SUSTAINABLE INSURANCE

KPMG Advisory S.p.A. and KPMG S.p.A.

INTRODUCTION

by Corrado Avesani and Lisa Sparapan

> *In recent years, the issue of sustainability has gained prominence on the global stage, both as a result of the economic impact of climate change, which requires timely consideration and definition of tangible responses, and given the extraordinary opportunities for transformation and innovation that sustainability offer in terms of revisiting consumer preferences and improving production processes.*

Environmental, social and governance (ESG) factors present the issues (or risk factors) that can affect the economic system's sustainable development:

- environmental factors (“E”) relate to the lack of oversight of climate and environmental risks and/or environmental violations. In addition to creating a liability for a company, failure to manage these risks can give rise to sanctions and/or significant costs to remedy the resulting environmental damage;
- social factors (“S”) relate to the protection (or violation) of human and labour rights that affect a company's reputation and reliability as perceived by all its stakeholders (including investors). Reputation impairment can lead to product boycotts, difficulties in raising funds, fines/sanctions and reduced opportunities to do business with third parties (e.g., suppliers, business partners, etc.);
- governance factors (“G”) relate to corporate governance violations with a transversal impact, including with respect to the previous two factors. Well-designed corporate governance frameworks (e.g., remuneration, working of the board of directors, internal policies, etc.) can prevent or limit the violations linked to environmental and social factors and the associated ethical, legal and business risks that affect a company's performance.

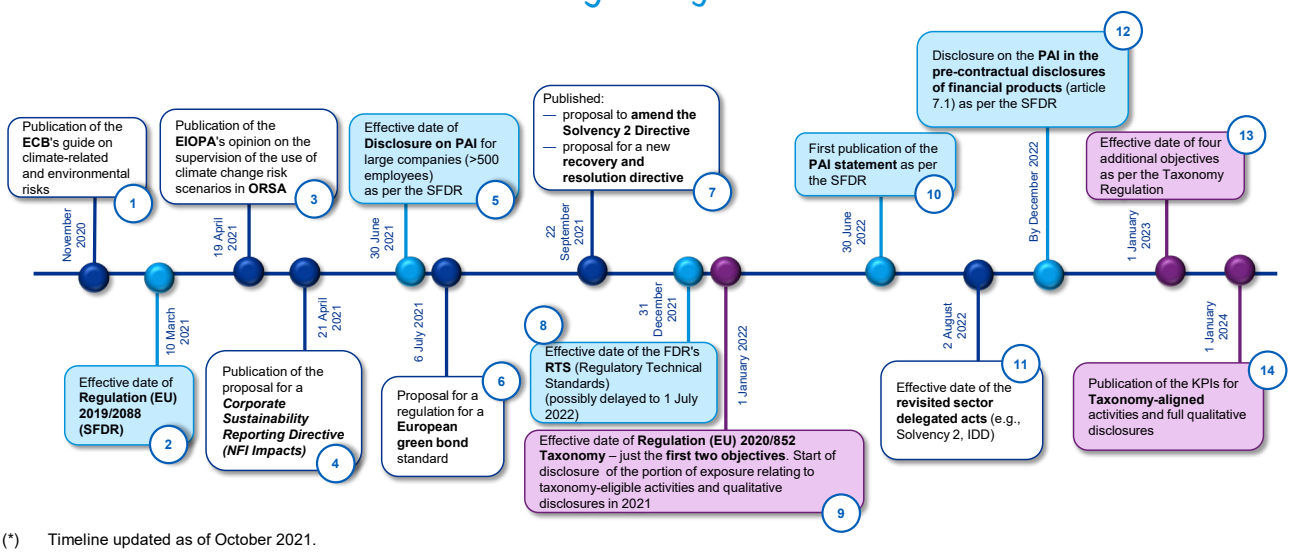
© 2021 KPMG Advisory S.p.A. è una società per azioni di diritto italiano e fa parte del network KPMG di entità indipendenti affiliate a KPMG International Limited, società di diritto inglese. Tutti i diritti riservati.

Following the Paris Climate Agreement(1), the European Commission has drawn up an action plan on financing sustainable growth with three specific objectives: (a) to reorient capital flows towards sustainable investments, (b) to integrate sustainability into risk management and (c) to foster transparency and long-termism. This plan identifies ten actions that are supported by regulations, including:

- Regulation (EU) 2019/2088 on sustainability-related disclosures in the financial services sector (the "SFDR"), which introduced new transparency obligations for financial market participants and financial advisers with regard to the integration of sustainability risks and the consideration of adverse sustainability impacts in investment decision-making and in investment and insurance advisory processes;
- Regulation (EU) 2020/852 (the taxonomy regulation – "TR"), which amends the SFDR with reference to the requirements for "light green" and "dark green" financial products(2) and governs the rules and technical screening criteria for the identification of environmentally sustainable economic activities for the purpose of providing disclosures in accordance with the key performance indicators (KPIs) set out in the implementing legislation;
- revisiting sector delegated acts (including those of the insurance sector: IDD and Solvency 2) to align with the SFDR reference to customer sustainability preferences in product governance and products, inclusion of sustainability risks in the risk management framework(3) and integration of responsible investment principles;
- proposal for a Corporate Sustainability Reporting Directive ("CSRD") which would amend the existing EU reporting requirements, extend the scope to other companies and introduce more detailed reporting requirements (qualitative and quantitative);
- proposal for a regulation for a European green bond standard to encourage the financing of investments that provide environmental and social benefits.

Furthermore, for the insurance sector, given the new proposals to amend the Solvency 2 Directive(4), the possible inclusion of sustainability issues in the own risk and solvency assessment ("ORSA") is under discussion. The European Insurance and Occupational Pensions Authority ("EIOPA") has been mandated to recalibrate the natural catastrophes ("NAT CAT") parameters (at least every three years) and to explore the potential scope for the dedicated prudential treatment of exposures related to investments or activities associated substantially with ESG objectives (e.g., with the introduction of a green supporting factor) by June 2023(5).

Table 1: regulatory timeline(*)



(*) Timeline updated as of October 2021.

(1) The Paris Agreement, the first universal and legally-binding agreement on climate change, adopted at the Paris Climate Conference (COP21) in December 2015, establishes a global framework to avoid dangerous climate change by limiting global warming to well below 2ºC and continuing efforts to limit it to 1.5ºC. In addition, the Agreement is designed to strengthen the countries' abilities to tackle the impacts of climate change and to support them.

(2) "Light green" applies to products that promote, inter alia, environmental and/or social characteristics as set out in article 8 of the SFDR and "dark green" are those products that have a sustainable investment objective as provided for in article 9 of the SFDR.

(3) See also EIOPA's "Opinion on the supervision of the use of climate change risk scenarios in ORSA" which offers implementation guidelines for the integration of climate and environmental risks into the risk management framework and scenario analyses provided for by ORSA. In particular, two types of risk factors are defined: physical risks (acute and chronic) and transition risks (policy, legal, technological, reputational and market sentiment) which should be mapped to a company's traditional risk categories.

(4) On 22 September 2021, the European Commission adopted a package of measures to revise the Solvency 2 Directive. These measures include the consideration of climate risks. A proposal for a recovery and resolution directive was also submitted.

(5) Speech by Stefano De Polis (Secretary General of IVASS, the Italian Institute for the supervision of insurance) on 14 October 2021, "The new challenges of the insurance sector between Solvency II review and sustainability".

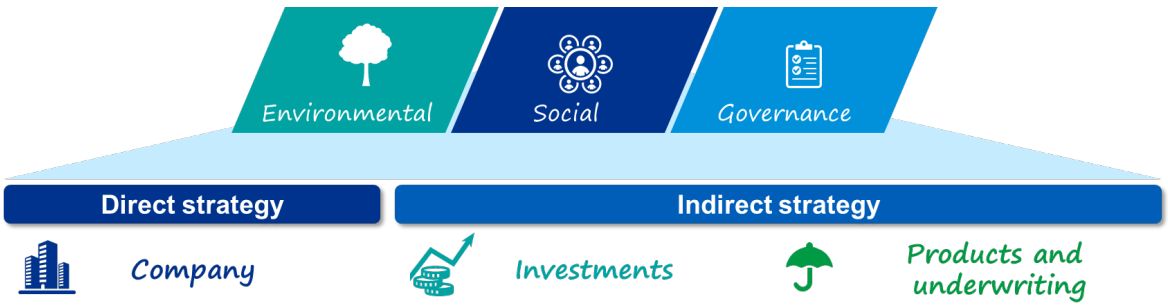
© 2021 KPMG Advisory S.p.A., an Italian limited liability share capital company and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

Given their typical risk-taking role, providing protection to households and businesses by absorbing the shock of unforeseeable events, and their role as institutional investors, which allows them to channel financial resources to long-term investments, thereby promoting the transition to a sustainable economy, insurance and reinsurance companies are key players in the economic system(6).

In 2021, they mainly focused on compliance with the SFDR and taking on the "E" factors (environmental and climate) which affect their risk map, but they did not always start this process by drawing up strategic plans (e.g., sustainability plan) that would guide and coordinate their transition of the coming years.

Companies have historically dealt with sustainability issues from a corporate social responsibility (CSR) perspective, which created the basis for the voluntary disclosing of their practices and behaviours, in the belief that this approach is beneficial to both themselves and their environment. However, the latest (regulatory and market) developments are highlighting not only the need for them to significantly broaden the action scope by coordinating the responses of their different departments to new requirements, but also the necessity to promptly define a change strategy.

Table 2: The ESG factors' integration strategy



Companies may define direct and indirect strategic actions to integrate ESG factors into their business operations. Direct actions are more directly related to the company and its relations/behaviours and include, for example, the reduction of its carbon footprint, the use of suppliers that comply with certain sustainability requirements, good relations with stakeholders (employees, customers, investors, etc.). Indirect actions are those carried out in the economic system that can indirectly positively (or adversely) affect it. This relates to the company's investments or the characteristics of its products.

The strategic actions should consider these aspects in an integrated way and over the long term. A change plan for the inclusion of sustainability criteria should comprise the following areas:

- internal governance (e.g., revisiting the board of directors' decision-making processes, internal regulations, remuneration systems, organisation and internal controls);
- risk management framework (e.g., integrating ESG factors into the risk map, revising risk policies and the RAF - risk appetite framework, defining methodologies for measuring climate risk of the real estate assets and the underwriting business, performing scenario analyses and revisiting ORSA reporting and reconciling the results with the strategic plan);
- investments (e.g., defining negative and positive screening criteria for both own investments and investments underlying the financial products offered to customers);
- life products (e.g., revisiting the product portfolio to respond to new customer preferences and revising disclosure, product governance, distribution processes and information flows with distributors);
- non-life products and reinsurance (e.g., revisiting the product portfolio to meet new customer needs, defining solutions to close protection gaps, revising the underwriting process based on ESG risk factors and defining solutions to align products/reinsurance business with the Taxonomy for reporting purposes);

(6) See Gabriel Bernardino's speech of 16 December 2020 "From policy to practice"..

© 2021 KPMG Advisory S.p.A., an Italian limited liability share capital company and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

— communication and reporting (e.g., revising data collection, aggregation and control systems for Taxonomy reporting purposes and revisiting non-financial reporting and communications with stakeholders and the communities).

Strategic actions should be planned to incorporate all the company's business areas: core (e.g., life and non-life businesses) and non-core (e.g., real estate activities and investments, agricultural activities, etc.).

Considering the above and the many areas of the insurance industry that will potentially be affected by the issue of sustainability over the next few years, the following sections focus on three of the main areas expected to be the most affected, namely:

— reporting and the independent auditors' report;

— innovations in life and non-life products;

— asset valuation and climate risk.

© 2021 KPMG Advisory S.p.A., an Italian limited liability share capital company and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

1 REPORTING AND THE INDEPENDENT AUDITORS' REPORT

by Corrado Avesani, Andrea Azzali, Maurizio Guzzi, Stefania Sala and Lisa Sparapan

> *Corporate sustainability reporting is evolving significantly to keep up with the latest regulatory changes and ensure greater transparency to stakeholders. The new disclosure will make it possible to more consciously direct capital flows towards economic activities that facilitate the transition to a carbon-neutral economy (net-zero emissions). Europe aims to reach this target by 2050.*

The Taxonomy Regulation introduces the requirement to disclose quantitative KPIs (investment and underwriting KPIs) and qualitative information on how environmentally sustainable the economic activities deriving from the insurance business are in the non-financial statement. The investment KPI is designed to break down a company's investment portfolio of the life business into "eligible"(7), "aligned"(8) (including "transitional"(9) and "enabling"(10)) and "non-eligible"(11) investments, using the same criteria applied to break down turnover and capital expenditure (or other specific indicators) of the issuers of the financial instruments being invested in on the basis of their economic activity (or other indicators identified for counterparties).

The underwriting KPI is designed to break down the non-life and reinsurance premiums into "eligible", "aligned" (solely "enabling") and "non-eligible" premiums.

(7) "*Eligible*" means economic activities that are considered by the TR to establish which activity is environmentally sustainable.
(8) "*Aligned*" refers to economic activities that complies with the requirements laid down in article 3 of the TR.
(9) "*Transitional*" means economic activities that support the transition to a climate-neutral economy as set out in article 10.2 of the TR.
(10) "*Enabling*" covers the economic activities that enable other economic activities to make a substantial contribution to one or more environmental objectives as set out in article 16 of the TR.
(11) "*Non-eligible*" means the company's other economic activities that are not covered by the TR.

© 2021 KPMG Advisory S.p.A. è una società per azioni di diritto italiano e fa parte del network KPMG di entità indipendenti affiliate a KPMG International Limited, società di diritto inglese. Tutti i diritti riservati.

The Taxonomy Regulation provides for a transitional phase (reporting for FY 2021 and FY 2022) in which companies will only provide disclosure about "eligible" investments and premiums (in addition to qualitative disclosures), and a final phase (from 2023) when complete disclosure on alignment with the Taxonomy criteria will be required. The new disclosure requires companies to implement processes and systems for collecting, processing/analysing and controlling the data to be disclosed, as well as the possible integration of management control activities for continuous monitoring of results and a revision of the administrative-accounting control system to include the new disclosure. Moreover, the company's independent auditors will be required to issue a limited or reasonable assurance report on the new disclosure.

The proposal for a CSRD revises the Non-Financial Reporting Directive (2014/95/EU) and related EU regulations by extending the target scope (listed companies, large non-listed banks and insurance companies, non-listed companies that exceed at least two of the following three thresholds: (a) assets of €20 million as per their statement of financial position, (b) net turnover of €40 million and (c) average annual number of employees of 250). The current requirements of the Non-Financial Reporting Directive apply to large public interest entities (banks, insurance companies, reinsurance companies, listed companies and companies operating on capital markets), i.e., companies with more than 500 employees and which have exceeded at least one of following two thresholds: assets of €20 million or net turnover of €40 million.The introduction of the new CSRD thresholds is expected to result in a significant increase in the number of insurance companies required to provide the disclosure. Indeed, the number of company employees will become less significant, since the other two quantitative parameters (assets and average turnover) are nearly always exceeded even by small and medium-sized insurance companies.

In addition, the new proposal requires the integration of the non-financial statement's disclosure into a more detailed sustainability report (which will be included in the directors' report). The new disclosure should describe the company's sustainability plans and their progress, the board of directors' role with respect to sustainability issues, the main adverse impacts (actual or potential) related to the value and supply chain (including mitigation actions taken and results obtained), the "intangibles" other than the intangible assets reported in the financial statements (e.g., human, intellectual, social and relational capital) and the overall process of identifying material topics. The information should be qualitative and quantitative (e.g., Taxonomy KPIs), prospective and retrospective and cover short, medium and long term time horizons. Prospective and retrospective reporting also requires the consideration of new common and mandatory reporting standards at EU level for greater comparability purposes.

In this context, the SASB (Sustainability Accounting Standards Board) standards(12) propose industry-specific ESG indicators that are a useful reference for the disclosure required by the above-mentioned regulation, together with international recommendations and standards (e.g., TCFD, PSI and PRI) that provide guidance about the various ESG factors applicable to individual companies.

The Directive substantially aligns the corporate responsibility of the members of companies' boards of directors, management and supervisory bodies who are thus responsible for ensuring that their company has presented its reports in accordance with EU sustainability reporting standards and in the required digital format. Member states will introduce "effective, proportionate and dissuasive" sanctions in order to ensure the application of these provisions.

When it transposed Directive 2014/95/EU, Italy introduced the requirement that independent auditors check companies' non-financial statement's compliance with applicable regulations.

Specifically, pursuant to article 3(10) of Legislative decree no. 254/2016 (the "Decree"):

> *"The party engaged to perform the statutory audit of the financial statements shall check that the directors have prepared the NFS"*

(12) See also the document "Measuring Stakeholder Capitalism" of the World Economic Forum (WEF), which defines a set of universal indicators ("material ESG metrics") that can be applied by all companies, regardless of their characteristics, to ensure comparable disclosure.

© 2021 KPMG Advisory S.p.A., an Italian limited liability share capital company and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

The same party engaged to perform the audit of the financial statements, or another specifically designated certified auditor, shall issue a report providing assurance on the compliance of the disclosures provided in the NFS with the requirements of the decree and the basis of preparation provided therefor.

In its regulation implementing the decree, Consob (the Italian Commission for listed companies and the stock exchange) specified the two types of assurance that the independent auditors may express:

— a “limited assurance”, whereby the independent auditors state whether anything has come to their attention that causes them to believe that the NFS has not been prepared in accordance with the applicable reporting framework;

— a “reasonable assurance”, whereby the independent auditors expresses their opinion about whether the NFS has been prepared in accordance with the applicable reporting framework.

In a limited assurance engagement, the auditors express their conclusion in the form of a negative assurance, stating whether, on the basis of the procedures performed and evidence obtained, anything has come to their attention that would cause them to believe that the NFS has not been prepared, in all material respects, in accordance with Legislative decree no. 254/2016 and the applicable standards identified in the “Basis of preparation” section.

A limited assurance engagement is less in nature, timing and scope than a reasonable assurance engagement.

On the other hand, in a reasonable assurance engagement, the auditors express their conclusion in the form of a positive assurance, stating whether, on the basis of the procedures performed and evidence obtained, the NFS has been prepared, in all material respects, in accordance with Legislative decree no. 254/2016 and the applicable standards identified in the “Basis of preparation” section.

A reasonable assurance engagement is more in nature, timing and scope than a limited assurance engagement, as required by ISAE 3000R.

Considering the option introduced by Consob, in the next few years, companies may decide to switch from the currently-preferred limited assurance engagements to reasonable assurance engagements, at least for some types of particularly important disclosures, in order to further increase the reliability and the level of assurance.

Under the decree, non-financial information may currently be provided either in the directors' report or in a separate document and specifically:

— in a specific section of the directors' report, which is named accordingly;

— in a specific section of the directors' report that refers to other sections thereof or other legally-required documents;

— in a separate report, to which the directors' report makes reference, which must be named accordingly (non-financial statement).

The requirement for separate assurance on the non-financial statement remains even when it is an integral part of the directors' report.

In accordance with the applicable auditing framework, an assurance engagement requires the performance of specific procedures that may be summarised in three macro-steps as follows:

— planning and preliminary analyses;

— checks, possible site visits and tests of data;

— examining the NFS and issuing the assurance report.

The nature, timing and scope of the macro-step procedures set out below differ according to the level of assurance required. However, even though a limited assurance engagement is less in nature, timing and scope than a reasonable assurance engagement, its procedures are planned to obtain the level of assurance that the auditors deem is appropriate.

During the first step, the auditors investigate the environment, determine the materiality levels and analyse the reporting scope.

Their first objective is to understand the environment in which the company operates, including through benchmarking and trend analyses, explore the process of selecting the material topics and information reported on the basis of the company's business and characteristics and analyse the reporting scope.

The auditors then analyse the reporting risks, assessing the level of risk of the processes of each material topic.

KPMG

© 2021 KPMG Advisory S.p.A., an Italian limited liability share capital company and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

The auditors conduct a preliminary analysis of the company's business management and organisational model, the policies for the topics reported in the NFS (and related key indicators) and the main risks, generated or borne, related to ESG issues.

Lastly, the auditors define their strategy. After gaining an understanding of the company and the level of risk associated with the reporting processes, the auditors design the sampling, procedures and tests of details to be carried out for each material topic (including possible site visits).

This is the basis of the work plan, which is finalised as the procedures are performed.

The main objective of the second step is to analyse the processes underlying the generation, recording and management of the qualitative and quantitative information disclosed in the NFS, as well as the internal control and risk management system adopted for non-financial reporting purposes.

This step mainly consists of interviews and discussions with the company's management to obtain information on the internal controls used to gather, assemble, process and transmit non-financial data and information to the office that prepares the NFS.

Moreover, the auditors carry out sample-based checks of the documentation used to prepare the NFS in order to obtain evidence of the suitability of the systems, processes and procedures adopted (sample-based checks of the reporting scope, the definition of the KPIs and the data aggregation method).

Another objective of this step is to check how the qualitative and quantitative data and information is consolidated.

For the most significant information, the auditors hold interviews to substantiate the qualitative information and carry out analytical documental procedures on the quantitative information, checking the calculation method and the data consolidation process.

The third step's objectives include checking the completeness and accuracy of the NFS disclosure in accordance with the applicable legislation.

Finally, before issuing their report, the auditors carry out their internal control procedures as provided for by ISAE 3000.

The proposal for a CSRD recommends that all in-scope companies' sustainability reports undergo independent limited assurance, with a view to providing comfort on the reliability and accuracy of the information reported. Specifically, the limited assurance should cover: the digital taxonomy, the KPIs included in the directors' report pursuant to article 8 of the Taxonomy Regulation (i.e., the proportion of their turnover and capex/opex associated with economic activities that qualify as environmentally sustainable), as well as the process underlying the identification of reportable information. At a later stage, the EU will consider requiring sustainability reports undergo independent reasonable assurance. Member states may engage independent parties to issue the assurance report, provided that they are subject to the same independence and professional requirements as those applicable to independent auditors. The assurance report should be published in conjunction with the audit report on the annual financial statements. Member states will have to ensure independent auditors carry out their sustainability reporting assurance engagements in accordance with the standards to be endorsed by the EU through delegated acts. In the absence of EU-endorsed assurance standards, the auditors should apply national assurance standards, procedures or requirements. The Audit Directive will be amended to strengthen the role and responsibilities of the audit committee in monitoring the sustainability reporting process, including its digital part, the effectiveness of internal control and risk management systems, the sustainability reporting assurance and the maintenance of auditors' independence.

© 2021 KPMG Advisory S.p.A., an Italian limited liability share capital company and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

2 INNOVATIONS IN LIFE AND NON-LIFE PRODUCTS

by Corrado Avesani, Giulio Dell'Amico, Eleonora Manzato, Federica Paris and Lisa Sparapan

> The new requirements offer insurance companies an opportunity to renew their life and non-life product range, with a view to creating value for the economic system as a whole (the company and the customer, which have their insurance needs met).

Table 3: the ESG revolution

© 2021 KPMG Advisory S.p.A. è una società per azioni di diritto italiano e fa parte del network KPMG di entità indipendenti affiliate a KPMG International Limited, società di diritto inglese. Tutti i diritti riservati.

Life products

With reference to the insurance-based investment products ("IBIP") of the life business, the SFDR requires the integration of sustainability risks and the consideration of adverse sustainability impacts in investment and advisory decision-making processes, requiring both specific disclosure (e.g., the "Principal Adverse Sustainability Impact Statement - PAI Statement") and the coordination of the company's remuneration policies for compliance with these provisions. With the investment KPI, the Taxonomy Regulation complements the investment disclosure of products.

Furthermore, with regard to sustainability, the SFDR has introduced a new definition of financial products, differentiating between products that promote, inter alia, environmental and social characteristics or a combination of both ("light green" products under article 8 of the SFDR) and products that have sustainable investment as their objective ("dark green" products under article 9 of the SFDR). These products must meet additional transparency requirements, both on the company's website and in terms of pre-contractual information and ongoing disclosures.

Although the definition of "light green" and "dark green" products seems clear, their classification is more complex when analysing the structure of the investments underlying IBIPs or the possible presence of investment options.

In the first, very frequent case, the insurance investment product may imply a series of investments in financial products (e.g., funds of funds), which requires establishing the SFDR classification of the underlying investments to determine the IBIP classification.

In the second case, an IBIP should separate and classify the different investment options as "light green" or "dark green".

In this context, the role of specialised info-providers that publish the ESG ratings of various financial instruments is crucial. These ratings currently use proprietary models to analyse ESG components, but a shift in available information to the Taxonomy criteria is expected. On the other hand, fund managers are instrumental in ensuring the traceability of ESG information on the series of investments related to funds of funds.

The enactment of SFDR has also required the updating of industry regulations[13] about insurance distribution to include the consideration of sustainability preferences expressed by customers. Consideration of these preferences not only requires a revision of the product portfolio (for suitable differentiation according to the ESG factors), but also entails:

- revising product governance processes (e.g., revision of the target market, integration of product monitoring KPIs) and related producer-distributor information flows;
- revisiting customer profiling and suitability assessment logics.

In this context, it will be essential for companies wishing to remain competitive, including vis-à-vis the broader responsible investment offers involving funds of specialised asset managers, to be able to offer attractive financial products. The global responsible investment market worth around USD35,301 billion[14] continues to present attractive growth opportunities (CAGR +7.3%). The European market accounts for 34% of the total value.

Non-life products

With reference to non-life products, the Taxonomy Regulation stipulates the rules and technical standards for identifying environmentally sustainable economic activities in the insurance and reinsurance businesses. This means that companies need to identify eligible lines of business and introduce organisational and product measures (in terms of product governance and technical characteristics) to align non-life products with the Taxonomy requirements in order to present the best share of aligned premiums in the underwriting KPI of the 2023 reports. However, not all non-life lines of business are included among the "eligible" categories (e.g., general third party liability, legal protection, bonds, pecuniary losses of various kinds have been excluded) although these excluded lines of business could still incorporate covers that promote the UN Sustainable Development Goals ("SDG"). This fact could lead to a future revision of the Taxonomy Directive (also in view of the development of the other four objectives and of the "social" taxonomy), and encourage forms of voluntary extended disclosure in order to present the additional share of green premiums.

(13) Delegated Regulation (EU) 2017/2358 on product oversight governance and Delegated Regulation (EU) 2017/2359 on information requirements and conduct of business rules applicable to the distribution of IBIPs have been updated. They will enter into force on 2 August 2022.
(14) Source: GSIA Report "Global Sustainable Investment Review 2020".

© 2021 KPMG Advisory S.p.A., an Italian limited liability share capital company and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

Non-life business development opportunities should not be driven solely by the Taxonomy Directive because closing the protection gap for catastrophe risks[15] and customers' new coverage needs will be the real drivers of innovation.

The market currently offers products with both high environmental and high social content.

Products with a high environmental content fall into the following categories:

- products that encourage sustainable mobility (e.g., third party liability for electric cars, cover for electric bikes, cover that rewards low annual mileage and responsible driving behaviour, etc.);
- general third party liability products for pollution (e.g., policies covering expenses for urgent and temporary measures to prevent or limit a compensable damage);
- products that address catastrophic or certain environmental risks (e.g., covers that reward the adoption of construction techniques that meet climate change mitigation/adaptation objectives);
- products that promote building energy efficiency (e.g., by providing specific discounts, advice on how to optimise energy consumption, etc.);
- products protecting against renewable energy production risks (e.g., cover for renewable energy production equipment with reimbursement of damage caused by weather events to solar, photovoltaic or similar systems, which can be supplemented with covers protecting against loss of profit resulting from the interruption of or decrease in electricity production).

Products with a high social content fall into the following categories:

- products aimed at ensuring social inclusion, designed for specific customer groups or categories previously excluded from covers (e.g., disabled persons during voluntary activities, unemployed people, etc.);
- products promoting volunteer work;
- products promoting a responsible and healthy lifestyle (e.g., applying discounts by leveraging the opportunities offered by new technologies, the importance of preventive healthcare or other responsible behaviour by policyholders);
- products supplementing the national health service (e.g., covering the cost of treatments and care, the cost of a drop in income for customers in the event of serious illness or non-self-sufficiency, etc.);
- micro-insurance products (in connection with micro-credit initiatives).

Innovation in services to be coupled with products (sometimes associated with new technologies) and the identification of partners meeting certain ESG requirements (e.g., suppliers to be activated against a claim for the benefit due) may characterise future non-life products.

(15) See EIOPA's “Final Report on Non-life underwriting and pricing in light of climate change”.

© 2021 KPMG Advisory S.p.A., an Italian limited liability share capital company and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

3 CLIMATE RISK AND ASSET VALUATION

by Giovanni Florian, Alessandro Lazzarini and Stefano Zattarin

> According to the European Environment Agency's estimates, direct physical economic damage due to natural events exceeded €557 billion in the EU alone between 1980 and 2017[16]. Projections show that human-induced climate change will increase both the frequency and intensity of extreme events, with the consequent amplification in terms of financial losses.

As a result of such evidence and projections, states, EU bodies, financial supervisors and companies are increasingly focusing on ESG issues by defining behavioural and investment logics aimed at limiting the impact of climate change and estimating the current and future economic impacts of climate change events.

However, measuring economic impacts remains an ongoing challenge. Limited historical information, rapidly changing climate trends, low frequency-high impact events and difficulties in linking financial losses to climate events have led, at least initially, to the development of purely qualitative approaches that are not always suitable for quantifying the potential losses associated with a physical asset when a climate event occurs.

In order to adequately direct business and investment strategies and in line with the inclusion of the specific issue within a broader risk framework, there is a clear need to quantify the impact of climate change in economic terms, using metrics based on quantitative risk measures.

The following sections provide an overview of how properly designed catastrophe risk models may achieve this purpose in the context of physical damage caused by climate events, highlighting the main advantages and focus points to be taken into account.

(16) Source: Joint Research Centre (JRC), the European Commission's science and knowledge service – "Science for disaster risk management 2020: acting today, protecting tomorrow".

© 2021 KPMG Advisory S.p.A. è una società per azioni di diritto italiano e fa parte del network KPMG di entità indipendenti affiliate a KPMG International Limited, società di diritto inglese. Tutti i diritti riservati.

Background to physical risk, catastrophic models and their evolution for climate risk assessment

Definition of physical risk

Following the definition provided by EIOPA[17], physical risks are the risks that arise from the physical effects due to climate change. They include acute physical risks, which arise from particular events, especially weather-related events such as storms, floods, fires or heatwaves, and chronic physical risks, which arise from longer-term changes in the climate, such as temperature changes, rising sea levels, reduced water availability, biodiversity loss and changes in land and soil productivity. These risks may have a direct impact (e.g., they may damage production facilities) or indirect impact (e.g., they may disrupt value chains).

The climate and environmental risk analysis and management approach that follows aims to quantify the direct impacts of acute physical risks on real estate assets in accordance with current catastrophe model standards.

The proposed framework can also be extended to the quantification of indirect impacts as well as possible changes in transition risk measurement[18].

Catastrophe models

A catastrophe model is a probabilistic model that estimates the frequency, intensity and location of an event as well as determining the magnitude of the damage that such event may cause to the item under analysis, in this case a real estate asset located in the area where the event occurs.

Although catastrophe risk modelling has a long history, it has only been possible to pinpoint the analysed assets in natural hazard maps thanks to the more recent use of geographic information systems (GIS).

Real estate assets in the same geographical area (e.g., province or region) are not necessarily subject to the same risks, due to their intrinsic characteristics and location. The first step is to analyse their exact positioning in relation to the identified risk factors and their structural characteristics in order to obtain accurate and reliable estimates.

An approach to analysing and managing climate and environmental risks using geospatial information allows the precise identification of which assets are the most exposed to certain risk factors through the following steps:

1 **Definition of reference maps (e.g., national/regional)**. Definition of the geographical area to be analysed (e.g., entire country or just particular areas of interest) on the basis, for example, of business objectives, specific risk factors of certain areas and the availability of an adequate dataset in terms of its content and usability. The following picture shows, as an example, a map of the Veneto region.

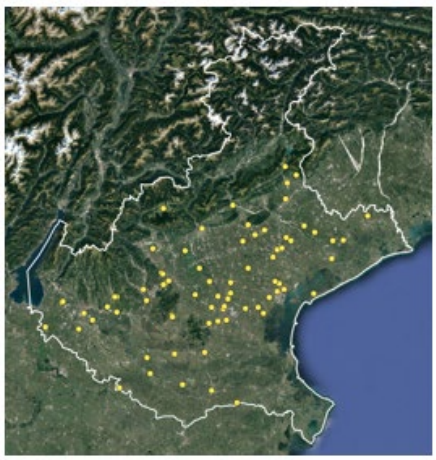
Table 4: map of the Veneto region

(17) Source: EIOPA, "Opinion on the supervision of the use of climate change risk scenarios in ORSA", 2021.
(18) Transition risks are risks that arise from the transition to a low-carbon and climate-resilient economy. They include policy risks, for example as a result of the relatively sudden adoption of climate and environmental policies, legal risks or transition-related reputational risks, technology risks and market sentiment risks. Source: EIOPA, "Opinion on the supervision of the use of climate change risk scenarios in ORSA", 2021.

© 2021 KPMG Advisory S.p.A., an Italian limited liability share capital company and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

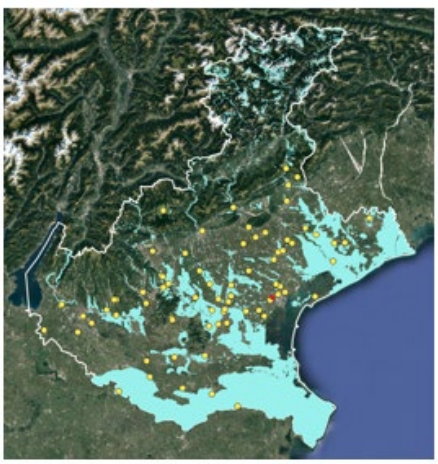
2 **Geospatial asset mapping.** Accurate identification of the asset using its geographical coordinates. The different types of assets need to be categorised on the basis of information about the real estate under analysis, including its value, location, characteristics and the forms of risk mitigation and transfer associated with the asset. This information is included in the "Exposure" form (see later). The following picture shows an example of the geospatial mapping of real estate assets.

Table 5: asset mapping (yellow dots)



3 **Risk factor geospatial mapping.** Identification of the areas where assets are subject to physical risks and accurate mapping of the factors that may further impact their value, such as hydro-geological risk, seismic risk, extreme climate events, pollution and environmental degradation (e.g., contaminated sites around the asset under analysis). The dataset on individual risk factors is generally accessible from external public data sources and usually certified by local and national authorities (e.g., National Data: ISPRA, National Geoportal; Regional Data: Regional Geoportal). This information can be found in the "Hazard" form (see later). The following picture shows an example of the relationship between the real estate assets under analysis and the areas subject to flood risk.

Table 6: areas at high flood risk



© 2021 KPMG Advisory S.p.A., an Italian limited liability share capital company and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

These GIS systems thus make it possible to interpret the information contained in geographical data in an integrated manner, linking several phenomena that would otherwise not be linked. This step is the starting point (and key element) for the design and subsequent application of proprietary catastrophe models and, more generally, of all risk-based methodological processes.

For illustrative purposes, it can be assumed that the structure of a catastrophe model is made up of four modules, executed sequentially, each of which provides very precise and useful information for the analysis of the risk as a whole.

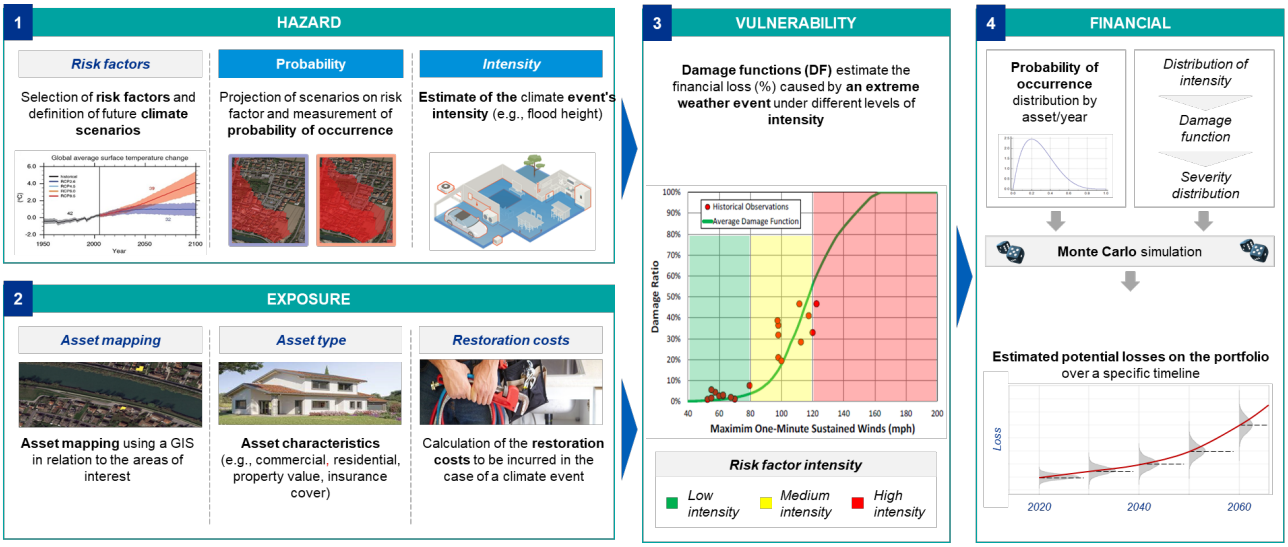
— **Hazard**: this module defines climate event scenarios in probabilistic terms on the basis of the following parameters: frequency (recurrence of the event), intensity and geographical location. This implies appropriately calibrating the parameters describing the hazardous event, identifying a frequency distribution to model the recurrence times and a severity distribution to model the intensity.

— **Exposure**: this module contains the information relevant to determine the asset's economic exposure, its position and the structural characteristics useful to identify its vulnerabilities.

— **Vulnerability**: this module identifies the damage function, i.e., the curve that maps the intensity of a hazard to the resulting damage (expressed as a percentage of the total value of the real estate). This mapping depends on the building's characteristics reported in the exposure module (e.g., properties built using modern technology are likely to suffer less damage than older buildings in the event of a climate event).

— **Financial**: The last module "converts" all the information produced by the other modules into a financial loss distribution, possibly incorporating risk mitigation and transfer measures. This conversion may entail performing a Monte Carlo simulation to produce the entire distribution of losses on which risk measures can be calculated.

Table 7: structure of a catastrophe model



Climate risk framework: ESG-specific catastrophe models

Catastrophe risk models are used to assess risk exposure at a one-year horizon, i.e., they estimate the distribution of annual losses considering the current environmental context (stable risk factors).

Climate risk models, on the other hand, estimate the changes in an environmental context over a long-term time horizon, but not the distribution of potential losses on company assets.

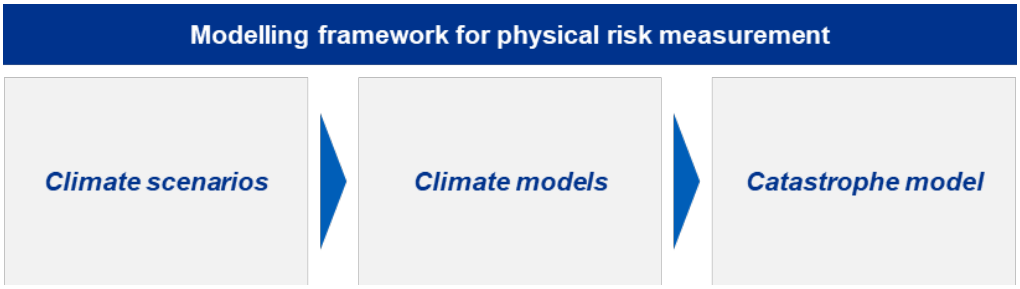
© 2021 KPMG Advisory S.p.A., an Italian limited liability share capital company and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

Therefore, it is important to adapt the current catastrophe models to reflect changes in the environmental context (e.g., by using the prospective risk factors proposed at regulatory level for stress testing) and forward-looking analyses and assessments, using, among other things, current climate risk modelling methods.

For this purpose, a new framework should be developed that integrates the above-mentioned catastrophe models with climate models (IAMs and GCMs), by modelling the relationships (linear and non-linear) between environmental trends and risk factors in order to more reliably identify the current and prospective risks to which a given category of company assets may be subject.

This integration impacts all the catastrophe model's modules (hazard, exposure, vulnerability and financial), resulting in the reconstruction of the entire loss distribution (for different time horizons and future scenarios) and quantification of the probability of occurrence.

Table 8: modelling framework



Benefits of using an integrated framework for climate risk measurement

The main benefits of using a framework that integrates climate and catastrophe models include:

- **Consolidated approach**: the catastrophe risk modelling framework is well known and was developed several years ago. Insurance companies are very familiar with the models and they are consistent with a wide range of publications.
- **Possibility of breaking down the situation into its various components**: although the overall framework may appear complex, each element is clearly identifiable, allowing the separation of the individual components affecting the final economic impact. The effect of each component on the final risk measures can be assessed through sensitivity analyses of risk factors, impact and frequency distributions and damage functions.
- **Transparent and objective measures**: the model estimates the entire distribution of losses in order to calculate risk measures and estimate financial losses. This is considerably more advantageous than an indicator-based approach, which does not allow for immediate interpretation of results and requires judgement to define thresholds for clustering results.
- **Transversal consistency of aggregation scenarios and time horizons**: the use of a mathematical model ensures complete measurement consistency: worst-case scenarios are associated with higher frequencies or impacts, which, through the damage function, will translate into higher costs and, therefore, higher economic impact. Furthermore, by assessing the loss distribution of each asset, once the risk interdependencies have been defined, aggregate measurements in terms of portfolio and geographical area become extremely simple.
- **Risk integration**: after reconstructing the relevant loss distribution, interdependencies with other risks to which the company is exposed can be analysed to obtain an integrated view of its overall risk exposure.
- **Reliability of results vis-à-vis the regulator**: all the above-mentioned characteristics ensure the adoption of a robust approach, including for regulatory communication purposes.

© 2021 KPMG Advisory S.p.A., an Italian limited liability share capital company and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

Data gaps and possible solutions

In addition to the mathematical and statistical aspects, the availability of all the information necessary to feed the different modules is the most critical issue for the development of a framework like the one described above: the quality, completeness and size of the databases on risk factors and their assessment are crucial to the reliability of the models used and the robustness of their results.

Generally speaking, complexity is also increased by the difficulties often encountered in reconciling the information to be used and its timing inconsistency, partly because there are different parties involved in collecting it.

The availability of the Hazard module data and its informative potential for climate risk purposes are its main critical issues.

Since the 1980s, in collaboration with the scientific community involved in the study of the climate, catastrophe model developers have generated extensive information containing data and historical series from a vast variety of public and private sources. This information shows, as far as possible, the geographical areas, frequencies and intensity with which climate events occur. However, given the extreme infrequency of the most serious events (i.e., catastrophes), the series were generally too limited to allow in-depth analysis of a particular event.

In recent years, thanks to intergovernmental bodies (IPCC), international commissions (NGFS), academic agencies and research centres, investments have been made in observation networks (e.g., installation of anemometers on buildings and infrastructures), the methods for calibrating instruments have been upgraded and data archiving techniques have improved, all of which have contributed to increasing the quality of the available databases.

However, as climate change is an evolving phenomenon, historical observations may not be representative of future trends, particularly when 20- or 30-year time horizons are considered.

To overcome this problem, the scientific community has developed models that use the data collected to generate a set of scenarios and their impacts on the risk factors modelled in the Hazard module (e.g., how flood risk varies in terms of frequency and intensity at a given location if there is a significant increase in temperature).

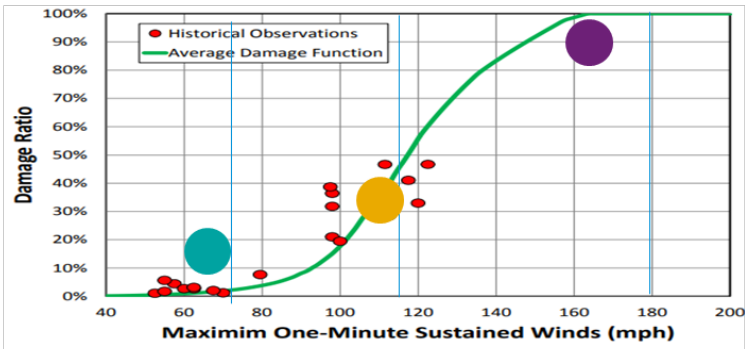
The exposure module also requires real estate data of a technical/economic nature. These are simpler to collect than the catastrophe and climate data contained in the Hazard module as they are usually obtainable from insurance companies and banks. However, since catastrophe risk modelling is not the purpose for which the databases are created, there are significant inconsistencies in the collection process leading to some issues in terms of completeness, format and granularity.

The development of standardised databases would overcome this problem as they would be more extensive and transparent.

The vulnerability module requires calibration of the damage function, i.e., the function that allows the intensity of the phenomenon to be mapped to a damage percentage (to be applied to the value of the real estate). Calibrating this function would, therefore, require data that include both the intensity of the event and the damage caused in the historical series and estimating the curve on this basis. Although some databases in the insurance industry may contain or approximate this information, it is generally more effective to calibrate the function directly through an assessment process involving engineering experts that can estimate, for a cluster of technical characteristics, the percentage of damage suffered by a property based on the intensity of the risk factor. This approach also produces information on the event's unavailable data.

Table 9: damage function estimate

Damage function estimate



Experts' assessment of damage percentage

- LOW intensity
- MEDIUM intensity
- HIGH intensity

© 2021 KPMG Advisory S.p.A., an Italian limited liability share capital company and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

In the light of the considerations discussed above, we hope that new data-sharing platforms will be developed by the various parties involved (primarily financial institutions, research centres, government bodies).

The analysis shows that the availability of standardised and integrated databases is a key element in the development of such models (e.g., having access to information on natural events as well as on their economic impact).

In addition, since certain events under analysis may be not observed or not historicised in a given business context, it may be useful to set up consortia that would develop granular and reliable databases that would ensure a holistic view of risks and events that are sometimes not directly observable by individual parties. Similar consortium systems have already been used in other areas in the past, for example for operational risks, where the enhancement of databases, the comparison of adopted models and the setting of common standards have allowed banks and insurance companies to acquire greater awareness of and confidence in the approaches used and the results obtained, also as part of the dialogue with the various stakeholders (including regulators).

Conclusion

In the transition to a sustainable economy, insurance and reinsurance companies are “key” economic system players, given their core risk underwriting activities that provide protection to households and businesses and their role as institutional investors.

A company's ability to grasp the opportunities offered by the evolving legislation shapes its ability to change and respond, which will be increasingly crucial to tackle the challenges of the competitive environment in which it operates.

These challenges encompass the ability to manage and optimise risks (also in terms of capital allocation), as well as the ability to reinvent the life and non-life businesses and to channel investments to sustainable and profitable assets. Strong internal governance will further foster the change.

Non-financial reporting will inform the market of the results of the sustainability journey that companies are undertaking, allowing trend analyses over the various reporting periods and benchmarking.

© 2021 KPMG Advisory S.p.A., an Italian limited liability share capital company and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.