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2	I-Catalist SL	ICA	ES	Beneficiary
3	Climate Risk Advisory Ltd	CRA	NO	Beneficiary
4	Helmholtz Centre for Environmental Research	UFZ	DE	Beneficiary
5	SINTEF AS	SINTEF	NO	Beneficiary
6	Mitigrate AS	MITI	NO	Beneficiary
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8	Genilland & Co GmbH	G&Co	DE	Beneficiary
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10	Hochschule Weihenstephan-Triesdorf	HSWT	DE	Beneficiary
11	Association for the Development of West Athens	ASDA	GR	Beneficiary
12	Behavior SMART OOD	BES	BG	Beneficiary
13	Conselleria de Generalitat Valenciana	GVA	ES	Beneficiary
14	Municipality of Gabrovo	MoG	BG	Beneficiary
15	Empower Insight	EI	FR	Beneficiary
16	Stiftung Global Infrastructure Basel	GIB	CH	Associated Partner
17	Verbraucherzentrale Sachsen e.V.	VZS	DE	Associated Partner
18	Landesamt für Umweltschutz (Regional Env. Protection Agency)	LAU	DE	Associated Partner
19	KLP Skadeforsikring AS (insurance)	KLP	NO	Associated Partner
20	Gjensidige Forsikring ASA (insurance)	GJE	NO	Associated Partner
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Abbreviations

AFPCN	French Association for Natural Disaster Risk Reduction
AS	Associated Partner
CAP	New Common Agricultural Policy
CINEA	European Climate, Infrastructure and Environment Executive Agency
CSRD	Corporate Sustainability Reporting Directive
DBU	German Federal Environmental Foundation
DSB	Directorate for Civil Protection and Emergency Planning
DWD	German Weather Service
E&S	Environmental and Social
EC	European Commission
ERM	Enterprise Risk Management
ESG	Environmental, Social, Governance
ESGE	Environmental, Social, Governance, Economic
EU	European Union
GHG	Greenhouse Gas Emissions
ICMIF	International Cooperative and Mutual Insurance Federation
iSDGs	insurance Sustainable Development Goals
MRV	Measurement, Reporting, and Verification
MSCI	Morgan Stanley Capital International
NatCat	Natural Catastrophes
NZAOA	Net-Zero Asset Owner Alliance
PC	Project Coordinator
PM	Project Manager
PPP	Public-Private Partnership
PRI	Principles for Responsible Investment
PSI	Principles for Sustainable Insurance
SASB	Sustainability Accounting Standards Board
SDGs	Sustainable Development Goals
SFDR	Sustainable Finance Disclosure Regulation
SI	Sustainable Insurance
SUSREG	Sustainable Financial Regulations and Central Bank Activities
TCFD	Task Force on Climate-related Financial Disclosures



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UN	United Nations
UNEP FI	United Nations Environment Programme Finance Initiative
WEF	World Economic Forum
WP	Work Package



EXECUTIVE SUMMARY

The insurance industry has traditionally focused on compensating losses rather than mitigating risks. Rising customer expectations, regulatory requirements, and unsustainable practices have driven the need for sustainable insurance (SI). SI integrates environmental, social and governance (ESG) principles into the insurance value chain to improve business performance, enhance customer satisfaction, promote sustainability and, last but not least, mitigate risks along the whole business value chain.

This report aims to assess current frameworks, principles and metrics for sustainable and nature-positive insurance, map relevant networks and initiatives, analyze and structure the sustainable insurance landscape, identify knowledge and implementation gaps, and propose actions to address these gaps.

The results demonstrate that, despite numerous organisations attempting to define SI, the concept is still evolving, with definitions varying across the industry and public bodies. Furthermore, many regulatory frameworks strongly encourage integrating ESG considerations into insurance practices and directing investments towards environmentally-conscious initiatives.

The integration of ESG factors is a critical aspect, guided by frameworks such as the Principles for Sustainable Insurance (PSI) and the EU Taxonomy Regulation. SI is a strategic approach that prioritizes ESG issues in insurance operations and stakeholder interactions. This approach helps to reduce risk, develop innovative solutions, improve business performance and contribute to sustainability. Academic research also emphasizes the role of ESG integration, innovative claims management and transparency in making the insurance industry more sustainable. It also highlights the need for comprehensive sustainability roadmaps and guidelines.

Both large and small insurers are aware of current market demands and are developing products that will benefit their businesses, customers, and the environment. A wide range of innovative sustainable portfolios are available, including both life and non-life insurance options designed to meet different needs. As a case study within this report, parametric agricultural insurance services are gaining significant traction, providing farmers and agribusinesses with (more or less) precise, data-driven protection against climate risks.

Despite progress, knowledge gaps remain in understanding the practical aspects of SI implementation. The report identifies barriers and suggests ways to overcome these challenges, emphasizing the need for common standards and detailed guidelines.

It is evident that there is a pressing need for a systematic and coherent approach to sustainable insurance. By addressing knowledge gaps and implementation barriers, the industry can enhance its ability to effectively navigate ESG risks and opportunities, thereby contributing to a more resilient and sustainable future.



1. Introduction

The insurance industry has often been successful across a variety of products and markets, including both life and non-life insurance. Life insurance involves a policyholder making regular payments to an insurer who guarantees to pay a beneficiary a specified sum or annuity on a specified date, or earlier if the insured dies. Non-life insurance, on the other hand, involves a policyholder making regular payments to an insurer who guarantees to pay a beneficiary an agreed-upon amount upon the occurrence of certain events other than death, such as accidents or property damage.¹

The ability to provide security in the face of uncertainty is why insurance exists. However, insurance companies have traditionally focused on compensating for loss rather than mitigating risk, which has contributed to their historical oversight of environmental concerns. Despite the broad range of services offered, the demand for “green” services and products is increasing due to customer expectations, regulatory requirements, and the fundamental unsustainability of the business-as-usual approach. This has led to the emergence of sustainable insurance (SI), where all stakeholders follow specific sustainability standards. Understanding SI means delving into its rules, principles, and metrics, each of which plays a critical role in shaping new and better approaches for the insurance industry. Sustainable insurance integrates responsible practices across the insurance value chain, focusing on environmental, social, and governance (ESG) issues. It aims to manage risks and opportunities to enhance business performance and contribute to sustainability.

Despite the potential advantages of the SI landscape, it is still in its infancy. As a result, it is highly heterogeneous, with numerous definitions that are either partly contrasting, rudimentary, or incomplete. Therefore, there is a need to set standards, establish reporting requirements and guide practical implementation in the financial and insurance sectors. An initiative to create such a framework has been started by several independent entities. The initial work of the Task Force on Climate-related Financial Disclosures (TCFD)² defines climate-related risks, but also provides a structured approach for companies to disclose these risks, assess their financial

¹ [The European System of Accounts](#)

² [Task Force on Climate-related Financial Disclosures \(TCFD\)](#)



impact, and integrate them into strategic planning. The UNEP Principles for Sustainable Insurance (PSI)³ initiative, together with the efforts of the United Nations (UN) Global Compact,⁴ have also played an important role in raising interest in the sustainability issues. Solvency II,⁵ is a base regulatory framework for all EU insurance companies that integrates ESG considerations into all their practices. Further examples are: the EU (environmental) Taxonomy classification system for sustainable activities⁶ (Commission Delegated Regulation (EU) 2023/2486, 2023), the EU (social) taxonomy,⁷ the EU Regulation 852/2020 on the establishment of a framework to facilitate sustainable investment⁸ (Verordnung (EU) 2020/852, 2020), the Corporate sustainability reporting directive (CSRD) as an obligatory reporting for large firms⁹ (Richtlinie (EU) 2022/2464, 2022) or the UN Environment – Finance Initiative that defines principles for sustainable insurance by addressing ESG risks and opportunities¹⁰ (UNEP FI, 2012). The EU framework for sustainable finance¹¹ aims to channel private investment towards a greener future through a series of regulations. These include the Taxonomy Regulation, the Sustainable Finance Disclosure Regulation (SFDR),¹² the Benchmark Regulation,¹³ the European Green Bond Regulation¹⁴ and the Corporate Sustainability Reporting Directive (CSRD).¹⁵ By setting clear criteria for sustainable investment and integrating sustainability into the financial and insurance sectors, these frameworks aim to drive a gradual shift towards a more climate-neutral industry. Going beyond theoretical definitions, they actively shape regulation, influence corporate behavior, and promote the transition to a more sustainable economy through practical steps and compliance requirements.

Despite the considerable effort that may ultimately result in the establishment of a unified standard in the foreseeable future, there are significant gaps in knowledge

³ [UNEP Principles for Sustainable Insurance](#)

⁴ [UN Global Compact](#)

⁵ [Solvency II](#)

⁶ [EU Taxonomy Navigator \(europa.eu\)](#)

⁷ [Platform on Sustainable Finance's report on social taxonomy \(europa.eu\)](#)

⁸ [EUR-Lex - 32020R0852 - EN - EUR-Lex \(europa.eu\)](#)

⁹ [CSR - Corporate Sustainability Reporting Directive \(CSRD\) \(csr-in-deutschland.de\)](#)

¹⁰ [The Principles – United Nations Environment – Finance Initiative \(unepfi.org\)](#)

¹¹ [A sustainable finance framework that works on the ground](#)

¹² [Sustainable Finance Disclosure Regulation \(SFDR\)](#)

¹³ [Benchmark Regulation](#)

¹⁴ [European Green Bond Regulation](#)

¹⁵ [Corporate Sustainability Reporting Directive \(CSRD\)](#)



about SI. These gaps include, but are not limited to, areas such as metrics, impacts, costs, accountability, monitoring, and more. There is also a significant lack of understanding of the practical aspects of implementing SI and maintaining marketability of the new products. It should be emphasized that sustainability is expected for both the production and investment components of insurance organizations. This is particularly relevant in the context of innovative insurance solutions, where products, data, and business models are identified as key categories.

Therefore, this report has been compiled to shed light on the various aspects of “sustainable insurance”, to suggest how these could be ushered into a common framework, to provide an overview about knowledge gaps and how these should be targeted or prioritized and, finally, to highlight implementation gaps and propose ideas how to overcome barriers and raise incentives.

2. Methodology

To provide a structured overview of the SI landscape, a systematic approach was employed. This involved defining key terms, identifying relevant sources, and utilizing specific search strategies to gather comprehensive and representative data on SI rules, principles, and metrics. The aim was to ensure a thorough and balanced understanding of the current state of SI, highlighting the interplay between regulatory frameworks, guiding principles, and performance measurement indicators.

2.1. Extensive web and literature search

A systematic search of peer-reviewed and grey literature (including working papers and company documentation) as well as government and international strategies was conducted as follows:

- Searched keywords included:
 - **General information about SI:** “sustainable insurance,” “green insurance,” “(sustainable) crop insurance,” “index-based insurance,” “parametric insurance,” “environmentally friendly insurance,” “sustainable finance,” “agricultural insurance,” and “nature-positive insurance.”



- **Rules:** “sustainable insurance regulations,” “ESG insurance guidelines,” “UNEP FI insurance principles.”
- **Principles:** “Principles for Sustainable Insurance,” “insurance ESG principles.”
- **Metrics:** “sustainable insurance metrics,” “ESG indicators in insurance,” “sustainability reporting in insurance,” “climate-related metrics. ”
- The search engines employed were Google Scholar, EBSCO, and ChatGPT.
- Sources referred to include those previously known to the authors and the SOTERIA team, namely UNEPFI,¹⁶ the Sendai framework for Disaster Risk Reduction,¹⁷ the Paris Climate Agreement, the UN Sustainable Development Goals, the EU (environmental) taxonomy,¹⁸ the New Common Agricultural Policy (CAP), the Sustainable Regulation Action Tracker.¹⁹
- Information provided by other SOTERIA work packages and tasks: WP1 and WP2, whose purpose is to improve the insurance coverage and climate risk management; T3.1 focusing on novel insurance solutions and optimal insurance pricing.

This report has been iteratively reviewed by SOTERIA partners to refine sources, structure and knowledge.

2.2. Structuring information and identifying gaps

The information obtained through the systematic search was structured according to the three ESG dimensions. This was helpful in recognizing gaps in knowledge and implementation.

With the support of external implementation partners, practical gaps (“banners”) and possible opportunities (“incentives”) were identified through meetings and interviews.

¹⁶ <https://www.unepfi.org/insurance/insurance/>

¹⁷ [Sendai Framework for Disaster Risk Reduction 2015-2030 | UNDRR](#)

¹⁸ <https://ec.europa.eu/sustainable-finance-taxonomy/activities/activity/241/view>

and <https://ec.europa.eu/sustainable-finance-taxonomy/taxonomy-compass/the-compass>

¹⁹ <https://www.wwf.sg/susneg/> and https://www.panda.org/wwf_news/p1834441/Sustainable-Financial-Regulations-SUSREG



External partners:

- Bulgarian insurance company DZI
- Allianz Agran
- Bayerischer Bauernverband (BBV)
- Gjensidige

End-user needs were identified based on available resources (literature, EU and government documentation, industry reports) and internally by SOTERIA partners (online and in-person meetings).

3. Results

3.1. Definition of Sustainable Insurance

A single term may have multiple definitions in different contexts, disciplines and intended uses. Legal and technical fields often develop specialised descriptions to suit their unique frameworks and operational needs, leading to various interpretations. Thus, careful clarification may be required to avoid misunderstandings and ensure accurate communication within specific areas. The aim of this report is to provide a common understanding by distilling a “core” of SI from a variety of sources, including policy frameworks, scientific literature and industry examples.

(i) *Scientific literature*

The academic literature on sustainability in the insurance sector has expanded significantly in recent years, reflecting a growing recognition of the industry's role in promoting sustainable development. Researchers have concentrated on the ways in which insurance companies can incorporate ESG principles into their operations in order to address the complex risks associated with climate change, environmental degradation, and social inequality. This body of work examines the diverse strategies and innovations employed by insurers to enhance their sustainability profiles while maintaining financial stability and profitability.



A book on sustainable consumption refers to the NATIVE project,²⁰ funded by the German Federal Environmental Foundation (DBU), as an initiative to develop a sustainability assessment plan for insurance companies (Wellbrock and Ludin, 2021). Part of the project was to provide a detailed literature-based definition of sustainable insurance. The description states that SI is broadening its regulatory framework to include economic factors (E) along with its existing focus on ESG aspects. This expansion involves integrating these ESG elements across the entire value chain and core business processes, such as strategy and risk management, operations, and asset management. As a result, the company is better positioned to fulfill its long-term commitments. The ESG dimensions are strongly reflected in the company's approach to sustainable products and services, including marketing, sales, underwriting, and claims management. For instance, the insurer communicates the importance of sustainable products and services to customers and engages employees in the sustainability transformation process. It promotes knowledge transfer, and offers sustainable, tailored risk coverage, and claims management solutions. The insurer continuously improves its sustainability efforts through specific measures, targets, and transparent, regular reporting. By acting as a role model for employees, customers and business partners, the insurer promotes industry sustainability initiatives and shares its expertise through partnerships. This approach reinforces its transformative impact on society, in line with the Paris Climate Agreement and the Sustainable Development Goals (SDGs). Advocating for a sustainable society not only supports the insurer's business foundation, but also ensures the well-being of its customers (Wellbrock and Ludin, 2021).

A thorough literature review by Barrera and Wagner (2023) analyzes 1731 academic publications and 23 studies from international and European organizations to provide a comprehensive understanding of current practices and research on ESG factors in the insurance and pension sectors. The review introduces the key objective of sustainable insurance, which is to develop products and services that effectively mitigate risks and positively influence ESG issues (Barrera and Wagner, 2023). In order to achieve this, insurance companies must prioritize the implementation of a versatile claims management strategy that encompasses all stakeholders, particularly customers, and place a strong emphasis on the disclosure of information, the reporting

²⁰ [Greensurance Stiftung NATIVE project](#)



of relevant data, accountability, and transparency. The literature shows that environmental factors dominate ESG considerations, with insurers able to influence sustainability through institutional investments. While governance issues are crucial to corporate strategy, they are less frequently addressed, possibly due to their complex nature and difficulty in measurement. The review highlights the need for detailed sustainability roadmaps and integrated guidelines, particularly in claims management, sales and marketing (Barrera and Wagner, 2023).

Another recent publication attempts to assess the current state of sustainability in the insurance industry (Eling, 2024). The purpose of this study was to develop a universal approach to examine sustainability in the insurance industry and to evaluate the inclusion of economic and technological factors to the traditional ESG aspects. These additions are critical because financial stability and technological innovation are key to achieving broader sustainability goals. The results show that the insurance industry is making progress towards sustainability by supporting and advancing goals across environmental, social, economic, and technological areas. This is evidenced by the identification of 50 unique contributions within the insurance value chain, highlighting the sector's significant potential to influence the level of sustainability (Eling, 2024).

Climate change and sustainability are certainly transforming many industries. Insurance is no exception. According to a comprehensive publication on the subject, sustainable insurance refers to an approach in which all activities within the insurance value chain are conducted in a responsible and forward-looking manner (Gaur & Bhatti, 2023). This includes identifying, assessing, managing and monitoring risks and opportunities related to ESG issues. The goal of sustainable insurance is to reduce risk, foster innovative solutions, improve business performance and contribute to environmental, social and economic security. By adopting sustainable practices, the insurance industry aims to support the development of renewable energy, clean water, food security, and disaster-resilient communities. Sustainable insurance also involves integrating ESG considerations into business operations, such as avoiding investments in projects that harm the environment and promoting those that address sustainability challenges. This comprehensive and inclusive approach helps build a stronger relationship between the insurance industry and society, placing sustainability at the heart of risk management to support long-term sustainable development (Gaur & Bhatti, 2023).



In summary, the literature on sustainable insurance reflects a shared recognition of the importance of integrating ESG principles into insurance practices, but it also reveals different approaches and focuses. While some sources emphasize a holistic, ethically driven integration of ESG factors throughout the insurance value chain, others highlight the predominance of environmental considerations and the need for better governance practices. Some suggest the inclusion of economic and technological dimensions, or to focus on the practical application of SI to improve risk management and societal resilience. These different perspectives underscore the complexity of achieving sustainability in the insurance sector and the need for a comprehensive, multi-dimensional approach.

(ii) *Policy frameworks*

A notable definition of sustainable insurance was established by the UN in the PSI.²¹ According to the PSI, sustainable insurance is described as “a strategic approach where all activities in the insurance value chain, including interactions with stakeholders, are done in a responsible and forward-looking way by identifying, assessing, managing and monitoring risks and opportunities associated with environmental, social and governance issues. Sustainable insurance aims to reduce risk, develop innovative solutions, improve business performance, and contribute to environmental, social and economic sustainability.” The four core principles of the PSI framework are: i) integrating ESG issues into decision-making, ii) engaging with clients and partners, iii) promoting public awareness and action, iv) demonstrating accountability and transparency. In the complex insurance setup, integrating ESG standards requires a thorough analysis of each aspect, which will be detailed in the subsequent sections.

The EU Taxonomy Regulation provides a classification system that establishes a list of environmentally sustainable economic activities, including guidelines for financial services such as insurance. While it does not provide a specific definition of “sustainable insurance,” it does outline criteria that insurance activities must meet to be considered environmentally sustainable. According to the EU taxonomy, sustainable insurance must make a significant contribution to one or more environmental objectives without having a negative impact on another objective (e.g. climate change mitigation or

²¹ [UNEP FI Principles for Sustainable Insurance \(PSI\)](#)



adaptation, pollution prevention, biodiversity restoration).²² To ensure coherence and broad adoption, the taxonomy is aligned with several international standards and frameworks, such as the Paris Agreement, the Sustainable Development Goals (SDGs), and the Task Force on Climate-related Financial Disclosures (TCFD).

(iii) *Insurance industry examples*

Many insurance companies are working to implement sustainable insurance practices into both their life and non-life insurance portfolios. Large corporations like Allianz Group, AXA Group, Generali, Swiss Re, Munich Re, Aviva, and Zurich Insurance Group have made efforts in this direction. Several of these companies are signatories to either UNEP FI, UN PRI, or UN PSI, reflecting their commitment to implementing sustainable practices and responsible investment practices. Direct insurers such as Gjensidige²³ in Norway, DEVK²⁴ or Vereinigte Hagelversicherung²⁵ in Germany and MAIF²⁶ in France are also moving towards more sustainable solutions. This report benefits significantly from the results of SOTERIA's deliverable D3.1 *Mapping and evaluation of best practices of insurance pricing and innovative insurance solutions*, by building on the fundamental understanding of innovative insurance solutions to close the climate protection gap. The exploration of innovative insurance mechanisms in D3.1 provides insights into how the insurance industry can adapt to increasing climate risks. In particular, the categorization and mapping of novel insurance products serves as a valuable resource. Furthermore, insights into innovation in the insurance sector feed directly into D3.3's goal of creating a more resilient and sustainable insurance landscape by suggesting ways to mitigate risk and enhance sustainability.

Allianz incorporates sustainability into its insurance operations with the objective of effectively managing risks and capitalizing on opportunities that promote sustainable development. The company's approach involves engaging with stakeholders and leveraging its expertise in risk analysis and sustainability risk management to add value.

²⁷ Furthermore, Allianz is dedicated to following the UNEP-FI PSI.

²² [EU taxonomy for sustainable activities](#)

²³ [Gjensidige](#)

²⁴ [DEVK](#)

²⁵ [Vereinigte Hagelversicherung](#)

²⁶ [MAIF](#)

²⁷ [ESG approach \(allianz.com\)](#)



Generali defines SI products as those aiming to create shared value for all stakeholders. Its insurance solutions are classified according to their social and environmental impact. Products in the social sphere concentrate on social inclusion for disadvantaged groups, encourage responsible behaviors, and supplement public health services. Those in the environmental sphere support sustainable mobility, enhance building energy efficiency, cover renewable energy production risks, address natural and climate risks, and support material recovery and recycling companies.²⁸

Swiss Re approaches sustainability by establishing an ESG risk framework.²⁹ This includes umbrella guidelines based on the principles of environmental protection, respect for human rights and good corporate governance. The company's two main sustainability goals are to advance the net-zero outcomes and to support societal resilience. Swiss Re has seven sector-specific policies that address sectors with heightened sustainability risks. These are agriculture, forestry and food; defence; hydroelectric dams; mining; nuclear non-proliferation; oil and gas; and thermal coal.³⁰

Zurich Insurance's sustainability framework is organized around three core categories: Planet, Customers and People. The focus is on achieving a smooth and rapid transition to net zero and actively contributing to the well-being of the environment and society. It also integrates ESG considerations into its underwriting and investment processes.³¹ It is a member of the Net-Zero Asset Owner Alliance (NZAOA) and, in addition to its own standards, Zurich Insurance meets the requirements of the Swiss Code of Obligations, the TCFD, the World Economic Forum (WEF) Stakeholder Capitalism Metrics and the Sustainability Accounting Standards Board (SASB).

The AXA Group's approach to sustainability concentrates on three key concerns: the protection of natural ecosystems, the reduction of climate change, and the integration of sustainable practices across the organization. A very important aspect of the company's strategy is to focus on sustainable and green investments. In addition, they

²⁸ [Generali: Insurance solutions with ESG components](#)

²⁹ [Swiss Re "umbrella guidelines"](#)

³⁰ [Swiss Re - Sustainability risk management](#)

³¹ [Zurich's Sustainability Framework](#)



have established Eligible Green, Eligible Social Categories, and Eligibility Criteria, which classify projects and their contribution to various environmental benefits and SDGs.³²

In addition, asset management at leading insurance companies incorporates ESG factors into investment decisions to promote long-term value creation and sustainability.

Allianz integrates ESG criteria into its investment strategy to achieve both financial returns and positive environmental and social impacts.³³ AXA prioritizes ESG factors in its investment processes and is dedicated to aligning its portfolio with the goals of the Paris Agreement. The company focuses on divesting from coal and investing in green assets and sustainable industries.³⁴ Zurich Insurance utilizes ESG benchmarks to inform its investment decisions and is working towards achieving carbon neutrality across its entire portfolio by 2050.³⁵ Swiss Re incorporates ESG considerations into its investment strategy to secure long-lasting risk-adjusted returns. The company's Responsible Investing approach is anchored on three main pillars: Enhancement, which involves ESG benchmarks and criteria; Inclusion, focusing on investments linked to the SDGs; and Exclusion, which consists of avoiding risks through the use of internal and external sustainability frameworks.³⁶

The approach of other companies is analogous. They define sustainable solutions as products and services that contribute to the well-being of people and the planet. The organizations address both current and future ESG challenges through improved investment strategies and innovative product offerings that support climate adaptation and resilience. However, it is often unclear whether an insurance product is truly a SI, as insurers employ different implementation strategies with varying parameters. Interestingly, a comparison of the US and European insurance sectors shows a growing understanding of environmental issues in both regions (Gatzert and Reichel, 2022). However, European insurers are generally more aware of and proactive

³² [AXA's sustainability strategy](#)

³³ [Allianz: Sustainability in asset management](#)

³⁴ [AXA: Net Zero strategy](#)

³⁵ [Zurich Insurance: Net-zero in investments](#)

³⁶ [Swiss Re: 2023 Sustainability Report](#)



in addressing climate risks. This might be largely due to stricter EU regulations requiring disclosure of sustainability levels. The study identifies key factors such as company size, market presence and regulatory pressure that influence climate risk awareness and integration into business models (Gatzert and Reichel, 2022).

a. Life insurance

Sustainable life insurance involves incorporating ESG factors into the products and services that companies offer. Allianz, AXA, Generali, and Swiss Re promote health and wellness through life insurance products that encourage policyholders to take preventive health measures. These include premium discounts for policyholders who participate in wellness programs, undergo regular health check-ups, and adopt healthier lifestyles. Additionally, AXA's green life insurance offers benefits to policyholders who reduce their carbon footprint or engage in environmentally friendly activities.³⁷ All companies have developed life insurance products that include coverage for risks associated with climate change. For example, they offer term life insurance policies that provide benefits to policyholders affected by natural disasters exacerbated by climate change.

b. Non-life insurance

Similarly, sustainable non-life insurance covers a range of products that incorporate ESG factors to promote sustainability. Insurance policies for residential and commercial properties now include coverage for environmentally friendly upgrades, energy-efficient construction, and repairs using sustainable materials. AXA³⁸ and Generali,³⁹ for example, offer advanced home insurance policies that promote the use of sustainable building materials and renewable energy systems.

For the renewable energy sector, insurance policies are specifically designed to provide coverage for projects such as solar, wind, and hydro. These policies address the specific risks associated with these technologies. Munich Re⁴⁰ and Zurich

³⁷ [AXA's green life insurance](#)

³⁸ [AXA sustainable building](#)

³⁹ [Generali green home insurance](#)

⁴⁰ [Munich Re renewable energy solutions](#)



Insurance⁴¹ offer specialized insurance products for renewable energy initiatives, covering construction, operations, and potential financial losses.

Policies tailored to electric and hybrid vehicles are also available. These often include coverage for battery life and charging equipment, and offer discounts for green driving habits. Aviva⁴² and AXA, for instance, offer insurance products designed to meet the specific needs of electric vehicle owners.

To help communities and businesses manage the risks posed by natural catastrophes (NatCat), insurers typically provide such coverage in their property insurance portfolios. Commonly covered NatCat events include: floods, droughts, wildfires, hailstorms, earthquakes, volcanic eruptions, landslides or avalanches, tornadoes, and hurricanes. Climate change insurance can encompass NatCat events as well as other climate-related risks, such as the impact of rising temperatures on agriculture, water scarcity, and prolonged changes in weather patterns. Climate change insurance solutions are designed with a broader approach that considers long-term environmental change and sustainability. They also aim to support adaptation and resilience efforts. Specific examples are described in section 3.5 of this document.

(iv) Agriculture as a case study

Agriculture is highly susceptible to climate change, natural disasters, and market fluctuations, making it essential to design insurance products that effectively address these challenges. However, the agricultural sector is complex, involving different crops, farming practices, socio-economic situations of farmers, and geographic conditions that require tailored insurance solutions. Understanding this complexity helps insurers develop more resilient and effective products, ultimately promoting sustainability and reducing the sector's vulnerability to external shocks. Parametric insurance, also known as index-based insurance, is a type of contract that pays a fixed amount based on the severity of a specific event, rather than compensating for actual losses like traditional indemnity policies.⁴³ In agriculture parametric insurance means that payouts are triggered by specific events, such as a drought due to insufficient rainfall. Policyholders receive payments when pre-defined statistical indices are met, bypassing the traditional claims process. If the index is triggered, the insurance pays out

⁴¹ [Zurich Annual Report 2022](#)

⁴² [Aviva electric vehicle insurance](#)

⁴³ [Definition of Parametric Insurance](#)



regardless of the actual loss.

Agricultural innovation, including advanced technologies such as robots, drones, and GPS systems, is enhancing productivity and sustainability in farming. These innovations allow farmers to manage resources more efficiently and improve profitability, safety and environmental impact (Kaur et al., 2023). Coupled with agricultural insurance, which provides financial protection against poor crop yields, these advances help mitigate risk and support farmers' economic stability. The use of innovative technologies and agricultural insurance is crucial for climate change adaptation, poverty reduction and food security. Effective agricultural strategies require coherent research, public-private partnerships and well-designed disaster resilience frameworks to ensure sustainable development and stable livelihoods for rural communities (Kaur et al., 2023).

3.2. Core components of SI

Clear sustainability criteria are essential benchmarks for rating the ESG performance of organisations and their products. These criteria guide investors, stakeholders, and policymakers in evaluating the impact of their practices. The PSI provides an overview of the essential elements of SI. However, it is important to recognize the role of other frameworks in the development of sustainable insurance solutions.

3.2.1. Principles and sustainability criteria

The Principles for Responsible Investment (PRI)⁴⁴ provide a framework for integrating ESG factors into investment practices, with the aim of promoting a more sustainable global financial system. Developed by investors under the patronage of the UN, the six Principles guide participants (signatories) in integrating ESG considerations into their decision-making processes, ownership policies and disclosures. Signatories commit to actions such as promoting ESG transparency, working together to improve implementation, and reporting on their progress. The core components of the PRI framework, when applied to the insurance sector, provide a robust foundation for better insurance practices. By adopting these principles, insurers can align their operations with broader sustainability goals, and ultimately enhance long-term value for

⁴⁴ [The Principles for Responsible Investment](#)



both their clients and shareholders.

The TCFD Recommendations⁴⁵, have become the leading standard for companies reporting on climate change-related activities. A TCFD-compliant report should address four key areas: i) governance, ii) strategy, iii) risk management, and iv) metrics and targets. These areas build on each other and reflect how businesses develop and monitor their climate strategies. The 11 specific reporting recommendations are designed to help companies disclose clear, comparable, and consistent information that all stakeholders can use to assess the financial impact of climate change on organizations. The TCFD recommendations advance sustainable insurance by encouraging the consideration of climate-related risks into key aspects of the insurance industry. For example, SI practices require insurers to consider climate-related risks in their underwriting decisions, which is supported by the TCFD's recommendations on disclosure and management of these risks. The TCFD framework provides a standardized approach to disclosure of climate-related information, which is essential for transparency in SI. It allows companies to demonstrate their commitment to managing climate-related risks and opportunities and to provide consistent and comparable information to stakeholders. This framework also supports the development of insurance products that promote environmental responsibility, ultimately contributing to a more resilient and sustainable financial system.

The Morgan Stanley Capital International (MSCI) ESG pillars⁴⁶ are important in assessing a company's sustainability and ethical impact. Insurers using MSCI ESG metrics can better assess potential risks, design products that support sustainable development, and promote responsible business practices. The Environmental Pillar focuses on managing risks related to climate change, resource efficiency, and pollution. For SI, it's important to develop products that address environmental issues. The Social Pillar covers labor practices, community impacts and data security. It is relevant to ensuring fair, ethical insurance products and expanding access to underserved groups. The Governance Pillar includes corporate transparency, board effectiveness, and ethical management. These issues are critical to maintaining trust, accountability, and stability in the insurance operations.

Table 1. MSCI Environmental Pillar Score.

⁴⁵ [TCFD Recommendations](#)

⁴⁶ [MSCI Pillars](#)



Environmental Pillar			
Climate Change	Natural Capital	Pollution & Waste	Env. Opportunities
Carbon emissions	Water stress	Toxic emissions & waste	Green building
Product carbon footprint	Biodiversity & land use	Packaging material & waste	Renewable energy
Climate change vulnerability	Raw material sourcing	Electronic Waste	Clean tech
Financing Environmental Impact			

Source: ESG Ratings Key Issue Framework⁴⁷

Sustainability frameworks share several core components, but they also differ in a number of ways. A common focus of these frameworks is an emphasis on ESG factors and alignment with international sustainability goals. They prioritize risk management, transparency, and stakeholder engagement. Additionally, all of them promote active dialogue between investors, companies, governments, and communities to promote sustainable practices. However, there is a difference in scope and specificity. The PRI provides broad principles for responsible investing, while the MSCI Pillars provide specific metrics for assessing companies' ESG performance. These frameworks also differ in their focus. The TCFD focuses primarily on climate-related disclosures, particularly the financial risks associated with climate change, while the MSCI ESG Pillars and PRI address a broader range of ESG issues.

3.2.2. How sustainable insurance contributes to the Sustainable Development Goals (SDGs)

SI is a vital tool for advancing the UN SDGs⁴⁸. Its importance can be determined by

⁴⁷ [MSCI ESG Ratings Key Issue Framework](#)

⁴⁸ [Sustainable Development Goals](#)



assessing how directly core insurance activities contribute to specific SDGs. SI plays a primary role in achieving the following goals:

SDG 1: No Poverty: financial protection and stability, reduced vulnerability to economic shocks.

SDG 2: Zero Hunger: agricultural resilience and food security.

SDG 3: Good Health and Well-Being: promoting a healthy lifestyle.

SDG5: Gender Equality: inclusive policies and protection against gender-based economic disproportions.

SDG 8: Decent Work and Economic Growth: stable economic environment favouring growth.

SDG 13: Climate Action: initiatives aimed at mitigating and adapting to climate change.

At a secondary level, SI also contributes to:

SDG 4: Quality Education: supporting educational programs through funding and risk coverage.

SDG 9: Industry, Innovation, and Infrastructure: encouraging novel and sustainable practices.

SDG 10: Reduced Inequalities: inclusive policies that minimise economic imbalances.

SDG 11: Sustainable Cities and Communities: building resilient and sustainable urban areas.

SDG 17: Partnerships for the Goals: collaborations that advance sustainable development.

3.3. Possible benefits of SI

Sustainable insurance can benefit four parties: the insured person or property, the insurance provider, society and nature. Considering all dimensions of sustainability (environmental, economic and social), the potential advantages include the following list. Whether any of these is truly materialized needs to be evaluated case-by-case for each particular insurance design.

For the insured:



- **Risk reduction:** Improved protection against environmental risks such as natural disasters and climate change.⁴⁹ (Insurance Europe, 2023)
- **Cost savings:** Lower premiums and incentives to adopt sustainable practices, resulting in long-term savings. (Insurance Europe, 2023)
- **Climate protection:** Providing partial coverage for currently uninsurable or uninsured climate-related catastrophes, helping to close the protection gap.⁵⁰ (European Central Bank & European Insurance and Occupational Pensions Authority, 2023)
- **Resilience:** Enhanced adaptability, productivity, and returns when implemented correctly, but caution is advised to avoid unintended maladaptive consequences.⁵¹ (International Fund for Agricultural Development, 2023; Müller et al., 2017)
- **Compensation and recovery financing:** Risk transfer is more cost-effective for resilience than post-disaster relief. Climate insurance supports recovery with parametric solutions and nature-based approaches, and directly helps policyholders with financial compensation and reconstruction assistance. (Schwarze R. et al., 2024, forthcoming)

For the insurance provider:

- **Stakeholder value creation:** Incorporating ESG aspects into core business processes enhances the stakeholder value of corporate social responsibility (CSR) investments, according to emerging guidance on the PSI in the insurance industry.⁵² (Nogueira et al., 2018)
- **Capitalizing on market prospects:** Adapting business models to meet the demands of sustainability positions early movers to take advantage of key market opportunities.⁵³ (Stricker et al., 2022)

⁴⁹ [Insurance Europe response to ECB-EIOPA paper on climate insurance protection gap Policy options to reduce the climate insurance protection gap \(europa.eu\)](#)

⁵⁰ [Policy options to reduce the climate insurance protection gap \(europa.eu\)](#)
[The climate insurance protection gap \(europa.eu\)](#)

⁵¹ [INSURED RESULTS 2023 \(ifad.org\)](#)

[Maladaptive outcomes of climate insurance in agriculture - ScienceDirect](#)

⁵² [Sustainable Insurance Assessment: Towards an Integrative Model | SpringerLink](#)

⁵³ [JRFM | Free Full-Text | Green Insurance: A Roadmap for Executive Management \(mdpi.com\)](#)



- **Credibility establishment:** Building reputation and brand worth through true sustainability practices while mitigating the negative image associated with greenwashing.⁵⁴ (WWF, 2022)
- **Market differentiation:** Attracting customers who prioritise sustainability, gaining competitive advantage.⁵⁵
- **Innovation:** Development of novel products and services in response to new market needs.⁵⁶

For society:

- **Lower external costs:** Risk-mitigating behavior by policyholders and insurance companies can reduce external expenses typically borne by society.
- **Reduce investment risk:** Transferring investment risks boosts private climate funding and de-risks nature-based infrastructure projects in cities. (Schwarze R. et al., 2024, forthcoming)
- **Social inclusion:** Improved social and financial inclusion of underserved populations and the protection of human rights.⁵⁷
- **Community Resilience:** Support for community initiatives that build resistance to environmental and social challenges.
- **Ethical investment:** Avoidance of controversial business activities such as weapons, gambling, tobacco and alcohol.⁵⁸
- **Sustainable investments:** Increase institutional investment in sustainable financial assets and activities, such as renewable energy ⁵⁹ (Global Sustainable Investment Alliance, 2022)

For nature:

⁵⁴ [WWF Singapore SUSREG | News & Reports](#)

⁵⁵ [How ESG Benefits a Company's Reputation And Brand Image?](#)

⁵⁶ [UNEP FI The global state of sustainable insurance](#)

⁵⁷ [The Role of Insurance in Promoting Social Sustainability](#)

⁵⁸ [Responsible investment screening](#)

⁵⁹ [GSIR_Review2018.3.28.pdf \(gsi-alliance.org\)](#)



- **Promote sustainable practices:** Promoting environmentally friendly business strategies ⁶⁰ (Wei et al., 2021).
- **Climate change mitigation:** Contribution to the reduction of the effects of climate change (Gaur & Bhatti, 2023).
- **Reduction of chemical use:** Lower pesticide application through sustainable agricultural insurance ⁶¹ (Zhichkin et al., 2023).
- **Positive climate impact:** Climate benefits from integrating ESG issues into insurance company strategies ⁶² (Gaur & Bhatti, 2023)
- **Environmental protection:** Incentivizing practices that reduce environmental impact, such as renewable energy and conservation efforts. (Gaur & Bhatti, 2023)
- **Resource efficiency:** Encouraging the sensible use of resources, reducing waste and pollution.
- **Rethinking Human-Nature Relationships:** changing the way how people perceive and interact with the environment, supporting biodiversity, and protecting ecosystems.

3.4. Metrics for sustainable and environmentally friendly insurance

An attempt to link insurance products to the SDGs and establish an impact assessment framework was made in 2020, when UNEP FI launched the insurance SDGs (iSDGs). Motivated by this, the Swiss Re Institute, in collaboration with the International Cooperative and Mutual Insurance Federation (ICMIF) and other industry stakeholders, created a set of iSDG indicators to measure the sustainability level of the insurance sector. This resulted in the launch of the Insurance SDG Calculator, which enables insurers to calculate iSDG scores from their business data. ICMIF members tested this tool and generated anonymised and aggregated iSDG scores to establish the ICMIF

⁶⁰ [Sustainability | Free Full-Text | Can Crop Insurance Encourage Farmers to Adopt Environmentally Friendly Agricultural Technology—The Evidence from Shandong Province in China \(mdpi.com\)](#)

⁶¹ [Agriculture | Free Full-Text | Agricultural Insurance, Risk Management and Sustainable Development \(mdpi.com\)](#)

⁶² [Contribution of the Insurance Sector in Sustaining the Climate - The Impact of Climate Change and Sustainability Standards on the Insurance Market - Wiley Online Library](#)



Insurance SDG Baseline. However, further research and access to detailed data is needed to improve the metrics and scoring systems. Swiss Re's SDG Analytics uses these methodologies to help insurers assess and plan their sustainability impacts.⁶³

Additionally, the TCFD has outlined several relevant climate-related metrics.⁶⁴ Here are the main categories and their significance:

1. **Greenhouse Gas (GHG) Emissions:** Disclosure of GHG emissions helps stakeholders understand the organization's exposure to climate-related risks and opportunities, and how these emissions affect policy, regulatory, market, and technological responses to climate change.
2. **Transition Risks:** Disclosing an organization's assets and how its business may be affected by climate change helps users understand potential financial risks.
3. **Physical Risks:** Sharing an organization's assets and operations that are vulnerable to climate-related risks helps users understand potential financial exposure. This includes issues such as asset impairment, the value of assets and liabilities, and business interruption costs.
4. **Climate-Related Opportunities:** Presenting how much revenue, assets, or business is linked to climate change helps users understand how organizations compare to others and what the future might look like.
5. **Capital Deployment:** The investment of assets by non-financial companies and the financing of this investment by financial corporations can affect the value of a business in the long run.
6. **Internal Carbon Prices:** Internal carbon prices help users assess how well an organisation is managing climate risks. Disclosing these prices allows users to see which companies are vulnerable to future climate policies and which are adapting to change.
7. **Remuneration:** Effective compensation policies enable organizations to achieve strategic goals and provide access to information about the organization's governance and approach to climate-related aspects.

These metric categories are part of a broader effort to standardize climate-related financial disclosures. The TCFD's guidance aims to make it easier for companies to

⁶³ [UNEP FI insurance SDGs \(iSDGs\)](#)

⁶⁴ [TCFD Climate-related metrics](#)



provide consistent and comparable information that all stakeholders can use to make informed decisions.

In a recent publication, MSCI presented a comprehensive list of all mandatory and voluntary ESG metrics, along with a number of additional ESG metrics.⁶⁵ The goal is to improve transparency, encourage responsible investing, and advance sustainable business practices, which will contribute to a more resilient and equitable global economy. Mandatory indices are divided into two sub-groups: 1) equity and corporate bond indexes, and 2) sovereign bond indexes. The metrics collected in this document touch on topics such as i) gender diversity and equality, ii) corruption, iii) controversial weapons, iv) degree of decarbonization, v) human rights policy, vi) social violations, and vii) green solutions. Voluntary metrics, on the other hand, focus on ESG pillars and scores.

3.5. Status of SI implementation

The implementation of sustainable practices has become increasingly crucial in addressing current environmental and social challenges. In response, the insurance industry is transitioning toward more sustainable models. This shift reflects a broader commitment to sustainability, yet much work remains to refine the solutions needed for success.

a) General practices

Allianz integrates sustainability components into its insurance offers through a variety of products. They focus on climate resilience and green solutions, providing products such as green building insurance, electric vehicle coverage, renewable energy project insurance and disaster recovery policies.⁶⁶

Zurich Insurance Group has also developed a range of sustainability-focused insurance products. These provide coverage for renewable energy projects, such as wind and solar farms. Zurich Insurance is also involved in initiatives to reduce environmental impact and promote sustainable business practices among their clients.⁶⁷

AXA offers green insurance products that support the transition to a low-carbon

⁶⁵ [MSCI INDEX ESG Metrics Calculation Methodology from May 2024](#)

⁶⁶ [Allianz Group Sustainability Report](#)

⁶⁷ [Zurich Insurance Group Sustainability Report](#)



economy, including coverage for electric vehicles and eco-friendly building insurance. AXA is also determined to distancing itself from industries that are not in line with its sustainability goals, such as the coal industry.⁶⁸

Specific success rates for individual sustainable insurance products offered by companies are not always publicly disclosed in detail. Getting precise metrics of success typically requires access to detailed internal reports or industry analyses that specifically evaluate the performance of sustainable insurance products in terms of profitability, risk reduction, and environmental impact. However, the growing emphasis on sustainable solutions suggests that all stakeholders recognize the value of these products. The information collected in Table 2 shows how different insurance companies define SI. Although the initial idea and understanding of the terms seem similar, there are noticeable discrepancies in core aspects of the SI characterisation. Therefore, using common terminology in the context of sustainable insurance would be beneficial.

It is also worth mentioning the importance of Public-Private Partnerships (PPPs) between insurance companies and public authorities to facilitate effective risk management and disaster preparedness. In Norway, the Knowledge Bank (Kunnskapsbanken)⁶⁹ of the Directorate for Civil Protection and Emergency Planning (DSB) is an example of such collaboration, providing valuable data and resources to improve societal safety. Similarly, in France, the French Association for Natural Disaster Risk Reduction (AFPCN)⁷⁰ highlights a collaborative framework that promotes information sharing and strategic planning. These platforms underscore the importance of integrating public and private sector efforts to strengthen community resilience and mitigate the impact of natural disasters.

⁶⁸ [AXA GROUP 2022 Climate and Biodiversity Report](#)

⁶⁹ [Knowledge Bank \(Kunnskapsbanken\)](#)

⁷⁰ [French Association for Natural Disaster Risk Reduction \(AFPCN\)](#)

Table 2: Examples of SI products and their components.

Organisation	SI solutions	Related standards	Ecological aspects	Economic aspects	Social aspects	Lacking components	Source
Allianz	Provide “sustainable insurance solutions”, fulfil regulatory requirements (EU Taxonomy), achieve strong sustainability position (in DJSI, MSCI), ensure sustainable solutions in proprietary investments and products	EU Taxonomy, UNEP FI, PSI	Climate change mitigation + adaptation, sustainable use/protection of water, transition to circular economy, pollution prevention and control, protection and restoration of biodiversity/ecosystems	Sustainable investments	Encourage and expand access to insurance and services for helpers, foster socially responsible behavior/ engagement, reaching underinsured customers	Crop insurance available, but not classified as “sustainable insurance solution”	Allianz Sustainability Integration Framework July 2023 (p. 36) Sustainability Report 2023 Allianz Group (p. 24 – 30)
AXA	Provide P&C (property-casualty) products (insurance coverage or services) contributing to ecological aspects (AXA Green Business Programm, green insurance products), increase premiums on green insurance products	EU Taxonomy, UNEP FI, PSI	Contribute to at least one of the following: Climate change mitigation or adaptation, transition to circular economy, limitation of biodiversity loss and pollution	Sustainable investments	Only in asset management	NA	AXA Climate and Biodiversity Report 2022 (p. 37 – 38) AXA Green Business Program 2022

							(p. 2 – 3)
Zurich Insurance	Provide “sustainable solutions” for customers in mobility, green behavior, energy, infrastructure	SASB, EU Taxonomy is NOT mentioned	Climate change mitigation and adaptation or providing meaningful support to sustainability values, mitigation of environmental risk, incentivizing sustainable behavior or enhancing social inclusion	Investments products with a focus on sustainability both specific, and not-specific, to environmental and social aspects	Enhancing the social or financial inclusion of socially disadvantaged people, incentivize healthy lifestyles and safe behavior	Crop insurance only in USA	Zurich Insurance - Annual Report 2022 (p. 170 – 180) Delivering an ambitious ESG strategy at Zurich, 2021 (p. 16)
Generali Group	Provide “insurance solutions with ESG components”	EU Taxonomy	Combat global warming and adapt to climate change; reduce resource use and support the circular economy; protect biodiversity and prevent pollution; aim for climate neutrality in operations	Gradual decarbonization of investments; increased green and sustainable investments; researching best practices for renewable energy risk underwriting	Offer inclusive insurance solutions; promote health and well-being; foster a culture of diversity, equity, and inclusion; ensure the protection of customers, employees, and partner data	NA	Sustainability in Generali

*b) Agricultural insurance*

Practical implementations of sustainable insurance have been limited and often face significant challenges. However, there are companies that have attempted to create parametric insurance products for farmers. The following overview is non-exhaustive, but sufficient to illustrate these first attempts.

Allianz Agrar offers specialized insurance products to protect crops from extreme weather events such as storms, heavy rain, and frost. A notable example is the parametric drought insurance, which was designed to provide financial protection against drought conditions. These products provide farmers with financial compensation based on pre-defined weather triggers, measured by the German Weather Service (DWD) stations. For instance, if the rainfall amount during the growing season falls below a critical threshold (in 2022, the precipitation limit was 153.9 mm.), the policy will pay out. While the insurance products offered by Allianz Agrar provide critical support, challenges remain. These include the availability and suitability of data, the complexity of setting accurate weather thresholds, and ensuring that farmers fully understand and effectively use the policies.⁷¹

In addition, the company Vereinigte Hagelversicherung also offers index-based insurance coverage in the event of drought.⁷² The FarmlIndex Drought product line provides automatic compensation if the established thresholds are met, eliminating the need for an on-site assessment of the damaged field to determine eligibility for payment. There are two versions of the drought insurance product FarmlIndex Drought E and FarmlIndex Drought N. FarmlIndex Drought E insures against drought by assessing regional yield loss based on factors such as precipitation, temperature, and soil conditions. Compensation depends on regional yield and is paid after the data is published, with possible advance payments for severe damage. Insurable crops include cereals, corn, oilseeds, and beets. FarmlIndex Drought N provides drought insurance based on local precipitation totals. It ensures fast, agreed-upon, flat-rate payouts, regardless of other yield factors.

AgniSomp, a global agricultural platform, offers parametric weather risk management solutions through its WeatherLock® suite. The products use local data and provide single weather trigger protection with fixed payouts, covering conditions from frost to

⁷¹ [Allianz Agrar parametric drought insurance](#)

⁷² [Vereinigte Hagelversicherung: The FarmlIndex Drought](#)



rainfall variability. For instance, the company works closely with farmers to create a customized policy that takes into account their specific growing conditions, financial factors and risk exposure. This policy is linked to an accumulation of "key rainfall," calibrated at 50% of the typical historical rainfall average. Additionally, it includes a daily rainfall limit of one inch to mitigate the impact of heavy storm runoff on the index. Such adjustments enable farmers to effectively mitigate the risks associated with variable rainfall patterns and protect their crop yields. Despite the high potential, the challenges presented by this solution echo those encountered by Allianz Agrar, including the complexity of these products, the need for farmers to fully understand and the effective management of these customized solutions.⁷³

Germany-based company gvf VersicherungsMakler offers individual index insurance policies that give farmers the flexibility to choose the coverage that best suits their needs and crops.⁷⁴ Their portfolio includes options for protection against drought, wetness, frost, cold and heat. The insurance provides compensation based on an index, using data from the DWD for the specific location.

Swiss Re has partnered with "VanderSat" to design an efficient soil moisture deficit index insurance policy.⁷⁵ This solution provides compensation when soil moisture falls below a specified threshold. An important feature of using the opti-crop index tracker tool is that farmers and insurers are always up to date. They receive daily updates on soil moisture conditions and notifications of insurance payouts. In addition, Swiss Re's soil moisture deficit index insurance is accessible globally. Swiss Re has also developed a product for insurers operating in the agricultural sector. Agro Suite⁷⁶ is a customisable insurance solution designed to offer scalable, affordable products that combine indemnity and parametric insurance solutions. Agro Suite provides real-time reporting, pricing, portfolio and claims management, and policy administration. It improves risk management through tools such as up-to-date crop health reports, weather data, and soil moisture measurements, helping insurers make better underwriting decisions and enhancing operational efficiency. The Suite also builds trust with farmers through transparent and innovative products, reducing information asymmetry and boosting the attractiveness of parametric insurance.

⁷³ [AgriSompo's weather protection products](#)

⁷⁴ [gvf agrar VersicherungsMakler - individual index insurance policies](#)

⁷⁵ [Swiss Re and VanderSat - soil moisture deficit index insurance policy](#)

⁷⁶ [Swiss Re - Agro Suite](#)



Munich Re offers a range of agricultural insurance solutions tailored to different needs.⁷⁷ Weather index insurance helps manage weather-related risks by providing fast payouts triggered by specific weather events, making it easy to understand and customizable. Yield index insurance covers the risk of crop failure, with immediate payouts if yields fall below an agreed level, using precise digital tools including modeling, data analysis, and remote sensing. Other parametric policies use satellite data, such as vegetation indices, to estimate crop biomass and assess agricultural risks. In addition, Munich Re offers solutions for smallholder farmers, supported by international providers and development banks, that use digitalization and big data to manage climate risks and contribute financially to insurance premiums.

Another portfolio of parametric insurance products is offered by the French company Descartes.⁷⁸ Insuring against drought, hail, excessive rainfall, frost or crop loss follows four simple steps: assess, customize, monitor and payout. Depending on the risk, specific data is evaluated and a customized product is designed. After the policy is issued, the relevant parameter is tracked at the insured location during the risk period to detect qualifying events. Finally, customers receive payouts within days of reporting a claim, ensuring financial support for the next season.

Croatia Osiguranje offers crop and plantation insurance to protect agricultural businesses from production losses and natural disasters.⁷⁹ Coverage includes damage from hail, fire, lightning, and reductions in yield for crops like wheat, barley, and corn. Advanced satellite technology measures soil moisture, enabling automatic drought damage payouts. Farmers can receive financial support covering up to 70% of the premium. Additional protection is available for drought, windstorm, frost, saltwater and flooding.

The provided examples demonstrate the initiatives that insurance companies are taking to integrate sustainable insurance solutions into the agricultural sector. However, they also highlight the need for simpler and more user-friendly solutions to achieve wider acceptance and success in sustainable insurance initiatives.

⁷⁷ [Munich Re - Weather index insurance, Yield index insurance and further parametric insurance solutions](#)

⁷⁸ [Descartes - portfolio of parametric insurance products](#)

⁷⁹ [Croatia Osiguranje offers crop and plantation insurance](#)



3.6. The challenges of agricultural insurance

The introduction of SI in the agricultural sector aims to increase resilience to climate risks, but it also has potential social and environmental side-effects that require careful consideration. Socially, while such insurance schemes can provide financial stability for farmers, they may inadvertently perpetuate social inequalities. For example, small-scale farmers may find it difficult to afford premiums or meet payout criteria, potentially widening the gap between small and large farms (Dhillon and Moncur, 2023). From an environmental perspective, SI can influence land use decisions, sometimes encouraging practices that are not environmentally friendly. Poorly designed climate insurance schemes can lead to maladaptive outcomes, such as encouraging agricultural intensification that destroys ecosystems and reduces biodiversity. Furthermore, reliance on insurance can create a false sense of security, leading farmers to adopt riskier agricultural practices that increase their vulnerability to climate change in the long term (Müller, Johnson, and Kreuer, 2017). Evidence from China's policy-based agricultural insurance pilot shows that insured farmers, feeling financially secure, tend to over-apply fertilizer to maximize yields. This behavior is driven by moral hazard, where the safety net of insurance encourages riskier farming practices, resulting in higher pollution (Niu, Yi, and Chen, 2022). Therefore, to minimise these risks, insurance solutions need to be designed with a holistic view of social and ecological connections and tailored to local contexts, ensuring that they support sustainable agricultural practices and fair access for all farmers.

3.7. Gaps and barriers to effective SI implementation

The ubiquitous emphasis on sustainability has certainly contributed to a growing understanding of the importance of the issue. However, there are still significant gaps in the knowledge and implementation of sustainable products. These gaps disturb the effective adaptation and integration of sustainable practices, thereby limiting the potential impact of SI. Identifying these obstacles highlights the existing deficiencies in knowledge and practice, providing a foundation for more robust and comprehensive sustainable insurance strategies.

Mentioned gaps are multidimensional and exist across different groups, including insurers, policyholders, and society. Each of these groups faces unique challenges and barriers that need to be addressed in order to effectively advance SI.



Insurers

Insurers often lack the comprehensive models and indicators needed to accurately measure, track and monitor sustainability impacts over time. The absence of standardised tools and consistent data sharing mechanisms hinders the development of robust sustainability strategies. The following factors are also often discussed as part of their challenges:

- Metrics and monitoring
- Competing approaches and principles
- Regulatory and data challenges
- Market situation and implementation status

Insured People and Society

For insured individuals and society, the knowledge gaps often relate to the understanding and appreciation of SI principles. Many policyholders are unaware of how sustainable insurance products can benefit them and the environment. These obstacles include:⁸⁰

- Emphasis on premium cost rather than overall value, which makes coverage seem unaffordable
- Unclear terms and conditions
- Past negative experiences with claims
- Misconceptions about the risk of natural catastrophes
- High expectations of government assistance in the event of a natural disaster
- The belief that buying insurance is complicated and time-extensive.

WWF's 2022 Sustainable Financial Regulations and Central Bank Activities (SUSREG) Annual Report provides an evaluation of sustainable financial regulations and central bank activities in 44 regions representing a significant share of global GDP and GHGs emissions. Key findings show progress in some areas, but also highlight some important gaps in the insurance sector.⁸¹

⁸⁰ [New EIOPA research probes reasons behind consumers' reluctance to taking out natural catastrophe insurance](#)

⁸¹ [WWF's 2022 SUSREG Annual Report](#)



Some of them include:

- **Lack of integration of nature-related risks:** Regulatory expectations to integrate nature-related risks, such as deforestation, into insurers' decision-making and risk management processes are rare.
- **Inadequate climate targets:** The integration of science-based climate targets into regulatory expectations remains unusual.
- **Poor natural catastrophe readiness:** It is uncommon for insurers to have a clear, concrete response strategy for additional losses from natural catastrophes, although the EU Taxonomy Regulation indirectly encourages this.
- **Insufficient E&S integration into ERM:** Insurers are not always expected to integrate environmental and social (E&S) considerations into their Enterprise Risk Management (ERM) frameworks.
- **Overlooked role of reinsurers:** The critical role of reinsurers in addressing systemic E&S risks is largely unrecognized.
- **Greenwashing risks:** issues with greenwashing are not widely discussed and generally not extended to traditional insurance products.
- **Restricted exposure limits:** The introduction of exposure limits for high-risk activities to prevent E&S-related systemic hazards is rare.
- **Rare compulsory insurance mandates:** Although climate-related natural disasters are becoming more frequent, policies requiring coverage for E&S risks are still rare.
- **Lack of public-private partnerships (PPPs):** The occasional existence of PPPs to support insurance for E&S risks highlights the need for increased cooperation to effectively address these issues.

3.8. Recommendations & Schemes

Based on the findings presented in this report, the following recommendations are made to improve the understanding and application of SI.

a) General

For scientific research

- i. **Reduce Knowledge Gaps:** The gaps identified in this report include: quantifying the impact of climate change on insurance risks; developing comprehensive climate risk models for insurance; assessing the effectiveness of sustainable



insurance products; understanding policyholder responses to sustainability incentives; assessing the long-term financial viability of sustainable insurance; studying PPPs for climate resilience. Addressing these gaps requires a multidisciplinary approach involving advanced methods, comprehensive data collection, targeted experimentation, and collaboration among key stakeholders such as insurers, policymakers, and academic institutions.

For practical implementation

- i. **Create trusted certificates:** Develop and implement reliable certification schemes based on Measurement, Reporting, and Verification (MRV) criteria to ensure transparency and credibility in SI products.
- ii. **Risk mitigation and adaptation components:** Ensure that SI products incorporate specific elements to effectively mitigate environmental and climate risks; SI products may also encourage policyholders to implement adaptation measures to be more resilient.
- iii. **Prioritize practical criteria:** Focus on meeting the most essential criteria first, rather than trying to meet all sustainability requirements simultaneously, allowing for more manageable and gradual improvements.
- iv. **Simplify products:** Avoid overly complex SI products that may deter potential buyers; simplicity is key to widespread adoption.
- v. **Lean on existing definitions:** Use existing definitions and frameworks, such as the EU taxonomy and ESG criteria, to reduce confusion and streamline SI product development.
- vi. **Expand PPPs:** Encourage the creation of new PPPs, such as the development of SOTERIA's Bavarian model, which can inspire similar initiatives.

For policy making

- i. **Create and support standards and certificates for SI:** Policymakers should facilitate the creation and support of standards and certification schemes for SI to promote consistency, reliability and trust in the market.
- ii. **Loss data sharing:** Encouraging the sharing of loss data among insurers and stakeholders is essential for developing more accurate risk assessments and tailored SI products.
- iii. **Comprehensive consideration of insurance products:** Ensure that all aspects of an insurance product and its lifecycle are considered to create robust and effective SI offerings. Some of these aspects include: risk assessment and



underwriting, product design and development, policyholder education and engagement, claims management, reinsurance and risk transfer, regulatory compliance, performance monitoring and reporting, stakeholder collaboration, innovation and technology integration, and lifecycle analysis.

- iv. **Define standards for different levels of sustainability:** Establish clear and universally accepted standards for various levels of sustainability to guide the development and evaluation of SI products.

b) Agriculture

SI in agriculture can be particularly complex due to the involvement of more actors than a traditional insurance product. Figure 1 illustrates the relationships in the use case of an index-based and sustainable drought insurance for cereals in Europe. The SI component is achieved by implementing various benchmarks for all stakeholders involved, including specific management requirements for farmers and asset restrictions for insurers. This approach is inherently more intertwined, as sustainability criteria must be clearly defined, integrated into contracts, and independently monitored to ensure compliance and effectiveness. The pyramid in the bottom left of Figure 1 represents a sustainability rating system. This scheme allows stakeholders to gain more points for meeting additional criteria, thereby achieving a higher, and more marketable, level of sustainability. All criteria within this scheme need to be measurable, reportable, and verifiable. This means that they must be clearly defined and capable of being independently assessed and certified, thus ensuring the transparency and reliability of the SI product.

SI transforms traditional risk management by adopting a perspective that focuses on long-term outcomes rather than short-term solutions. This shift requires dynamic SI strategies that can adapt to dynamically changing circumstances. According to Scordis (Scordis et al. 2014) in "Principles for Sustainable Insurance: Risk Management and Value," meticulously designed SI product could not only manage negative factors, but also finance macroeconomic risks, providing stability and resistance in the face of global challenges.



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Figure 1: Scheme of a sustainable index-based drought insurance for cereals in Europe. There are many more actors, relations and constraints than in the "classical" insurance setup





4. Conclusions

This report highlights the growing importance of SI in the insurance industry, driven by rising customer expectations, regulatory demands, and the need for environmentally and socially responsible practices. It shows that while significant progress has been made in integrating ESG principles into insurance, the concept of SI is still evolving. Current efforts by regulatory bodies and industry leaders have established a solid foundation, but challenges remain, particularly in establishing common standards and understanding the practical aspects of SI implementation.

A key takeaway is that integrating ESG factors not only improves business performance, but also plays a critical role in mitigating risk and contributing to sustainability goals. To facilitate the industry's transition to sustainability, it is essential to adopt a systematic approach to address knowledge gaps, standardize metrics, and create comprehensive guidelines. Insurers continue to develop innovative solutions that align with these principles, but there is a need for further collaboration and clarity.

This report has provided an assessment of the current state of sustainable insurance, mapping out existing frameworks, principles, and metrics while identifying significant knowledge and implementation gaps. To move forward, the industry must focus on creating a coherent and unified approach to sustainable insurance that effectively integrates ESG considerations into all aspects of the insurance value chain. By addressing these challenges, the industry can better navigate the evolving landscape and ultimately contribute to a more resilient and sustainable future for both businesses and society.



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