs incurred through Environmental Protection Authority (EPA) orders, including costs that the EPA incurs itself. Environmental pollution liability insurance risks manifest themselves either as sudden events or gradual events that can take many years to be identified. It is important to note that coverage is typically only provided for accidental pollution events and is not designed to cover systemic pollution.

Some compulsory insurance schemes such as motor third party liability insurance and workers' compensation have grown considerably over the years. However, environmental pollution liability insurance has not developed in the same way—today, it is estimated that it accounts for less than USD 3.5 billion of gross written premiums globally.

The development of environmental pollution liability insurance varies considerably from jurisdiction to jurisdiction. While some markets have developed broad environmental pollution liability insurance capabilities, a market that stands out in terms of the perceived penetration for this insurance line is Germany. In the German market, insurers provide environmental pollution liability insurance as a standalone cover and within a broad general liability wording. Several EU markets (e.g. France, Italy, Spain) have also developed insurance pools to increase risk capacity available to insureds.

Other mature insurance markets such as the London market have a long history of writing global environmental pollution liability insurance risks, with a notable participation in the Exxon Valdez oil spill in Alaska in 1989 resulting in USD 2.5 to 3 billion of expenses by Exxon and insurance recoveries totalling USD 780 million.<sup>6</sup> Despite the high-profile nature of this event—the largest in US waters until the Deepwater Horizon oil spill in the Gulf of Mexico in 2010—it did not lead to widespread take up of environmental pollution coverage by large corporates. It highlights the protection gap (i.e. the gap between economic and insured losses) in large pollution liability events.

According to Kennedys, a global law firm, the UK went through its own evolution in the development of the environmental pollution liability insurance market. Prior to the 1990s, a typical London market public liability insurance policy did not contain a pollution exclusion. These public liability policies were written on an occurrence basis and responded to claims from environmental damage that occurred during a given policy period.

The Association of British Insurers (ABI) published guidance in 1991<sup>7</sup> that identified existing liability policies did not adequately deal with the issue of gradual pollution, which often takes years to manifest. The ABI introduced a standard gradual pollution exclusion that was implemented across the London market, creating a new form of public liability coverage. This had the effect of excluding all pollution liabilities other than those caused by a “sudden, identifiable, unintended and unexpected incident”.

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6 The New York Times (1996): With insurers' payment, Exxon says Valdez case is ended [nytimes.com/1996/11/01/business/with-insurers-payment-exxon-says-valdez-case-is-ended.html](https://www.nytimes.com/1996/11/01/business/with-insurers-payment-exxon-says-valdez-case-is-ended.html)

7 This publication is not available online but is contained within the ABI archives.





The ABI pollution wording released in 1991 states: “This policy excludes all liability in respect of Pollution or Contamination other than caused by a sudden identifiable unintended and unexpected incident which takes place in its entirety at a specific time and place during the Period of Insurance.

“All Pollution or Contamination which arises out of one incident shall be deemed to have occurred at the time such incident takes place. ‘Pollution or Contamination’ is defined as:

“(i) all Pollution or Contamination of buildings or other structures or of water or land or the atmosphere; and

(ii) all loss or damage or injury directly caused by such Pollution or Contamination”.<sup>8</sup>

Thereafter, the response of public liability insurance policies to environmental losses was limited to cover tortious liability to third parties (whether injury, property damage or nuisance) resulting from a “sudden, identifiable, unintended and unexpected incident”.

According to Kennedys, “the 2006 case of *Bartoline Limited v Royal and Sun Alliance plc & others* further made clear that a standard PL [public liability] policy does not cover statutory environmental liability, whether caused by a sudden or gradual cause, because the regulator’s right to reclaim the costs of remediation are not ‘damages’”.<sup>9</sup>

Environmental pollution liability insurance policies that emerged following this development were designed to respond to claims from environmental regulators and other third parties. This development expanded coverage for the first time in the insurance market to cover fines or costs to remediate biodiversity losses following a pollution event.

German environmental law, as an example, requires coverage not just for third party losses but also damage caused to the environment which includes soil, water and biodiversity. Despite this coverage requirement, environmental pollution liability insurance coverage is common within general liability policies. This shows that extended coverage requirements may not reduce the availability or an insured’s propensity to purchase cover.

Unfortunately, it is difficult to obtain specific premium and loss data at a country level for environmental pollution liability insurance, particularly as insurers and regulators are not reporting this coverage as a separate line of business.

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8 Chartered Insurance Institute (2020): Legionella coverage in the UK/Public liability insurance market: Disease, pollution or excluded? [cii.co.uk/media/10124713/legionella-coverage-in-uk-public-liability-market.pdf](https://cii.co.uk/media/10124713/legionella-coverage-in-uk-public-liability-market.pdf)

9 Kennedys (2020): Environmental impairment liability: Is the London Market prepared for climate change related claims? [kennedyslaw.com/thought-leadership/article/environmental-impairment-liability-is-the-london-market-prepared-for-climate-change-related-claims/](https://kennedyslaw.com/thought-leadership/article/environmental-impairment-liability-is-the-london-market-prepared-for-climate-change-related-claims/)



## 1.1 Elements of environmental pollution liability insurance

This report refers encompasses various versions of environmental pollution liability insurance (also known as environmental impairment liability insurance, pollution liability insurance) and coverages designed to meet compulsory environmental insurance legislative and regulatory requirements as well as voluntary insurance schemes. In this report, environmental pollution liability insurance refers to all forms of environmental damage and pollution-related coverages related to the risk to the natural environment arising from pollution and contamination events.

A typical environmental pollution liability insurance policy provides coverage for the following perils:

- Compensatory damages for third-party personal injury and property damage
- Clean-up costs (statutory and non-statutory) for pollution conditions at the covered location
- Clean-up costs (statutory and non-statutory) for pollution conditions that have migrated from a covered location to another location
- Natural resource damage for pollution conditions that are at or have migrated from a covered location into the natural environment (land, air or water) and impact biodiversity
- First-party business interruption following a covered pollution event

The policy is typically structured with coverage for “accidental or sudden” pollution events and for “gradual seepage” pollution events that may take many years for the risk to manifest or become identifiable.

Coverage is provided on a “claims made” (i.e. claims can only be paid from the policy year in which the claimant filed notice of loss) or “occurrence” basis (i.e. the policy that will respond to a claim is the policy in force at the time of the loss event, even if that policy has expired).

Coverage can be provided for specific sites and locations and for contractors who may be working at a customer site.

Preliminary research is now being undertaken to calculate the total number of pollution events in certain jurisdictions. Currently, records have been collated for about 492,000 pollution events in the UK, USA and Canada that were recorded from 2010 to 2021.

Feedback from interviews suggest that less than 10% of all pollution events are properly recorded and tracked by regulators.

Disclosure of pollution events is an important topic for insurers to be aware of in order to better understand loss events of all sizes. The interviews suggest that large pollution events are typically events visible to the general public. Because of this, the polluter typically has a higher level of disclosure. For small and more localised pollution events, there is a lower level of disclosure as the typical approach can be to carry out remediation measures quickly.



## 1.2 Market size and characteristics

As a niche line of business, annual global premiums for environmental pollution liability insurance is estimated at less than USD 3.5 billion,<sup>10</sup> with more than half—about USD 2 billion<sup>11</sup>—coming from the US market alone. The estimated 3.5 billion translates to just 1.64% of global liability premiums (excluding motor premiums) of USD 214 billion in 2020.<sup>12</sup>

It is difficult to determine an exact number given that most jurisdictions and insurers do not report their gross written premiums for this specialised line of business. The premium total is complicated by the environmental pollution coverage available within traditional property & casualty lines of business.

Further complicating the reporting is the inclusion or exclusion of sudden and accidental cover provided by many commercial general liability (CGL) policies along with debris removal or mould considerations under property insurance. Some newer combined CGL/pollution policies currently available in the US and other jurisdictions also confuse the premium calculation for just the environmental-related risk coverage.

Environmental risks and liabilities have not been insured under traditional CGL policies or umbrella policies in the US since the Insurance Services Office (ISO) modified pollution exclusions in their standard policy forms, starting with an exclusion to the 1973 CGL form. Although specialised environmental insurance has been available in the US since 1980, the market did not begin to take hold until 1985-86 with the ISO's updated CGL policy form.

Environmental pollution liability insurance has traditionally been considered a specialty coverage, with only sophisticated and experienced insurers offering this coverage. It is typically placed by experts at major broking firms and some regional speciality insurance intermediaries. The customer base is generally limited in most insurance markets to those industries and business operations that have the highest risk of a pollution event.

Environmental pollution liability insurance is a very specific and niche line of business within the insurance industry. Based on the interviews conducted as part of this study, environmental pollution liability insurance underwriters usually have an engineering, environmental science or environmental consulting background. Such experience and education provide a good foundation for insurers to develop the necessary technical underwriting skills for this highly specialised line of business.

From a coverage perspective, environmental pollution liability insurance has historically provided a relatively narrow coverage form and its use by insureds has been limited to high-risk industries (with limited capacity) and merger and acquisition activity, and has played a role in supporting the redevelopment of lightly contaminated sites. While regulators have tried in various jurisdictions to use legislation to expand the industries,

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10 This estimated figure is based on Axco data, underwriters' reported gross written premiums, Aon Environmental Insurance Market Update 2019, NAIC figures, and feedback from interviewees

11 US National Association of Insurance Commissioners (NAIC) (2021): Environmental insurance [content.naic.org/cipr-topics/environmental-insurance](https://content.naic.org/cipr-topics/environmental-insurance)

12 Swiss Re Institute (2021): sigma 4/2021—More risk: The changing nature of P&C insurance opportunities to 2040 [swissre.com/institute/research/sigma-research/sigma-2021-04.html](https://swissre.com/institute/research/sigma-research/sigma-2021-04.html)



companies and operations required to use environmental pollution liability insurance, the results have been mixed.

The environmental pollution liability insurance market has evolved differently across geographies based on several factors. With reinsurance capacity from the 1970s to the 1990s concentrated in London and Bermuda, the growth was stronger in Europe and North America. This expertise being centred in a few reinsurance hubs may have also contributed to the slow growth in smaller markets. Additionally, the large environmental pollution liability insurance losses paid by insurers during the 1980s led to a reluctance to issue large policy limits and to reduce overall risk exposure given that a single large loss event can easily exceed the premiums written for this line of business in a given territory in a single year.

According to the World Economic Forum's Global Risk Report 2022,<sup>13</sup> of the top ten most severe risks on a global scale over the next 10 years, five risks are environmental: climate action failure (1<sup>st</sup>), extreme weather (2<sup>nd</sup>), biodiversity loss (3<sup>rd</sup>), human environmental damage (7<sup>th</sup>), and natural resource crises (8<sup>th</sup>). Given this context, the insurance industry, including insurers that write environmental pollution liability insurance business, has a major opportunity to find solutions to these risks.

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13 World Economic Forum (2022): Global risks report [weforum.org/reports/global-risks-report-2022/](https://www.weforum.org/reports/global-risks-report-2022/)

## Examples of environmental pollution liability insurance markets across the globe

Jurisdiction	Gross written premiums (estimated)	Limit of liability (estimated)	Sudden/accidental/gradual pollution cover available?	Insurance scheme / Legal and regulatory framework
<b>USA</b>	USD 2 billion (estimate) US National Association of Insurance Commissioners (NAIC)	USD 10 to 100 million	Yes	Voluntary with 1980 Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA or “Superfund”) to support remedial actions where no financially responsible party can be found
<b>Canada</b>	USD 132 million (2018)	USD 10 million	Yes	Compulsory for only certain industries. Voluntary with a federal Environmental Damages Fund collecting fines
<b>Spain</b>	USD 45 to 50 million	USD 230 million	Yes	Pool. 2004 EU Environmental Liability Directive (ELD) framework based on the polluter pays principle to prevent and remedy environmental damage
<b>France</b>		USD 85 million	Yes	Pool. 2004 EU Environmental Liability Directive (ELD) framework based on the polluter pays principle to prevent and remedy environmental damage
<b>Italy</b>		USD 60 million	Yes, with low sub-limits	Pool. 2004 EU Environmental Liability Directive (ELD) framework based on the polluter pays principle to prevent and remedy environmental damage
<b>Brazil</b>	USD 22 million (2018)	USD 50 million	Yes. Gradual pollution excluded under standard policies	Voluntary
<b>India</b>	Not available	Not available	Not available	Voluntary
<b>China</b>	USD 25 to 50 million (estimate)	Compulsory EIL cover limits range from USD 71k to 1.4 million	Yes	Compulsory for certain industries. 2018 Compulsory Environmental Pollution Liability Insurance (CEPLI) Regulation



Jurisdiction	Gross written premiums (estimated)	Limit of liability (estimated)	Sudden/accidental/gradual pollution cover available?	Insurance scheme / Legal and regulatory framework
<b>South Korea</b>	USD 55 to 60 million (estimate)	Maximum compulsory cover set at USD 171 million (with voluntary capacity in excess of USD 25 million available up to USD 146 million)	Yes	Compulsory for certain industries. 2016 Act on Liability for Environmental Damage and Relief Thereof
<b>Thailand</b>	Not available	USD 157k to USD 785k	Gradual pollution coverage available from international insurers only with many general liability policies covering small limits for sudden and accidental pollution	Voluntary. Certain high risk industries (e.g. fuel oil) required to have insurance for fire and explosion. Low number of environmental pollution liability insurance policies have been purchased.
<b>Australia</b>	Not available	USD 35 million	Sudden and Accidental only, Gradual typically covered under standalone policy	Voluntary
<b>Costa Rica</b>	Not available	Not available	Sudden and accidental only	Voluntary. However, projects requiring environmental impact studies need to have an environmental guarantee of 1% of the amount of investment
<b>South Africa</b>	Not available	Not available	Sudden and accidental pollution with limited gradual pollution coverage	Voluntary with financial provisions needs for minerals and petroleum operations
<b>Turkey</b>	USD 800k to 1 million (estimate)	USD 87k to USD 1 million	Yes	Voluntary with mandatory requirements for operations in the seashore

Jurisdiction	Gross written premiums (estimated)	Limit of liability (estimated)	Sudden/accidental/gradual pollution cover available?	Insurance scheme / Legal and regulatory framework
<b>Finland</b>	USD 5 million with less than 100 policies issued	USD 10 million	Yes	Voluntary. Environmental Insurance Centre (compulsory membership for all EIL insurers) provides cover where no financially responsible party can be found. Major changes are expected in 2022
<b>Netherlands</b>	Not available	USD 6 million	Yes	Pool. 2004 EU Environmental Liability Directive (ELD) framework based on the polluter pays principle to prevent and remedy environmental damage
<b>Nigeria</b>	Not available	USD 1.5k is a common limit with higher limits available from international insurers	Liability policies in Nigeria specifically include pollution arising from sudden, unintentional and accidental means. Gradual pollution excluded	Nigeria's environmental protection agency has published guidelines for the oil industry



# 2. Research methodology

The research for this project was carried through a literature review, an online global survey, and interviews with insurance experts and practitioners.

The literature review included research into historical environmental pollution liability insurance policy wordings, claims, and publications from insurers, intermediaries and regulators. The full list of materials is included in the Appendix.

## 2.1 Survey objectives

The global survey sought to achieve the following objectives:

- a. Assess the awareness and perception of environmental pollution liability insurance within the global insurance industry and by its key stakeholders
- b. Collect data and insights on how environmental pollution liability insurance can be strengthened and expanded, and explore potential novel applications
- c. Gather practitioner and stakeholder views related to compulsory and voluntary insurance schemes that can guide follow-up research
- d. Educate respondents and stakeholders on the importance and language of environmental pollution liability insurance and its role in sustainable development

## 2.2 Survey design

The survey was set up and managed through an online poll, with respondents taking an average of 15 minutes to complete the survey. The survey was designed mainly for insurance market participants and those with knowledge of or interest in the insurance business.

The survey was made up of 20 questions (see Appendix). Three styles of questions were used with respondents' rankings their preferences, yes/no options, and open written responses.

## 2.3 Survey distribution

The survey was distributed through three channels. Each channel targeted different groups of respondents to capture the diversity of views across functional responsibilities (e.g. underwriters and non-underwriters), geographic locations or operations (e.g. developed and developing countries), and stakeholders (e.g. non-insurance professionals), with the overall goal of maximising both survey response rate and quality.



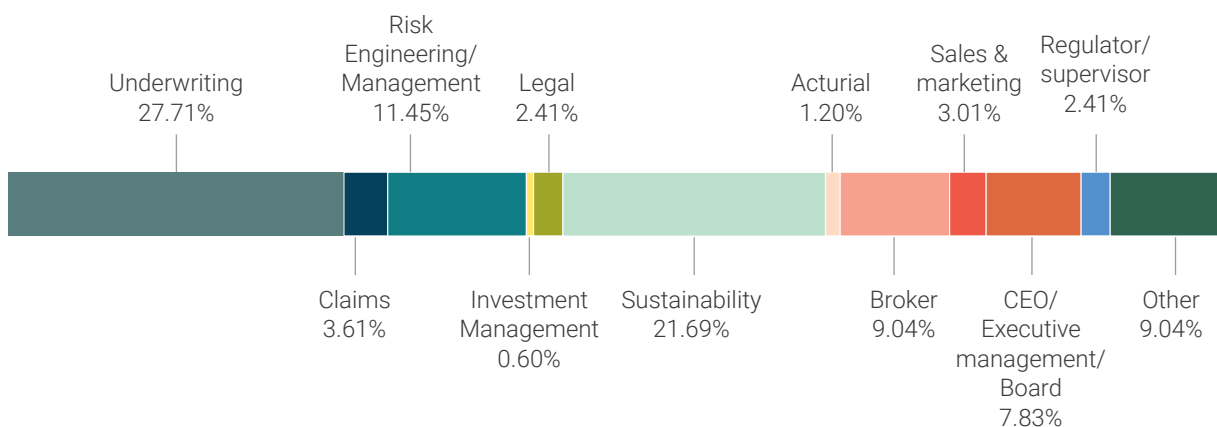
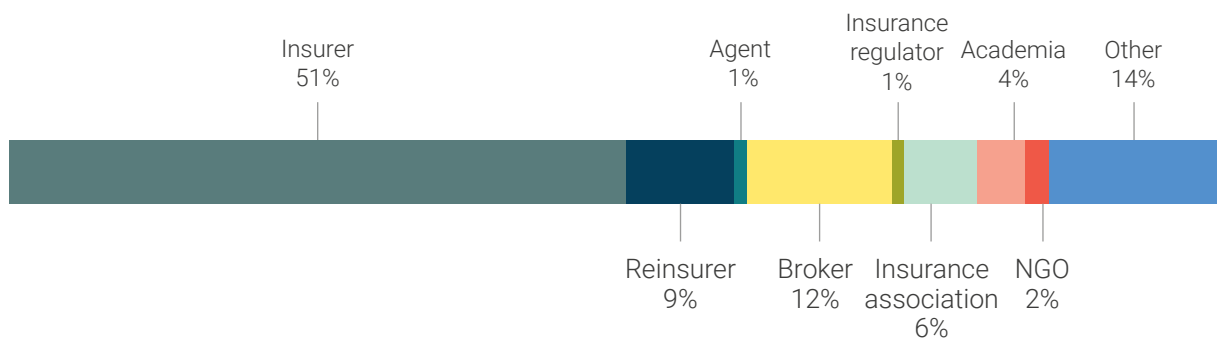
**Channel 1:** Direct e-mail to the global network of UN Environment Programme’s Principles for Sustainable Insurance Initiative (PSI). This group included Chief Executive Officers, Chief Underwriting Officers, Chief Risk Officers, Chief Sustainability Officers, national and regional heads, line underwriters, product managers, actuaries, sustainability managers, sales & marketing managers, investment managers, claims managers and other officers of PSI member companies and stakeholders worldwide

**Channel 2:** Direct e-mail to specific practitioners, experts and organisations within the PSI global network and the respective networks of individual project team members. This group included insurance underwriters and brokers, insurance associations, insurance regulators, industry initiatives and academic institutions.

**Channel 3:** Online distribution through social media posts (i.e. LinkedIn) that generated about 14,000 views. A webinar was also held in 2021 to promote the survey and share early insights.

## 2.4 Survey statistics

- 168 respondents
- 213 individual comments
- Representing insurers, reinsurers, brokers, agents, academics, regulators, NGOs and environmental consultants
- Respondents from 35 countries
- With broad expertise and backgrounds (see charts below)

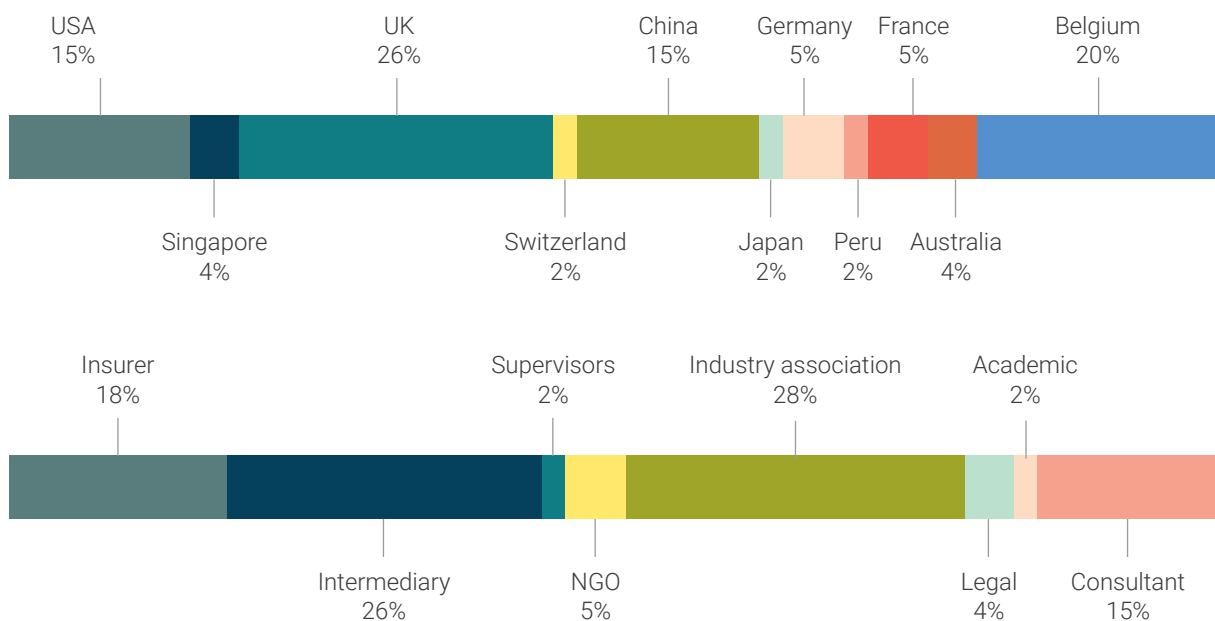




## 2.5 Interviews with experts

Interviews were conducted with individuals from different backgrounds including insurers, reinsurers, brokers, regulators and industry stakeholders. The interviews allowed respondents to discuss in more detail their views, experiences and ideas on the strategies and actions needed to mainstream environmental pollution liability insurance. Interviewees highlighted opportunities for risk assessments and analytics to help drive demand for environmental pollution-related insurance products and services.

The 57 interviewees were based in 12 countries and represented a range of insurance market participants and stakeholders. Many interviewees were senior experts in the broking, underwriting or servicing of environmental pollution liability insurance. Other interviewees were stakeholders who had a specific interest in or experience in dealing with environmental pollution liability issues.







# 3. Six themes that emerged from the research

1. Risk management: The bedrock of the insurance business
2. Policy and regulation: Compulsory and voluntary insurance schemes
3. Data: Access, reporting and use
4. Building the required technical expertise
5. Alignment between insurance and environmental regulators
6. Closing the protection gap: Opportunities to develop and expand environmental pollution liability insurance solutions

## Theme 1: Risk management: The bedrock of the insurance business

There has been a fundamental shift in how businesses, governments and communities view the management of environmental risks. Environmental agencies, legislation and changes in business operations are all converging to better address and reduce environmental risks.

As society's risk manager, the insurance industry will continue to play a vital role in supporting all types of environmental risk management.

### a. Loss prevention and risk reduction measures

One of the most fundamental actions that the insurance industry can take to advance environmental risk management is the continued investment in and support for environmental risk assessments, risk surveys and risk reduction strategies which can be conducted by in-house experts or external organisations. One example from the property insurance market is the boiler inspection process that exists in many jurisdictions where the boiler insurer is required to undertake the inspections. This approach leads to the alignment of interests and a strong commitment from both the insured and insurer to prevent a dangerous and potentially lethal boiler explosion. By aligning environmental risk assessments in a similar way, there is an opportunity for insurers and insureds to



reduce environmental risks.

Reinsurers have a key role to play in helping expand the risk management capabilities for environmental risks. In developing markets with limited underwriting and risk capacity, the reinsurance market will play an important role in transferring best practice, underwriting capabilities and expertise, along with vital reinsurance capacity to support the development and growth of the environmental pollution liability insurance market.

As aggregators of risk, reinsurers will be able to support further through the aggregation of data, and the analysis and insights this will provide to insurance market participants and regulators in developing the environmental pollution liability insurance market. This will also provide helpful information to policymakers who need to determine if relevant legislative actions are having the desired impact.

If legislators aim, through compulsory or other policy approaches, to better protect the environment from pollution events, it is vital for them to have the data to understand how the legislation is working in the real economy. If changes in legislation are not having the desired or expected impact in either the increased take up (e.g. policy count) and expansion of environmental pollution liability coverage (e.g. broader and novel coverage) or increases in capacity (e.g. policy limits available in a given market), along with innovation around the scope of insurability, one of the most effective ways to identify these mismatches could be through the data collected and published by insurance regulators.

Given the emergence of new risks related to climate change, biodiversity loss, ecosystem degradation and plastic pollution, it will be important to innovate and explore ways to develop the environmental pollution liability insurance market. In this regard, there is a need for greater collaboration on this matter between environmental regulators, insurance regulators, insurance market participants and companies in the real economy. It is crucial that all parties create a culture of prevention and a vibrant and supportive insurance ecosystem that can enable environmental pollution liability insurance to grow and support businesses in their endeavours while better understanding, preventing and reducing pollution risks and other environmentally-damaging events.

Overall, environmental impact assessments (EIAs) are the best known and most widely used environmental risk planning and management tool, while strategic environmental assessments (SEAs) have been gaining momentum over the last decade. The objective of these tools is to make sure that all critical information to assess future impact on the environment is supplied and considered in the decision-making process.

While EIAs assess planned physical developments, SEAs target the strategic planning level, such as government plans, programmes or policies, making it crucial to align with other initiatives and national climate change, biodiversity, pollution prevention and other sustainability-related goals.

Both EIAs and SEAs aim to avoid the implementation of any activity or strategic planning document with significant negative impacts on the environment, while promoting the enhancement of positive impacts.<sup>14</sup>

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14 [Environmental\\_Impacts\\_Legislation.pdf](#)



Insurers, brokers and third-party risk engineers and environmental consultants perform a vital service by providing an independent “check and balance” on company operations and business practices as they relate to environmental risks.

When an organisation goes through the process to collect and analyse its risk exposure in conjunction with its broker and insurer, it gains access to a wealth of knowledge and expertise. Insurers can mobilise a global network of expertise to develop solutions to reduce risk. This knowledge sharing will be crucial to organisations looking to reduce their environmental impact as they prevent pollution, transition to net-zero emissions and align with national and international environmental standards.

Historically, environmental pollution liability insurance and associated regulations have dealt with risks such as hazardous chemicals storage and the associated leakage into surrounding areas (water, land), air pollutants, wastewater pollutants, solid waste, municipal dumps, and marine leaks and contamination.

Operational improvements to both underwriting and investment management can help environmental pollution liability insurance develop further. At present, many insurers do not have a highly sophisticated underwriting process to determine environmental pollution liability risk exposure and pricing. While technology will play an important role, such as sensors that can detect pollution and improve remote and continuous soil, air and ground water monitoring, it is important for insurers to play an active role in the development of these systems.

Insurers requiring these risk monitoring systems for clients, while providing premium and/or coverage incentives to those clients that effectively monitor their pollution risks and working with poor performers to improve, could be an important component to help scale up environmental pollution risk management going forward.

Investments in these systems and approaches could potentially be funded by the insurance industry, governments and insureds. For example, a “levy” on all insurance policies in a jurisdiction could be an option to fund a broader environmental pollution risk management programme with a strong approach to loss prevention.

## **b. Total balance sheet approach**

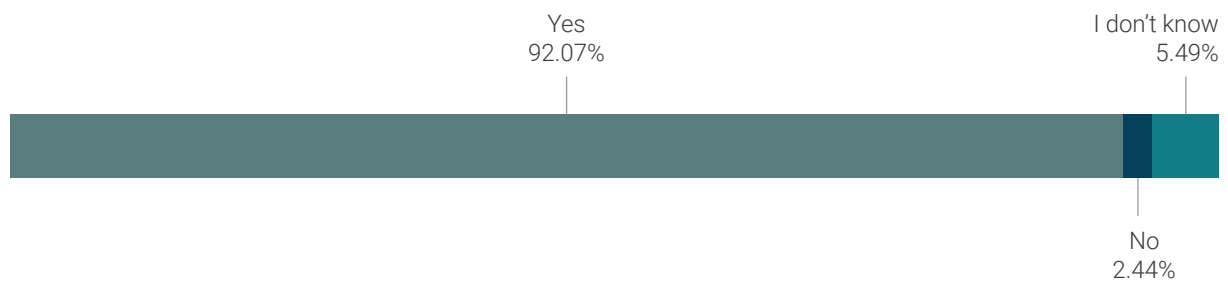
The insurance industry’s role in leading the mobilisation of capital for sustainable investments over the next decades cannot be understated. Insurers, both life and non-life players, can pivot their investment portfolios towards sustainable asset classes, companies and projects. For example, there is considerable investments already moving into the development of sustainable real estate to reduce energy use and carbon emissions and prevent pollution and waste during both construction and operations. Investing in sustainable companies and infrastructure projects offers opportunities for environmental pollution liability insurance coverage. As investors, insurers can engage with investee companies on their environmental risk management practices and sustainability performance.



Across the financial sector, there is an increasing trend to allocate capital towards sustainable initiatives. With the global insurance industry's more than USD 36 trillion<sup>15</sup> in assets under management and more than USD 6 trillion<sup>16</sup> in world premium volume generated from the sale of life and non-life policies, there is a need for greater sustainability alignment between the asset (investment) and liability (underwriting) sides of an insurer's balance sheet.

In this regard, the survey asked two questions regarding the management of an insurer's balance sheet.

**The first survey question on this topic was:** "On insurance company operations and activities, do you believe insurers should be managing their investment portfolios in a way that prevents adverse environmental impacts?"



**The second question was:** "From an environmental perspective, especially related to pollution, should the investment side of insurers' activities be fully aligned with the underwriting side (risk selection) in terms of insuring environmental liability risk?"

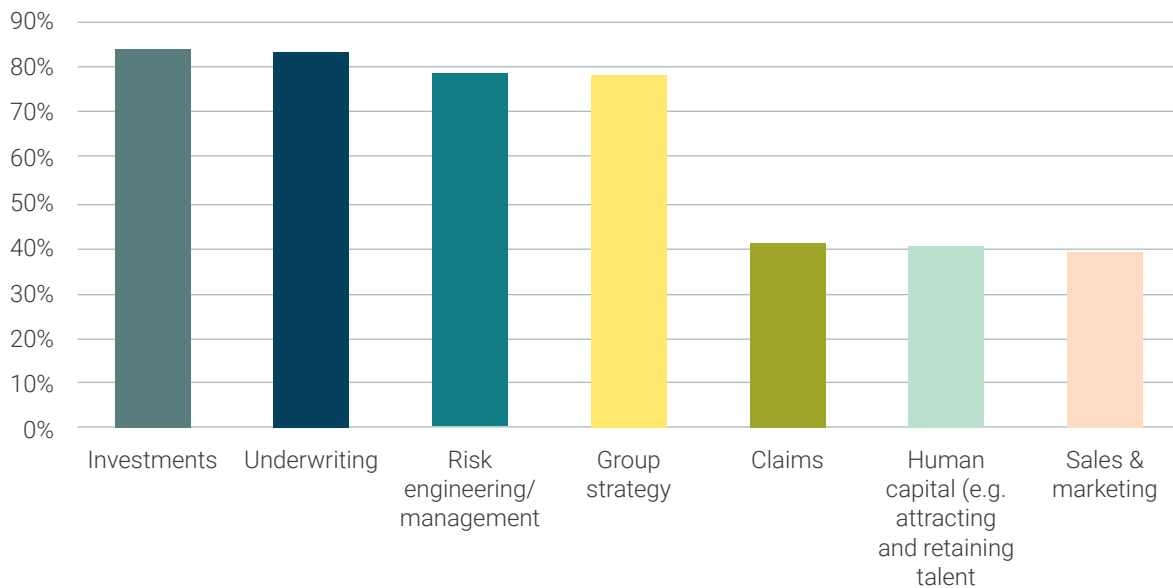


15 TheCityUK (2021): Key facts about the UK as an international financial centre 2021 [thecityuk.com/research/key-facts-about-the-uk-as-an-international-financial-centre-2021/](https://thecityuk.com/research/key-facts-about-the-uk-as-an-international-financial-centre-2021/)

16 Swiss Re Institute (2021): Sigma No. 3/2021: World insurance: The recovery gains pace [swissre.com/institute/research/sigma-research/sigma-2021-03.html](https://swissre.com/institute/research/sigma-research/sigma-2021-03.html)



**The third question was:** “To help reduce environmental risk, in which operational areas do you recommend insurers to incorporate global sustainability frameworks, such as the UN Sustainable Development Goals, Paris Climate Agreement and Post-2020 Global Biodiversity Framework?”



Survey respondents provided key areas insurers should focus on, including investments, underwriting, risk engineering/management, and group strategy. Furthermore, interviewees emphasised the need for greater risk engineering capabilities around environmental pollution liability risks coupled with enhanced underwriting processes, capacity and marketing of insurance solutions. Claims management, human capital, and sales and marketing are next-tier priorities according to the survey. When the results are further broken down, 84% of respondents from insurance companies and 86% from non-insurer respondents answered “yes” to insurers aligning their underwriting and investment processes with the aims and targets of global sustainability frameworks. There is also an opportunity for premiums generated from the underwriting of environmental pollution liability insurance policies to be segregated into dedicated investment funds or portfolios that meet certain sustainability guidelines.

## Theme 2: Policy and regulation: Insurance schemes, potential negative impacts, key benefits

Historically, liability insurance policy terms and insurance markets have emerged in response to specific policy and regulatory requirements. Various insurance lines today are designed to meet regulatory requirements. For example, motor third party liability insurance (for bodily injury or property damage) and workers’ compensation (for workplace injury) are insurance policies that generally address a regulatory requirement.

On balance, there is considerable difference of opinion on compulsory and voluntary insurance schemes.



More than half of survey respondents (56%) favour compulsory insurance schemes for environmental pollution liability risks, but a significant proportion (31%) prefer voluntary insurance schemes.



54% of respondents from insurance companies have the view that buying environmental pollution liability insurance should be compulsory, while 100% of respondents from insurance regulatory authorities believe it should be. Meanwhile, only 20% of respondents from insurance associations and 50% of respondents from academia and NGOs indicated their support for compulsory schemes.

Several interviewees highlighted the need for the insurance industry to invest in the required technical expertise for environmental pollution liability insurance prior to the inception of any compulsory scheme. It can take years to train underwriting, marketing, claims and risk engineering teams to handle the increased demand for risk surveys and site inspections, quotations, policy administration, and claims handling.

In some jurisdictions, the premium pool and risk quality have been below insurers' expectations, resulting in a smaller and less efficient environmental pollution liability insurance market. This can put at risk the sustainability of the product line itself.

Several factors need to be considered when making insurance purchase compulsory:

- Will the policy wording be dictated to the market? An important consideration is the scope of cover (e.g. including gradual pollution along with sudden and accidental loss events)
- Will pricing be set by the regulator or by the market?
- Is there sufficient technical expertise to underwrite, service and implement the insurance policies and handle claims?
- Do insurers have adequate capital to underwrite these risks?

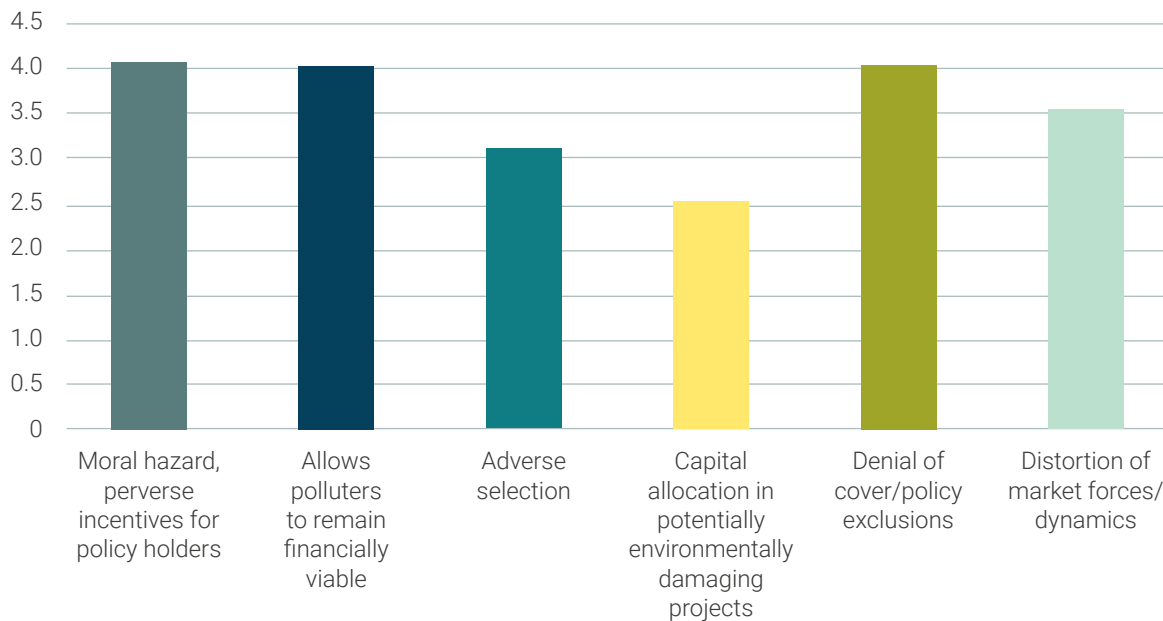
Regulators and the insurance industry need to work together to ensure that any scheme for environmental pollution liability insurance, whether compulsory or voluntary, truly meets the goals of preventing and reducing pollution to begin with. Loss prevention and effective remediation measures in the event of a loss are integral to making environmental pollution liability insurance solutions fit for purpose and help address potential unintended consequences and negative impacts.

The study was not meant to assess the pros and cons of compulsory and voluntary insurance schemes in the context of environmental pollution liability risks. Further research needs to be conducted for such a specific purpose.





On the question, “What are the potential negative impacts of environmental pollution liability insurance?”, the survey gathered the following responses:



The survey also asked, “What are the key benefits of environmental pollution liability insurance?”:



Survey respondents highlighted the protection of communities and natural ecosystems as the main benefit provided by environmental pollution liability insurance. Better risk identification and risk management along with greater awareness of environmental risks were all ranked highly. This supports the value added to insureds that forms part of the risk management and underwriting process for environmental pollution liability insurance.

Policymakers, regulators and the insurance industry need to take into consideration such potential negative impacts and key benefits in their decision-making, regardless of whether the insurance scheme is compulsory or voluntary.

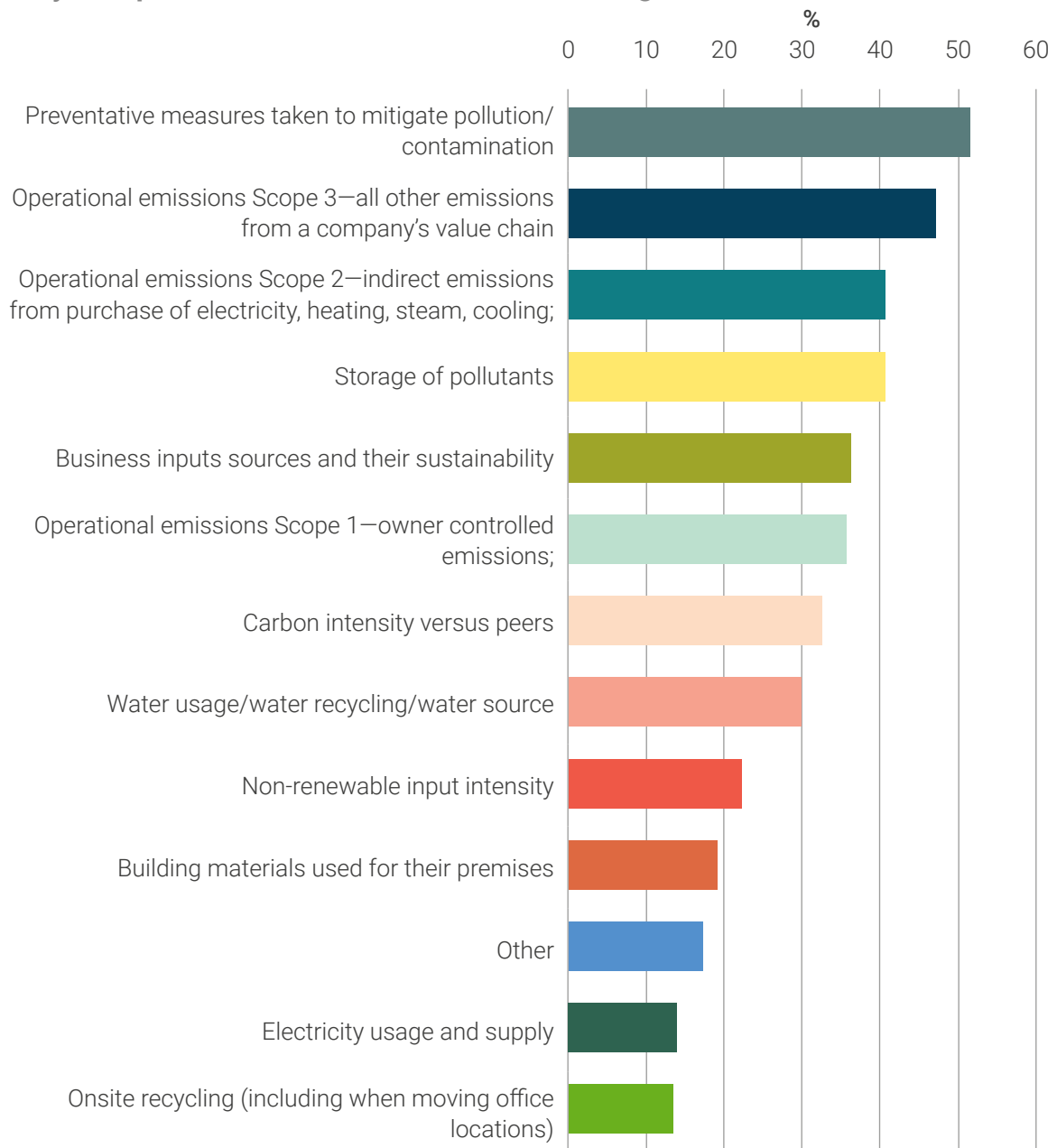


## Theme 3: The need for more and better data

Data is vital for the insurance industry to identify, assess, quantify and price risks, and environment-related insurance policies would benefit from access to and use of new and innovative data sources.

The survey showed how respondents ranked data points missing that insurers need in order to scale up their environmental pollution liability insurance capabilities.

### The key data points insurers/underwriters are missing



Survey respondents indicated that they would be willing to purchase data from third party data providers to help in the underwriting of environmental pollution liability insurance policies. With the growth of ESG disclosure and the emergence of new and innovative data sets, there is potential to incorporate these into the underwriting process.



Additionally, with the prospect of the insurance industry as a customer, third party data providers may be more willing and able to invest in the collection of environmental risk data from the perspective of both risk exposure and historical event loss data.

According to the survey, about 63% of respondents would be willing to pay for these new data sources in order to support the underwriting process.



The preparedness to use third party ESG data to assist underwriters was an interesting insight, with 71.5% of respondents working for an insurer answering “yes” to paying for such data, and 44% of insurance association respondents. Brokers were less interested in paying for third party data with 27.7% of respondents indicating preparedness.

Existing data providers could therefore expand their coverage to support these new data needs, or other financial ESG data providers could enter the insurance industry and provide data directly to insurers and intermediaries.

Improvements in underwriting processes and incorporating data analytics have the potential for considerable efficiency gains along with incorporating new and real-time data into the risk transfer process.

## Theme 4: Building the required technical expertise

The consistent feedback from participants in the interview process was the relatively small number of underwriters and intermediaries (brokers and agents) across all regions with the required technical expertise and experience to underwrite environmental pollution liability risks and manage claims. Therefore, there is a real need and a major opportunity for all insurers and intermediaries to develop the talent pipeline for environmental pollution liability insurance.

The environmental pollution liability line of business is reliant on experts with specific skillsets to understand, underwrite and service these risks across a range of economic sectors. During the interview process, it became clear that many of the underwriters and intermediaries working in the environmental pollution liability marketplace have diverse backgrounds, with the common theme that almost all started their careers outside insurance with engineering, environmental and/or scientific backgrounds.

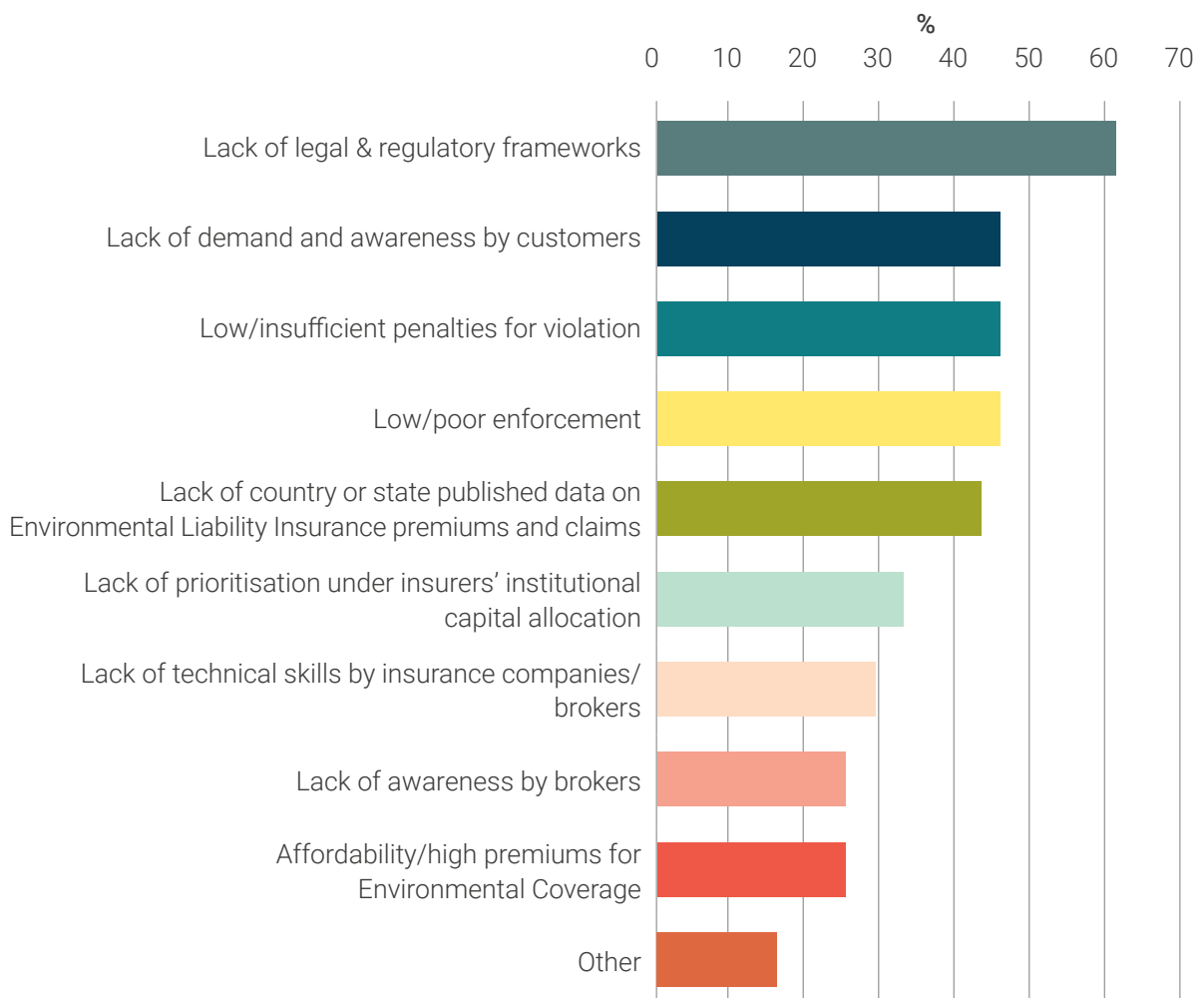
Interviewees stressed the need for new and diverse expertise to grow and expand the underwriting and broking capabilities across all regions, including a structured approach to attracting talent with the necessary scientific and engineering backgrounds to the insurance industry. Interviewees also highlighted certain issues in some jurisdictions when there was a shift from a voluntary insurance purchase regime to a compulsory regime. For example, relevant policy and legislative changes have led to a large increase in demand for insurance coverage without necessarily building first the required expertise to properly underwrite the risks and support policyholders.



The growth of the environmental pollution liability insurance market will require the relevant technical skills and knowledge in risk management and underwriting, data availability and quality, and other resources in order to reduce environmental risks and support insurance clients and the communities in which they operate.

## Theme 5: Alignment between environmental and insurance regulators

According to survey respondents, the top five challenges in mainstreaming environmental pollution liability insurance globally are the lack of legal and regulatory frameworks for environmental pollution liability (1<sup>st</sup>), lack of demand and awareness of environmental pollution by customers (2<sup>nd</sup>), low or insufficient penalties for violations of laws and regulations (3<sup>rd</sup>), low or poor enforcement of laws and regulations (4<sup>th</sup>), and lack of national or state published data on environmental liability insurance premiums and claims (5<sup>th</sup>).



These are fundamental challenges that need to be addressed by policymakers, environmental regulators and insurance regulators, including engagement with and input from the insurance industry.



The survey respondents also identified the following challenges and opportunities:

- Should governments make environmental pollution liability insurance compulsory, the insurance industry can help customers and governments embed risk management measures. Investing in loss prevention and risk reduction needs to be seen as a critical business investment. The insurance industry can also consider contributing to a fund (e.g. based on a percentage of gross written premiums) to be able to put loss prevention measures in place as an integral component of corporate environmental risk management.
- Limited reinsurance capacity, lack of maturity of insurance markets in various countries, and lack of required technical underwriting and risk engineering skills can lead to high transaction costs
- Lack of understanding of the insurance product. For example, some intermediaries and insureds only look at the insurance cost, not the scope of risk protection and loss prevention services
- Difficulty of obtaining cover for clients in certain circumstances
- Lack of scale and market standardisation. Unless required (e.g. by lenders), cover is optional and polluters are primarily the ones who purchase.
- A key issue that was raised both in the survey and in the interviews was the lack of data from regulators on pollution actions and historical events. While this will differ from jurisdiction to jurisdiction, a clear positive outcome for the industry and governments in the drive towards achieving sustainability goals will be the disclosure of past events to better inform underwriters on the types of risks they are exposed to and to help risk engineers prevent future losses and reduce potential adverse impacts.
- Since environmental pollution liability insurance data is not published at the national level in virtually all jurisdictions reviewed, it is difficult to identify premium, policy or coverage growth. Based on the interviews with underwriters and brokers, while they have typically experienced an increase in submission and customer enquiries after compulsory purchase of environmental pollution liability insurance legislation was introduced, the limits and scope of coverage generally did not improve. And if this was the case, it appears that there has not been a considerable increase in total insurance capacity in the markets concerned.
- Given this context, there is a unique opportunity for insurance regulators and environmental protection regulators and agencies within governments to collaborate to support the development of environmental pollution liability insurance, help companies and communities better manage environmental risks, and promote environmental sustainability.

Insurance regulators can ensure there is proper data collected in their jurisdictions (e.g. number of policies issued, premiums written, number of claims, claims paid, loss reserves). This will promote greater transparency on the breadth and depth of the environmental pollution liability insurance market. Requiring the reporting of granular data is a first step that insurance regulators can take to help quantify the size of the environ-



mental pollution liability insurance market. This will enable insurance market participants to develop clear strategies and plans for innovation and growth and improve data availability, access and quality. For example, research is currently underway in the UK to produce a standard classification system for pollution events. This would replace the thousands currently in operation and would allow underwriters to draw meaningful comparisons between users and accurately price their future pollution risks based using standardised data sets.

For environmental regulators and agencies, this data will be valuable to determine the scale of environmental pollution liability protection provided by insurers and if the coverage is sufficient based on their assessment of needs. The data would also provide a quick reference for environmental regulators wanting to understand the purchase uptake following changes in environmental legislation, regulation and enforcement. By understanding the environmental risk management performance of companies and industries following legislative, regulatory or enforcement changes, any increase in the uptake of environmental pollution liability insurance and the associated risk management activities could provide useful evidence for environmental agencies on the effectiveness of their activities. Conversely, if there were to be no associated increase in insurance uptake, then this could be a red flag for regulators. It could indicate poor risk quality and insurability and highlight a large insurance protection gap.

With such granular reporting, it could be possible for environmental regulators to set targets for the growth and development of environmental pollution liability insurance as a risk management instrument to help achieve environmental protection goals and ensure environmentally sustainable industries.

Another key issue that was raised by interviewees pertain to the importance of environmental impact assessments (EIAs) and strategic environmental assessments (SEAs) to risk management and underwriting decision-making on environmental pollution liability insurance. Ensuring these assessments are properly and thoroughly carried out is an important source of information that enable underwriters to identify, quantify, price and carry risks.



In 2018, UNEP published a report that examined different approaches to environmental legislation and implementation. This report specifically looked at EIAs and SEAs:

**“The triggering point for Strategic Environmental Assessments is the intention of a government agency to adopt a plan, programme or policy. A key difference to the Environmental Impact Assessments process is that instead of project proponents, whether private or public, legal Strategic Environmental Assessments requirements are generally ‘only’ binding for public institutions. The objective of these tools is to make sure that all critical information to predict future impact on the environment is supplied and considered in the decision-making process.”<sup>17</sup>**

The UNEP report highlighted the difference in compliance and quality of legislation in various jurisdictions and how the use of these proceeds can have a positive environmental impact. In the interviews carried out for this report, practitioners highlighted the important role that EIAs and SEAs play to help underwriters make risk management and pricing decisions. What is not clear at the moment is how involved the insurance industry has been in helping shape legislation and in developing stronger controls on how such assessments must be implemented, and the role the industry plays in ensuring that corporate activities and projects do not damage the environment.

Given this context, the insurance industry can become actively involved in the development of standards for environmental assessment reports at the national and international levels by working together with key stakeholders (e.g. international financial institutions, development banks), particularly those which have frameworks that promote sustainability.<sup>18</sup> By working with legislators and environmental regulators to develop robust processes and controls around the completion of environmental assessment reports, the insurance industry can advance best sustainability practice for companies and projects spanning various industries.

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17 UNEP (2018): Assessing environmental impacts: A global review of legislation [unep.org/resources/assessment/assessing-environmental-impacts-global-review-legislation](https://www.unep.org/resources/assessment/assessing-environmental-impacts-global-review-legislation)

18 For example, the International Finance Corporation’s (IFC) Sustainability Framework articulates the Corporation’s strategic commitment to sustainable development and is an integral part of IFC’s approach to risk management. The Sustainability Framework comprises IFC’s Policy and Performance Standards on Environmental and Social Sustainability, and IFC’s Access to Information Policy. The Policy on Environmental and Social Sustainability describes IFC’s commitments, roles, and responsibilities related to environmental and social sustainability. See: [IFC Performance Standards on Environmental and Social Sustainability \(effective 1 January 2012\)](#)





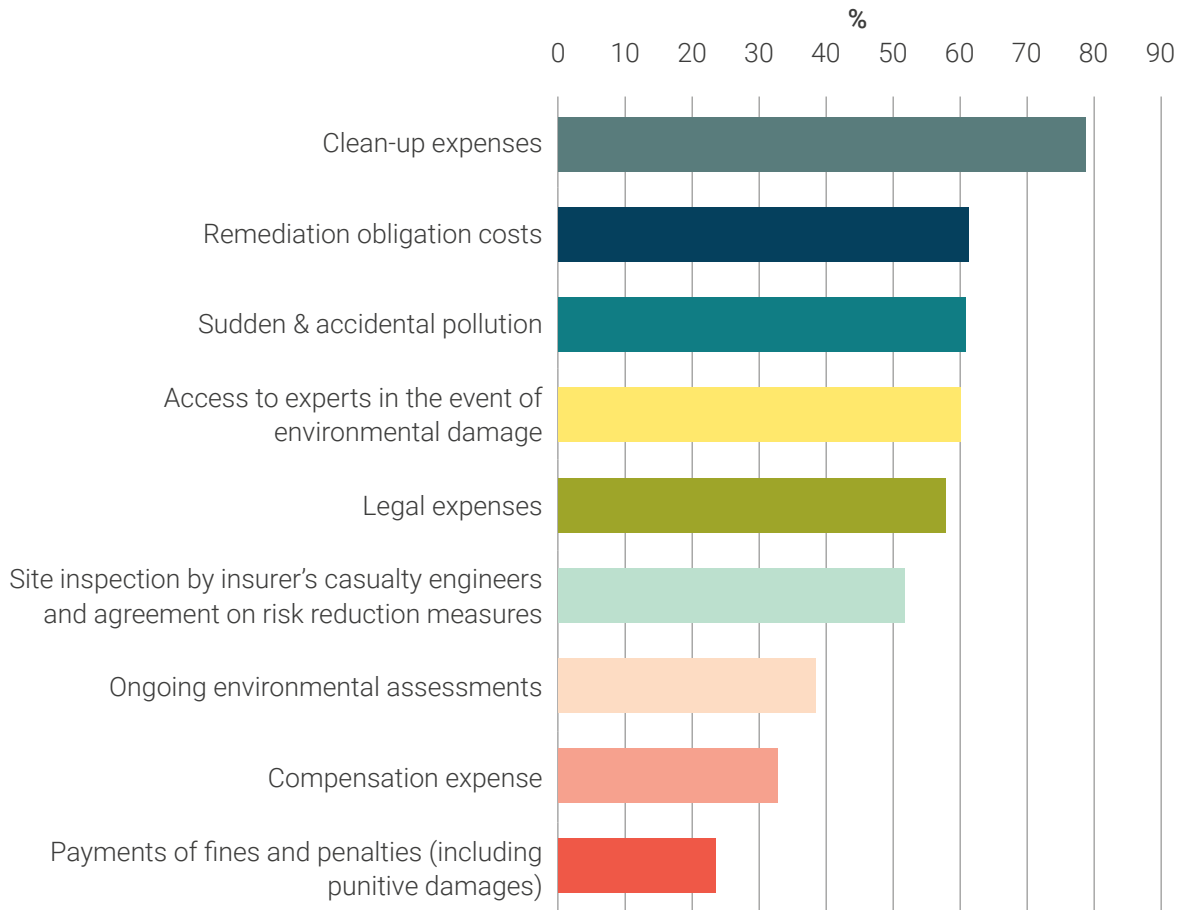
## **Theme 6: Closing the protection gap— Potential opportunities to develop and expand insurance solutions**

During the interviews and literature review for this report, a number of potential opportunities were identified that could enable insurance policies to better protect the environment. Environmental pollution liability insurance has traditionally been used within a relatively narrow and confined scope—to assist with the remediation of an affected site and indemnify third party losses.

The survey data showed that the lack of legal and regulatory frameworks and poor enforcement are major barriers to the growth of the traditional environmental pollution liability insurance market. This presents a real opportunity for policymakers, regulators and enforcement agencies to collaborate with each other, and to engage with the insurance industry.

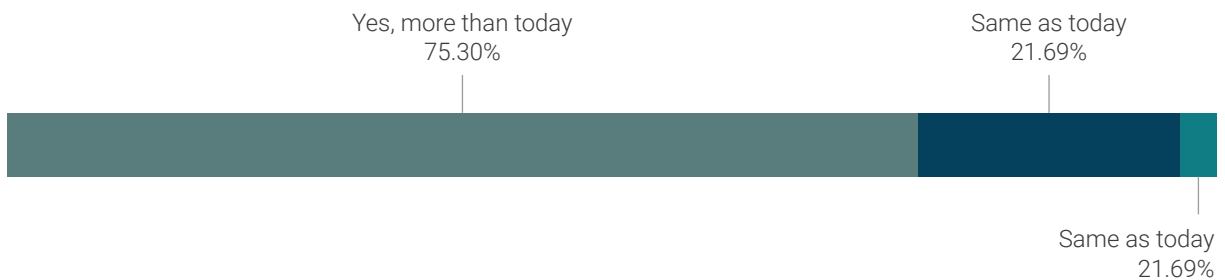
Furthermore, survey respondents highlighted that the most useful elements of existing environmental pollution liability insurance policies include the coverage it provides for clean-up and remediation costs, and sudden and accidental loss events.

While pre-loss risk management activities such as site inspections, risk reduction measures and environmental assessments were ranked lower in the survey, during the interviews with leading underwriting experts, their feedback was this is the most important step in their decision-making process and that improvements in this area have the potential to significantly reduce environmental risks. It may not be surprising that the loss prevention impacts of insurance can be overlooked or not valued as highly as the risk coverage provided and claims payments made. However, there is a need for clients and key stakeholders to understand the fundamental importance of loss prevention and risk reduction measures as they will help make insurance solutions become more affordable, accessible and sustainable.



Interviewees also commented that the lack of technical risk management and underwriting expertise in many markets for this highly specialised insurance line is holding back its growth and development.

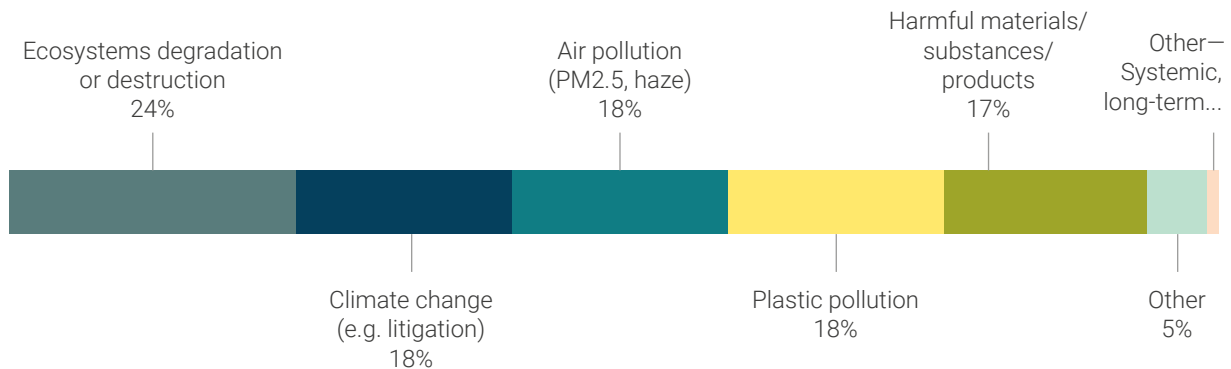
Another key insight from the survey is the view by the majority of respondents (75%) that they expect more environmental-related litigation in their country or region in the next five years. Only 3% indicated they expect less environmental litigation, while the balance of about 21% expect the same litigation as today.



On the premise that there will be appropriate legal and regulatory frameworks, strong enforcement of environmental protection laws and regulations, and good corporate risk management practices, there is a major opportunity for the insurance industry to innovate and expand the use of environmental pollution liability insurance to cover a broader range of sustainability risks and clients.



The survey identified a number of opportunities that environmental pollution liability insurance coverage can potentially expand into:



As the interviews with environmental pollution liability insurance practitioners progressed, participants opened up to the opportunities presented by a reinvigorated strategy and investment and realigned policy wordings that would place this insurance line at the centre of the insurance industry's core activities in supporting the transition to a sustainability economy.

### a. Carbon emissions and air pollutants

Climate change litigation is a growing global phenomenon. Globally, the cumulative number of climate change-related cases has more than doubled since 2015. Just over 800 cases were filed between 1986 and 2014, while over 1,000 cases have been brought in the last six years.<sup>19</sup> Given this trend, and the feedback from majority of survey respondents that they expect more environmental-related litigation in their respective countries or regions in the next five years, it could be prudent for the insurance industry to explore the applicability or expansion of environmental pollution liability insurance to liability risks associated with carbon emissions and other greenhouse gases.

Furthermore, environmental pollution liability insurance coverage can potentially be expanded to provide cover for carbon release and air pollutants in the event of fire affecting insured assets (e.g. buildings, factories, forests). There is opportunity for insurance to cover the costs of removing or offsetting the carbon and air pollutants released during a loss event. This approach could be applied to both commercial and personal lines insurance by providing indemnity for the impact of carbon emissions and air pollutants, in addition to the loss of the physical property and/or related business interruption.

For properties that are destroyed by non-incendiary events (e.g. floods and landslides are other major causes of loss), the additional carbon emissions produced in rebuilding could be insurable with an expanded environmental pollution liability insurance by providing coverage for insureds to remove or offset carbon and/or choose to rebuild with lower or zero-carbon emissions.

<sup>19</sup> Setzer J and Higham C (2021) Global trends in climate change litigation: 2021 snapshot. London: Grantham Research Institute on Climate Change and the Environment and Centre for Climate Change Economics and Policy, London School of Economics and Political Science. [lse.ac.uk/granthaminstitute/wp-content/uploads/2021/07/Global-trends-in-climate-change-litigation\\_2021-snapshot.pdf](https://lse.ac.uk/granthaminstitute/wp-content/uploads/2021/07/Global-trends-in-climate-change-litigation_2021-snapshot.pdf)



This concept could also be interesting as it relates to government and corporate net-zero targets in line with the aims of the Paris Agreement on Climate Change. Carbon released following insured events could deter the achievement of net-zero targets each year. Insurance solutions could be in place to cover the costs associated with missed emissions reduction targets or for carbon removal.

## **b. Natural ecosystems and biological diversity**

Following the footsteps of climate change litigation, it appears that there is an emerging trend on litigation related to the degradation of natural ecosystems and the loss of biological diversity (“biodiversity” hereafter).<sup>20,21,22</sup> Therefore, it would be equally prudent for the insurance industry to further explore the potential role of environmental pollution liability insurance in this context.

Furthermore, parametric insurance (also known as index-based insurance) is increasingly being used or considered to help governments and businesses finance the restoration of natural ecosystems (e.g. coral reefs, forests, wetlands) and biodiversity following climate change-related risks (e.g. tropical storm).

While such parametric insurance policies are not designed as environmental pollution liability insurance policies, there is an opportunity for convergence and innovation to protect and restore natural ecosystems following a broader range of insurable events, including pollution events.

For example, an insurance payout could be triggered based on the reduction of species identified in a particular ecosystem, or a similar indication of biodiversity loss. The drop in biodiversity that triggers the insurance policy could be linked to polluting activities breaching regulations as well as climate-related risks such as fire or windstorm. The insurance payout can be used to fund the restoration of the ecosystem and biodiversity.

Protecting ecosystems and biodiversity will become an increasingly important underwriting skill and will need to take into account the interests and rights of all stakeholders in biodiverse environments, particularly indigenous communities.

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20 The Guardian (2022): Legal eagles: How climate litigation is shaping ambitious cases for nature [theguardian.com/environment/2022/mar/16/climate-litigation-lisbon-wetlands-aoe](https://www.theguardian.com/environment/2022/mar/16/climate-litigation-lisbon-wetlands-aoe)

21 Clyde&Co (2022): Biodiversity litigation: Environment analysis [clydeco.com/en/insights/2022/04/biodiversity-litigation-environment-analysis](https://clydeco.com/en/insights/2022/04/biodiversity-litigation-environment-analysis)

22 Nigel Brook, Wynne Lawrence, Zaneta Sedilekova (Clyde & Co LLP), and Nathaniel Matthews (Global Resilience Partnership) (2022): Biodiversity loss, litigation and value chain risk [globalresiliencepartnership.org/biodiversity-loss-litigation-and-value-chain-risk/](https://globalresiliencepartnership.org/biodiversity-loss-litigation-and-value-chain-risk/)



Indeed, in the survey conducted for this report, the following question was asked: “Should environmental pollution liability insurance for high-impact industries (e.g. mining, forestry, agriculture, urban expansion) evolve to include protection of indigenous communities and vulnerable communities?”



Survey respondents voiced strong support, with 71% in favour of environmental pollution liability insurance evolving further to provide specific coverage for indigenous and vulnerable communities.

Another opportunity for an insurance solution could be the use of financial interest cover in the event of environmental damage to a natural ecosystem caused by pollution. This is relevant to a company or organisation which draws income from a business activity associated with a natural ecosystem (e.g. ecotourism). Such businesses need the ecosystem to be pristine and protected to attract customers and could use insurance that covers their financial interests if the ecosystem they operate in and depend on is damaged by pollution not caused by them and not covered by any other policies associated with the polluter.

The opportunities to explore potential environmental pollution liability insurance solutions covering natural ecosystems and biodiversity will likely be complemented by the expected adoption of a Post-2020 Global Biodiversity Framework at the 2022 UN Biodiversity Conference in Kunming, China. This global framework will be a stepping stone towards the 2050 vision of “Living in harmony with nature”.

### c. Nutrient pollution

The operations of companies in various industries (e.g. agriculture, aquaculture, waste management, energy) and storm water runoff can lead to nutrient pollution. This form of pollution happens when too much nutrients—particularly nitrogen and phosphorus—enter the environment due to fertilizer runoff, animal manure, septic tank leaks, sewage treatment plant discharge, and fossil fuel combustion, among others. The excess nutrients pollute the water and air and can lead to eutrophication of surface waters, harmful algal blooms, impaired ability to breathe (e.g. hypoxia), alter plant growth, and acid rain.

The nutrient pollution risks associated with these operations and events could be relevant to new and innovative applications of environmental pollution liability insurance. For example, the pollution caused by storm water runoff is not currently covered under typical environmental pollution liability insurance policies as the ultimate polluter is likely to be unknown. Parametric insurance solutions that provide cover if certain thresholds are exceeded could be provided to help restore natural ecosystems and biodiversity.



## d. Plastic pollution

Plastic is an increasingly high-profile threat to our climate, ocean, wildlife and human health. Plastic pollution is becoming widespread both in the ocean and on land, where it is impacting our ecosystems and threatening lives and human health. To make matters worse, these plastics gradually break down into small particles known as microplastics. Microplastics are becoming so widespread in our environment that they have been found everywhere from bottled water to Arctic snow. Further research is needed to understand the impact of microplastics on nature and on human health, but many worrying effects have been found. For example, additives in plastics are known to disrupt animals' hormonal systems, and possible impacts on human health include lung inflammation, carcinogenicity, gene mutilation and repercussions for reproductive health.<sup>23</sup>

Furthermore, plastics make a direct contribution to climate change. Plastics, which are made from fossil fuels, account for 20% of total oil consumption and their manufacture, recycling and incineration is energy intensive, resulting in high carbon emissions.<sup>24</sup>

The 2019 report published by UNEP's Principles for Sustainable Insurance Initiative (PSI), Unwrapping the risks of plastic pollution to the insurance industry, shows that, just like climate change-related risks, plastic pollution risks can affect insurance and investment portfolios in the form of physical, transition, liability and reputational risks.<sup>25</sup>

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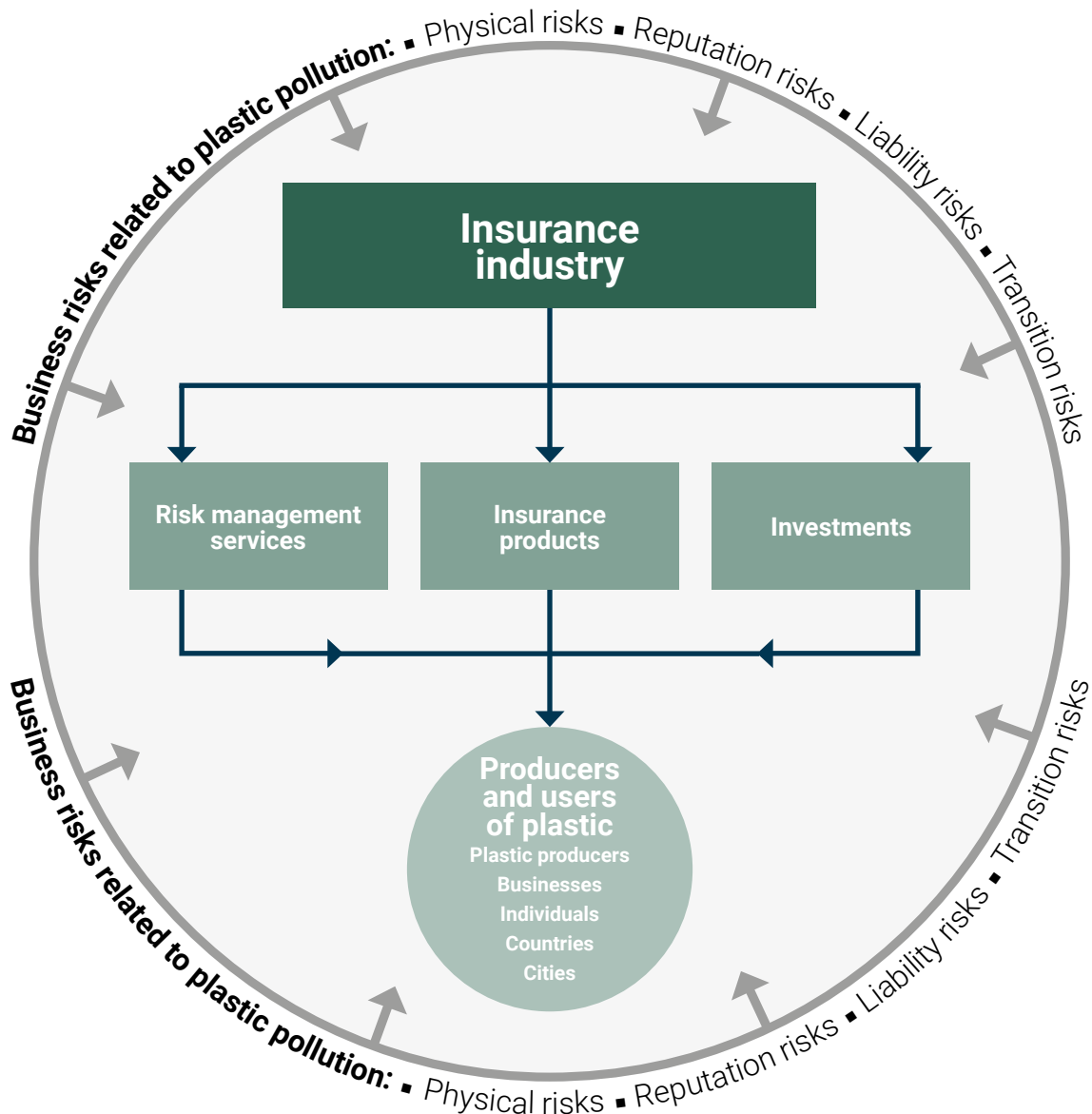
23 UNEP's Principles for Sustainable Insurance Initiative (2019): Unwrapping the risks of plastic pollution to the insurance industry [unepfi.org/psi/wp-content/uploads/2019/11/PSI-unwrapping-the-risks-of-plastic-pollution-to-the-insurance-industry.pdf](https://unepfi.org/psi/wp-content/uploads/2019/11/PSI-unwrapping-the-risks-of-plastic-pollution-to-the-insurance-industry.pdf)

24 Ibid

25 Ibid



## How the risks associated with plastic pollution affect the insurance industry and ten recommendations to manage those risks

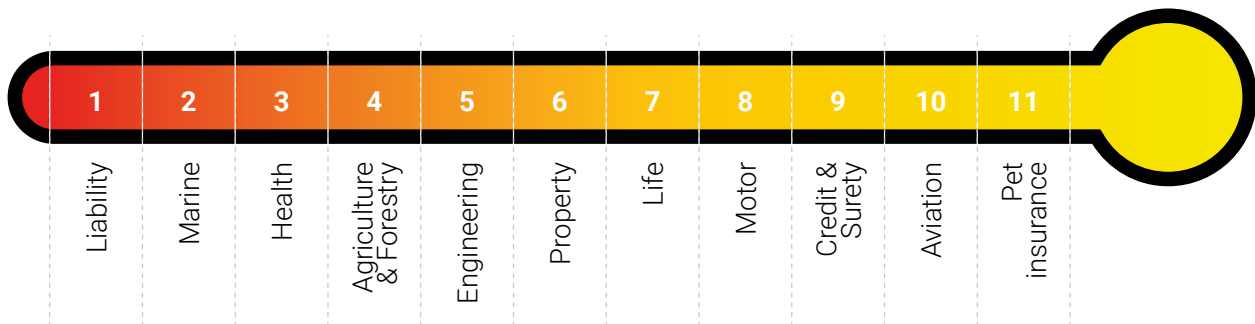


Lead by example	Understand, prevent and reduce plastic pollution risks	Insure risks associated with plastic pollution	Support wider efforts to reduce plastic pollution
<ol style="list-style-type: none"> <li>1 Introduce policies to reduce plastic use and waste internally</li> <li>2 Include plastic pollution in ESG or sustainability approaches</li> </ol>	<ol style="list-style-type: none"> <li>3 Support knowledge and build awareness among the public, government and industry</li> <li>4 Include plastic pollution risks in risk assessment models for insurance and investment activities</li> <li>5 Develop relevant risk reduction measures</li> <li>6 Reduce the plastic footprint of reinstating damaged property investment activities</li> </ol>	<ol style="list-style-type: none"> <li>7 Design innovative insurance products to cover the risks associated with plastic pollution</li> </ol>	<ol style="list-style-type: none"> <li>9 Actively engage with key stakeholders as risk managers, insurers and investors</li> </ol>
		<b>Support alternatives to plastic</b> <ol style="list-style-type: none"> <li>8 Support innovations for plastic alternatives through insurance products and investments</li> </ol>	<ol style="list-style-type: none"> <li>10 Disclose plastic pollution risks and opportunities in relevant disclosure and reporting frameworks</li> </ol>





It is also worthwhile to note that based on the global survey for the 2019 PSI report on plastic pollution, insurers rated liability insurance to be the most relevant to plastic pollution risks.



Source: PSI global survey on insurers' attitudes to and actions to address plastic pollution risks

The PSI report cited general liability insurance, employers' liability insurance, pollution liability insurance, and directors' and officers' liability insurance as specific examples of relevant lines of liability insurance business and arrived at the following insights for each line:

### General liability insurance

Businesses may face liability risks related to plastic pollution should individuals suffer damage as a result of plastic pollution and seek compensation from those whom they consider responsible. Such cases have so far been limited by difficulties linking damage directly to the company responsible. Furthermore, most insurers would consider plastic pollution to be excluded from the vast majority of general liability products because these products generally have a clause which excludes pollution. However, these exclusions do not generally specifically mention plastic pollution, and have yet to be tested in this context in the courts.

It is possible that plastic producers and waste management companies could be vulnerable to future claims, especially as extensive plastic pollution clean-up is required. For example, where recycling companies pass materials to other countries for recycling and adequate recycling does not take place, liability claims could possibly be made. Companies providing products found to contain microplastics may also be vulnerable. For example, recent research showed that bottled water—a product promoted for its purity—contained levels of plastic fibres twice as high as those found in tap water.

A further risk is that plastic producers face liability claims for bodily damage caused by chemicals (e.g. phthalates, BPA, formaldehyde) in plastic products. It is possible that those who come into contact with these plastics (either as a result of intentional contact or through exposure to plastic pollution), could bring liability cases against the plastic producers or those that distribute plastics. Where these chemicals are present in objects produced for consumers, insurers would not necessarily avoid liability claims for harm caused by these chemicals through pollution exclusions, since harm is not caused by a discarded by-product but by the produced object itself. For now, mass litigation has not come about because of the difficulties in linking specific bodily harms with exposure to specific chemicals. However, scientific investigation on these chemicals is developing, and it may soon be possible to link specific chemicals in common plastic objects to



specific bodily harm. If so, this could lead to mass litigation. Although very few insurers have yet reflected these risks in their liability pricing, some insurers are well aware of them and are developing various approaches to manage these risks.

Although new research is constantly revealing new risks related to plastic pollution, its damaging impacts, especially on the ocean, has been well established for decades. As public awareness and political and regulatory environments evolve, liability cases made by individuals, groups, employees, shareholders, and even regulators may be increasingly likely to succeed. We may see similar patterns to those seen in important past liability cases such as asbestos and smoking, where risks were not originally recognised and later resulted in very high losses for companies and their insurers. If a class-action suit based on microplastic pollution succeeds, it is likely that this situation and insurers' responses will develop rapidly.

Most insurers would consider plastic pollution to be excluded from most general liability products because these products generally have a clause which excludes pollution. However, these exclusions do not generally specifically mention plastic pollution, and have yet to be tested in this context in the courts.

### **Pollution liability insurance**

Plastic pollution could be considered under pollution liability coverage, though the vast majority of products would not have been written with plastic pollution in mind and it is unlikely to be a named peril. Nonetheless, it could be argued that plastic pollution, especially microplastic pollution, could be considered under some existing categories of pollution such as "releases".

So far, we have not seen examples of insurers specifically writing products to explicitly cover plastic or microplastic pollution. If this becomes a source of future liability cases, plastic pollution may be excluded explicitly from many liability products. However, some insurers may develop specific products with this as a named peril and this could represent an opportunity for innovative insurers.

It would be important to collect extensive data on plastic and microplastic pollution and its effects over time to better develop such coverage.

### **Employers' liability insurance**

Employees in plastic production may be exposed to damaging plastic additives, which have been shown to pose a threat to human health, including reproduction, neurodevelopment and metabolism. Plastic producers and their insurers may therefore find themselves exposed to employers' liability claims from bodily harm caused to employees working in plastic production.

Women form an important part of the work force in plastic production. In Canada, for example, the plastics industry has more women workers than in any other manufacturing sector and in some areas of the country, women make up the majority of the workforce.<sup>52</sup> The chemicals involved in plastic production have been found to have particularly worrying risks for women, including the risks of cancer and reproductive prob-



lems. Such risks also apply to women exposed to plastic fumes in other factories where plastic is used, such as in automotive production. For example, women exposed to plastic fumes in factories have been found to have a 400% increased risk of breast cancer.

### **Directors' and officers' (D&O) liability insurance**

D&O policies seek to insure company management against personal liability claims which can be taken out against them by shareholders for a perceived breach of duty. It is possible that allowing a company to continue high rates of plastic pollution, or selling products that are highly polluted with microplastics despite increasing research on the dangers, could be considered a breach of duty.

However, insurance companies are increasingly excluding pollution in this kind of insurance policy. It could also be possible for the reputation and transition risks around plastic to create D&O liability claims, should company directors make strategic errors in not recognising changing consumer attitudes to plastics and demand for a product or services be severely damaged as a result.

### **Other opportunities: Cities, the tourism industry**

At the same time, plastic pollution presents significant opportunities for insurers to position themselves on the frontline in tackling this global issue and helping to secure a more sustainable future.

As mentioned earlier, there is the possibility of insurers developing pollution liability insurance with plastic or microplastic pollution as a named peril. Another possibility might be for insurers to offer products to support cities in managing plastic pollution when it reaches certain levels. This would be especially relevant for coastal cities, where levels of plastic pollution on the coast can peak because of pollution caused outside of the local authority's control. Insurers are already piloting parametric insurance policies based on factors like air pollution, and similar approaches could be considered for plastic pollution. Such cover could be used to fund both clean-up efforts and measures to deal with the impacts of plastic pollution.

The loss of income experienced by the tourism industry as a result of surges of coastal plastic pollution may be another opportunity for innovative insurance products. In December 2017, Bali had to temporarily close some of its most popular tourist beaches due to an influx of (mostly plastic) waste on its coastline. Tourist sites, hotels, tour companies and water-based sports companies all experience reduced incomes when plastic pollution deters visitors.

In many cases, this plastic pollution does not come primarily from tourist activities, although this is also an issue. Rather, marine litter can be carried vast distances at sea and activities in one country can affect beaches in another. Insurers could therefore consider offering business interruption insurance to cover surges in coastal plastic pollution. In addition to covering lost income, these products could fund activities like beach clean-ups to combat surges in plastic pollution when they occur.



Many other possibilities for innovative insurance cover related to plastic pollution will likely emerge in the future, particularly given the ongoing global effort to develop an international legally binding agreement on plastic pollution by 2024.

### **Upcoming international legally binding agreement on plastic pollution**

In March 2022, UN Member States endorsed a historic resolution at the 5<sup>th</sup> UN Environment Assembly to end plastic pollution and forge an international legally binding agreement by 2024. The resolution addresses the full lifecycle of plastic, including its production, design and disposal.<sup>26</sup>

According to UNEP Executive Director, Inger Andersen, the resolution to end plastic pollution “is the most significant environmental multilateral deal since the Paris accord. It is an insurance policy for this generation and future ones, so they may live with plastic and not be doomed by it.”<sup>27</sup>

### **e. Crisis management**

A potential extension of environmental pollution liability insurance could be covering the crisis management costs of the insured. Such insurance could cover costs related to reputation and brand protection, particularly when dealing with high-profile loss events. These additional costs could include experts required to support clean up, communicating to the general public the loss event, and how the adverse impacts of pollution will be remedied. Having such insurance coverage could encourage greater transparency and disclosure of environmental damage due to pollution events.

### **f. Alignment with the broader financial sector**

A universal system of pollution event classification could provide useful detailed information to better identify, assess, quantify and price clients’ environmental pollution risks. By using standardised and granular data, capital market participants such as investors, banks and stock exchanges could require their clients to disclose their environmental pollution liability risk coverage before extending financing. This approach encourages the use of environmental pollution liability insurance by companies across economic sectors as a risk management instrument that would enable financial institutions to better understand and manage corporate environmental pollution risks.

Active ownership and shareholder engagement can be a driver to mainstream environmental protection. Through investors requiring disclosure of investee companies’ environmental pollution liability risk coverage, company boards and management will need to look into its purchase and use as part of their corporate environmental risk management programme and overall sustainability strategy. Such disclosure could also be required by stock exchanges as part of listing rules. While not necessarily mandating the purchase of environmental pollution liability insurance, the disclosure of its use alone will promote a dialogue on the company’s environmental risk management practices and sustainability stewardship.

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26 UNEP (2022): Historic day in the campaign to beat plastic pollution: Nations commit to develop a legally binding agreement [unep.org/news-and-stories/press-release/historic-day-campaign-beat-plastic-pollution-nations-commit-develop](https://www.unep.org/news-and-stories/press-release/historic-day-campaign-beat-plastic-pollution-nations-commit-develop)

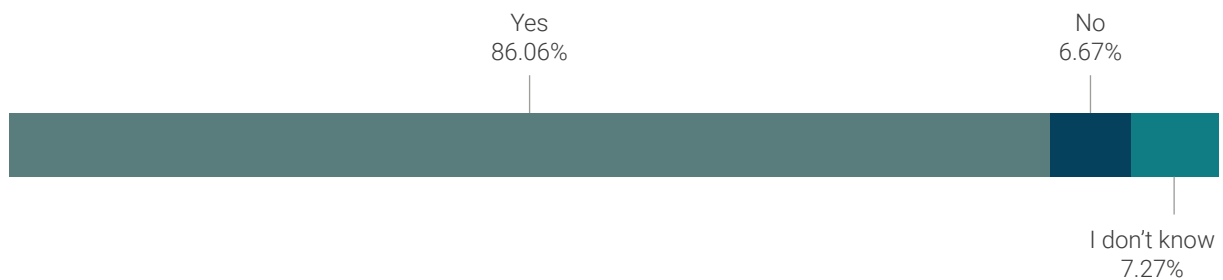
27 Ibid



## g. Alignment with global sustainability frameworks

The vast majority of survey respondents believe that to help reduce environmental risks, insurers should align their core business strategies and operations with the aims of global sustainability frameworks such as the UN Sustainable Development Goals (SDGs) and Paris Climate Agreement. Accordingly, many practitioners voiced the real need for sustainability expertise to be embedded across risk management, underwriting and investment roles within insurance organisations. This is useful feedback and gives an indication of the insurance industry's current capabilities and what is needed to align the industry's activities with global sustainability frameworks.

**“To help reduce environmental risks, do you recommend insurers to align their underwriting and investment processes with the aims/targets of global sustainability frameworks such as the UN Sustainable Development Goals, Paris Climate Agreement, and Post-2020 Global Biodiversity Framework?”**



Another relevant global sustainability framework is the Montevideo Programme for the Development and Periodic Review of Environmental Law (Montevideo Environmental Law Programme). In March 2019, the UN Environment Assembly adopted the 5<sup>th</sup> Montevideo Environmental Law Programme—a 10-year intergovernmental programme on promoting and implementing environmental rule of law.



The following are the aims of the Montevideo Environmental Law Programme:<sup>28</sup>

- Support the development of adequate and effective environmental legislation and legal frameworks at all levels to address environmental issues
- Strengthen the effective implementation of environmental law at the national level
- Support enhanced capacity-building for increased effectiveness of environmental law for all stakeholders at all levels
- Support national governments, upon their request, in the development and implementation of environmental rule of law
- Promote the role of environmental law in the context of effective environmental governance

The Montevideo Environmental Law Programme complements the aims of policymakers and regulators who are considering the use of environmental pollution liability insurance, particularly for high-risk industries. Most survey respondents (61%) opined that the biggest challenge to mainstreaming environmental pollution liability insurance globally is the lack of legal and regulatory frameworks. Moreover, 45% of respondents stated that low/insufficient penalties for violation of environmental protection laws and regulations and low/poor enforcement were key barriers.

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28 [unep.org/explore-topics/environmental-rights-and-governance/what-we-do/promoting-environmental-rule-law-1](https://www.unep.org/explore-topics/environmental-rights-and-governance/what-we-do/promoting-environmental-rule-law-1)



# 4. Recommended strategies, actions and next steps

Taking into account the literature review, survey and interviews that were conducted for this study, the following are recommendations for the insurance industry and key stakeholders to harness the full potential of environmental pollution liability insurance to support the transition to a sustainable economy:

## 4.1 Insurance market participants and associations

- Invest in developing the risk management, underwriting, broking, marketing and claims management expertise needed within individual organisations and the industry as a whole to be able to prudently write, place and service environmental pollution liability insurance business; and to innovate and explore new opportunities and applications for this line of business.
- Support the creation of a standard classification system for environmental pollution events that can be used by the entire value chain including clients, agents, brokers, insurers and reinsurers, as well as by regulators and policymakers.
- Promote good risk management practices to prevent and reduce various forms of pollution (including new risks such as plastic pollution), greenhouse gas emissions, and biodiversity loss and ecosystem degradation through capacity building programmes and events to better educate clients, regulators and policymakers on the required capabilities to manage environmental risks and help make insurance solutions affordable, accessible and sustainable.
- Engage with environmental regulators and policymakers on the development of the necessary legal and regulatory frameworks to manage environmental pollution risks, and to ensure enforcement of environmental protection laws and regulations.
- Explore and develop innovative insurance solutions (both indemnity and parametric insurance) to help address the protection gap for traditional, new and emerging environmental pollution liability risks.





- Allocate sufficient capital to support the increased underwriting capacity needed for environmental pollution liability insurance to develop and grow in local markets around the world, spanning both developing and developed countries.

## 4.2 Insurance regulators and supervisors

- Require reporting on environmental pollution liability insurance policies (e.g. premiums, claims). It would be ideal to extract the premiums for environmental pollution risk coverage embedded in some commercial general liability policies. By collecting and publishing these statistics along with other lines of business (e.g. motor, workers' compensation, property, marine), the insurance industry will be able to better track the development, growth and impact of this line of business.
- Support the creation of a standard classification system for environmental pollution events that can be used by the entire value chain including clients, agents, brokers, insurers and reinsurers, as well as by regulators and policymakers.
- Engage with insurance market participants and invest in developing the technical expertise needed to be able to prudently regulate and supervise environmental pollution liability business, and to help close the protection gap for environmental risks.
- Collaborate with environmental regulators and policymakers to ensure alignment between the aims of environmental protection laws and regulations and insurance solutions, be it via mandatory or voluntary insurance schemes.

## 4.3 Environmental regulators and policymakers

- Ensure that the appropriate legal and regulatory frameworks are in place to support the development and growth of environmental pollution liability insurance market
- Ensure the proper enforcement of environmental protection laws and regulations
- Create a standard classification system for environmental pollution events that can be used by the entire value chain including clients, agents, brokers, insurers and reinsurers, as well as by regulators and policymakers.
- Engage with insurance market participants and insurance regulators and supervisors to ensure alignment between the aims of environmental protection laws and regulations and insurance solutions, be it via mandatory or voluntary insurance schemes.
- Align environmental protection laws and regulations with the aims of global sustainability frameworks such as the UN Sustainable Development Goals, Paris Agreement on Climate Change, the upcoming Post-2020 Global Biodiversity Framework, and the upcoming international, legally binding agreement on plastic pollution.



## 4.4 Civil society organisations, academia and research institutions

- Engage with insurance market participants and associations, insurance regulators and supervisors, and environmental regulators and policymakers on the various recommended strategies and actions outlined above.

## 4.5 Next steps

As risk managers, insurers and investors, there is a clear opportunity for the insurance industry to play a leading role in preventing pollution, reducing greenhouse gas emissions, protecting biodiversity and ecosystems, and supporting the transition to a sustainable economy.

Environmental pollution liability insurance has been around for several decades but its full potential to address both traditional pollution risks and a broader range of new and emerging environmental risks remains largely untapped.

This report highlights the fundamental importance of appropriate legal and regulatory frameworks; the proper enforcement of environmental protection laws and regulations; strong loss prevention and risk reduction measures by companies; and environmental pollution data availability, accessibility and quality in order to support the development and expansion of environmental pollution liability insurance markets worldwide.

All these efforts require developing the appropriate policy, legal, regulatory and supervisory frameworks to tackle environmental pollution risks; the relevant risk management and underwriting expertise to insure such risks; and continued research on new and emerging environmental risks in order to support the development of loss prevention measures and insurance solutions.

There is an urgent need for collaborative and strengthened efforts between insurance market participants, insurance regulators and supervisors, environmental regulators and policymakers, civil society organisations and other key stakeholders in advancing the shared aim of environmental protection.

By reimagining the role environmental pollution liability insurance can play in protecting the natural environment that underpins communities and economies, the insurance industry will be able to provide more tailored and innovative risk management services and insurance solutions that support economic, social and environmental sustainability—in other words, sustainable development.



# 5. Appendix

## 5.1 Survey questions

Global survey on environmental liability insurance and sustainable development conducted by UN Environment Programme's Principles for Sustainable Insurance Initiative (PSI)

### 1. Which best describes your organisation?

- |   |  |
|---|--|
| <input type="checkbox"/> Insurer                | <input type="checkbox"/> Insurance regulator   |
| <input type="checkbox"/> Reinsurer              | <input type="checkbox"/> Insurance association |
| <input type="checkbox"/> Agent                  | <input type="checkbox"/> Academia              |
| <input type="checkbox"/> Broker                 | <input type="checkbox"/> NGO                   |
| <input type="checkbox"/> Other (please specify) |  |
- 

### 2. Which best describes your expertise?

- |   |  |
|---|--|
| <input type="checkbox"/> Underwriting                 | <input type="checkbox"/> Actuarial                         |
| <input type="checkbox"/> Claims                       | <input type="checkbox"/> Sales & Marketing                 |
| <input type="checkbox"/> Risk Engineering/ Management | <input type="checkbox"/> Regulator/ Supervisor             |
| <input type="checkbox"/> Investment Management        | <input type="checkbox"/> Broker                            |
| <input type="checkbox"/> Legal                        | <input type="checkbox"/> CEO/ Executive/ Management/ Board |
| <input type="checkbox"/> Sustainability               |  |
| <input type="checkbox"/> Other (please specify)       |  |
- 

### 3. In which country or territory do you currently work?

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#### 4. Part 1: Environmental Liability Insurance

What are the key benefits of environmental liability insurance? Please rank in order of preference with 1 being highest benefit and 6 lowest

	Greater awareness of environmental risks
	Better risk management/hazard reduction
	Increasing loss mitigation measures
	De-risking new investments
	Protecting communities and natural ecosystems
	Better risk identification

#### 5. What are the potential negative impacts of environmental liability insurance? Please rank in order of preference with 1 being the highest impact and 6 the lowest impact

	Moral hazard, perverse incentives for policyholders
	Adverse selection
	Denial of cover/policy exclusions
	Distortion of market forces/dynamics
	Allows polluters to remain financially viable
	Capital allocation in potentially environmentally damaging projects

#### 6. What are the key challenges to mainstreaming environmental liability insurance globally?

- Lack of legal and regulatory frameworks
  - Low/poor enforcement
  - Low/insufficient penalties for violation
  - Lack of demand and awareness by customers
  - Lack of awareness by brokers
  - Lack of technical skills by insurance companies and/or brokers
  - Lack of prioritisation under insurers' institutional capital allocation
  - Lack of country or state published data on environmental liability insurance premiums and claims
  - Affordability/high premiums for environmental coverage
  - Other (please specify)
-



## 7. Data questions

What are the key data points insurers/underwriters are missing? (select as many boxes as relevant)

- Electricity usage and supply
  - Operational emissions Scope 1—owner-controlled emissions;
  - Operational emissions Scope 2—indirect emissions from purchase of electricity, heating, steam, cooling;
  - Operational emissions Scope 3—all other emissions from a company's value chain
  - Building materials used for their premises
  - Onsite recycling (including when moving office locations)
  - Storage of pollutants
  - Carbon intensity versus peers
  - Water usage/ water recycling/ water source
  - Business inputs sources and their sustainability
  - Non-renewable input intensity
  - Preventative measures taken to mitigate pollution/ contamination
  - Other (please specify)
- 

## 8. Would you be willing to pay for third party ESG data to assist in underwriting of environmental liability risks?

- Yes
- No

## 9. What are the most useful elements of coverage in environmental liability insurance policies? (select as many boxes as relevant)

- Sudden and accidental pollution
- Clean-up expenses
- Remediation obligation costs
- Legal expenses
- Access to experts in the event of environmental damage
- Payments of fines and penalties (including Punitive damages)
- Compensation expense
- Ongoing environmental assessments
- Site inspection by insurer's casualty engineers and agreement on risk reduction measures



**10. Do you think the purchase of environmental liability insurance should be mandatory or voluntary?**

- Yes, Mandatory
- No, Voluntary
- don't know

**11. Can you please expand on your reasons for your answer to question 11 above?**

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**12. Should Environmental Liability insurance for high impact industries (e.g. mining, forestry, agriculture, urban expansion) evolve to include protection of indigenous communities and vulnerable communities?**

- Yes
- No
- don't know

**13. Part 2: Growth potential of environmental liability insurance**

Do you think environmental liability insurance has potential to be expanded into other forms? (Choose any/all that apply)

- Climate change (e.g. litigation)
- Air pollution (PM2.5, haze)
- Plastic pollution
- Harmful materials/ substances/ products
- Ecosystems degradation or destruction
- Other (please specify)

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**14. With regards to corporate ESG reports, what would be the benefits (ranked in order of impact with 1 being the highest and 5 the lowest) of enhanced disclosure of environmental insurance policies and related risks by all companies/organisations?**

- Better understanding of environmental risks
- More tailored environmental solutions
- More transparency around claims
- Better environmental risk management
- More efficient use of capital towards sustainable activities

**15. Do you expect there will be more environmental-related litigation in your country/ region in the next 5 years?**

- No, less than today
- Same as today
- Yes, more than today

**16. Part 3: Insurance company operations and activities**

Do you believe insurers should be managing their investment portfolios in a way that prevents adverse environmental impacts?

- Yes
- No
- Don't know

**17. From an environmental perspective, especially related to pollution, should the investment side of insurers be fully aligned to the underwriting side (risk selection) in terms of insuring environmental liability risk?**

- Yes
- No
- Maybe





**18. To help reduce environmental risk, in which operational areas do you recommend insurers to incorporate global sustainability frameworks, such as the UN Sustainable Development Goals, Paris Climate Agreement and Post-2020 Global Biodiversity Framework?**

- Underwriting
- Claims
- Sales & Marketing
- Risk engineering/ management
- Investments
- Group strategy
- Human Capital (e.g. attracting and retaining talent)

**19. To help reduce environmental risks, do you recommend insurers to align their underwriting and investment processes with the aims/targets of global sustainability frameworks such as the UN Sustainable Development Goals, Paris Climate Agreement, and Post-2020 Global Biodiversity Framework?**

- Yes
- No
- Don't know

**20. Is there anything this survey has missed that you would like to share on environmental liability insurance and the role it can play in developing a sustainable insurance industry?**

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## 5.2 Resources and links

### 5.2.1 Premium estimate sources

[2019-Environmental-Insurance-Market-Update.aspx \(aon.com\)](#)

[Environmental insurance \(naic.org\)](#)

Based on data compiled from Axco Environmental Impairment Liability (EIL) country reports and US National Association of Insurance Commissioners (NAIC) website:

China	USD 25,830,000
Republic of Korea	USD 55,830,000
Brazil	USD 22,330,000
Canada	USD 132,160,000
Belgium	USD 1,000,000
Spain	USD 50,000,000
Ukraine	USD 1,000,000
UK	USD 124,000,000
Kazakhstan	USD 5,000,000
Turkey	USD 1,000,000
USA	USD 2,000,000,000
<b>Total</b>	<b>USD 2,418,150,000</b>

### 5.2.2 United Nations

[About | UNEP Law and Environment Assistance Platform](#)

[Environment, health and pollution | UNEP–UN Environment Programme](#)

[PSI-unwrapping-the-risks-of-plastic-pollution-to-the-insurance-industry.pdf \(unepfi.org\)](#)

[Application Paper on the Supervision of Climate-related Risks in the Insurance Sector](#)

[Sustainable Insurance Forum \(SIF\) Publications](#)

[global-state-of-sustainable-insurance\\_01.pdf \(unepfi.org\)](#)

[Assessing Environmental Impacts: A Global Review of Legislation–UNEP-WCMC](#)

[IPCC Synthesis Report: Climate Change 2022 – AR6](#)

### 5.2.3 Insurers and reinsurers

[AIG: Burning Issues for Environmental Claims](#)

[Allianz: Environmental Liability Insurance](#)

[Chubb Hong Kong: Environmental Impairment Liability Insurance](#)



[Peak Re: Environmental liability on the verge of becoming compulsory in China](#)

[SONAR 2020: New emerging risk insights | Swiss Re](#)

[Environmental Insurance | AIG US](#)

[Gen Re: Mandating Environmental Pollution Liability Insurance in China](#)

[Strategic Risk: A guide to environmental liability in Europe](#)

[Environmental Liability: Top concerns for 2021 \(axaxl.com\)](#)

## **5.2.4 Brokers**

[Willis Towers Watson Insurance Marketplace Realities 2020—Environmental](#)

[Environmental Liability Insurance Market Recap 2020](#)

[Aon Environmental Insurance Market Update Q1 2021](#)

## **5.2.5 Insurance regulators and supervisors**

[NAIC environmental insurance](#)

[The impact of climate change on the UK insurance sector \(bankofengland.co.uk\)](#)

[California Climate Insurance](#)

## **5.2.6 Law firms**

[Kennedys Law: The UK's environmental policy and legal landscape post-Brexit](#)

[Kennedys Law: Environmental Impairment Liability: Is the London market prepared for climate change-related claims?](#)

[Defining “ecocide”: How and why should environmental destruction be criminalised? | Leigh Day](#)

## **5.2.7 Consultants**

[Climate change and P&C insurance: The threat and opportunity | McKinsey](#)

[Valuing nature conservation | McKinsey](#)

[Argyll Environmental Environmental Insurance](#)

## **5.2.8 Insurance associations and initiatives**

[Insurance Information Institute environmental liability insurance](#)

[Environmental Liability \(iua.co.uk\)](#)

[Climate-Related Risks in the Insurance Sector—Supervisory Dialogue | Access to Insurance Initiative \(a2ii.org\)](#)



## 5.2.9 Governments

[Liability—Legislation—Environment—European Commission \(europa.eu\)](#)

[Philippines congress framework for mandatory environmental insurance](#)

[Environmental liability | European Commission \(europa.eu\)](#)

[European Commission Annex-III environmental insurance availability and demand](#)

[European Commission member state summaries Annex II](#)

[European commission study on environmental liability directive effectiveness scope and exceptions](#)

[European commission improving financial security in the context of the environmental liability directive](#)

[KOREAN LAW INFORMATION CENTER | LAW SEARCH](#)

[Press Release \(me.go.kr\)](#)

## 5.2.10 Others

[Global Risk Financing Facility](#)

[Material-issues-big-food-and-the-rise-of-plastic-related-risk.pdf \(clientearth.org\)](#)

[Institute of Risk Management—Climate change risk management guide](#)

[Moody's environmental risks global heat map overview](#)



### About UN Environment Programme's Principles for Sustainable Insurance Initiative

Endorsed by the UN Secretary-General and insurance industry CEOs, the Principles for Sustainable Insurance (PSI) serve as a global framework for the insurance industry to address environmental, social and governance (ESG) risks and opportunities—and a global initiative to strengthen the insurance industry's contribution as risk managers, insurers and investors to building resilient, inclusive and sustainable communities and economies on a healthy planet. Developed by UN Environment Programme's Finance Initiative, the PSI was launched at the 2012 UN Conference on Sustainable Development (Rio+20) and has led to the largest collaborative initiative between the UN and the insurance industry. As of June 2022, more than 220 organisations have joined the PSI, including insurers representing about one-third of world premium and USD 15 trillion in assets under management, and the most extensive global network of insurance and stakeholder organisations committed to addressing sustainability challenges. The PSI also hosts the Net-Zero Insurance Alliance and the Sustainable Insurance Facility of the Vulnerable Twenty Group of Finance Ministers (V20).

Learn more at:

[unepfi.org/psi](https://unepfi.org/psi)

[unepfi.org/net-zero-insurance](https://unepfi.org/net-zero-insurance)

[v20sif.org/](https://v20sif.org/)



[unepfi.org/psi](https://unepfi.org/psi)



[psi@unepfi.org](mailto:psi@unepfi.org)



[/UNEPFinanceInitiative](https://www.facebook.com/UNEPFinanceInitiative)



[United Nations Environment Programme Finance Initiative](https://www.linkedin.com/company/united-nations-environment-programme-finance-initiative)



[@PSI\\_Initiative](https://twitter.com/PSI_Initiative)