Guide to managing climate and environmental risks

DeNederlandscheBank

EUROSYSTEEM

Contents

Introduction

Climate change and environmental degradation can pose risks to Dutch financial institutions. DNB expects financial institutions to understand all material risks and to manage them appropriately. This also applies to climate and environmental risks. In this Guide, we provide tools to manage these risks.

Climate change and environmental degradation can pose risks to Dutch financial institutions[1]. These risks may result from physical damage due to climate change and environmental degradation or from financial institutions having to adapt to stricter climate and environmental policies, new technology and/or changing market and consumer sentiment[2].

DNB expects financial institutions to understand and manage all material risks, including climate and environmental risks. Institutions must have sound and ethical operational management[3]. DNB research[4] shows that financial institutions are aware of climate and environmental risks but are still taking only limited account of them in their core processes. We have also announced that we will further specify our expectations with regard to sustainability risk management in 2022 and submit them to the financial sector for consultation, thereby meeting the demands from the sector.

In this Guide, we provide tools to manage climate and environmental risks. The Guide builds on previous policy statements on the management of these risks which have been published in recent years for specific sectors and components of the management framework[5]. We are thus following the recommendation of the Network for Greening the Financial System (NGFS) to draw up "supervisory expectations"[6]. Financial institutions can use these tools proportionately by adopting a risk-based approach. The Guide should be viewed in conjunction with the applicable laws and regulations.

The Guide relates to prudential supervision and will be updated periodically. The tools are intended for insurers, pension funds, premium pension institutions, investment firms and institutions, and electronic money and payment institutions. In the case of investment firms and institutions, only the sector-specific tabs apply[7]. These incorporate the Good Practice published in 2021[8]. The tools provided in the Guide have been aligned where possible with the "supervisory expectations" of the European Central Bank applicable to the banking sector[9]. In the light of legislative and regulatory developments and new insights into the proper management of climate and environmental risks, additional explanatory notes and practical examples

1 The term "financial institutions" is used in a generic sense in this document and includes both financial companies governed by the Financial Supervision Act and pension funds governed by the Pensions Act.
2 See, inter alia An energy transition risk stress test for the financial system of the Netherlands (2018), Values at Risk? (2019), Indebted to nature (2020) and Balancing sustainability (2021).
3 In accordance with Section 3:17 of the Financial Supervision Act and Section 143 of the Pensions Act.
4 The study entitled "Balancing sustainability" examined the extent to which banks, pension funds and insurers integrate sustainability risks into their knowledge processes in the fields of strategy, governance, risk management and information provision.
5 For example, good practices and Q&As were published for insurers on how to include climate risks in the ORSA (2019) and for investment firms and institutions on the management of climate and environmental risks (2021), only Dutch version available. A consultation on good practices for the pension sector was also conducted in 2022, only Dutch version available.
6 See NGFS (2020).
7 As the good practice for investment firms and institutions has been previously consulted, it is decided to not include this in the English consultation version. In the final edition of this guide, this good practice will be included.
8 The Dutch Authority for the Financial Markets (AFM), as the authority supervising the operational management of investment firms and institutions, ensures that they conduct a policy to manage the risks that may detrimentally affect the treatment of customers and participants. This includes managing climate and environmental risks.
9 The ECB Guide applies to "systemic institutions" as part of the Single Supervisory Mechanism. DNB has also declared the ECB Guide applicable to "less systemic institutions".

will be added to this Guide periodically. For example, we are currently working on a good practice for payment and securities institutions with regard to climate risk management.

Reader's guide

This Guide comprises a cross-sector part and sector-specific explanatory notes and good practices. The next tab outlines the legislative and regulatory framework for the management of climate and environmental risks and its application in supervisory activities This is followed by a more detailed explanation of climate and environmental risks. The Guide describes focal points for integrated climate and environmental risk management. These cover the areas of business model and strategy, governance, risk management and information provision. The sector-specific tabs (accessible by clicking the sector buttons at the end of each chapter) contain good practices for the relevant sector. These are practical examples that, in our view, are good examples of integrated climate and environmental risk management. They are intended as a source of inspiration on how institutions can give substance to the cross-sector focal points.

Legislative framework and applicability

Legislative framework

Under Section 3:17 of the Financial Supervision Act and Section 143 of the Pensions Act, Dutch financial undertakings and pension funds respectively are obliged to have sound and ethical operational management. In addition, more detailed specific regulations are in force for various sectors with regard to the management of prudential risks. These can be found in the sector-specific tabs.

Institutions are thus expected to manage material risks. Since climate and environmental risks can be a source of financial and non-financial risks, supervised institutions are required to manage material climate and environmental risks.

At European level there is an increasing amount of legislation and regulation in the field of sustainability[10]. For example, the European Commission has drawn up the Action Plan for Financing Sustainable Growth to make sustainability an integral part of risk management and encourage transparency and long-term thinking. This package includes: the EU taxonomy, a classification system for sustainable economic activities; the Sustainable Finance Disclosure Regulation (SFDR), containing sustainability disclosure requirements for financial market participants; and the Corporate Sustainability Reporting Directive (CSRD), with reporting requirements for listed and large companies on ESG aspects[11]. European Supervisory Authorities (ESAs) are also increasingly embedding sustainability in their laws and regulations[12].

Application in supervision

This Guide provides tools to enable the sector to embed climate and environmental risks in core processes. The tools include focal points for integrated climate and environmental risk management in the areas of business model and strategy, governance, risk management and information provision. These focal points have been further detailed in sector-specific good practices: practical examples that in our view can effectively fulfil the obligations in the laws and regulations[13]. These may be (possibly anonymised) practical examples that we have observed in institutions or stylised examples.

Institutions can use these examples and apply them proportionately according to the nature, size and complexity of the institution. The good practices in this Guide are not binding, but they will be referred to in the supervisory dialogue between DNB and the institution on climate and environmental risk management.

10 The Guide focuses on climate and environmental risks as a subcategory of sustainability risks. This scope may be expanded over time.
11 The Dutch Authority for the Financial Markets (AFM) is responsible for supervising compliance with the obligations in the SFDR and the CSRD.
12 The sector-specific tabs in this Guide provide more information on these ESAs' laws and regulations of relevance to the sector.
13 Good practices are indicative and institutions are free to take a different approach as long as they comply otherwise with the laws and regulations. To learn more about the status of our policy statements, go to the Explanatory guide to DNB's policy statements on Open Book on Supervision.

Box 1: proportionate approach to the management of climate and environmental risks

We monitor sound and ethical operational management in a proportionate and risk-based manner in accordance with laws and regulations. This means we take into account the nature, size and complexity of the institution, as well as the materiality of the risks to the institution. The same applies to the management of climate and environmental risks. Whether climate and environmental risks are material to an institution depends on the characteristics of its business model, operating environment and risk profile. As a minimum, we expect an institution to analyse the extent to which climate and environmental risks are material to the institution (see Box 2 containing focal points for the materiality analysis). An institution must accordingly identify these risks and assesses their materiality. It must then manage the material risks.

An institution adopts a proportionate and risk-based approach to managing climate and environmental risks that is geared to the size of the institution and the materiality of its exposure to climate and environmental risks. For example, a qualitative and less granular approach may suffice for a small institution with low material exposures, whereas larger institutions or institutions with material exposures will adopt a more sophisticated approach. We recognise that climate and environmental risks have particular characteristics and that a gradual entry path may be necessary to raise the management to the desired maturity level over time.

Legislative framework for sectors

- Pension fund
- Insurer

Climate and environmental risks

This Guide addresses climate and environmental risks. These are the financial and non-financial risks[14] that may arise from financial institutions' exposure to the effects of climate change and environmental degradation. Climate change can lead to extreme droughts, floods and storms, among other things. Examples of environmental degradation include water or air pollution, desertification, deforestation and loss of biodiversity and ecosystem services[15].

Climate and environmental risks may be driven by **physical** and **transition risk factors**:

- Physical risk factors are related to the physical impacts of climate change and environmental degradation. These can be both acute and chronic. Acute physical risk factors result from extreme climate and environmental events, such as drought, floods or environmental disasters leading to soil, air or water pollution. Chronic physical risk factors result from long-term climate and environmental events, leading, for example, to sea level rise and biodiversity loss.
- Transition risk factors are related to the transition to a lower-carbon and environmentally friendlier economy, such as changes in climate and environmental policies, technology or consumer and market sentiment.

Physical and transition risk factors are interrelated. The longer policy action and hence the transition to a lower-carbon and environmentally friendlier economy is delayed, the greater the (actual or expected) physical consequences will be. As a result, more far-reaching policy measures may be required. At the same time, far-reaching policy measures are a transition risk factor.

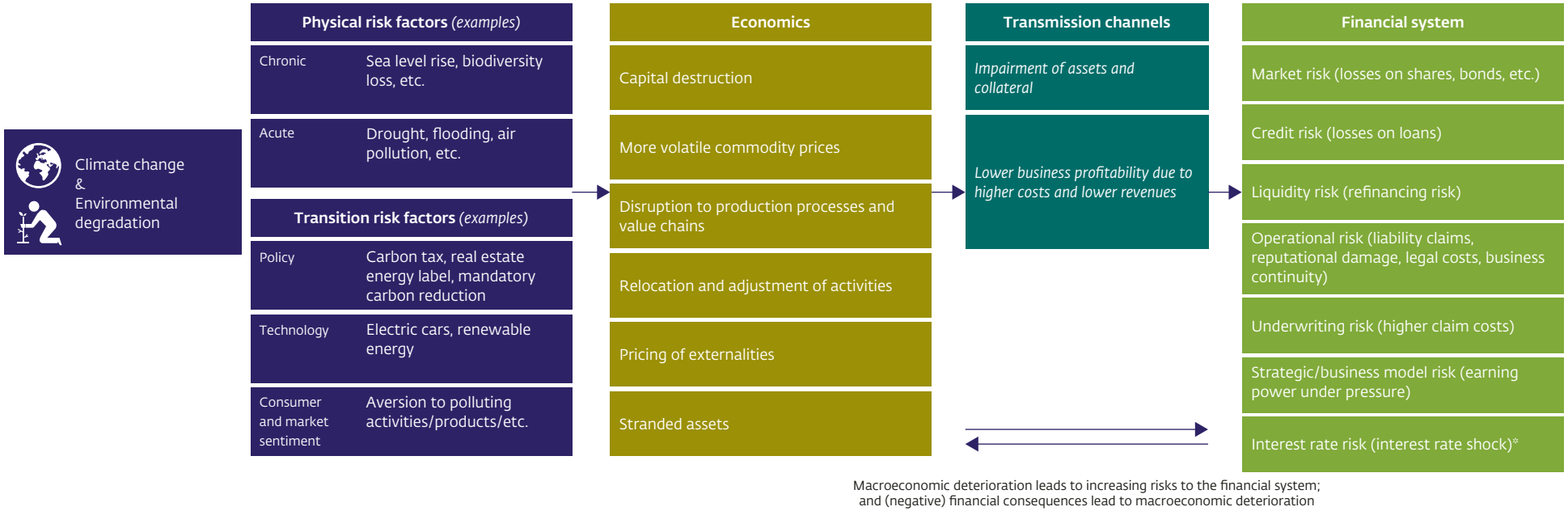
Physical and transition risk factors can lead to financial or non-financial risks for financial institutions, such as market and reputational risk, through so-called transmission channels (see Figure 1), as these factors can cause changes in the economy which in turn feed through to the financial system.

Climate change, for example, will make extreme weather events more frequent, potentially causing capital destruction and increasing the unforeseen claims burden for non-life insurers, as well as their underwriting risk. It can also damage the premises, data centres and services of financial institutions, disrupting production processes and jeopardising business continuity. New climate policies, technical developments and/or changes in consumer preferences could also potentially reduce the market value of certain investments (stranded assets). In the case of financial institutions, this may imply increased market risk.

Climate change and environmental degradation do not only affect financial institutions; financial institutions themselves also have an impact on the climate and environment through their activities. This impact also entails risks. For example, financial institutions that invest in companies that have a large negative environmental impact may face increased reputational and legal risks. Financing and investments with an actual or intended positive impact on the climate or the environment entail possible reputational risks if, for example, greenwashing is involved or if expectations are not met. Institutions may then face claims that lead to higher operational risks.

14 Financial risks also include market, liquidity and credit risks as well as underwriting and interest rate risks. Non-financial risks include business model/strategic risk, governance risk and operational risk. Reputational risk and legal risk are considered part of operational risk.
15 Ecosystems are complex and dynamic systems of plants, animals and microorganisms, as well as the non-living environment, interacting as a functional unit. See inter alia the DNB study Indebted to nature – Exploring biodiversity risks for the Dutch financial sector

Figure 1. Climate and environmental risks as a source of prudential risks



* Interest rate risk is primarily a second-order effect and results from macroeconomic deterioration.

The extent to which climate and environmental risk factors permeate or interact with the institution may differ from sector to sector and also depend on the institution's business model. The sector-specific tabs contain a table with examples of how these risk factors feed through into existing financial or non-financial risks.

In addition to these direct impacts, financial institutions may encounter indirect or second-order effects. The (negative) impact on the financial system may in turn worsen the macroeconomic conditions. The feedback arrows between the economy and the financial system in Figure 1 illustrate these second-order effects.

Characteristics of climate and environmental risks

Climate and environmental risks have specific characteristics that are important in the integrated management of these risks. Climate and environmental risks are systemic in nature and have a non-linear impact. Historical data is therefore often of limited value in assessing the risks. In addition, they are characterised by the enormous scope and scale of the impacts, uncertain timing ranging from the short to long (or very long) term and dependence on short-term action and policy measures. Finally, climate and environmental risks are relatively new in the financial sphere and new developments and insights are emerging in rapid succession.

Impact of risks on sectors

- Pension fund
- Insurer
- Electronic money or payment institution

Focal points for the management of climate and environmental risks

With this Guide, we highlight four focus areas of possible relevance to financial institutions in achieving integrated management of climate and environmental risks. The focus areas relate to (1) business model and strategy, (2) governance, (3) risk management and (4) information provision. For each focus area, focal points have been identified that are applicable to climate and environmental risk management across sectors. Institutions are also offered good practices, as an example of effective application of a focal point. These can be found on the sector-specific tabs. When applying these it is important to keep in mind the proportionality and materiality of the risks to the institution.

Box 2: Materiality analysis

Financial institutions should manage material risks appropriately. The same applies to material climate and environmental risks. Whether climate and environmental risks are material to the institution can be determined by means of a materiality analysis.

When conducting a materiality analysis, the institution can take the following focal points into account:

1. *Distinction between physical and transition risk factors*
Examples of physical risk factors include drought, floods, biodiversity loss and water stress. Transition risk factors include policy, technology and market sentiment (see Chapter 3).

2. *Impact on the various prudential risk areas*
This involves identifying how the above physical and transition risk factors may impact the risk domains used by the institution, such as credit, market, liquidity, operational/reputational, business model and strategic risk (see Chapter 3 for an explanation of how climate and environmental risks impact prudential risk categories).

3. *Different time horizon*
Here a distinction can be made between the short (0-5 years), medium (5-10 years) and long (>10 years) term.

4. *Qualitative and quantitative analysis methods*
Examples of quantitative methods include exposure and/or concentration analysis, scenario analysis, sensitivity analysis, portfolio alignment assessment and ratings or climate scores from external data providers. Qualitative methods include a heat map and qualitative scenario analysis.

5. *Materiality assessment*
Materiality can be assessed by combining information on probability and impact for different time horizons. This assessment is institution-specific and depends on particular features of the respective institution's business model, operational environment and risk profile. It is important that institutions record the results of this analysis. This will enable the institution to provide an explanation if climate and environmental risks turn out to be non-material.

Focal area 1: Business model and strategy

Mapping the potential impact of climate and environmental risks on the business environment and business model

Institutions should consider all material risks to which the business model may be exposed. These risks may arise from developments in the business environment, among other things. Climate change and environmental degradation can affect this environment and pose risks to the business model. For instance, increased flood risk can make a region's business climate less attractive. An institution dependent on income from this region may have lower earning power in the long run. At the same time, climate change and environmental degradation can provide opportunities that maintain the institution's earning power.

Adopting a granular and long-term perspective when identifying risks (and opportunities)

A good way to identify risks (or opportunities) for the business model is to identify them at the level of sectors, geographical areas and services in which the institution operates or wishes to operate. In doing so, the institution can indicate the timeframe within which these risks are likely to materialise. Some climate and environmental risks may occur within the regular planning cycle, such as reputational effects or extreme weather events. Other risks, such as technological breakthroughs, may come into play and affect the business model in the longer term.

Including climate and environmental risks in strategy formulation and implementation

Material climate and environmental risks may impact the effectiveness of the existing and future strategy. To investigate this, the institution can use forward-looking tools, such as stress tests and scenario analyses. Material risks arising from the analyses are taken into account when formulating or updating the strategy.

Establishing performance indicators

To implement and monitor the strategic goals regarding climate and environmental risks, an institution can establish performance and risk indicators. The indicators allow the institution to make adjustments to the implementation of its strategy and take action. Depending on the activities and materiality, specific indicators can be drawn up for relevant parts of the institution and portfolios. These could include indicators such as the organisation's carbon footprint or the share of sustainable assets in the strategic investment policy.

Good practices for sectors

- Pension fund
- Insurer

Focal area 2: Governance

Policymakers[16]

Embedding climate and environmental risks in governance and policy frameworks

It is important that policymakers, making up the senior level of the institution, embed climate and environmental risks in the governance, strategy, risk appetite and risk management framework. As these risks can affect the institution in multiple ways, it is important to do this on an integrated basis. In this way they can ensure that these risks receive sufficient attention within the organisation and are adequately addressed. In doing so, they also promote a culture of values, standards and behaviour that contributes to conscious consideration of climate and environmental risks. Policymakers also engage in a dialogue with relevant stakeholders so that their interests and views are included in the considerations.

Assigning responsibilities for climate and environmental risks within the institution's own policymaking bodies

Assigning tasks and responsibilities for climate and environmental risks in the institution's own policymaking bodies stresses the importance of this theme and demonstrates a commitment to climate and environmental risks from "the top". To ensure that climate and environmental risks are properly embedded, it is possible to examine which structure, working method and/or mutual division of tasks is appropriate within the institution's own bodies. Various options are possible, including setting up a specific management or supervisory board committee for climate and environmental risks.

Ensuring sufficient fitness with regard to climate and environmental risks

It is important that policymakers have sufficient knowledge, experience and skills with regard to climate and environmental risks to assess the exposure of the institution to these risks and make balanced decisions about them. We also pay particular attention to this when assessing the fitness of policymakers and other officers for whom we conduct fit and proper assessments (see Box 3)[17]. As these risks are relatively new, complex and diverse, building fitness and propriety is particularly important. Since developments are fast-moving in this area, for example around new legislation, it is advisable to pay constant attention to this.

Box 3: Climate and environmental risks as part of fit and proper assessments

In fit and proper assessments at banks, insurers and pension funds, climate and environmental risks are taken into account when assessing fitness and propriety. Among other things, we expect prospective members of the management board, supervisory board, supervisory authority or other sole or joint policymakers to have knowledge of these risks, the relevant laws and regulations and to know how these risks may affect the institution. We also assess whether he/she has sufficient competences to properly assess these risks and include them in decision-making, such as a helicopter view, environmental sensitivity and strategic direction. We apply this expectation proportionately, taking into account the specific post, the institution's nature, size, complexity and risk profile and the composition and performance of the body as whole.
See: Climate-related risks are now a part of fit and proper assessments (dnb.nl).

16 By this we mean the highest executive body (the management, board of directors or management board) and the supervisory body (the supervisory or oversight board) of the institution, as applicable.
17 Climate and environmental risks are only taken into account in fit and proper assessments at banks, insurers and pension funds, not at investment firms and institutions or electronic money and payment institutions.

Organisation

Allocating responsibilities and resources for climate and environmental risk management within the organisational structure

By explicitly assigning roles and responsibilities and distributing them in a balanced way across functions, it is possible to make well-informed decisions on climate and environmental risks. The nature of these risks requires institutions to take account of major uncertainties surrounding the timing and impact of climate change and environmental degradation in decision-making. This makes it particularly important to include input from the relevant functions involved in the management of climate and environmental risks. Sufficient financial and human resources, including the required knowledge and skills, are important for the adequate performance of the functions. As developments are occurring rapidly in this area, it is advisable that the adequacy of resources, expertise and skills to manage climate and environmental risks is assessed on a regular basis.

Aligning remuneration policies and practices with the climate and environmental risk strategy and management

By aligning remuneration policies and practices with the institution's strategy, goals, long-term targets and risk appetite, it is possible to encourage behaviour that can help achieve the institution's climate and environmental targets. This could involve, for example, compliance with the institution's own climate or footprint targets. Achieving such targets generally requires a gradual entry or exit path of several years.

Good practices for sectors

- Pension fund
- Insurer

Focal area 3: Risk management

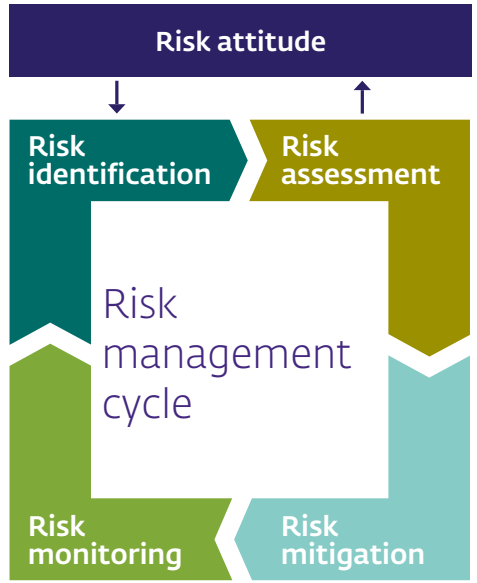
Explicitly including climate and environmental risks in the existing risk appetite framework

The risk appetite framework is the starting point for the design of the risk management cycle. By including in this framework all material and other risks to which the institution is exposed (now and in the future), an institution can indicate which climate and environmental risks it accepts in order to attain its strategic goals and which it does not. As input for integrating climate and environmental risks in this framework, the institution can investigate which risk categories are affected by climate and environmental risks and to what extent. For risks it considers material, the institution defines a targeted risk appetite and takes targeted measures. These could include a risk tolerance for market risk caused by asset impairment due to stricter climate policies. Particularly in view of the new and dynamic nature of climate and environmental risks and the related regulations, it is sensible to review this framework regularly.

Integrating climate and environmental risks in the existing risk management cycle

Incorporating climate and environmental risks in the existing management cycle (see Figure 2) ensures that they receive regular attention. In this cycle, the institution identifies, assesses, mitigates, monitors and evaluates its exposure to the relevant risks in the light of the established risk appetite. In its policy, management information and risk reports, the institution can provide a written demonstration of the way it manages risk through these steps in the management cycle. The identification and assessment builds on financial institutions' legally required risk assessments[18].

Figure 2: risk management cycle



Building a comprehensive picture of climate and environmental risks in the identification phase

In the identification phase it is useful for the institution to build a comprehensive picture of the climate and environmental risks that affect the aforementioned business model and strategy, but also how these risks will affect the current balance sheet and organisation in the short term. This identification enables the institution to understand the climate and environmental risks to which it is exposed. Looking from different perspectives and considering interactions between risks helps to build a comprehensive picture.

18 The *Own Risk and Solvency Assessment* (ORSA) in the insurance sector, the Own Risk Assessment (Eigen Risico Beoordeling – ERB) in the pensions sector and the *Internal Capital and Liquidity Adequacy Assessment Process (ICLAAP) for investment firms and institutions.*

Using scenario analyses and stress tests to estimate exposure to climate and environmental risks

Scenario analyses and stress tests can be useful tools given the uncertainties and complexities associated with both short-term and long-term climate and environmental risks. For the shorter regular planning period, these tools can be used to identify the impact of these risks on capital (and required capital). Business impact analyses and continuity tests can also be used to test the resilience of critical operational processes to climate and environmental risks. Longer-term scenario analyses are useful particularly to test the resilience of the business model. Examples are scenarios of temperature rises of 1.5-2 versus 3 or more degrees Celsius, or a scenario in which the transition to a sustainable economy is disorderly. These can also be analyses of a qualitative nature that can provide input for strategic planning and decision-making. See also Box 4.

Establish appropriate risk tolerances and indicators for measuring and assessing climate and environmental risks

For example, based on the appetite, these could include tolerances for exposures to sectors or geographical areas that are highly sensitive to climate and environmental risks and hence a source of, for instance, market or counterparty risks. To monitor the risk appetite, it is important that tolerances are clearly defined and, where possible, measurable using indicators. To form a complete picture of the risk, it may be necessary to define multiple indicators for a single risk. For example, these could be indicators derived from certain concentration risks on investments and loans or indicators reflecting the potential impact of physical risks on outsourcing. Where there is no quantitative data, it is possible to use qualitative indicators based on expert judgement. For each risk indicator, it is possible use probability and impact analyses to assess whether the identified risk level falls within the risk tolerance and hence the risk appetite.

checklist for preparing and conducting scenario analyses:

Phase	Action	Explanation
1	Define goal	**Understanding** long-term risks to the business model, or short-term financial risks. **Input** for risk management or strategic policy discussi-ons.
2	Choose scenarios	**Type** (dependent on purpose): qualitative or quantitative, trend, exploratory or stress. **Number:** 2 or more, at least 2-degree temperature rise scenario.
3	Assumptions, measure and parameters	**Assumptions:** internal or aligned with recognised third parties (NGFS, KNMI, et al.). **Measure:** choice of emissions, temperature rise. **Parameters:** type of transition (orderly and timely, disorderly or no transition). Make prudent assumptions in a stress scenario.
4	Time horizon	**Short and medium horizon** (up to 10 years) for financial risks and impact on soundness of the institution in regular planning horizon. **Long horizon** (>10 years) for qualitative estimates for impact on business environment and business model.
5	Method and procedure	**Method:** calculation model or storyline behind the scenarios. **Procedure:** include stakeholder engagement, workshops with experts.

Managing climate and environmental risks that fall outside the risk tolerance

If the potential impact of climate and environmental risks falls outside the established risk tolerance, it is important to indicate how these risks will be mitigated within a specified period. For example, an institution can reduce its carbon footprint or opt for impact investing in companies that invest in renewable energy. It is useful to evaluate the effectiveness of the mitigation tools used, and to make this measurable and monitor it where possible. Where measures are unlikely to be sufficient to align the risk profile with the risk appetite, appropriate follow-up steps are defined.

Monitoring and periodically reporting exposure to climate and environmental risks

By monitoring climate and environmental risks on the basis of the established risk indicators, it is possible to monitor these risks and their development. For institutions that have committed to certain climate targets or alliances, it is important that they monitor the progress of these commitments to remain credible and avoid reputational risks. Risk reporting helps the policymaking body to take informed decisions on the management of material climate and environmental risks.

Frequent evaluation of the climate and environmental risk management cycle

Developments in climate and environmental risks are occurring rapidly. There is increasing knowledge and understanding of the risks and their modelling, data coverage is growing and legislation is increasing. It is therefore important that an institution frequently evaluates its climate and environmental risk management cycle. In this evaluation, questions may arise such as: Is the list of identified risks still complete? Is the materiality estimate of the risks still correct? Is the impact of the risks being properly measured? Are the mitigation measures effective? By setting a target maturity level, the institution can identify what future steps are still needed to improve the risk management cycle.

Good practices for sectors

- Pension fund
- Insurer

Focal area 4: Information provision[19]

Setting up appropriate data infrastructure for climate and environmental risks

An appropriate data infrastructure for climate and environmental risks helps the institution to identify these risks. For proper embedding and an integrated approach, it is important to link the collected data on climate and environmental risks to existing models and processes. An important part of that infrastructure is determining the data requirement, which partly depends on the business model and the size of the institution. This data can serve as input for internal reporting to guide strategic decisions, as well as external reporting such as the annual report and prudential reports. DNB recognises that data and methodologies are still being developed and are sometimes incomplete. By working on a best-effort basis and keeping up with developments, the data infrastructure can be raised to an increasingly mature level.

Paying attention to new reporting standards when determining the data requirement

Various initiatives are under way to increase transparency concerning sustainability in the financial sector. One of the main reporting standards for climate and environmental risks currently being developed stems from the *European Corporate Sustainability Reporting Directive* (CSRD); these are the *European Sustainability Reporting Standards* (ESRS)[20]. Institutions covered by the rules must include in their external reporting information on the effects of ESG factors on the company and the corresponding effects of the company on people and the environment. This includes ESG information on the strategy, governance and business model, materiality analysis, risks and opportunities and performance indicators. These standards also mention data indicators to measure climate and environmental risks[21]. Institutions are advised to align their data needs as closely as possible with these European reporting standards and make clear where they use their own, additional or different, metrics and methods. This applies both to institutions covered by the reporting obligation and to those not covered by it.

Providing meaningful information on material climate and environmental risks

Providing information on climate and environmental risks increases market participants' understanding of the risk profile and resilience of financial institutions. Good information provision is particularly important for institutions that are committed to achieving climate and environmental goals. For example, if an institution commits to policy goals to fund (or refrain from funding) certain activities, it can provide sufficient clarity on matters such as the plans, goals and thresholds used as well as the portfolios and/or activities involved and the associated progress. It is also important that the institution provides details of the metrics and methods used. Such transparency is important to avoid reputational damage.

Good practices for sectors

- Pension fund
- Insurer

19 Information provision is an area in which supervision is shared with the Dutch Authority for the Financial Markets (AFM). AFM supervises the legal requirements in the field of information provision. DNB focuses on prudential reporting and the prudential implications of external reporting, such as reputational risks due to insufficient or inadequate information provision

20 The ESRS were developed by the *European Financial Reporting Advisory Group* (EFRAG). The *International Sustainability Standards Board* (ISSB) is also currently working on reporting standards (IFRS Sustainability Disclosure Standards) to serve as a global baseline. While not legally enforceable in the EU, these standards play a role in aligning European reporting standards.

21 See here for the draft version of the ESRS put out to consultation; and here for the draft of the ISSB.

Sectors

- Electronic money and payment institution
- Pension funds
- Insurers

Impact of climate and environmental risks on electronic money and payment institutions

The table below shows an example of how climate and environmental risk factors can affect existing financial and non-financial risk areas of an electronic money or payment institution. The same risk factor can affect several risk areas simultaneously. The table is intended purely as an illustration to provide a starting point for the materiality analysis. The ultimate impact depends among other things on the size and distribution of the physical and transition risks, as in the case of the institution's business model This impact and its materiality will have to be determined by the institution itself in its materiality analysis.

Table showing examples of how climate and environmental risks feed through to the risk profile of an electronic money or payment institution (non-exhaustive)

Risk channel	Subtype	Operational risk
Physical	Acute or chronic	Serious climate and environmental events can damage the premises, data centres and operations, among others, of an electronic money or payment institution.
Transition	Policy, technology and market sentiment	New policy/technology and changing market sentiment with regard to climate and the environment may put pressure on the reputation of an electronic money or payment institution, for example with regard to the fulfilment of climate targets such as aiming for climate-neutral operation by 2050.

Back to main text

Legislative framework for pension funds

The legislation and regulations governing pensions are laid down in the Pensions Act, the Pension Fund (Financial Assessment Framework) Decree, the Pensions Act and Obligatory Occupational Pension Schemes Act Implementing Decree and the Financial Supervision Act. Whereas the main text of the Guide specifically concerns climate and environmental risks, the legislation speaks of: "risks arising in the field of the environment and climate, human rights and social relations". This scope is broader, and in line with the scope applied by EIOPA in IORP II, namely "ESG factors". ESG stands for Environmental, Social and Governance factors. For example, following the implementation of the IORP II Directive in the Pensions Act in early 2019, pension funds have been obliged to incorporate ESG risks in the risk management framework and their own risk assessment. Pension funds must also state in their annual reports how they take account of ESG factors in their investment policy and must share this information more widely under the SFDR – for example on their website.

In 2019 EIOPA published an opinion with explanatory notes for supervisory authorities on what they can expect from pension funds with regard to the management of climate risks.

As far as DNB is concerned, the good practices of pension funds are good examples of ways to comply with the above legislation while also fulfilling the focal points in Chapter 4. The good practices refer explicitly to the legal articles in some places.

The following page provides an overview of relevant legislation relating to ESG.

Section 5:68 of the Financial Supervision Act and Section 21a of the Market Abuse (Financial Supervision Act) Decree.	Pension funds are subject to one explicit prohibition: on investing in companies involved in the production of cluster munitions.
Sections 18 and 18b of the Pension Fund (Financial Assessment Framework) Decree.	The risks relating to the environment and climate, human rights and social relations in the investment portfolio and their management are included in a pension fund's risk management. As a long-term investor, a pension fund will have to deal directly with the impacts of environmental, economic or social developments on the future value of investments. The associated risks are therefore part of the risk management and the own-risk assessment.
Section 21 of the Pensions Act and Section 48 of the Obligatory Occupational Pension Schemes Act, Section 2 of the Pensions Act Implementing Decree	The employee or participant receives basic information about the pension scheme (Pension 1-2-3) within three months of the start of pension accrual. Section 2 of the Pensions Act and Obligatory Occupational Pension Schemes Act Implementing Decree states what is meant by this, such as information on how the pension fund takes account of the environment and climate, human rights and social relations in its investment policy.
Section 135 (4) of the Pensions Act and Section 130 (3) of the Obligatory Occupational Pension Schemes Act	A pension fund must state in its management report how its investment policy takes account of the environment and climate, human rights and social relations. An accountability body (Section 115a of the Pensions Act and Section 110e of the Obligatory Occupational Pension Schemes Act) or stakeholder body (Section 115c of the Pensions Act) of a pension fund has authority to give an opinion on the management board's actions on the basis of the management report, the financial statements and other information, including the findings of the internal supervision on the policy implemented by the management board, as well as on policy choices for the future.
Section 145 (1) of the Pensions Act, Section 29b of the Pension Fund (Financial Assessment Framework) Decree	The statement of investment principles includes the way in which the investment policy takes account of the environment and climate, human rights and social relations. This could include the way in which energy consumption, climate, raw material availability, health, safety and good corporate governance are taken into account in the investment policy.
Section 33 of the Pensions Act; Section 42 of the Gatekeeper Improvement Act; Section 11 of the Pensions Act Implementing Decree, Gatekeeper Improvement Act (Pension Funds Code)	Pension funds are required to report on compliance with the Pension Funds Code in their annual report. If a provider has not complied with the principles or does not intend to comply with them in the current and subsequent financial year, it must state the reasons in the management report. Among other things, the Pension Funds Code requires management boards to ensure stakeholder support for responsible investment choices.

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Impact of climate and environmental risks on pension funds

The table below shows an example of how climate and environmental risk factors can affect existing financial and non-financial risk areas of a pension fund. The same risk factor can affect several risk areas simultaneously. The table is intended purely as an illustration to provide a starting point for the materiality analysis. The ultimate impact will depend among other things on the scale and distribution of physical and transition risks, like the pension fund's business model. This impact and its materiality will have to be determined by the institution itself in its materiality analysis.

Table showing examples of how climate and environmental risks feed through into a pension fund's risk profile (non-exhaustive)

Risk channel	Financial risk	Reputational risk	Social risk
Physical	Damage to property and assets in high-risk locations.		Global warming is having a negative impact on the liveable world.
Transition	Depreciation of assets of carbon-intensive companies due to policy measures such as carbon tax/ negative impact on revenue model of companies due to product substitution (e.g. car industry).	Participants' preferences are changing; they do not want to invest in fossil energy or carbon-intensive sectors.	

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Good practices for management of climate and environmental risks by pension funds

1. Business model and strategy

Good practice: identifying the impact of climate and environmental risks on the business environment and business model

A pension fund board[21] ("board") wants to know the impact of climate and environmental risks on its business environment and business model. It wants to include this impact in its strategic investment policy and risk management cycle. In order to gain a fuller understanding, the board analyses the short- and long-term impacts of climate change, deforestation and biodiversity loss on its investments. The investments are broken down by sectors with sufficient granularity to allow relevant impact analysis. The board also looks at opportunities to invest in sectors that invest in new technology, for example.

In addition to the impact that climate and environmental risks have on investments on the balance sheet, the board examines which risks its investments actually create for the climate and the environment, known as "double materiality" or "social risk". The increased attention that participants and society pay to these risks may lead to reputational risk or lawsuits concerning the investment policies pursued. Mitigating measures considered for social risk include signing the IMVB Covenant or the Paris Agreement targets. However, these can also be an additional source of risk. If the board fails to honour the signed commitments, this may lead to a loss of support among the participants and hence additional reputational and legal risk.

The board must also bear in mind possible dilemmas that may surface during a broad impact analysis. An investment that has a positive impact on carbon reduction may simultaneously have an undesirable negative impact on social aspects, for example, resulting in reputational risks.

We consider this a good practice because:

- the board examines the impact of climate and environmental risks with a broader scope and longer horizon than in the regular risk analysis. Many climate and environmental risks only manifest themselves over the longer term.
- the board breaks down the investment portfolio with sufficient granularity. The impact of climate and environmental risks often becomes visible only when the investment portfolio is included in the analysis at activity, company, region or sector level. Asset classes may be exposed to climate and environmental risks to varying degrees, with the way investments are made within a class also having an impact. An example concerns the characteristics of a real estate portfolio. The sensitivity of companies to carbon pricing is also becoming more visible, as are the opposite effects. For example, a climate risk scenario may lead to a fall in the market value of the equity portfolio, while an assumed rise in interest rates would make the impact on the funding ratio seem limited. Separating these effects provides a better understanding of the importance of the different assumptions.
- the board considers the impact on society, in addition to the impact of climate and environmental risks on investments and operational management.

21 The good practice has been written from the perspective of a pension fund operating a defined benefit agreement. However, the good practice also provides guidance on risk management for premium pension institution or pension fund with a defined contribution plan.

Good practice: surveying participant preferences

In determining the social risk that the pension fund is prepared to accept, the preferences of its members are an important variable. The pension fund therefore conducts period surveys and panels on participants' investment preferences with regard to climate and environmental risks. These show that a large proportion of participants do not want the board to invest on their behalf in companies that (i) have high carbon emissions, (ii) do not invest in cleaner technology, (iii) produce controversial weapons or tobacco, (iv) damage biodiversity or (v) operate in countries that violate human rights. Furthermore, a large proportion of participants want the pension fund board to sign the climate agreement.

In response to these preferences, the fund decides to put more companies on the exclusion list and to seriously consider signing the climate agreement.

As the board is ultimately responsible for the investment policy, it makes its own assessment based on the results of the participant survey and is transparent about them. In a newsletter to participants, the board presents the results of the participant survey, how the board takes preferences into account in its policy choices and reports on their impact.

We consider this a good practice because:

- the board proactively canvasses the preferences of its participants. In doing so, the fund strengthens the support for its policies and mitigates the reputational risks.
- the board knows that it has ultimate responsibility for the investment policy and makes its own assessments based on the results of the participant survey and is transparent about this. The fund explains to its participants how it arrived at its policy choices and reports on their impact.
- this partially fulfils Section 135 of the Pensions Act (prudent person), Section 11 of the Pensions Act Implementing Decree, the Gatekeeper Improvement Act (Pension Funds Code).

Good practice: formulating beliefs and strategic investment targets for climate and environmental risks

The management board of a pension fund formulates beliefs and strategic targets that it records as part of its Socially Responsible Investment strategy.

Beliefs of the fund board:

- Climate and environmental risks are not sufficiently priced in at present. The risk measures, volatility and tracking error are not good measures of climate and environmental risks.
- Investing in line with Paris Agreement will reduce risks in the long run and increase the chance of retiring in a liveable world.
- Achieving the Paris Agreement targets not only means investing less in carbon-intensive businesses, but also requires investment in businesses that facilitate the energy transition.
- Investments in companies that are major contributors to biodiversity loss pose reputational risks.

Targets:
- The fund invests in line with the Paris Agreement.
- The fund invests in such a way that it contributes to climate mitigation (carbon reduction) and climate adaptation.

The fund translates these – long-term – beliefs and targets in the strategic investment policy into targets (or specimen targets) for the next three years:
- Aligning the investment portfolio with the Paris Agreement (with Paris-aligned benchmark)
- Understanding the impact of physical climate risks and biodiversity loss
- Impact investing; investing 10% of the assets in Sustainable Development Goals (SDGs) 7 (Affordable and clean energy), 13 (Climate action) and 15 (Life on land – restoring ecosystems and biodiversity)

We consider this a good practice because:
- the pension fund includes the impact of climate and environmental risks on its business environment and business model when defining its beliefs and strategic and concrete goals, so that it can target them accordingly.
- this partially fulfils Section 102a of the Pensions Act, Section 13a of the Pension Fund (Financial Assessment Framework) Decree, Paragraph 1 Pensions Act, and Section 29a of the Pension Fund (Financial Assessment Framework) Decree.

Good practice: translating strategic investment goals into concrete performance indicators

The pension fund board translates this strategic investment policy into concrete performance indicators (KPIs) for the coming year. For this it uses existing standards, indicators and methods such as the TCFD (*Task Force on Climate-related Financial Disclosures*), the PAI (*Principal Adverse Impacts*) indicators of the SFDR, the PCAF (*Partnership for Carbon Accounting Financials*) for measuring the carbon footprint, or the SBTi (*Science Based Targets initiative*) for setting targets..

	KPI
1	There is a roadmap to net zero by 2050 in line with the Paris Aligned Benchmark (PAB).
2	The physical climate risk in the real estate and mortgage portfolio has been assessed and a plan is in place to reduce it by 10%.
3	5% of assets were invested in SDGs 7, 13 and 15 at the end of the year.
4	The fund has signed up to collective engagement initiatives on climate and biodiversity loss.
5	The fund has conducted a qualitative analysis on the potential impact of biodiversity loss on the equity and corporate bond portfolio.

We consider this a good practice because:
- the pension fund translates strategic goals into measurable performance indicators (KPIs). KPIs are a good way to translate and specify a strategy so that the board can monitor progress.
- the pension fund uses standards, indicators and methods that are widely accepted in the market.

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Good practice: ensuring that policymakers are fit to manage climate and environmental risks

A board has drawn up minimum requirements in terms of knowledge of climate and environmental risks and opportunities for the management board and the supervisory board of a pension fund. These minimum requirements have been incorporated in the job profiles The management board has adopted the principle that it and the supervisory board have insight into and an understanding of the key developments in the field of climate and the environment, the related legislation and regulations, what society and stakeholders expect from the institution and what that means for operational management.

With a view to maintaining an adequate level of knowledge, the management board of another pension fund periodically organises knowledge sessions on climate and environmental themes for the management board, the supervisory board and the key function holders in risk management, actuarial and audit. Discussions are also held with several asset managers to broaden their perspective. Topics include the causes of climate change, laws and regulations, national and international climate policies, standards and frameworks, and the use of models and scenario analyses for climate and environmental risks. External experts are regularly invited to these knowledge sessions, to train and "challenge" session participants to pinpoint the climate and environmental risks and opportunities for the institution. The management board and the supervisory board periodically evaluate whether the knowledge standards are being met and identify where is a need for training and education.

The management board of a third pension fund establishes an advisory board with external and internal experts to gather knowledge, experience and advice on integrating climate risks and opportunities into policy frameworks on a more permanent basis.

2. Governance

We consider this a good practice because:

- in this way, the pension fund ensures that sufficient expertise and focus is present within the administrative and supervisory bodies to assess the pension fund's exposure to climate and environmental risks, respond appropriately to risks, identify opportunities, arrive at informed and balanced decisions and maintain effective supervision.
- the pension fund ensures continuous development of expertise in and experience of climate and environmental risks and opportunities.

Good practice: assigning responsibilities for climate and environmental risk management within the organisational structure

The pension fund board has clearly formulated the responsibilities of all bodies in terms of climate and environmental risk management and in the SRI policy, as shown in Table 1.

Table 1: example of assigning responsibilities for climate and environmental risk management within a pension fund.

Bodies	Responsibility	Process
Management board	The management board discusses how best to assign the responsibilities for climate and environmental risks. The board has joint (ultimate) responsibility for the SRI policy and its implementation. One director is the portfolio holder for the Climate theme.	The board discusses the SRI policy and its implementation at least quarterly. This includes the following subjects: ■ the SRI implementation; ■ progress of the SRI KPIs adopted by the fund; and ■ updates regarding possible new SRI targets
Investment committee	The board has delegated the implementation of the SRI policy to the investment committee (IC). The IC reports to the management board on progress and the results achieved.	Every quarter, the IC reports to the management board on the KPIs and challenges.
Sustainability manager	The sustainability manager supports the Climate portfolio holder on the management board.	He/she attends all management board meetings where the topic of climate is discussed.
The second-line risk manager	The second-line risk manager conducts ■ an independent review of the SRI policy; ■ its implementation; and ■ the risk management (ESG risk management is conducted primarily by the first line)	The risk manager attends meetings of the IC and the management board. Before the meeting, he/she gives an opinion to the IC (and the management board) for the decision-making, by means of a risk opinion/proposer.
Participant	Participants provide input into the fund's SRI policy when requested. By actively soliciting preferences from participants, the fund can increase support for the SRI policy.	Every three years, participants are asked for their opinions and preferences on SRI in representative participant panels and by means of a broad survey. A webinar on SRI is also organised periodically.
Employer	Employers provide input on the SRI policy. The fund can increase support for its SRI policy by actively soliciting preferences from employers.	Coordination with the employer on the SRI policy takes place at least once a year.
Accountability body	The accountability body has two roles: advisory powers and accountability. This also ensures greater support for the SRI policy and the accountability body also represents the interests of participants.	A dialogue is conducted with the fund's accountability body at least once a year, on both the chosen policy (advisory power) and the implementation of the policy (accountability).

We consider this a good practice because:

- in this way the management board ensures that roles and responsibilities are clearly assigned so that climate and environmental risks are adequately considered in decision-making, risk management, implementation and supervision.
- this partially fulfils Section 143 of the Pensions Act.

Good practice: aligning remuneration policies and practices with the strategy and management of climate and environmental risks

The remuneration policy for the management board of a pension fund is based on both financial and non-financial KPIs. The non-financial KPIs align with the strategic sustainability targets set by the pension fund. These targets are specific and linked to deadlines. For example, the remuneration policy specifies a percentage carbon reduction relative to the first year of pension administration, to be achieved by 2025 at the latest. Similar agreements have been made in the area of investments, with regard to the long-term strategic targets for carbon reduction in the investment portfolio.

We consider this a good practice because:

- the pension fund includes non-financial KPIs in the remuneration policy that are in line with strategic targets and makes them measurable. The aim is to encourage certain behaviour, including with regard to the climate and the environment.
- establishing these KPIs and making them measurable also means they can be accounted for externally.

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3. Risk management

Good practice: formulating an ESG risk appetite

A pension fund has formulated a qualitative ESG risk appetite with regard to the pension fund's reputational, compliance, operational and financial risk. The pension fund's formulation for reputational and financial risk is set out below.

Reputational risk appetite 1: "We have a low risk appetite for exposure to reputational risk arising from investments that the fund board and participants find morally objectionable."
Reputational risk appetite 2: "We have a medium risk appetite for reputational risk arising from non-compliance with the IMVB Covenant."
Financial risk appetite: "Climate change and biodiversity loss must not have a major impact on the financial position of the pension fund."
Social risk appetite: "We have a low risk appetite for failure to fulfil the Paris Agreement."

We consider this a good practice because:

- the qualitative risk appetite is the starting point for the ongoing development of the risk management cycle. It is good if a pension fund distinguishes between the different areas where ESG risks affect the pension fund (such as financial, reputational, operational and compliance risk), because each risk may require a different kind of assessment and management.
- this partially fulfils Section 18 and Section 18b of the Pension Fund (Financial Assessment Framework) Decree.

Good practice: specifying the ESG risk appetite

The pension fund specifies the (qualitative) risk appetite;

- **Reputational risk appetite 1**: *"We have a low risk appetite for reputational risk arising from investments that the fund board and participants find morally objectionable."* Specifically, this means there is no risk appetite for investments in companies that produce controversial weapons, companies that use child labour, companies that are major contributors to biodiversity loss or companies and countries that violate human rights.
- **Reputational risk appetite 2**: *"We have a medium risk appetite for reputational risk arising from non-compliance with the IMVB Covenant."* Specifically, this means that we have conducted ESG due diligence on compliance with the IMVB policy for at least 80% of the portfolio.
- **Financial risk appetite**: *"Climate change and biodiversity loss must not have a major impact on the financial position of the pension fund"* Climate change: Specifically, we do not want to lose more than 20% on equities, 15% on credits or 10% on real estate in two climate (stress) scenarios. Also, in two (plausible) ESG scenarios (such as a "Paris-aligned" scenario), we do not want to lose more than 5% on equities, 3% on credits or 1% on real estate. Biodiversity loss: For biodiversity loss, we have not yet been able to establish a specific quantitative risk appetite. Additional explanatory notes: For financial risk, the risk appetite was specified using the results of the (plausible and stress) climate scenarios and expert judgement was used to determine what the pension fund considers desirable in terms of potential impact. The pension fund is aware of the high uncertainty of the scenario analyses and data deficiencies and takes this into account in the expert judgement. The pension fund has decided to review the scenario analyses periodically and adjust them as necessary. The pension fund has also identified biodiversity loss as a major financial risk, but it does not have the right knowledge and tools to measure this, as these are still being developed. On the basis of the precautionary principle the pension fund is taking steps to reduce its biodiversity footprint by 10% next year.

■ **Social risk appetite**: "*We have a low risk appetite for failure to fulfil the Paris Agreement.*" This means there is a low risk appetite for deviation from the Paris Aligned Benchmark.

We consider this a good practice because:

- the management board provides an explicit and, where possible, measurable definition of the maximum risk tolerance and this provides guidance for effective risk management. For ESG risks, the management board seeks as much alignment as possible with the existing financial risk appetite (although such integration for ESG risks is not yet entirely possible in practice).
- this partially fulfils Section 18 and Section 18b of the Pension Fund (Financial Assessment Framework) Decree.

Good practice: from longlist to shortlist in risk identification

To determine which risks are potentially material for the fund's risk profile, the fund conducts a comprehensive risk analysis (*this partly overlaps with the good practice under business model and strategy*) and a participant survey.
Based on these analyses, the fund compiles a longlist of all possible climate and environmental risk factors. These include climate change, biodiversity loss, deforestation, water pollution and no proper waste disposal. To reduce the longlist of possible risks to a shortlist, the pension fund examines which risks could have a major impact. To this end, the pension fund has combined quantitative analyses with qualitative insights from experts. By examining the impact on the entire investment portfolio, both in the short and long term and in different scenarios, it has obtained a good, up-to-date picture of the risks. The pension fund goes through the identification process frequently in order to identify new risks in good time.

The following table shows a number of risks from the shortlist (non-exhaustive)::

Table 2: examples of ESG risks

ESG risk factor	Potential effect	Impact on	Estimated risk (*=low, **=medium, ***=high)
Climate risk; physical	Damage to property and assets in high-risk locations	Financial risk	*
Climate risk; transition	Depreciation of assets of carbon-intensive companies due to policy measures such as carbon tax. Negative impact on businesses' earnings model due to product substitution (e.g. car industry)	Financial risk	***
Climate risk; transition	Participants' preferences are changing; they no longer want to invest in fossil energy or carbon-intensive sectors	Reputational risk	***
Child labour	Participants do not want to invest in companies that use child labour	Reputational risk	**

We consider this a good practice because:

- the pension fund uses different sources and methods for identification, including a combination of expert-driven and data-driven approaches. In doing so, it uses various sources, such as reports and frameworks of international institutions, to arrive at a longlist of risks. Engaging with different parties broadens the field of vision. Estimates can be made on a best-effort basis, as it is not yet easy to take into account all the factors and interactions that may play a role.
- the pension fund goes from a longlist to a shortlist.
- the pension fund describes how these risks may affect the pension fund (transmission channels). The more specific this detail, the easier it is to make a subsequent estimate of the extent of the risk.

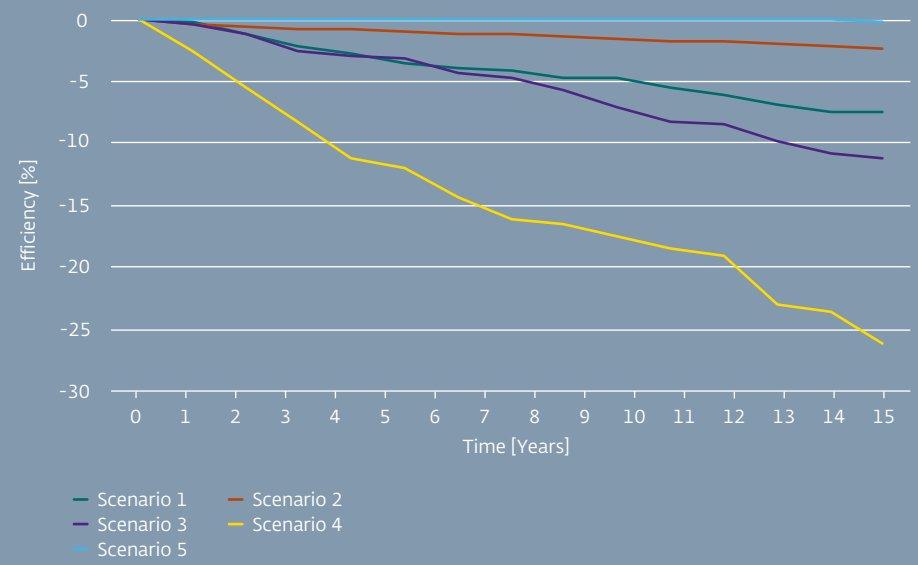
- this partially fulfils Section 18 and Section 18b of the Pension Fund (Financial Assessment Framework) Decree.

Good practice: using forward-looking methods in risk identification

To understand its financial risk, the pension fund asked an external party to work with the fund's management board to qualitatively examine a number of scenarios in order to obtain a sense of certain risks. The scenarios they discussed included: What if the bee becomes extinct? What if we stop using fossil fuels? What if we are only allowed to drive electric vehicles? Which sectors and companies are sensitive to groundwater scarcity?

The fund also asked the external party to carry out some quantitative impact analyses for climate change. It requested the inclusion of transition and physical risks The pension fund also requested the calculation of a "Paris aligned" scenario (which it considers a very plausible climate scenario) and a number of stress scenarios. The pension fund requested a bottom-up analysis, where possible, to gain a good understanding of exactly where the risks affect investments. Furthermore, the pension fund does not want the scenarios to assume a rate rise relative to the baseline, as this assumption is highly uncertain and very decisive for the outcome.

Figure Climate risk on shares



We consider this a good practice because:

- the use of – multiple "plausible but serious" – scenario analyses and stress tests by the pension fund board (or in this case commissioned by the board) is in line with the long-term nature of pension investments and can provide guidance on reducing the uncertainty and complexity of (non-linear) climate and environmental risks.
- the pension fund uses indicative estimates and qualitative analyses to form a picture of risks for which there is still little in the way of data and methods. Adequate data and methods do not exist for all climate and environmental risks to provide a detailed forward-looking analysis and calculate the financial impact. We nevertheless see that it may still be possible to estimate the risks, for example by identifying which potentially risky exposures a pension fund has in its portfolio.
- the chosen scenarios are consistent with the research question, based on plausible assumptions and address the investment portfolio at an appropriate level. For example, a scenario assuming a 1.5-degree temperature rise relative to pre-industrial levels could be a benchmark against which to examine the degree of "Paris alignment" but may be less suitable as a stress scenario. Exploring a range of possible future scenarios, adopting the precautionary principle and thinking in "what if" scenarios can give the board a sense of what relevant risks might be. Calculating scenario analyses and translating them into the impact on the

pension balance sheet is complex and inevitably involves uncertain assumptions. It is prudent is to take sufficient account of uncertainty when making the assumptions.

- this partially fulfils Section 18 and Section 18b of the Pension Fund (Financial Assessment Framework) Decree.

Good practice: defining ESG risk indicators in the risk assessment

A pension fund researches and lists possible risk indicators. Here, the fund uses the IMBV information on the website of the Federation of the Dutch Pension Funds as a source where indicators can be found for many ESG risk factors.

Table 3: list of risk indicators

Type risico	Risico driver	Data vereisten	Risico Indicator
Transition	Policy, technology, preferences and sentiment, legal	Carbon footprint	Carbon footprint
Transition	Policy, technology, preferences and sentiment, legal	Carbon intensity	Weighted average Carbon intensity (WACI)
Transition	Policy, technology, preferences and sentiment, legal	Biodiversity impact	Biodiversity footprint
Transition	Policy, technology, preferences and sentiment, legal	Corruption score	Exposure to serious abuses (# investments/ monetary value)
Transition	Policy, technology, preferences and sentiment, legal	Human rights violations	Exposure to serious abuses (# investments/ monetary value)
Transition	Policy, technology, preferences and sentiment, legal	Labour rights violations	Exposure to serious abuses (# investments/ monetary value)
Transition	Policy, technology, preferences and sentiment, legal	Environmental rights violations	Exposure to serious abuses (# investments/ monetary value)
Physical, acute	Flooding, forest fire, extreme precipitation, storm damage, desertification	Location of assets + risk maps*	Exposure at Risk (possibly forward-looking)
Physical, chronic	Reduced fertility, heat stress/ change in temperature patterns, water scarcity, extreme precipitation, groundwater level change (risk of pile rot, subsidence, etc.), ecosystem service dependency	Location of assets + risk maps*	Exposure at Risk (possibly forward-looking)

* Where possible, identifying mitigation/adaptation opportunities can strengthen the analysis.

For each risk, the pension fund chooses one or more indicators to measure the risk and for each risk indicator a standard is set, which is in line with the ESG risk appetite (s).

- Reputational risk 1. For each risk on the shortlist, the pension fund has formulated one or more risk indicators with risk tolerances. In general, the higher the exposure to the ESG factor, the higher is the likelihood of the pension fund experiencing reputational damage. For human rights, the pension fund looks at the "number of companies involved in controversies classified as serious (or very serious)" risk indicator and for biodiversity loss at the decrease in mean species abundance (MSA*km2*year, the size of the area where biodiversity is being completely destroyed by the activities of the companies in which the pension fund invests). Table 4 shows the results for human rights and biodiversity loss.

- Reputational risk 2. The pension fund has conducted ESG due diligence on 70% of the portfolio for compliance with the IMVB Covenant. For 10% of the portfolio it was found to be not yet compliant. The pension fund therefore believes the risk here is high.
- Financial risk. For financial risk, the pension fund looks at the impact of two climate stress scenarios (low probability) on different asset classes and at two plausible (high probability) scenarios. The impact is greater than the risk tolerance.

Table 4

ESG	Metric	Exposure	Probability			Impact	Risk
			low	medium	high		
Human rights	Number of companies involved in controversies classified as serious or very serious	30	< 2	2-15	> 15	high	high
Biodiversity loss	Biodiversity footprint (MSA.km2.yr)	237	< 50	50-250	> 250	high	medium

Table 5

Metric	Impact	Probability	Impact			Risk
			low	medium	high	
Scenario 1 (stress)	equities 23%; credits 10%; real estate 8%	low	loss on equities <10% or credits <7.5% or real estate <5%	loss on equities = >10% or credits = >7.5% or real estate = >5%	loss on equities >20% or credits >15% or real estate >10%	high
Scenario 2 (stress)	equities 18%; credits 8%; real estate 8%	low				medium
Scenario 3 (plausible)	equities 10%; credits 5%; real estate 8%	high	loss on equities <5% or credits <3% or real estate <1%	loss on equities = >5% or credits = >3% or real estate = >1%	loss on equities >7% or credits >5% or real estate >3%	high
Scenario 4 (plausible)	equities 3%; credits 1%; real estate 2%	high				medium

low
medium
high

Based on these assessments, the pension fund has set all three (gross) risks at high.

Table 6

ESG risk	Risk	Risk appetite	Within appetite?	Risk response	Notes
1. Reputational risk arising from investments that the fund board and participants consider morally objectionable.	■	low	not OK	Manage	The assessment is not yet complete; there are no metrics of risk tolerance for child labour yet.
2. Reputational risk arising from non-compliance with the IMVB Covenant	■	medium	not OK	Manage	We have conducted due diligence with regard to IMVB on 70% of the portfolio. On 10% of the portfolio we still turn out to be non-compliant.
3. The financial risk due to climate change and biodiversity loss	■	low	not OK	Manage	The assessment is now only based on climate risk; a biodiversity loss impact analysis is being worked on.

■ low
■ medium
■ high

We consider this a good practice because:

- in the risk assessment, the pension fund identifies the risk using risk indicators and probability and impact analyses, by engaging in dialogue and using expert judgement, and assesses whether the risk falls within the risk appetite.
- to estimate the financial risk, the pension fund measures the impact by means of scenario analyses, with the scenario matching the purpose of the analysis; for example, is it a baseline scenario or a stress scenario? Here too, the pension fund can determine risk tolerances with regard to the degree of impact. In addition, a fund can also look at "portfolio at risk". This identifies which part of the portfolio is exposed to risk.
- the pension fund uses risk indicators that provide information on the risk. We see some pension funds using carbon indicators such as carbon footprint, but mostly driven by targets in the investment policy and less from a risk perspective. In the case of human rights violations, for example, the "number of companies involved in controversies classified as serious (or very serious)" risk indicator could be considered.
- the pension fund makes clear at what level of exposure or impact the risk is assessed as high, medium or low, for example, by stating specifically how many serious (or very serious) controversies the pension fund still refers to as low risk. Table 3 lists a number of possible risk indicators with the data requirement, broken down into risk type and risk driver for different ESG risk factors. This is only an example and the table is not exhaustive.

- where risks cannot be assessed within the existing risk management system, the pension fund looks at what alternatives are available. If there is not yet a method to measure risks such as biodiversity loss, it is important to look at what is possible to identify the specific risks. The pension fund can devise actions to assess these risks in other ways, such as examining approaches based on other data sources and methods, or through a qualitative estimation based on expert judgement.
- this partially fulfils Section 18 and Section 18b of the Pension Fund (Financial Assessment Framework) Decree.

Good practice: listing mitigation measures for ESG risks

To manage ESG risks, the pension fund has listed possible mitigation measures for each risk, such as exclusions, voting policies, engagement, and best-in-class allocation by sector. To mitigate reputational risk, the fund opts for exclusions; to mitigate climate transition risk, it opts for a Paris-aligned benchmark.

Also with regard to reputational risk, the pension fund has decided to be transparent about its ESG policy and, in particular, about the exclusion list. In this way it can obtain feedback from external parties, which helps it to take a critical look at its exclusion policy

We consider this a good practice because:

- the pension fund uses various instruments to manage ESG risks, making a conscious choice to deploy control measures and matching those to the ESG risks it wishes to manage.
- this partially fulfils Section 18 and Section 18b of the Pension Fund (Financial Assessment Framework) Decree.

Good practice: assessing the effectiveness of mitigation tools

The pension fund gives an opinion on the effectiveness of mitigation measures. The effectiveness in this example is still not good enough. The pension fund has devised actions to increase the effectiveness of the risk management. The results for financial and reputational risk are set out below.

- low
- medium
- high

Table 7: ESG risk mitigation

ESG risk	Risk	Risk appetite	Within appetite?	Risk response	Mitigation tools	Effectiveness	Net risk	Notes
We do not accept any exposure to investments that we consider morally objectionable	■	low	not OK	Manage	Exclusions aimed at excluding human rights violations, child labour	low	■	Our desired exclusions do not match the asset manager's exclusions. We will discuss this with the asset manager and explore the possibilities. When selecting new funds, we look for asset managers whose exclusion list is in line with our requirements in terms of selection criteria.
Risk of ESG risk having a material impact on the fund's financial position	■	low	not OK	Manage	Implement Paris-aligned benchmark for equities	medium	■	With the new benchmark, we incur less transition risk and fall within the risk tolerance with regard to transition scenarios. However, in one of the two stress scenarios our loss is still too high. We will explore whether we can reduce this risk further without coming into conflict with failure to achieve our ambition.

We consider this a good practice because:

- the effectiveness of measures to reduce risks is estimated and, as far as possible, made measurable and monitored. In this process the link between the measure deployed and the risk (and risk reduction) is made as explicit as possible. A precise link to risk is often difficult to establish, however, because the impact of instruments is not always measurable (ex ante) and there may be an indirect relationship between the instrument and the risk.
- the precautionary principle is applied. Since the impact of ESG risks and the effectiveness of management measures are difficult to estimate, the effectiveness of management measures should be prudently estimated and frequently monitored.
- the pension fund adopts an absolute rather than a relative approach. A relative approach is not an effective way to delineate the absolute risk level and makes it difficult to manage risk in relation to the risk appetite. We see pension funds sometimes aiming for a relative reduction in the risk profile,

for example by conducting an investment policy aimed at outperforming a benchmark in terms of its ESG score or carbon footprint. Such an approach may fit in with a sustainable investment policy and may lower the risk profile (relative to the benchmark).

- it identifies where measures are unlikely to be sufficient to align the risk profile with the risk appetite and defines appropriate follow-up steps. For example (temporarily) conscious acceptance and designing an action plan to achieve improvement (see also the good practice below on improving the ESG risk management cycle).
- this partially fulfils Section 18 and Section 18b of the Pension Fund (Financial Assessment Framework) Decree.

Good practice: monitoring ESG risks on the basis of (key) risk indicators

The pension fund has examined a wide range of ESG indicators and established key risk indicators for each material risk that provide information on the risk. This list includes the (key) risk indicators that it uses in risk identification and assessment). The pension fund has subsequently formulated risk tolerances in line with risk appetite. For example, the fund formulated the carbon footprint as a KRI for climate risk. The higher the carbon footprint, the more the pension fund loses in the climate scenarios. *The figures in this example are fictitious.*

With regard to climate risk, the pension fund has also developed a climate meter as a key risk indicator, which uses various criteria to examine to what extent Europe is in line with the climate agreement. The meter is now on orange/red, indicating that the risk is rapidly increasing.

Table 8

KRI		Low	Medium	High	Now	Previously
Carbon footprint	Weighted carbon footprint	< 30	30-60	> 60	50	
	Total carbon emissions (1,000 tonnes)	< 40	40-110	> 110	100	

low
medium
high

We consider this a good practice because:

- the pension fund uses key risk indicators (KRIs) that provide insight into the development of the risk and whether the exposure to the risk is still within the specified standard. For example, a key risk indicator for climate risk could be the portfolio's carbon footprint (see also the examples in the table of risk indicators for risk assessment). It is good if a pension fund chooses a wide range of indicators.
- this partially fulfils Section 18 and Section 18b of the Pension Fund (Financial Assessment Framework) Decree.

Good practice: frequent evaluation of the entire ESG risk management cycle

The pension fund decides to evaluate its ESG risk management on an annual basis. Is the list of identified risks still complete? Is the materiality estimate of risks still correct? Is the impact of the risks being properly measured? Are the mitigation measures effective? Is the exclusion list still appropriate?

We consider this a good practice because:

- developments are occurring rapidly in the field of ESG. Some risks are rapidly increasing, there is more and more knowledge about the risks and their modelling, data coverage is growing and legislation is increasing. It is therefore important for a pension fund to frequently evaluate the design of the ESG risk management cycle.
- this partially fulfils Section 18 and Section 18b of the Pension Fund (Financial Assessment Framework) Decree.

Good practice: setting targets for improving the ESG risk management cycle and drawing up a strategy to achieve this

The pension fund has defined a risk management ambition for each step in the cycle. For example, when identifying and assessing financial risk, the pension fund aims to use scenario-based analyses to determine the financial impact of climate change and biodiversity loss on the portfolio. It then conducted a gap analysis comparing the current status of the risk management with the ambition. Based on this gap analysis, the pension fund drew up a list of actions to improve the ESG risk management.

Table 9

no.	Cycle	Action	Status	Notes	When
1	Identification	Expanding sources		Currently, we are only using data from two sources. The action is investigating multiple sources and seeing if there is a source we can add to improve our ESG data.	by 1/10/2021
2	Risk attitude	Further elaboration of the financial risk attitude with a (quantitative) risk appetite with regard to the financial impact due to biodiversity loss		There are still no useful biodiversity loss scenarios, but we expect them to be developed soon.	by 1/3/2022
3	Assessment	Adding metrics and risk tolerance for child labour		We now have good data for child labour. The action is to discuss with each other what the best metrics are and what our risk tolerances are.	by 1/10/2021
4	Assessment	Adding assessment of financial impact of biodiversity loss		See action no. 2	by 1/4/2022

no.	Cycle	Action	Status	Notes	When
5	Mitigation	Exploring whether we can manage climate risk further		Our desired exclusions do not match the exclusion policy of our equity fund with asset manager X. The action is to discuss this with the asset manager and explore the options.	by 1/10/2021
6	Mitigation	Exploring whether we can manage climate risk further		After the implementation of the new climate benchmark (and the restructuring of the portfolio), we run less transition risk and fall within the risk tolerance with regard to the transition scenarios. However, in one of the two stress scenarios our loss is still too high. We will explore whether we can reduce this risk further and list possible actions.	by 1/10/2021
7	Process	Embedding ESG risk framework into integrated risk framework		This has been completed	by 1/9/2021

low
medium
high

We consider this a good practice because:

- the pension fund sets a desired maturity level and determines the differences between the desired and current position. The full establishment of the risk management cycle for ESG risks is sometimes difficult or not yet feasible, for example because of limited data availability, the complex relationship between risk factors or because analysis methods have not yet been fully developed. By setting an intended maturity level, pension funds can identify which steps are still needed. These goals may be ambitious. What cannot be done now may well be possible in the longer term. A strategy with specific milestones helps guide the achievement of goals. Rapid developments call for frequent evaluation and possible adjustment of the strategy.
- this partially fulfils Section 18 and Section 18b of the Pension Fund (Financial Assessment Framework) Decree.

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4. Information provision

Good practice: setting up an appropriate data infrastructure for climate and environmental risks

Some time ago, following a gap analysis, a pension fund board started setting up a data infrastructure and collecting data required to analyse risks and opportunities of climate and environmental change. It started by measuring the carbon footprint of its investments. The pension fund board decided to adhere to internationally recognised methodologies, such as that of PCAF *(Partnership for Carbon Accounting Financials*). For its investments it uses an external data provider in accordance with the PCAF methodology. The carbon footprint data is used internally for decision-making, such as optimising the investment mix. The pension fund board takes into account the carbon footprint of different asset classes in its strategic investment policy.

The carbon emission data is also used for external reporting, such as the annual report, in order to comply with EU legislation and regulations on *Environmental Taxonomy* (SFRD). Here too the pension fund board uses a data vendor and the NACE code[22] can be used to determine the extent to which the business activities of its investments are "green".

We consider this a good practice because:

- the pension fund board has conducted an analysis to determine which data is already available and which needs to be collected to meet strategic and legal requirements over time.
- the pension fund board has developed a data set to be used for various reporting and (strategic) decision-making purposes.

Good practice: reporting in SRI section in annual report

A pension fund board reports in a Socially Responsible Investment (SRI) section in the annual report, which includes:

- the principles, targets and KPIs for climate and environmental risks and opportunities;
- the risk analysis with regard to climate change and environmental degradation;
- the engagement and voting policy;
- the SRI implementation (including the rationale for the choices and assessments involved);
- the SRI results, with regard to long-term and short-term targets, KPIs and engagement and voting results; and
- the results of the survey of participants and other stakeholders, and the choices made by the board regarding stakeholder preferences.

The pension fund aims to publish an integrated annual report next year, with SRI no longer being a separate section but integrated into the annual report.

22 The NACE code is a code assigned by the European Union and its member states to a certain class of commercial or non-commercial economic activities.

We consider this a good practice because:

- the pension fund board provides insight into the management of climate and environmental risks.
- the pension fund board is transparent towards participants and other stakeholders with regard to the choices and assessments it has made.
- this partially fulfils Section 21 of the Pensions Act and Section 48 of the Obligatory Occupational Pension Schemes Act, Section 2 of the Pensions Act Implementing Decree.

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Legislative framework for insurers

In addition to the legal framework in the main text of the Guide, the European Delegated Regulation (EU) 2015/35 (Solvency II Delegated Regulation) – which has direct effect – is also relevant to insurers falling within the scope of the Solvency II Directive.
Whereas this Guide specifically concerns climate and environmental risks, Solvency II refers to sustainability risks. This includes social and governance risks in addition to climate and environmental risks.
The European Commission amended parts of the Solvency II legislation in 2021. This led to an amendment to Delegated Regulation (EU) 2015/35 (Solvency II Delegated Regulation) with regard to the integration of these sustainability risks in insurers' governance and risk management. The amendments came into force on 2 August 2022 and concern the following articles:

- Article 1, Definitions;
- Article 260, Risk management areas (underwriting, reserving and investment risk management);
- Article 269, Risk management function;
- Article 272, Actuarial function;
- Article 275, Remuneration policy;
- Article 275bis, Integrating sustainability risks into the prudent person principle.

For the management of risks under Section 3.17 of the Financial Supervision Act, insurers must comply with the requirements set out in the Solvency II Directive and the Solvency II Delegated Regulation, including with regard to risk management and the assessment of own risk and solvency. Insurers' good practices are based on the focal points in Chapter 4 of the Guide, which in turn are derived from Section 3.17 of the of the Financial Supervision Act. The good practices make explicit reference to the amended Solvency II legislation in a number of places.

In addition to the above legislation, a number of official publications have recently been issued, both by EIOPA (European Insurance and Occupational Pension Authority) and by DNB.

- DNB has published a Q&A and good practice on dealing with climate risks in the ORSA; see Q&A Climate-related risks and insurers. In the Q&A, DNB sets out its expectation that the insurer will examine its exposure to climate risks and that, if there is material exposure, the insurer will include a climate risk scenario in its ORSA. The accompanying good practice contains practical examples of how insurers can include their climate risks in the ORSA in a Q&A-compliant manner.
- EIOPA has described the opinion on climate change risk scenarios in the ORSA and also in an application providing guidance on using climate change scenarios in the ORSA. The EIOPA opinion and DNB Q&A set out what supervisory authorities expect from insurers with regard to the treatment of climate-related risks in the ORSA. Examples are shared in the guidance application and the good practice. For more information, see: Sustainable finance | Eiopa (europa.eu).

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Impact of climate and environmental risks on insurers

The table below shows an example of how climate and environmental risk factors can affect an insurer's existing financial or non-financial risk areas. The same risk factor can affect several risk areas simultaneously. The table is intended purely as an illustration to provide a starting point for the materiality analysis. The ultimate impact depends among other things on the scale and distribution of physical and transition risks, like the insurer's business model. This impact and its materiality will have to be determined by the institution itself in its materiality analysis.

Table showing examples of how climate and environmental risks feed through into an insurer's risk profile (non-exhaustive)

Risk	Subtype	Market risk	Underwriting risk	Operational risk	Business model & strategy
Physical	Acute or chronic	Prolonged droughts and floods can result in loss of value of investments and can increase volatility in commodity markets, for example.	Extreme rain and hail storms or flooding of secondary flood defences can result in insurance claims.	Extreme weather can pose a threat to insurers' buildings and operations.	Climate change may cause large price increases for non-life insurance and possibly lead to risks becoming uninsurable. This may affect the viability of the insurer.
Transition	Policy, technology, market sentiment, reputation	Changes in climate and environmental policy, disruptive technologies and changing market sentiment may lead to stranded assets in carbon-intensive industries and other turmoil in financial markets.	Additional claim risk due to over-representation of liability insurance in carbon-intensive industries, for example.	Reputational risk and social pressure if climate targets are not sufficiently concrete or ambitious and do not match actual practice.	New regulations may make it impossible to supply products or services to "brown" operators, affecting the insurer's results.

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Good practices for management of climate and environmental risks of Insurers

1. Business model and strategy

Good practice: using scenario analysis in strategic planning

The management board of the insurer wants better insight into the material negative impact and opportunities of climate change in order to incorporate them in its strategy. In line with the TCFD recommendation, scenario analysis is used as part of the strategic planning. The institution opts for scenarios based on global qualitative and quantitative changes, drawing inspiration from the scenarios of the IPCC and the International Energy Agency. It takes the two-degree warming scenario in 2050 and compares it with the *business-as-usual*[23] situation. To streamline the discussion, external experts with diverse backgrounds are invited. For each scenario, the board considers the strategic position for the company as a whole and, for each market segment, considers how to deal with it in terms of premium setting and product development.

We consider this a good practice because:

- the insurer takes climate and environmental risks into account in its strategy setting and not only identifies the risks but also determines the associated actions.
- scenario analysis is a useful exploratory tool given the uncertainties and complexities associated with climate and environmental risks. Scenarios also make it possible to identify the impact of climate and environmental risks for the institution over a longer period than the usual horizon of three to five years.

23 A business-as-usual scenario can be interpreted as "a scenario in which no additional climate change mitigation policies are implemented; this would be a scenario in which physical risks will likely increase significantly in the long run". Source: Network for Greening the Financial System (NGFS), June 2020, Guide to climate scenario analysis for central banks and supervisors.

Good practice: a non-life insurer integrates climate risk into its strategy

The management board of an insurer draws up a company-wide strategy for the medium to long term. Addressing the impact of climate change on the organisation and its environment is high on its priority list. The insurer adjusts its product range and investments accordingly. After analysing existing frameworks and initiatives, the insurer chooses to conform to a number of frameworks. The sustainability principles are derived from the *United Nations Global Compact* (UNGC). For its investments, the insurer bases itself on the *Net-Zero Asset Owner Alliance*, the *Sustainable Development Goals* (SDGs) and the Dutch financial sector's Climate Commitment. The reporting is based on the recommendations of the *Task Force on Climate-Related Financial Disclosures* (TCFD). For the pricing of insurance products, the insurer aims to take into account climate adaptation measures such as toughened glass in greenhouses. In its ESG strategy, the insurer has set the goal of reducing the carbon footprint of investments to net zero by 2050. This goal is translated into climate performance indicators, linked to SDG 13 "Climate Action", among others, which the board uses to monitor progress and determine whether the strategy needs to be adjusted.

We consider this a good practice because:

- the insurer incorporates the opportunities and risks resulting from climate and environmental changes into its strategy on the basis of frameworks and initiatives.
- strategic goals are translated into concrete, measurable performance indicators (KPIs) that make it easy to monitor progress.

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2. Governance

Good practice: policymakers embed material climate and environmental risks in existing governance and policy frameworks

The management board and supervisory board of an insurer have assigned the risks and opportunities related to climate and environment to the portfolio of a management board member and a supervisory board member. The portfolio holders are supported by a *task force* consisting of a management board member, a supervisory board member, a senior manager and an external advisor.

The management board and the supervisory board consider further integration of climate and environmental risks and opportunities into existing frameworks and processes within the institution to be necessary, and to this end have set up a specific management board and supervisory board committee for climate and environmental risks and opportunities, in which managers with expertise in managing these risks and external experts in the field participate in addition to a number of management board and supervisory board members. This committee informs the management board and the supervisory board of the results of its deliberations and considerations.

We consider this a good practice because:

- the members of the management and supervisory bodies (management board and supervisory board) provide a working method, structure and division of tasks aimed at ensuring that climate and environmental risks and opportunities are appropriately taken into account in decision-making and supervision.
- the commitment from "the top" to climate and environmental risks is then visible.

Good practice: ensuring that policymakers are fit to manage climate and environmental risks

An insurer has drawn up knowledge requirements for management board and supervisory board members with regard to risks and opportunities associated with climate change and environmental degradation. In so doing, it has adopted the principle that management board and supervisory board members should have insight into and understanding of the most important developments in the field of climate and the environment, the legislation and regulations in this area, what society and stakeholders expect from the institution and what that means for business operation. These minimum knowledge requirements have also been incorporated into the job profiles.

In order to maintain the level of knowledge, the insurer periodically organises knowledge sessions on climate and environmental themes for the management board and supervisory board members and for key function holders in actuarial and risk management. Topics include the causes of climate change, laws and regulations, national and international climate policies, ESG ratings and the use of models and scenario analyses for climate and environmental risks. For these knowledge sessions external experts are regularly invited to train and "challenge" participants on climate and environmental risks and on the opportunities for the institution. The management board and the supervisory board periodically assess whether the knowledge standards are being met and in which areas there is a need for training and education.

In order to integrate risks and opportunities flowing from climate and environmental changes into the strategy and set specific targets in this area, the institution's management board has set up an advisory board with external and internal experts to gather basic knowledge, experience and advice.

We consider these good practices because:

- in this way, the insurer guarantees that sufficient expertise is available within the management and supervisory bodies to assess the institution's exposure to climate and environmental risks, identify opportunities, take informed and balanced decisions and conduct effective second-line supervision.
- the insurer makes sure there is a continuous focus on the importance and development of expertise and experience in climate and environmental risks and opportunities.

Good practice: assigning responsibilities to control climate and environmental risk management within the organisational structure

The management board of an insurer realises that the institution needs to catch up in terms of climate and environmental risk management. It has therefore decided to temporarily set up a specific department headed by a sustainability manager with responsibility for implementing the strategy, policy and risk management related to climate and environmental risks. The management board has ensured that its structure is in line with the existing business processes, structures and risk management. The management board monitors progress by means of periodic reports.

As the maturity of the management of climate and environmental risks and opportunities grows, further integration and embedding of these risks takes place within the insurer. The management board has therefore drawn up a responsibility matrix according to which tasks and responsibilities for climate and environmental risks have been assigned within the organisation. The reporting lines, working procedures and responsibilities have also been assigned:

- the duties and responsibilities of the first line for managing climate and environmental risks have been defined. These state among other things that climate and environmental risks must be considered in the development of insurance products.
- the risk manager (second line) assesses the first line's management of sustainability risks and attends management board meetings when necessary.
- the compliance function (second line) assesses whether the management of climate and environmental risks within the insurer is in line with laws and regulations.
- the actuarial function (second line) is responsible for assessing how sustainability risk is taken into account in underwriting, technical provisions and reinsurance.
- internal audit (third line) is responsible for verifying that climate and environmental risk are managed appropriately in accordance with policies and procedures.

We consider this a good practice because:

- the insurer thus ensures that the strategy, policy and management of climate and environmental risks are appropriately incorporated into the governance system and risk management.
- in line with the "three lines of defence model", the insurer thereby facilitates strong governance for the management of climate and environmental risks and this theme is embedded and applied in all areas of its operational management.
- this enables management board and supervisory board members to take sound and informed decisions and manage the institution effectively.
- this partially fulfils Articles 260, 269 and 272 of the Delegated Regulations.

Good practice: promoting awareness of climate and environmental risks

In addition to the knowledge sessions and training courses aimed at increasing knowledge of climate and environmental risks, the management board of an insurer has appointed "ambassadors" in parts of the organisation where climate and environmental risks arise. These ambassadors are tasked with raising climate awareness within the organisation. The ambassadors discuss sustainability initiatives on a quarterly basis to update each other on developments in their part of the organisation. This ensures an integrated approach to climate and environmental aspects. These discussions are chaired by the sustainability manager. The results of the discussions are shared with the director whose portfolio includes sustainability and the management of climate and environmental risks.

We consider this a good practice because:

- this promotes a culture encouraging awareness and behaviour that contributes to the management of climate and environmental risks.

Good practice: aligning remuneration policies and practices with the strategy and management of climate and environmental risks

The remuneration policy of the management board of an insurer is based on both financial and non-financial KPIs. The non-financial KPIs are aligned with the strategic sustainability targets set by the insurer. These targets are specific and linked to deadlines. For example, the remuneration policy includes a percentage carbon reduction relative to the first year of the insurer's operations, which must be achieved by 2025 at the latest. Similar agreements have been made in the area of investments, with regard to the long-term strategic targets for carbon reduction in the investment portfolio.

We consider this a good practice because:

- the insurer has included non-financial KPIs in the remuneration policy that are in line with strategic targets and has made them measurable. The aim is to encourage certain behaviour, including with regard to the climate and the environment.
- the fact that these KPIs have been established and made measurable means they can be accounted for externally.
- this fulfils Article 275 of the Delegated Regulations with regard to the inclusion of ESG considerations in the remuneration policy.

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3. Risk management

Good practice: explicitly including climate and environmental risks in existing risk appetite framework

An insurer has translated the defined risks (see Chapter 1) due to climate and environmental change into existing risk categories. For example, the physical and transition risk of investments has been assigned to "market risk" and the "reputational risk" category has been expanded to include the risk of climate commitments not being met.

The insurer has defined as its strategic principle that it wants demonstrable social value through its insurance and investment activities, with the interests of stakeholders (particularly the policyholder) having the highest priority. The insurer therefore decides to monitor the "ESG effect" over the next three years by benchmarking against the portfolio used in the recent ALM / SAA[24]. It agrees to subsequently examine the ESG effect and to take possible actions on that basis.

The strategy is specified in the risk appetite as follows:

- the insurer wants to minimise the transition risk on investments and has therefore decided to convert the entire portfolio to ESG-responsible investments by 2030. The "green investment" share KPI based on the MSCI ESG[25] is used for this.
- the insurer takes into account the differences in returns and volatility between green and non-green investments.
- the insurer aims to have a direct positive impact on climate change with at least 20% of its investments by 2030 (impact investing). Specifically, this means investing in SDGs 7 (Affordable and clean energy), 13 (Climate action) and 15 (Life on land – restoring ecosystems and biodiversity). It has been agreed that 5% of assets will be invested in SDGs 7, 13 and 15 by the end of the year. The insurer defines the "impact investing" KPI for this purpose.
- the insurer wants to specify and delineate its willingness to accept physical climate risks. Upper limits are therefore set for exposures in certain climate-sensitive regions and industries (partly based on postcode and NACE code[26]).
- the insurer wants to safeguard its reputation for corporate responsibility. The indicators used here are the benchmark of the Dutch Association of Investors for Sustainable Development and the practical research by the Fair Insurance Guide (Eerlijke Verzekeringswijzer).

We consider this a good practice because:

- the insurer has sought to make the emerging risks concrete, translate them into targets within the existing risk appetite framework and link measurable indicators to its targets.
- this enables the insurer to communicate both internally and externally on progress regarding the transition of the investment portfolio, thereby reducing reputational risk and bringing it within its own risk tolerance.
- this fulfils the legal obligation under the Solvency II delegated regulations on the integration of ESG risks in risk management (Article 260) and in the Prudent Person principle (Article 275bis). The insurer has thus taken an initial step in adjusting its risk appetite framework (often referred to as the Risk Appetite Statement – RAS).

24 ALM, asset liability management; SAA, strategic asset allocation.
25 ESG Investing: ESG Ratings - MSCI. Please note: DNB has no preference for any particular index; this is just an example. Each institution must make its own choice about what sources, if any, are consulted externally.
26 The NACE code is a code assigned by the European Union and its member states to a certain class of commercial or non-commercial economic activities. This is intended as a tool for compiling economic statistics and statements (source Wikipedia)

Good practice: building a comprehensive picture of climate and environmental risks in the identification stage and integrating it into the risk management cycle

An insurer organises a workshop to identify risks of climate change and environmental degradation. Together with ESG experts, the management board surveys the potential risks and examines the pathways by which these risks could affect their institution in the short and long term. Based on the impact on conventional risks, the survey is converted into a number of material risks.
To quantify the impact, proprietary metrics have been developed, complemented by qualitative insights from experts.

Table 1: survey of climate risks from the workshop

Climate risk	Consequences	Impact
Extreme weather	Higher cost of claims due to damage to insured properties. Losses due to damage to investments.	Insurance obligations and investments
Increase in carbon tax	Losses in carbon-intensive assets	Investments
Implementation contrary to (widely) advertised ambitions	Negative publicity and stakeholder dissatisfacti-on	Operational (reputational) risk

We consider this a good practice because:

- it gives the insurer insight to the risks associated with climate change and how these risks affect the institution through the knock-on effect on conventional risks.

Good practice: using scenario analyses and stress tests to estimate the exposure to climate and environmental risks

Example (building on the example above)

The insurer creates a working group made up of first- and second-line members to develop a feeling for the probability of climate risks as well as their impact. In line with the outcomes of the ORSA (conducted in line with DNB's 2019 Q&A), the working group assesses the likelihood and impact of physical and transition risks and reputational damage if climate or environmental targets are not met. For the probability and impact of the risks it uses a scale with four levels: *low*, *medium*, *high* and *very high*.

Probability	**Impact**
Low: interval greater than 10 years	*Low:* financial loss (<€10k) and reputational damage; no actions by supervisory authority.
Medium: interval 5 to 10 years	*Medium:* financial loss (€10-100k); some reputational damage; single measure by supervisory authority
High: interval 1 to 5 years	*High:* financial loss (>€100k) or reputational damage; more severe measure by supervisory authority
Very high: interval less than 1 year	*Very high:* financial loss (>€1m) or major reputational damage; severe measures by supervisory authority

The risk matrix is then used to estimate the gross risk.

Gross risks	**Probability**			
Impact	*Low*	*Medium*	*High*	*Very high*
Low				
Medium				
High				
Very high				

Mitigation depends on the gross risk score.

Low	Acceptable risk; normal attention
Medium	Tolerable risk; additional monitoring
High	Worrying risk; short-term management
Very high	Unacceptable risk; direct management

The observation leads to a matrix of probability and impact and the final scores for the gross risks. The gross risk for extreme weather has a *medium* score. In the actions, we see that the investment risk associated with carbon taxes in the short term and the reputational risk in the case of deviations between ambition and practice need to be mitigated immediately.

Climate risk	Consequences	Affected risks	Probability	Impact	Gross risk	Action
Extreme weather	Losses due to damage to insured properties and damage to investment properties and items	Insurance liabilities and investments	Medium	Medium	Medium	Additional monitoring
Increase in carbon tax	Losses in carbon-intensive assets	Investments	High	Medium	High	Short-term management
Implementation contrary to (widely) advertised ambitions	Negative publicity and stakeholder dissatisfaction	Operational (reputation)	Medium	Very high	Very high	Direct management

We consider this a good practice because:

- the insurer examines its exposure to climate risk using scenario analyses and, in the event of material exposure, the insurer includes a climate risk scenario in its ORSA, thereby fulfilling the DNB Q&A.
- the insurer examines the probability of climate risks as well as their impact.
- the insurer uses simple, practical scales for the probability and impact to qualify the risks.
- the insurer uses the risk scores to determine whether and how climate risks should be mitigated.

Good practice: using scenario analyses and stress tests to estimate the exposure to climate and environmental risks

To gain an idea of the impact of transition risk associated with climate change, the institution draws up a transition scenario that translates the changing climate and environment into conventional risks such as market and underwriting risk. The scenario is modelled on scenarios' from the DNB transition stress test[27].

The scenario involves an abrupt, disorderly transition to a climate-neutral economy. Government intervention causes the carbon emission price to surge and the value of carbon-intensive investments to fall. This scenario is applied to the entire balance sheet to determine the impact on the financial position.

We consider this a good practice because:

- the insurer quantifies the exposure to transition risk by means of a scenario focused on transition risk.
- the insurer examines its exposure to climate risks using a scenario analysis, thus fulfilling the DNB Q&A.
- the analysis reveals which conventional risks are affected by climate change and environmental degradation.

Good practice: managing climate and environmental risks that fall outside the risk tolerance

The risk analysis shows that extreme precipitation poses an operational risk because one of the insurer's two data centres is in a location susceptible to flooding. Moreover, the probability of flooding at this location is increasing over time. This risk falls outside the risk tolerance and needs to be managed.

To mitigate the short-term consequences of flooding, the institution decides to make additional backups of data in the data centre. In order to mitigate this risk sustainably, it explores options to relocate the data centre to another, higher location.

We consider this a good practice because:

- the institution conducts a targeted risk analysis and on that basis controls the risk (including the flood risk) that falls outside the risk tolerance.
- it shows that mitigation consists not only of final solutions but can also be a rapid action aimed at a temporary solution to directly contain the damage.

27 An energy transition risk stress test for the financial system of the Netherlands (dnb.nl)

Good practice: frequent evaluation of the climate and environmental risk management cycle

The insurer integrates the climate and environmental risks in its risk management cycle. To understand the steps needed to improve the risk management, the insurer conducts scenario analyses and a gap analysis. The differences between the current and desired state lead to a number of actions.

The table below contains examples from this action list.

Cycle	Description	Risk	Risk level	Action	Time limit
Identification	ESG data from two sources is used. The ESG data can be improved by adding additional sources.	Reputational damage due to a possibly incomplete picture of ESG risks.		Investigate expansion of sources for ESG data.	1 year
Identification	No attention is paid to the social or S component of ESG.	Reputational damage because profiling as an ESG insurer does not match practice.		Expand scope of risks to include 'S'. Start with exploratory research.	3 years
Risk attitude	There are no scenarios for biodiversity loss; this must be remedied rapidly.	Financial risk due to investments dependent on animal pollination.		Develop risk attitude, (qualitative) risk appetite and a scenario for biodiversity loss.	6 months
Assessment	Available data on insured properties is insufficient for flood risk.	Underwriting risks due to incomplete picture of insured risks.		Expanding location and vulnerability data	1 year
Mitigation	Asset manager's exclusion policy does not match the desired exclusions.	Reputational damage caused by difference between stated ambitions and practice.		Examine role of exclusions in mitigating climate risks. Coordination with asset manager and exploration of alternatives.	2 years
Mitigation	The exclusion policy in one scenario allows losses greater than the risk tolerance.	Reputational damage due to non-fulfilment of ambitions and financial risk due to unknown large exposure.		Refine exclusion policy.	3 months

We consider this a good practice because:

- the insurer sets a desired maturity level for climate and environmental risks and identifies differences between the desired state and the current situation.
- the insurer defines concrete actions, with milestones and timelines to achieve the desired maturity level.

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4. Information provision

Good practice: setting up an appropriate data infrastructure for climate and environmental risks

Some time ago, following a gap analysis, an insurer started setting up a data infrastructure and collecting data required to analyse the risks and opportunities of climate and environmental change. It started by measuring the carbon footprint of its investments. In doing so, the insurer decided to align with internationally recognised methodologies, such as that of PCAF *(Partnership for Carbon Accounting Financials*). For its corporate bonds and loans it uses an external data provider in accordance with the PCAF methodology.

The carbon footprint data is used internally for decision-making, for example to optimise the investment mix. The insurer takes the carbon footprint of the different asset classes into account its strategic asset allocation. The carbon emission data is also used for external reporting purposes such as the annual report in order to comply with EU legislation and regulations on the *Environmental Taxonomy* (NFDR/CSRD). Here too the insurer board uses *a data vendor* and the NACE code[28] can be used to determine the extent to which the business activities of its investments are "green".

The insurer recognises that more data is needed to price its products correctly, such as data on the location of properties insured against flood risks.

We consider this a good practice because:

- the insurer has conducted an analysis to determine which data is already available and which needs to be collected to meet strategic and legal requirements over time.
- the insurer has developed a data set to be used for various reporting and (strategic) decision-making purposes.
- the insurer recognises the need for more detailed data and is taking steps to further improve the data infrastructure.

28 The NACE code is a code assigned by the European Union and its member states to a certain class of commercial or non-commercial economic activities.

Good practice: external reporting on non-financial information

In the annual report, an insurer devotes attention to non-financial information in addition to financial information, striving for *integrated reporting* and complying with the *Global Reporting Initiative* (GRI) standard. The insurer reports on how it addresses climate change in accordance with, among others, *the Decree laying down further rules on the content of the annual report*, *the Decree on disclosure of non-financial information* and *the EU Non-Financial Reporting Directive (NFRD)*. The insurer provides disclosures under the double materiality principle[29] in the NFRD Directive In doing so, it considers the impact of climate change on financial risks on the one hand and the insurer's impact on people and the environment on the other. The insurer also reports periodically on how investments meet sustainability targets in accordance with the *Sustainable Finance Disclosure Regulation* (SFDR). The insurer also reports on its progress in complying with the *Principles for Sustainable Insurance*, to which it has committed. The insurer is transparent about the potential impact and effect, and about the way in which the management has taken these results into account. The institution has asked the external auditor to report inconsistencies in the reported sustainability information.

See also:

- NBA on Integrated reporting framework
- Global Reporting Initiative
- Decree adopting further rules concerning the content of the annual report of insurers and Decree on the disclosure of non-financial information
- EU Non-Financial Reporting Directive (NFRD)'
- AFM on 'Sustainable Finance Disclosure Regulation (SFDR)'.
- Principles for Sustainable Insurance

We consider this a good example because:

- in this way, the insurer provides insight into the management of risks related to climate change and environmental degradation. At the same time, the insurer reports on its own climate and social impact.
- the insurer's disclosures are well aligned with (several widely used) international and national frameworks and initiatives, avoiding "blind spots" as much as possible.
- the sustainability information is audited by an external auditor and any inconsistencies in this non-financial information are reported.

See also:

- United Nations: UNGC, SDGs, Net Zero Asset Owner Alliance
- TCFD Good Practice Handbook
- Chapter Zero, Principles and frameworks for climate change strategy and action
- Climate commitment of the Dutch financial sector

29 Double materiality concerns on the one hand the organisation's potential positive and negative material impact on the environment (e.g. by contributing to the energy transition) and society (e.g. by reducing poverty): the inside-out perspective. On the other hand, double materiality is about the material impact of sustainability-related risks (such as water or drought damage, for example) and opportunities for the organisation (of the financial kind): the outside-in perspective.

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