

A large-scale photograph of an offshore wind farm. In the foreground, a large white wind turbine is partially visible, with its three blades extending across the frame. The background shows a vast expanse of blue water with numerous other wind turbines stretching towards the horizon under a clear sky. The overall scene is bright and clear, suggesting a sunny day.

# Climate Risk Assessment for ORSA: Materiality and Quantification



*FS-Consulting/Insurance and Actuarial Services*

**July 2024**



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Introduction and regulatory framework

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KPMG Vision: how can we help you?

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Why is KPMG the perfect partner?

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**01**

# **Introduction and regulatory framework**

# 01 Introduction and regulatory framework: Climate risks in insurance

Insurance entities must collect a **broad and complete vision of climate change risk**, considering all risks arising from trends or events caused by this risk.

The risk due to climate change is broken down into **two typologies: physical risks and transition risks**.



## Physical risks

*Physical risks are those derive from the effects or physical/material damage of climate change.*

We can find two types of physical risks:

- Physical risks **acute**, derived from specific events. An example may be a weather phenomenon such as storms.
- Physical risks **chronic**, derived from long-term climate changes. An example could be global warming or the loss of biodiversity.



## Transition risks



*Transition risks are derived from a rapid transition towards a low-carbon and climate-resilient economy.*

Among others, these are some of the most common transition risks:

- Politicians**. For example, the impact of energy efficiency requirements
- Market sentiment**. For example, changing product preferences
- Reputation**. For example, difficulty in attracting customers.
- ...

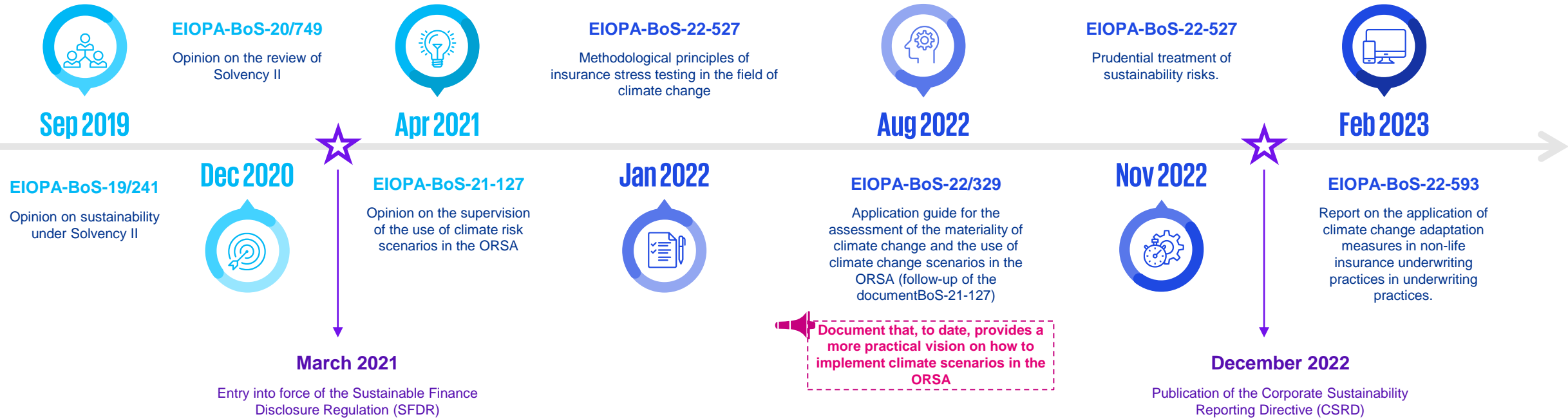
Given that climate change is a variable that impacts already in the existing risks, it can be **associate** to the **traditional underwriting, market, credit, counterparty, operational, reputational and strategic risks**.

Below are examples of said association or relationship between risks:

 Physical risks		 Transition risks	
<b>Subscription risk</b> Claims higher than expected in the damaged insured assets (Non-Life) or mortality or morbidity rates higher than expected (Life/Health).	<b>Market risk</b> Impairment of the value of assets due to financial losses that affect the profitability of companies, for example, due to interruption of activity or damage to real estate.	<b>Subscription risk</b> Decreased underwriting due to increased insurance prices in response to higher than expected claims (Non-Life) or changes in policyholder expectations and behavior in relation to sustainability factors (Life/Health).	<b>Market risk</b> Deterioration in the value of financial assets due to the transition to a low-carbon economy, for example, decline in value of carbon/GHG-intensive sectors.

# 01 Introduction and regulatory framework: Main publications

In recent years, regulations and initiatives regarding sustainability have been promoted (SFDR Regulation, TCFD working group, CSDR Directive...), in such a way that **EIOPA**, following this same line, has published consultations and updates in the Delegated Regulation to **bring different aspects of ESG criteria to the insurance sector**.



Additionally, the **IAA** has published documents of interest regarding climate risk since 2020:

- **paper1**

Importance of climate risks for actuaries
- **paper2**

Introduction to climate risk scenarios
- **paper3**

Climate scenarios applied to insurance entities and other financial entities
- **paper4**

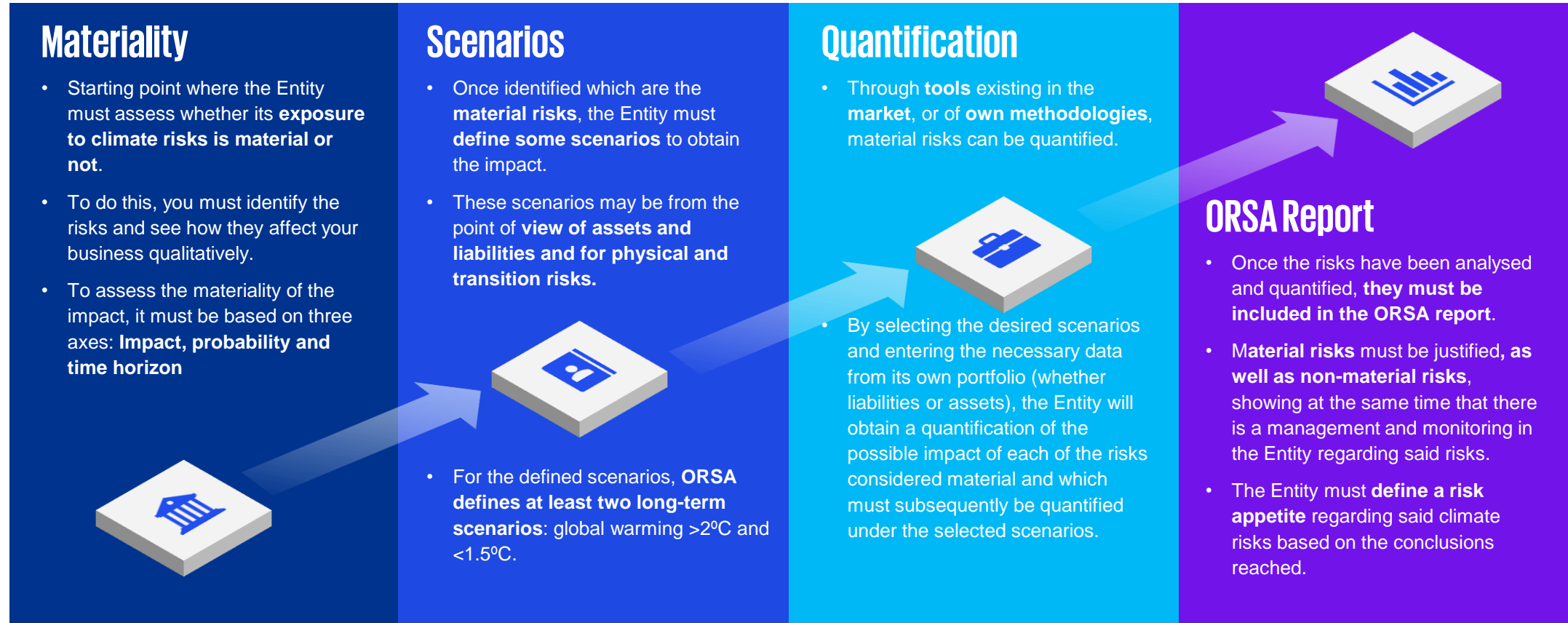
Application of climate risk scenarios to asset portfolios
- **paper5**

Disclosures related to climate and risk management: standards and best practices
- **paper6**

The GAP for adaptation to climate change: an actuarial perspective

# Introduction and regulatory framework: EIOPA and ORSA application

In line with the **recommendations proposed by EIOPA**, in the document “*Application guide for the evaluation of the materiality of climate change and the use of climate change scenarios in the ORSA*” which refers to the process that an entity should follow when assessing its climate risks, the following are proposed: **four phases that an Entity must address to evaluate the impact of climate risk on its business:**

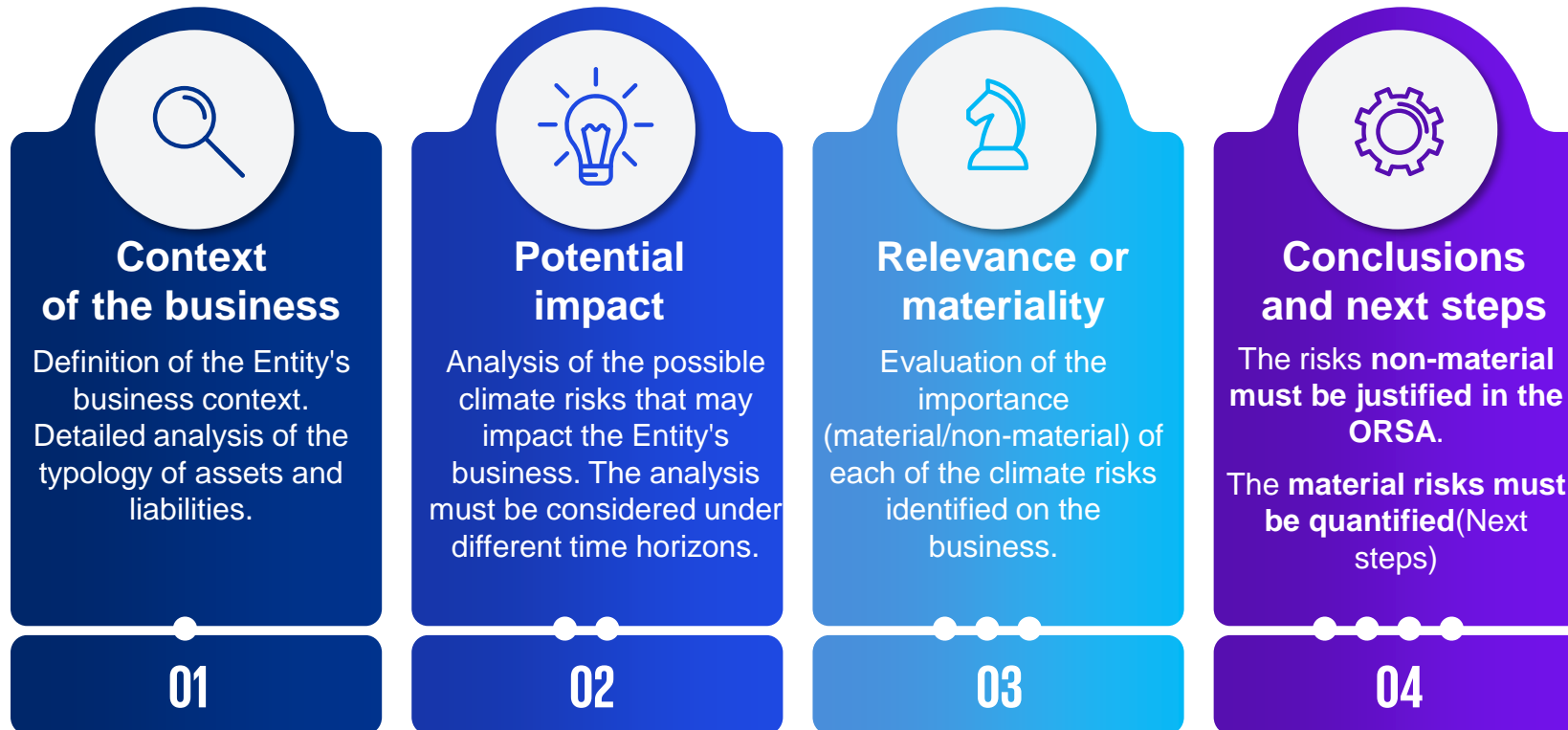


# 01 Introduction and regulatory framework: ORSA - Materiality



EIOPA considers that the risks are **materials**, in the context of Solvency II, when **ignoring the risk could influence decision making** or in the judgment of the users of the information. Although it is true, a materiality threshold is not established by the regulator, such that it must be defined by the Entity.

Below are the steps that EIOPA proposes to follow to evaluate the materiality of climate change risks:

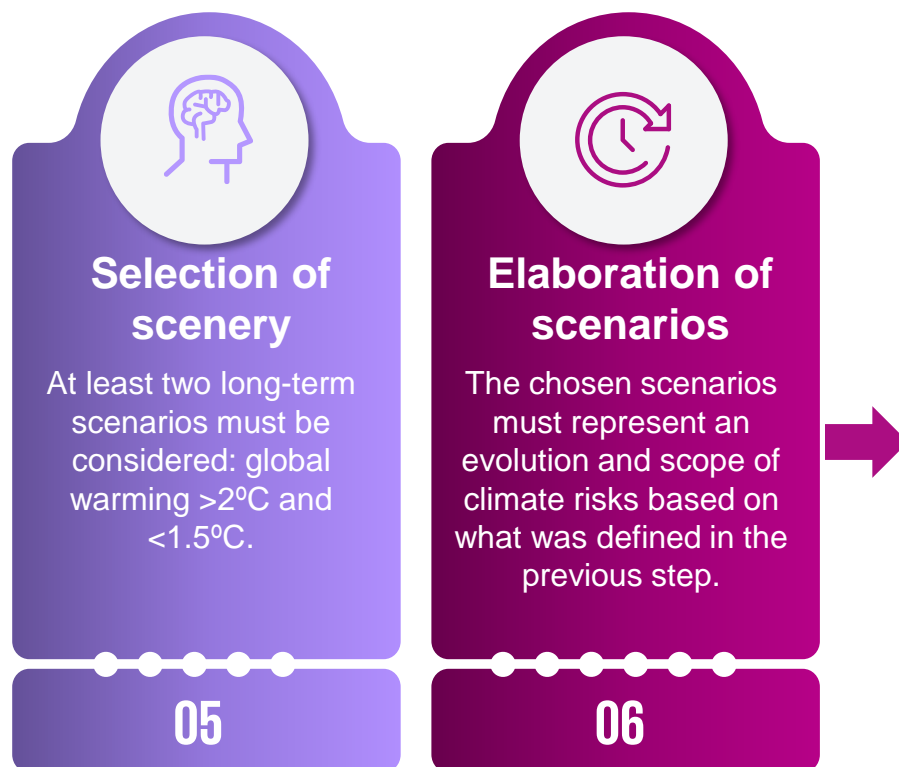


# 01 Introduction and regulatory framework: ORSA - Scenarios



For those risks that in the **material assessment have been considered material**, it is required to **elaborate scenarios** to subsequently quantify its impact.

Below are the steps that EIOPA proposes to follow for the definition and design of the scenarios:



The approach to the different scenarios for climate change risks will follow a different process depending on whether the scenarios are built for physical and transition risks.

### Transition risks:

- Define scenarios at a high level
- Define the parameters of each scenario
- Establish the ambition of each scenario, since each scenario is associated with different probabilities of achieving a series of objectives
- Choose the speed of each scenario (for example, a slow transition may increase your risks)

### Physical risks:

- There are established scenarios (CPR, SSPs, NFGS...) that Entities can use to develop scenarios.

The scenarios must be considered in the short, medium and long term.



# 01 Introduction and regulatory framework: ORSA – Quantification



Once the scenarios are established, calculations and simulations are carried out in order to **financially quantify the impact** by the affected climate risks.

As in the definition of scenarios, when quantifying the financial loss due to the impact of climate change, it must be **differentiated between transition risks and physical risks**.

Regarding this last step, EIOPA suggests the use of models and tools to assess the financial loss derived from the impact of climate risks, where depending on the type of risk it is preferable to use one or the other.

**Set the financial loss**

Financial quantification of the impact for each of the climate risks identified as material on the affected business.

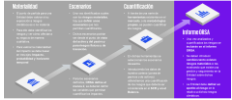
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Once the model has been chosen or developed, to evaluate the financial impact depending on the type of risks being evaluated (physical, transition or both), one indicator or another will be considered.

The objective of these indicators is to offer a global vision of the main factors that determine the impact of the defined scenarios on balance sheet items, solvency or other variables:

Indicator type	Indicator example	Type of climate risk
Balance	SCR	Physical & Transition
	Change in assets over liabilities	Physical & Transition
	Stressed asset value	Transition
	Change in provisions	Physical
Cost effectiveness	Combined Ratio	Physical
	Overall impact on PYG	Physical & Transition
Technical	Exposure (sum insured)	Physical
	Assets subject to transition risks	Transition
	Annual probability of occurrence	Physical
Straight	Gas emissions from investments	Transition

# 01 Introduction and regulatory framework: ORSA – Report



The analyses and work mentioned above are necessary to finally capture in the ORSA the evaluation and analysis of the impact of climate risks on the Entity's business and how it will.



- **Materiality analysis** of climate risks, as well as **conclusion and justification** of those that are not material
- **Risk analysis** of climate change in relation to **business opportunities** in the strategic trajectory of the Entity.
- Development and detail of the **impacts** both to **short, medium and long term**.
- Identify and develop **impacts on processes** of the Entity affected by climate risks (e.g. pricing)



- **Definition of climate change risk**, distinguishing these between transition and physical, and main risks that impact the Entity in a particular way.
- **Establish the main KPIs and risk appetite or risk profile** of the company in relation to the different risks due to climate change.



- **ID of the risks** of climate change as risks that **not addressed in the standard formula and alternative considerations** to control these risks.
- **Inclusion of climate change risks in scenario analysis**– both in the short and long term – in which the extent to which the company is at risk is analysed and how the Entity would be able to absorb the impacts of climate change (worst cases).



- **Proposal and analysis of corrective measures** to address the risks of climate change.
- **Action plan for impacts on processes and risks** traditional communities affected by climate risks.



**02**

**KPMG Vision:  
how can we help  
you?**

## 02 KPMG Vision: Two main work blocks

At KPMG we identify **two main work blocks**, which will be detailed in the following slides:

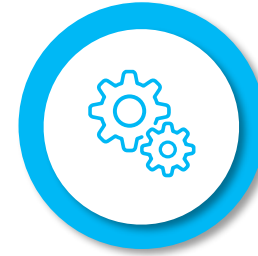


### Materiality

Starting point where it is assessed whether the **exposure to climate risks is material or not**.

To this end, **risks are identified (physical and transition) and the impact on the business (assets and liabilities)** is analyzed in a **qualitative way**.

The assessment of the materiality of the impact will be based on three axes: impact or severity, probability of occurrence and time horizon.



### Modeling and quantification

Risks identified as material will have to be quantified under **different scenarios**.

The scenarios required by the regulator in the ORSA will be at least two.

Once the scenarios are established, the Entity must **quantify the impact** on the business, both **assets and liabilities**.

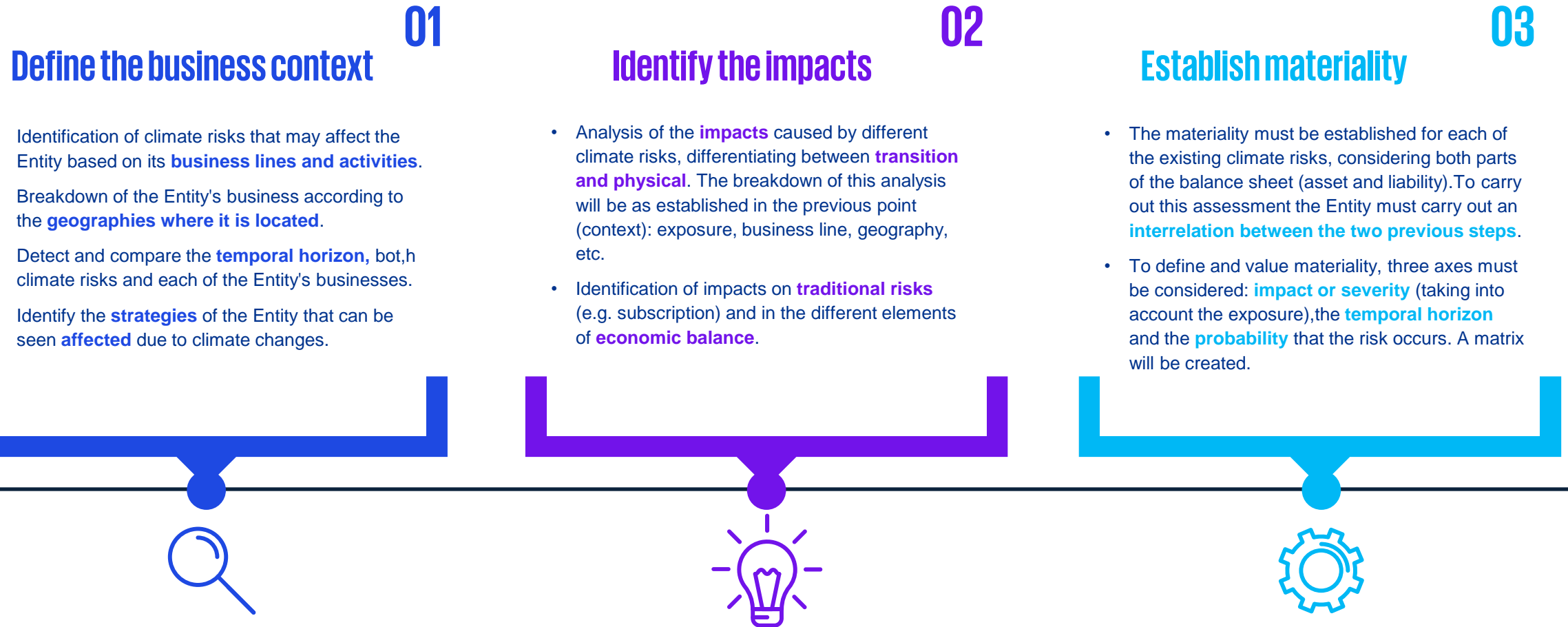
For this modelling it is used internal data, but also external data and models, all already defined by KPMG (KLIM)



# KPMG Vision: Materiality

The first block of work will be based on the **identification of those material risks**, as well as the **justification of those that are not material**.

Below are the steps to follow in this block to achieve the objective:



# 02 KPMG Vision: Materiality



Initially, as a first step, you must identify the **company profile** based on:



Businesses/insurance lines in which the Entity operates.



Products, characteristics of them and SCR impacted



Countries in which it operates



Type of assets the Entity have



In this way, it will be necessary **information about the business**, both, amounts and qualitative characteristics, such as, for example:

1

QRT S.05 for liability exposures

2

List of liability products with: GRH, average ages, average duration, SCR impacted, SII provision, premiums and capital, open/closed for marketing, etc...

3

For assets exposure, QRT S.06.02.01, S.06.03.01, S.06.04.01, S.07.01.01, S.08.01.01, S.10.01.01, S.11.01 will be used, among others. .01

## 02 KPMG Vision: Materiality



Once the previous analysis has been carried out, the **climate risks** that **impact the Entity's business** must be identified. In this way, a first identification will be made of those **risks that impact the Asset and those that impact the Liability**. In turn, it must be identified the **impact of these climate risks on traditional risks** and the relevance of the impact of each of them according to the time horizon.

Below are key points that will be analysed in both the Asset and Liability:

### ASSET



**Potential asset exposure** underlying climate risks in different scenarios and when they are expected to materialize;



How are **distributed assets geographically**, since the climate change policies established by different countries may involve exposure to a different risk.



How this is **translated into changes in financial performance/position** of the companies in which it is invested and the market value of the investments (including for different types of products such as shares, credit, government bonds, infrastructure bonds, private equity, etc.);



Analyse **investment terms** to which the portfolio is exposed, the risk derived from climate change affects differently depending on the deadlines in which work is carried out.



What actions are required in terms of commitment to investee companies or changes to strategic asset allocation?



**Analyse whether the emissions profile of the portfolios** existing supports the net zero carbon target or other **objective of a company**.





The company's assets are exposed to transition and physical risks derived from climate change, which is why it is important to consider the composition of the asset portfolio, both based on its type and geographical distribution and maturities. from the portfolio.

# 02 KPMG Vision: Materiality







## Liabilities and subscription – Non-life/Health

Depending on the line of business, insurers may be particularly exposed to climate risks, both transitional and physical. Therefore, climate modeling is important to understand;

-  How can **be developed** over time the **claim rate** of certain lines of business and what this would mean for loss ratios or combined ratios in different scenarios and time frames;
-  The **key factors** of changes in the modelled loss ratio and the timing of **occurrence of physical risk** (for example, when, in a certain scenario, there is expected to be an increase in flooding in the Spanish east);
-  The **key factors** in the changes in the modelled accident rate due to the **transition risks** (e.g. when combustion vehicles will be replaced by electric vehicles, resulting in a change in repair costs).
-  **Quantify the required change in premiums** to support loss ratios in the face of increased claims and to what extent it would be received by the market or permitted by regulators;

## Liabilities and subscription – Life/Deaths

The impacts of climate change on life insurance vary depending on the location of the underlying risk. Therefore, for liabilities, climate models can help insurers understand;

-  The **impacts** of climate change in the **demographic assumptions** of each country (for example, mortality and morbidity assumptions);
-  The **resulting impact this may have on reserves**, and the extent to which this may affect the allocation and duration of the **assets**;
-  The typology **risk to which they are exposed** depending on the type of product. For example, risk products are exposed to mortality risk, while savings products are exposed to longevity risk.
-  Certain types of **products that may be exposed to linked assets**(e.g. linked products vs. unlinked products).

Like Assets, a company's Liabilities can be affected by physical or transition risks derived from climate change, which is why it is important to study the characteristics of the company's liabilities and understand the possible implications that these risks may have on the same.



# 02 KPMG Vision: Materiality

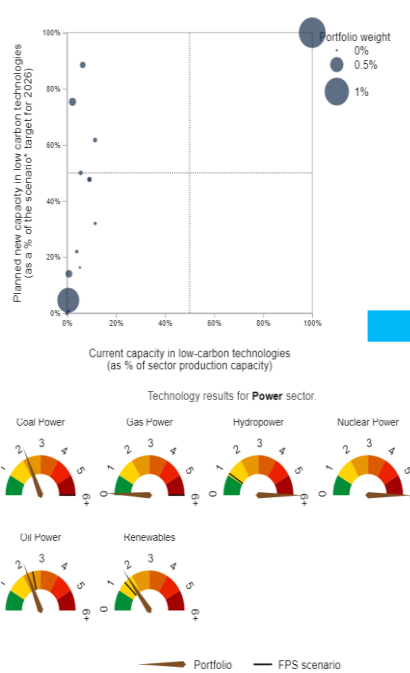


Finally, after the mentioned analysis, the focus **will be into those businesses identified as most relevant or material**, detailing the type of business, type of risk, impacted area and type of climate risk, taking into account the risks covered by the consortium.

In this way it **will determine the materiality or non-materiality of the different climate risks**.

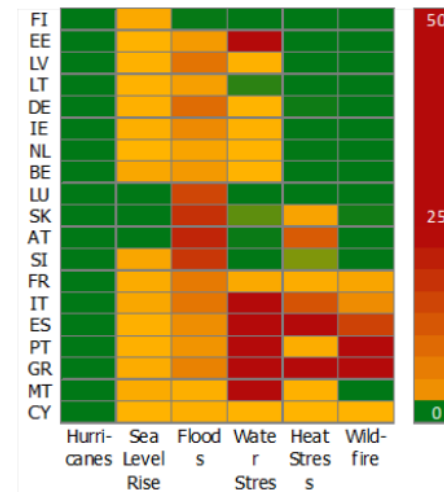
Illustrative example

## ASSETS



Tipo de riesgo	Tipo de activo	Plazo	Materialidad
Físico	Bono Gubernamental	Corto plazo	No material
Físico	Bono Gubernamental	Medio plazo	No material
Físico	Bono Gubernamental	Largo plazo	No material
Físico	Bono corporativo/ Acciones	Corto plazo	No material
Físico	Bono corporativo/ Acciones	Medio plazo	Material
Físico	Bono corporativo/ Acciones	Largo plazo	Material
Físico	Inmuebles	Corto plazo	Material
Físico	Inmuebles	Medio plazo	Material
Físico	Inmuebles	Largo plazo	Material
Transición	Bono Gubernamental	Corto plazo	No material
Transición	Bono Gubernamental	Medio plazo	No material
Transición	Bono Gubernamental	Largo plazo	No material
Transición	Bono corporativo/ Acciones	Corto plazo	Material
Transición	Bono corporativo/ Acciones	Medio plazo	Material
Transición	Bono corporativo/ Acciones	Largo plazo	Material

## LIABILITIES

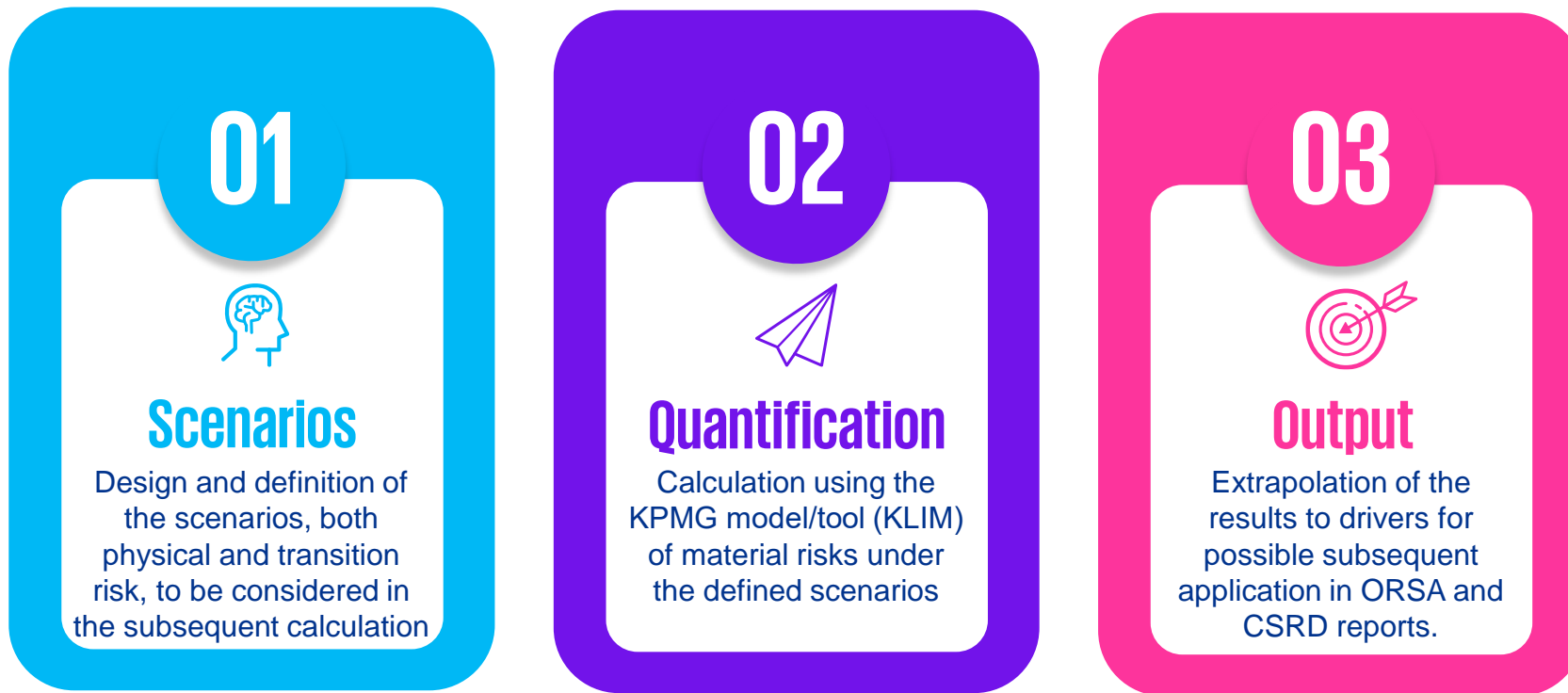


Tipo de riesgo	Tipo de riesgo	Plazo	Materialidad
Físico	Riesgo Biométrico	Corto plazo	Material
Físico	Riesgo Biométrico	Medio plazo	Material
Físico	Riesgo Biométrico	Largo plazo	Material
Físico	Riesgo Mercado	Corto plazo	No material
Físico	Riesgo Mercado	Medio plazo	No material
Físico	Riesgo Mercado	Largo plazo	No material
Transición	Riesgo Biométrico	Corto plazo	No material
Transición	Riesgo Biométrico	Medio plazo	No material
Transición	Riesgo Biométrico	Largo plazo	Material

## 02 KPMG Vision: Modeling and quantification

The second block of work will be based on the **modeling and quantification of those risks identified as materials** in the previous block.

Thus, the **steps to follow in this block** in order to achieve the objective are:



# KPMG Vision: Modeling and quantification



Initially, the **design of the scenarios required to cover both the ORSA report and those required for the CSRD** report will be established, and then the impact of the material risks in each scenario will be quantify.



- At least the Entity must be considered **two long-term scenarios for the ORSA report**: global warming >2°C and <1.5°C.
- Also, scenarios are specified **considering the limitation of global warming** at 1.5 °C as **climate neutrality in 2050 (NETZERO 2050 scenario)**, with the objectives of considering it in the **CSRD report**.
- Different process of **definition of scenarios for physical and transition risks**.
  - Transition risks:
    - Define scenarios at a high level
    - Define the parameters of each scenario
    - Establish the ambition of each scenario, since each scenario is associated with different probabilities of achieving a series of objectives
    - Choose the speed of each scenario (for example, a slow transition may increase your risks)
  - Physical risks: there are established scenarios (CPR and SSPs) that Entities can use to develop scenarios.

The scenarios must be considered both in the short, medium and long term, depending on the **horizon required by both, ORSA and the CSRD report**.

# KPMG Vision: Modeling and quantification



To quantify these material risks we rely on our “KLIM” solution, whose models already have established scenarios that can be used to cover ORSA and CSRD needs, considering seven scenarios where different physical and transitional impacts are covered:

- 1 Net Zero 2050** Net Zero 2050 is an ambitious scenario that limits global warming to 1.5°C through strict climate policies and innovation, reaching net zero CO<sub>2</sub> emissions around 2050. This scenario assumes ambitious climate policies are immediately introduced, with the net zero CO<sub>2</sub> emissions, around 2050, giving at least a 50% chance of limiting global warming to below 1.5°C by the end of the century, with zero or low excess (<0.1° C) of 1.5°C in previous years. The physical risks are relatively low, but the transition risks are high.
- 2 Low demand** The Low Demand scenario assumes that significant behavioural changes, which reduce energy demand, mitigate the pressure on the economic system to achieve net zero CO<sub>2</sub> emissions around 2050. Consequently, the carbon shadow price of this scenario can be lower than that of the Net Zero 2050 scenario, despite both sharing the same global warming limit.
- 3 Lower than 2nd** Below 2°C gradually increases the stringency of climate policies, giving a 67% chance of limiting global warming to below 2°C. This scenario assumes that climate policies are introduced immediately and gradually become stricter, although not as high as in Net Zero 2050. Net CO<sub>2</sub> emissions will be achieved after 2070. Physical and transition risks are relatively low.
- 4 Slow transition** It assumes that annual global emissions will not decrease until 2030, so strong policies are needed to limit warming to less than 2°C. This scenario assumes that no new climate policies will be introduced until 2030. As a result, emissions temporarily exceed the carbon budget and decline faster than below 2°C after 2030, ensuring a 67% probability. to limit global warming to less than 2°C. This leads to higher physical and transition risks than the Net Zero 2050 and Below 2°C scenarios.
- 5 National commitments** They include all policies committed by the country, even if they have not yet been implemented. This scenario assumes that the moderate and heterogeneous climate ambition reflected in the conditional policies of early 2021 continues throughout the 21st century (low transition risks). Emissions decrease but still lead to 2.6°C warming associated with moderate to severe physical risks. Transition risks are relatively low.
- 6 Current policies** It assumes that only currently implemented policies are retained, resulting in high physical risks. Emissions will grow until 2080, causing warming of about 3°C and serious physical risks. This scenario can help central banks and supervisors consider the long-term physical risks to the economy and financial system if we continue on our current path toward a “hothouse world.”
- 7 Global divergence** It entails delayed and divergent climate policy ambition globally, leading to high transition risks in some countries and high physical risks everywhere due to the overall ineffectiveness of the transition. Countries without a zero target follow current policies, while other countries partially achieve theirs (80% of the target).

Scenarios < 1.5°C

Scenarios > 2°C

Although the models consider NGFS scenarios, it is flexible to consider variations that allow the Entity to make sensitivities regarding deviations from said scenarios.



# KPMG Vision: Modeling and quantification



Once the models have been defined, at KPMG Spain we have developed in our **model KLIM, which is a robust and proven models** that will help the Entity to obtain the impact under the different selected scenarios. These models have **data and information from external official sources**, as well as the **scenarios** mentioned previously, with the aim of helping the Entity to obtain a more accurate calculation without the need for additional effort.

Thus, **the entity** will only need to collect **information about the business affected by the calculation**.

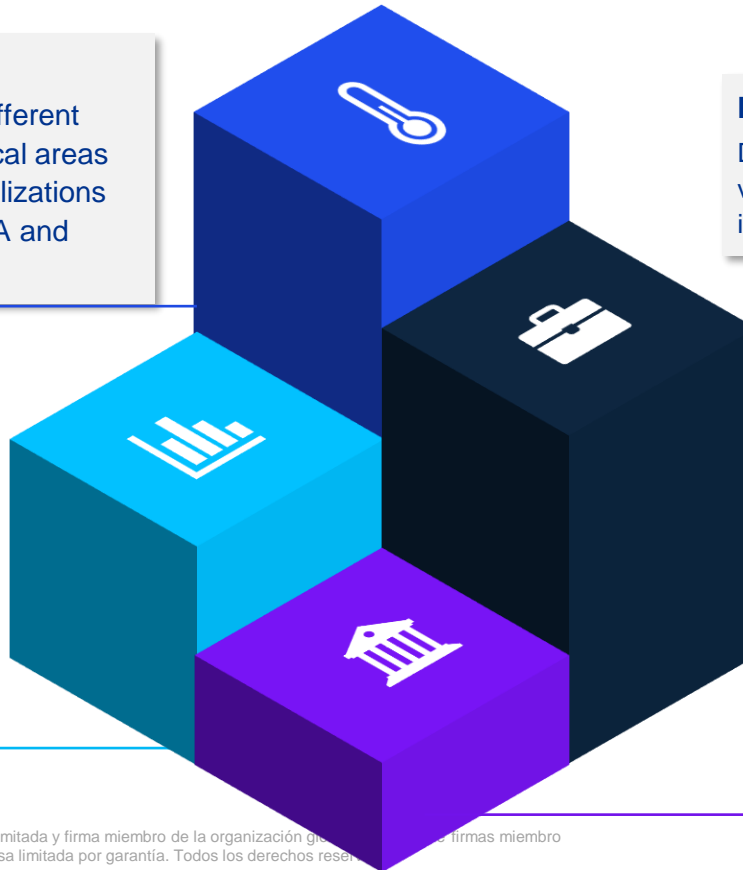
It should be noted that our model is **flexible to modifications** and is **easy to understand**, in such a way the **explainability** of the model to a third party is not a problem.

**External information Liabilities**  
The model has temperature history, different climatic events for different geographical areas of Spain, history of deaths and hospitalizations for different causes, age ranges, CCAA and frequency

**NGFS scenarios**  
Different scenarios to use as a projection base variable in the model provided by the tool. The model is flexible to consider additional scenarios

**Assets company information**  
QRT S.06 and the *look-through* of the funds.  
**Liabilities company information**  
Geographic location, capital at risk, age and historical accident rate (date, place and cause) for liabilities

**External information Assets**  
Shocks defined for the asset by the scenarios in NGFS distinguishing by country and scenario, shocks defined by EIOPA for the stage *Delayed Transition* differentiated by sector.



# KPMG Vision: Modeling and quantification



For **quantify the impacts on the asset** of the company, it is necessary to combine external and internal data that allows us to adapt to the reality of the company evaluated.

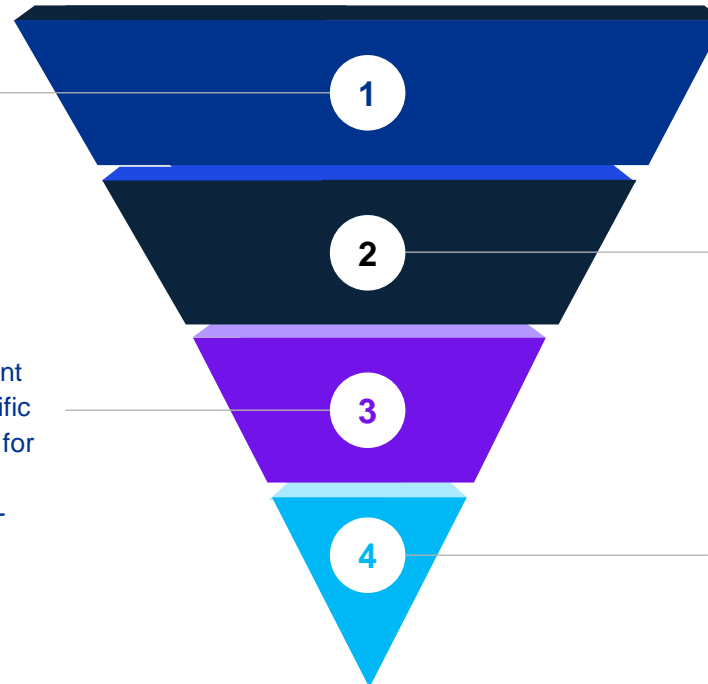
## 1. Shocks origin

It is based on the shocks predefined by organizations or regulators: EIOPA, NFGS, etc.

It is based on an impact already studied by these organizations, with the aim of starting from an official estimate of the change in value of assets in the face of climate change.

## 3. Inputs of the company

Depending on the different types of assets (government bonds, corporate bonds, stocks or real estate) Specific inputs will be requested in order to obtain the impacts for each of them. This information will mainly be the QRT S.06 and, for greater detail in the calculation, the *look-through* of the funds held by the company.



## 2. Adaptation to the escenarios NGFS

With the objective of homogenize the scenarios considered, and based on the source shocks, the impact on assets is obtained for all scenarios, as well as for a complete time horizon.

## 4. Output

By combining the three previous points, the impact monetary for each asset.

# KPMG Vision: Modeling and quantification



For **quantify the climate impact on the liabilities**, the KLIM mode studies the historical relationship between temperature and the event that is subject to analysis, which will depend on the business being considered. Based on historical behaviour, a predictive model is structured that, based on the scenarios proposed, predicts the evolution of the analysed event.

## 1. Event history



The first input of the KLIM model is the history of the event to be analysed: death, hospitalizations, hail, storms...

This information, and therefore the subsequent model, is differentiated by Autonomous Community.

## 2. Associated temperature



The historical temperatures are associated with the history of the analysed event, relating both using a statistical model to find the relationship between both variables and be able to predict their future behaviour.

## 3. Future impact through NGFS scenarios



Starting from the model built in the previous point and based on the evolution of the temperature defined in the selected scenarios, we obtain the evolution of the event analysed in the future, thus being able to predict its behaviour in each of the scenarios and, therefore, the corresponding shock to apply.

# KPMG Vision: Modeling and quantification



The proposed model that will help as support in obtaining the quantitative impacts of those businesses exposed to material climate risks, in addition to the statistical calculation, offers a **result which has been transferred to magnitudes that the Entity can use for its subsequent impact calculations** in elements such as: actuarial provisions, asset value, SCR, etc.

In this way, the **output for each of the modules will be a magnitude that can be easily extrapolated**: decrease in asset value, increase in mortality (qx), increase in frequency of hospitalizations, increase in accidents or combined ratio, etc.

**Tabla de Resultados**

Horizonte temporal NGFS current policies warming level Temp.Hosp.Indirecto 65 años o más	% Impacto Mediano NGFS current policies warming level Temp.Hosp.Indirecto 65 años o más	Factor Precio Medio
1	0,020506%	1
6	0,071697%	
11	0,122772%	
16	0,173632%	
21	0,224253%	
26	0,274661%	
31	0,324886%	
36	0,374955%	
41	0,424905%	
46	0,474836%	
51	0,524767%	
56	0,574698%	
61	0,624629%	
66	0,674559%	
71	0,674559%	
76	0,724490%	

An illustrative example of the result offered by KLIM is shown, where an impact of an increase in % of the number of hospitalizations is shown based on a scenario chosen for a dummy portfolio.

This impact will later be extrapolated to the selected indicators, such as supply or SCR in this example.

# 02 KPMG Vision: How can we take advantage of synergies with CSRD?

## What is CSRD?



The CSRD belongs to the Sustainable Finance package and contributes to extending and implementing the European Green Deal, with are porting much more exhaustive, which includes financial impacts



The European Directive **CSRD** covers the different aspects within the field of sustainable finance (ESG): **environmental, social and governance**. In the area of **ORSA**, we focus on the are **environmental** to evaluate the impact of these phenomena on the Entity.

For this reason, the work detailed above can be focused from a CSRD perspective, in case the Entity is obliged to do so, in order to be able to use them in both reports.



Niveles de reporte			
Información común (sector-agnostic)			
Transversal	Ambiental	Social	Gobernanza
<b>ESRS 1</b> Principios generales	<b>E1</b> Cambio climático <b>E2</b> Contaminación <b>E3</b> Agua y Recursos marinos	<b>S1</b> Plantilla <b>S2</b> Trabajadores en la cadena de valor <b>S3</b> Comunidades afectadas <b>S4</b> Consumidores y usuarios finales	<b>G1</b> Conducta empresarial
<b>ESRS 2</b> General, estrategia, gobernanza y evaluación de la materialidad	<b>E4</b> Biodiversidad y Ecosistemas <b>E5</b> Uso de los recursos y Economía Circular		
<b>1.207 requisitos obligatorios y 530 voluntarios</b>			
Información sectorial (sector-specific)			
Información específica de la organización (entity-specific)			

## MATERIALITY

Materiality will be assessed from **OUTSIDE** → **INSIDE**: **Impacts of the environment and society on the business model.**

Both the **current materiality** (measured in severity) **like the potential** (measured in severity and probability) for the three time periods (**short, medium and long**).

## E1: Climate change

Compatibility Disclosure **transition towards a sustainable economy**, including the **limiting global warming to 1.5°C, as the climate neutrality in 2050.**

# 02 KPMG Vision: Preparation of support documentation

With the objective of having maximum explainability and supporting documentation for any necessary review, the following documents will be prepared:



## Report

### Materiality

Report where the company's business, possible climate risks and their relationship with traditional risks and the materiality of the impact of these risks on the business will be analysed on a specific date.

The analysis will differentiate between assets and liabilities.



## Documentation

### technical-functional calculation

Technical explanation of the calculation or calculations carried out through the tool: inputs used, statistical models chosen, justification of the adequacy of the model, etc.

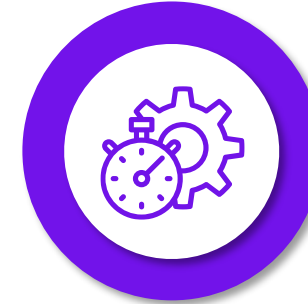


## Graphics and shocks

### (KLIM output)

The direct outputs of the tool will be delivered, which will mainly include for each business and climate risk:

- Scenarios used
- Scenario graphics
- Portfolio exhibition
- Impact table



## Parameters and tables

### derived from shocks

So that the Company can subsequently extrapolate the impacts resulting from the calculation of the impact of climate risks on its insurance businesses (liabilities) to its BEL and SCR, a deliverable will be prepared where, depending on the business, it will be adapted to a generational mortality table. , an impact on the combined ratio or an increase in the number of claims

**03**

**Why is KPMG the  
perfect partner?**



## 04 Why is KPMG the perfect partner?: Learned lessons

01

### Do not underestimate the materiality analysis

In groups of entities, it is especially relevant to carry out a robust materiality analysis where both individual risks and the interrelationships that exist between them (asset) are identified.

02

### Quantification capacity in material risks

Once the material risks have been identified, the exposures in each of them must be quantified, whether assets or liabilities, physical or transitional.

03

### Robust liabilities statistical model

HeAn insurer's business is in liabilities, so the model must correctly quantify the exposure since it could damage solvency if it is not correctly valued.

04

### Adaptable to the needs of the Entity

The predefined scenarios do not imply that adaptation to the needs of each Entity is not necessary to better reflect their exposure to climate risk.

05

### Auditable/explainable a priori

That the model is not a “*black box*” to be able to validate it and understand it by third parties in order to justify the results.

## 04 Why is KPMG the perfect partner?: Learned lessons

06

### Measurable in precision

Important to be able to perform *back testing* of the model to check its accuracy.

07

### Ex post calibratable

Based on the exercises of *back testing*, it is important that the model be parameterizable and adaptable to be able to calibrate it with the needs of the Entity and adjust it based on said results.

08

### Sectorally and academically contrasted

Statistical model discussed and improved with universities, as well as contrasted with KPMG's international practices to ensure its validity.

09

### Built with international experience

Due to KPMG's international experience, we have been able to nourish the model with experience in other geographies and supervisors, to improve it and correctly quantify climate risks.

10

### Homogenization and synchronization of assets and liabilities

The asset and liability scenarios must be equivalent to ensure the solvency of both parts of the balance sheet in the face of adverse situations, including the relationship that exists between them.

## 04 Why KPMG is the perfect partner?: Added value



### Experience in similar projects

We have experience in ESG within the insurance sector, and more specifically with experience in projects to include climate risks in the ORSA for several multinational insurance companies.



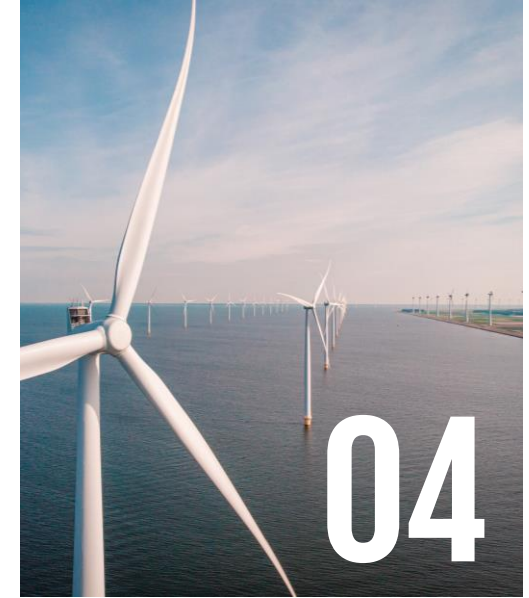
### KPMG International Support

At KPMG Spain we are constantly evolving in line with international trends. Active participation in ESG and climate risk working groups in KPMG International insurance.



### Panel of experts

We have a large team of experts to provide specialized support, thus guaranteeing the quality of both the work and the deliverables required by the project.




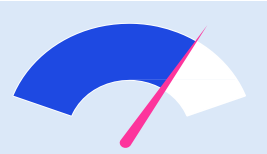









### KPMG tools/models

At KPMG Spain we have predefined models and tools for project support and agility. In the case of climate risks, we would rely on KLIM.

## 04 Why KPMG is the perfect partner?: Added value

At KPMG we have predefined models and tools for project support and agility. Below are the available accelerators, highlighting the support tool that we would use in the project with the Entity (KLIM):

<p>Tools and solutions available at KPMG Spain to facilitate the implementation of different solutions</p>	 <p><b>KLIM</b> Calculation of climate risk impact on ORSA</p>	 <p><b>Price Walking</b> Replica of the pricing model</p>	 <p><b>KITT</b> Generation and comparison of IFRS17 EEFF</p>
<p><b>KPMG Spain TOOLS</b></p> 	 <p><b>IFRS17 PAA Eligibility (Direct and Reinsurance)</b></p>	 <p><b>OCI IFRS17 Curves and Impact Calculator</b></p>	 <p><b>K-Budget</b> IFRS17 budgeting (BBA, VFA, PAA)</p>
 <p><b>ActuaTool</b> Automation of actuarial calculations</p>	 <p><b>Eligibility VFA IFRS17</b></p>	 <p><b>LIC IFRS17</b></p>	 <p><b>IFRS17 Transition (FV, MRA y FRA)</b></p>





# KPMG

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