Guide to managing climate and environmental risks

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DeNederlandscheBank

EUROSYSTEEM

Contents

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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 also announced that, in 2022, we would further define how we expect financial institutions to manage sustainability risks and consult the financial sector on this, thereby meeting a need felt throughout 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 applicable laws and regulations.

This Guide relates to prudential supervision and will be updated periodically. The tools it contains 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. These incorporate the Good Practice published in 2021.[7] The tools in this Guide have been aligned where possible with the European Central Bank's supervisory expectations for the banking sector.[8] 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 will be added to this Guide periodically. For example, we are currently working on good practices for payment and securities institutions for managing climate and environmental risks.

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 (*Wet op het financieel toezicht – Wft*) and pension funds governed by the Pensions Act (*Pensioenwet – Pw*).
2 See, inter alia An energy transition risk stress test for the financial system of the Netherlands (2018), Values at Risk? - Sustainability risks and goals in the Dutch financial sector (2019), Indebted to nature – Exploring biodiversity risks for the Dutch financial sector (2020) and Balancing sustainability - Integrating sustainability risks into the core processes of the financial sector (2021).
3 In accordance with Section 3:17 of the *Wft* and Section 143 of the *Pw*.
4 The study "Balancing sustainability" examined the extent to which banks, pension funds and insurers integrate sustainability risks into their core processes in the fields of strategy, governance, risk management and disclosure.
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 (in Dutch) on the management of climate and environmental risks (2021). A consultation on good practices (in Dutch) for the pension sector was also conducted in 2022.
6 See NGFS (2020).
7 As the authority supervising the ethical operational management of investment firms and institutions, the Dutch Authority for the Financial Markets (AFM) ensures that they pursue a policy to manage the risks that may adversely affect the treatment of customers and participants. This includes managing climate and environmental risks.
8 The ECB Guide applies to significant institutions as part of the Single Supervisory Mechanism. DNB has also declared the ECB Guide applicable to less significant institutions.

Reader's guide

The Guide consists of a cross-sectoral section and sector-specific explanations and good practices (accessible via the sector buttons at the end of each section). The next tab, "Legislative framework and applicability", outlines the legislative and regulatory framework for the management of climate and environmental risks and its application in supervisory activities. The associated sector tabs outline additional sector-specific legislation. This is followed by a more detailed explanation of climate and environmental risks ("Climate and environmental risks" tab), with the sector-specific tabs providing examples of the potential impact by sector. The "Focal points for managing risks" tab then outlines 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 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-sectoral focal points. For now, these tabs only include good practices for pension funds and insurers. Good practices for electronic money and payment institutions will be added in a future edition of the Guide. Good practices vary by sector, making it worthwhile to consult the sector-specific tabs of other sectors for additional inspiration.

Good practice for investment firms and institutions

Legislative framework and applicability

Legislative framework

Under Section 3:17 of the Financial Supervision Act (*Wet op het financieel toezicht – Wft*) and Section 143 of the Pensions Act (*Pensioenwet – Pw*), 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 the European level there is a growing body of legislation and regulation in the field of sustainability.[9] 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.[10] At the request of the European Commission, the European Financial Reporting Advisory Group (EFRAG) is developing the CSRD into standards for sustainability reporting: the European Sustainability Reporting Standards (ESRS). The European Supervisory Authorities (ESAs) are also increasingly embedding sustainability in their laws and regulations.[11]

Application in supervision

This Guide provides tools to enable the sector to embed climate and environmental risks in core processes. The tools include cross-sectoral 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. These may be (anonymised) practical examples that we have observed at institutions or stylised examples.

Good practices are indicative and institutions are free to take a different approach as long as they comply otherwise with the laws and regulations.[12] The good practices in the Guide are thus not binding, but serve as input in the supervisory dialogue between the institution and DNB on climate and environmental risk management. An institution can use these examples and apply them proportionately according to its nature, size and complexity and the materiality of the risks.

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

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 the "Focal points for managing risks" tab, Box 1 for further information and focal points for the materiality analysis). An institution must accordingly identify these risks and assess their materiality. The institution must then manage the material risks identified.

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 funds

Insurers

Climate and environmental risks

This Guide covers climate and environmental risks. These are the financial and non-financial risks[13] 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 events. Examples of environmental degradation include water or air pollution, desertification, deforestation and loss of biodiversity and ecosystem services[14].

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

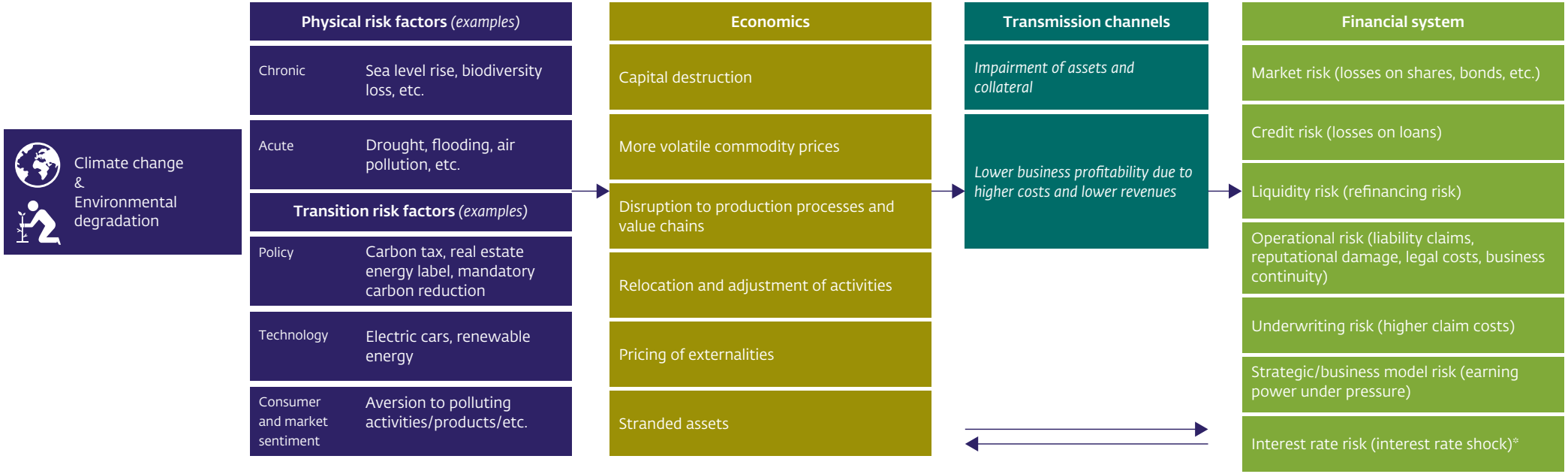
- Physical risk factors are related to the physical impacts of climate change and environmental degradation. These can be both acute and chronic. Acute physical risk factors result from extreme climate and environmental events, such as drought, floods or environmental disasters leading to soil, air or 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 will be the (actual or expected) physical consequences. This may require more drastic policy measures. At the same time, far-reaching policy measures are a transition risk factor. Physical and transition risks can also lead to systemic risks, which are risks that arise from the breakdown of the entire system, rather than from the failure of individual parts.[15] For example, if an ecosystem collapses due to the accumulation of physical risks, if multiple sectors are affected by physical and transition risks, and/or if the financial problems of one or more companies or financial institutions spill over to the entire system.

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 have an impact on the economy and thus feed through to the financial system.

13 Financial risks 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.
14 Ecosystems are complex and dynamic systems of plants, animals and microorganisms, together with the non-living environment, interacting as a functional unit. See, inter alia, the DNB and PBL study Indebted to nature – Exploring biodiversity risks for the Dutch financial sector
15 See also TNFD's definition of nature-related systemic risks: TNFD's definitions of risks » TNFD.

Figure 1: Climate and environmental risks as a source of prudential risks[16]



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 and even result in stranded assets[17]. 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.

16 Figure 1 is for illustrative purposes only and is not exhaustive for every institution. The climate and environmental risk factors that may affect an institution, and to what extent, vary by institution.
17 Stranded assets are defined as assets that have suffered unexpected or premature depreciation, write-downs or conversion to liabilities as a result of, for example, new climate and environmental regulations.

This is also known as double materiality[18]. The ESRS defines double materiality as impact materiality and financial materiality. Impact materiality is about the institution's impact on people and the environment, whereas financial materiality refers to the impact of people and the environment on an institution's financial performance. The impact on people and the environment (impact materiality) 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.

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 and non-financial risks. In addition to these direct impacts, financial institutions may face 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.

Biodiversity loss and climate change

Biodiversity loss poses a major risk to our society and the global economy. It accelerates climate change and threatens the health of ecosystems that support the economy. This also affects the financial sector. Financing companies that depend on ecosystems exposes financial institutions to -physical- biodiversity risks. Investments in companies that negatively impact biodiversity can lead to transition risks if governments start banning or pricing these impacts. Research[19] shows that Dutch financial institutions have hundreds of billions of euros in outstanding exposures that are at potential risk from biodiversity loss. This may be because ecosystem services disappear, because of changes in legislation to protect the environment and nature, or because of environmental controversies. The stakes are thus high for the financial sector, and it is vital that financial institutions identify these risks.

It is also important to consider climate-related and biodiversity risks in relation to each other. Biodiversity loss amplifies climate change through deforestation and CO_2 released in the process, for example, while climate change in turn is one of the main drivers of biodiversity loss. Conversely, good forest management can actually help prevent further climate change.

Read more:

- Study by DNB and PBL Indebted to nature – Exploring biodiversity risks for the Dutch financial sector
- DNB-OMFIF biodiversity conference: three takeaways
- Biodiversity Working Group

18 See also ESRS 1 General requirement for an explanation of what should be considered material.
19 De Nederlandsche Bank and PBL Netherlands Environmental Assessment Agency (2020), Indebted to nature – Exploring biodiversity risks for the Dutch financial sector

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 funds
- Insurers
- Electronic money or payment institution

Focal points for the management of climate and environmental risks

In this Guide, we highlight four focal areas of possible relevance to financial institutions in achieving integrated management of climate and environmental risks. The focal areas are (1) business model and strategy, (2) governance, (3) risk management and (4) information provision. For each focal area we have identified focal points that are applicable to climate and environmental risk management across sectors. We also provide institutions with good practices as examples of effective application of the focal points. 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 1: Focal points for 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. *Difference 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.

2. *Impact on the various prudential risk areas*

This involves identifying how the 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 the "Climate and environmental risks" tab for an explanation of how climate and environmental risks impact prudential risk categories).

3. *Different time horizons*

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 the 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 that is 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 for the institution to maintain its earning power. Using a materiality analysis, the institution can determine which risks from the environmental analysis constitute a material risk (see Box 1 for focal points for the materiality analysis).

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[20]

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 to 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 in climate and environmental risks to be able to assess the institution's exposure to these risks and make balanced decisions about them. We also pay particular attention to this when assessing the suitability of policymakers and other officers for whom we conduct fit and proper assessments (see Box 2 for additional information on these assessments).[21] 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 2: 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. 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 they have sufficient competences to properly assess these risks and include them in decision-making, such as a helicopter view, environmental sensitivity and strategic guidance. We apply this expectation proportionately, taking into account the specific position, 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

20 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.
21 Climate and environmental risks are currently included in fit and proper assessments at banks, insurers and pension funds.

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 take 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 funds

Insurers

Focal area 3: Risk management

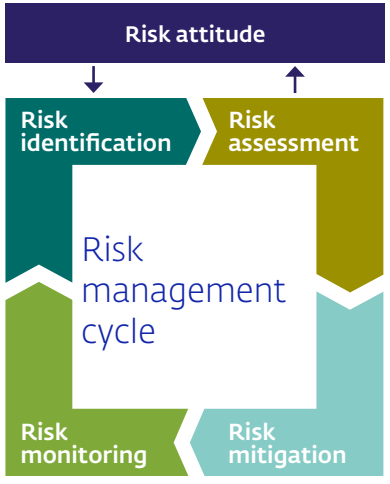
Explicitly including climate and environmental risks in the existing risk appetite

The risk appetite is the starting point for the structure of the risk management cycle. By including in this risk appetite all material and other risks to which the institution is exposed, both 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 the risk appetite, the institution can investigate which risk categories are affected by climate and environmental risks and to what extent. Using a materiality analysis, the institution can determine which risks from the environmental analysis constitute a material risk (see Box 1 for focal points for the materiality analysis). For risks it considers material, the institution formulates a risk appetite and takes targeted measures. These could include a risk tolerance for market risk caused by asset impairment due to stricter climate policies. It is sensible to review this risk appetite regularly, particularly in view of the new and dynamic nature of climate and environmental risks and the related regulations.

Integrating climate and environmental risks in the existing risk management cycle

Including climate and environmental risks in the existing management cycle (see Figure 2) ensures ongoing attention for these risks. 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.[22]

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 and that generally arise in the medium to long term, 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.

22 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 versus 3 or more degrees Celsius, or a scenario involving a disorderly transition to a sustainable economy. These can also be analyses of a qualitative nature that can provide input for strategic planning and decision-making. See also box 3 for additional information on scenario analyses.

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

For example, given the risk appetite, tolerances can be set on exposures to sectors or geographical areas that are highly sensitive to climate and environmental risks and thus a source of market or counterparty risks. Clearly defined tolerances and, where possible, measurable indicators are important for monitoring the risk appetite. To form a complete picture of the risks, it may be necessary to formulate 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 to use probability and impact analyses to assess whether the identified risk level falls within the risk tolerance and hence the risk appetite.

Box 3: Focal points for preparing and conducting scenario analyses

Stage	Action	Explanatory notes
1	Define goal	**Understanding** long-term risks to the business model or short-term financial risks. **Input** for risk management or strategic policy discussions.
2	Choose scenarios	**Type** (dependent on purpose): qualitative or quantitative, trend, exploratory or stress. **Number**: 2 or more, including 1.5 degree temperature rise.
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** (up to 5 years) **and medium** (5 to 10 years) **horizon** for financial risks and impact on soundness of the institution. **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 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 set timeframe. For example, an institution can reduce its carbon footprint or opt for investing in companies that invest in renewable energy. It is useful to evaluate the effectiveness of the mitigation tools used, to make this measurable where possible and to monitor it. 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 using the established risk indicators, these risks and their development can be tracked. For institutions that have committed themselves to certain climate targets or alliances, it is important to monitor the progress of these commitments to remain credible and avoid reputational risk. Risk reporting helps the policymaking body to take informed decisions on the management of material climate and environmental risks.

Frequently evaluating 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 funds

Insurers

Focal area 4: Information provision[23]

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).[24] 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, known as double materiality. This includes ESG information on 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. 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 enhances market participants' understanding of the risk profile and resilience of financial institutions. Good disclosure is particularly important for institutions that are committed to achieving climate and environmental goals. For example, if an institution commits to policy goals to finance (or refrain from financing) 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 funds
- Insurers

23 Information provision is an area in which supervision is shared with the Dutch Authority for the Financial Markets (AFM). The 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.

24 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. See here for the draft version of the ESRS put out to consultation, and here for the draft of the ISSB.

Sectors

Good Practice

Integrating climate-related and environmental risks into the risk management of investment firms and managers of collective investment schemes

DeNederlandscheBank

EUROSYSTEEM

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Introduction

Climate-related and environmental risks can have a material financial impact on the soundness and reputation of Dutch investment firms, managers of undertakings for collective investment in transferable securities (UCITS) and management companies of investment funds (referred to below as "firms and funds").

We expect firms and funds to understand and manage the potential impact of climate-related and environmental risks, as these risks can be a source of conventional financial risk for a firm or fund. Under current prudential regulations, firms and funds must take into account all relevant material risks in their strategy, business model, governance and risk management, and this includes climate-related and environmental risks. We have set out our interpretation of how existing laws and regulations apply to the management of climate-related and environmental risks by firms and funds in the Q&A below [link].

At our request, 22 firms and funds have included the impact of climate-related risks in their 2019 and 2020 Internal Capital Adequacy Assessment Process (ICAAP) submissions. In this good practices document we share some of the good practices we have observed. In doing so, we aim to provide guidance to firms and funds on how to integrate climate-related and environmental risks into their strategy, business model, governance and risk management.[25]

These good practices do not going into detail with regard to transparent reporting and disclosure of climate-related and environmental risks. The Dutch Authority for the Financial Markets (AFM) supervises compliance with obligations under the Sustainable Finance Disclosure Regulation (SFDR) in the financial services sector, which also applies to firms and funds.[26] As the authority supervising the ethical operational management of firms and funds, also monitor that they pursue a policy to manage the risks that may adversely affect the treatment of customers and participants. This includes managing sustainability risks, as well as integrating sustainability risks into investment policies.

We wish to stress that the good practices concerns firms and funds. They do not address the management of sustainability risks at the level of individual customer portfolios or the investment services which investment firms provide to their customers.

Chapter 1 shows how climate-related and environmental risks can translate into conventional financial risks, such as market and operational risk. Chapter 2 discusses the applicable laws and regulations. Chapter 3 discusses good practices in which climate-related and environmental risks are properly integrated into the strategy, the business model, governance, risk management and disclosure.

25 Earlier, we released similar Q&As and good practice documents on climate-related risks for insurers [link] and banks [link].
26 Also see: AFM (2020) Handvatten voor de financiële sector bij invoering duurzaamheid [link in Dutch] and the Sustainable Finance Disclosure Regulation (SFDR) [link].

1 Climate-related and environmental risks

This good practices document discusses climate-related and environmental risks.

- Climate-related risks are linked to climate change. These include extreme climate events such as drought, flooding and storms.
- Environmental risks are related to environmental degradation and the loss of ecosystem services. Examples include water or air pollution, desertification, deforestation and loss of biodiversity.

Climate-related and environmental risks can be broken down into physical risks and transition risks.

- Physical risks are related to the physical impacts of climate change and environmental degradation. These risks can be both acute and chronic. Acute physical risks result from extreme climate-related and environmental events such as droughts, floods, storms, heat waves or environmental catastrophes that result in soil, air or water pollution. Chronic physical risks result from long-term climate and environmental events that cause, for example, sea level rise, changes in precipitation, desertification, biodiversity loss and land use change.
- Transition risks result from climate-related and environmental policies, technological developments or changing consumer and market sentiment aimed at mitigating or preventing climate-related and environmental damage. Transitioning to a climate-neutral and environmentally-friendly economy exposes the economy and the financial sector to transition risks.

Climate-related and environmental risks are a source of conventional financial risks for firms and funds. Physical risks may result in lower revenues and/or higher costs for an investee company. If this leads to lower profitability, the company's value and the return on investment may go down.
A (sudden) transition risk can cause a decline in the value of assets that have an adverse impact on the climate and the environment.
Firms and funds whose fee income is linked to the value of their assets under management may see their income go down. Finally, firms and funds run the risk of incurring liability claims or reputational damage if they are associated with controversial investments or greenwashing.[27] Figure 1 illustrates the above by means of some examples. We have published various studies on how and to what extent Dutch financial institutions are exposed to climate-related and environmental risks at the macro level.[28]

27 Pretending to be more concerned with sustainability than one actually is.
28 See: DNB (2017) *Waterproof? An exploration of climate-related risks for the Dutch financial sector* [link]; *DNB (2019) An energy transition risk stress test for the financial system of the Netherlands* [link]; DNB (2019) *Values at risk. Sustainability risks and goals in the Dutch financial sector* [link]; DNB, PBL (2020) *Indebted to nature - Exploring biodiversity risks for the Dutch financial sector* [link].

Figure 1 Climate-related and environmental risks as a source of conventional financial risks for firms and funds

Risk channel	Subtype	Market risk	Operational risk	Other risks
Physical	 Chronic	Serious climate-related and environmental events can result in loss of value of investments and increase volatility in, for instance, commodity markets.	Serious climate-related and environmental events can damage a firm or fund's premises, data centres and operations, among others things.	Serious climate-related and environmental events leading to macroeconomic shocks can increase liquidity risks.
	 Acute			
Transition	 Policy	New climate-related and environmental policies, new technologies and changing market sentiment may result in stranded assets in carbon-intensive industries, which in turn will result in abrupt price changes in, for instance, equity and/or bond markets.	New climate-related and environmental policies, new technologies and changing market sentiment may lead to reduced demand for services and, consequently, affect a firm or fund's revenues if it is unable to meet the set requirements.	New climate-related and environmental policies, new technologies and changing market sentiment may exacerbate the negative impact of greenwashing on the business model, resulting in reputational damage and claims.
	 Technology			
	 Consumer and market sentiment			

Climate-related and environmental risks have distinctive characteristics that require a special focus from both supervisory authorities and financial institutions. For instance, these risks are characterised by the enormous scope and scale of their ramifications, their uncertain and long time horizon and their dependence on short-term (policy) action. Climate-related and environmental risks can mutually influence each other, making it important to consider them in conjunction.[29]

Climate-related and environmental risks are also recognised internationally. The central banks and supervisory authorities that form the Network for Greening the Financial System (NGFS) demonstrated in 2018 that climate-related and environmental risks are a source of conventional financial risk, and that it is therefore within their mandate to ensure that the financial system is resilient to these risks.[30] In addition, the European Banking Authority (EBA) released a report on how environmental, social and governance (ESG) risks can be embedded in the regulatory and supervisory framework for credit institutions and investment firms.[31]

29 NGFS (2019) *First comprehensive report. A call for action, Climate change as a source of financial risk* [link]
30 NGFS (2019) *First comprehensive report. A call for action, Climate change as a source of financial risk* [link]
31 EBA (2020) *Report on management and supervision of ESG risks for credit institutions and investment firms* [link]. The EBA will use this report as a basis to develop guidelines on the management of ESG risks by financial institutions.

2 Relevant laws and regulations

Current regulations stipulate that material risks must be adequately managed. As climate-related and environmental risks can be sources of conventional financial risks, firms and funds must manage material climate-related and environmental risks. We expect firms and funds to understand, measure, assess and manage the potential impact of these risks. These good practices provide firms and funds guidance on how to apply the obligations with regard to climate-related and environmental risk management.

At the European level, the prudential framework for investment firms is largely set out in the Investment Firm Directive (IFD) and the directly applicable Investment Firm Regulation (IFR).[32] Regarding collective asset management, the Alternative Investment Fund Directive (AIFMD) applies to investment funds and their management companies, while the UCITS Directive applies to UCITS. Based on these European rules, firms and funds must have an adequate risk management policy.[33]

The obligation on firms and funds to have appropriate risk management in place is enshrined in law, for example in the Financial Supervision Act (*Wet op het financieel toezicht – Wft*) and underlying regulations, and derives primarily from European legislation. The *Wft* and the European directives it implements oblige firms and funds to pursue a policy aimed at identifying and managing financial risks. This follows from Section 3:17 of the *Wft* and is further elaborated in the Decree on Prudential Rules for Financial Undertakings (*Besluit Prudentiële Regels Wft - Bpr*).[34] In addition, based on Section 3:17 of the *Wft*, in conjunction with Section 24a or 24a1 of the *Bpr*, firms and funds must have sound, effective and comprehensive strategies and procedures in place to continuously ensure that the amount, composition and distribution of regulatory capital and liquid assets match the size and nature of the risks to which they may be exposed and which they may pose to others (i.e. Internal Capital & Liquidity Adequacy Assessment Process – ICLAAP).

With respect to sustainability, European regulations are forthcoming. For example, as part of the EU's sustainable finance package, the European Commission has adopted regulations clarifying that firms and funds must consider sustainability factors as part of their obligations towards (potential) customers and investors.[35] Senior management of firms and funds will also be required to assign responsibility for sustainability under new European regulations. These regulations are expected to apply from the end of 2022. Another example concerns the disclosure requirements set out in Article 53 of the IFR. These apply to certain investment firms from the end of 2022.

Further details can be found in the Q&A [link].

32 After the implementation law comes into force, expected in autumn 2021.
33 For investment firms, this obligation is largely set out in Articles 24 to 29 of the IFD. For investment funds, this obligation follows from Article 15 of the AIFMD and from Articles 38 to 56 of the directly applicable AIFM Implementing Regulation (EU) No 231/2013. For UCITS, this obligation is laid down in Article 51 of the UCITS Directive and Articles 38-43 of the UCITS Implementing Directive (2010/43).
34 For an investment firm and a UCITS manager, this obligation is mainly elaborated in Sections 23, 23a and 23j of the *Bpr*. As far as a management company of an investment fund is concerned, it follows from Section 26.1 of the *Bpr* that the relevant company is obliged, with regard to the investment funds it manages, to pursue a policy aimed at managing risks that could affect the solidity of those funds.
35 See: Commission Delegated Regulation amending Delegated Regulation (EU) 2017/565 as regards the integration of sustainability factors, risks and preferences into certain organisational requirements and operating conditions for investment firms; Commission Delegated Regulation amending Delegated Regulation (EU) No 231/2013 as regards the sustainability risks and sustainability factors to be taken into account by Alternative Investment Fund Managers; Commission Delegated Directive amending Directive 2010/43/EU as regards the sustainability risks and sustainability factors to be taken into account for Undertakings for Collective Investment in Transferable Securities (UCITS).

3 Good practices

This chapter presents several good practices which we have observed that show how climate-related and environmental risks can be integrated into the activities of firms and funds. We have grouped them into four themes: strategy and business model, governance, risk management, and disclosure.

The good practices are based on the ICAAP submissions of 22 firms and funds for the years 2019 and 2020. At our request, the firms and funds have also considered climate-related risks. We selected examples that we believe are useful in analysing and quantifying climate-related and environmental risks.[36] The applicability of good practices to a specific firm or fund depends on the nature, size and complexity of activities of that particular firm or fund. We emphasise that proportionality is an important principle when applying good practices. This means that activities other than those described in the good practices may be justified or warranted.

The good practices are non-binding and fulfil a bridging function. We recognise that many regulatory and supervisory initiatives on climate-related and environmental risks are currently under development at the European level. The same applies to the methods and tools for addressing these risks. We will obviously monitor these initiatives and determine their potential implications for good practices and communicate with the sector on this subject. Developments may in due course obviate the need for good practices as European directives are being implemented.

36 The good practices mainly relate to climate-related risks, given that climate change is receiving international attention, a clear transition path for the reduction of carbon emissions is available, and several firms and funds have committed to make active contributions to implementing the national and international climate agreements.

3.1 Strategy and business model

Firms and funds need a sustainable business model to ensure their long-term survival and minimise risks to customers and/or investors.

This means they must take into account climate-related and environmental risks to which they are exposed. It also means they must meet the growing demands of customers and/or investors in this area. Customers and/or investors of firms and funds are increasingly aware of, and make demands with respect to, the social and ecological impact of their investments.
As a result, they are also imposing more and more requirements on the activities of firms and funds in this area. In some cases, these are already underpinned by statutory requirements.[37] Lastly, firms and funds must be aware of the potentially negative impact which greenwashing can have on their business model, resulting in a loss of customers and/or investors and, potentially, liability claims.

Good practice: Customer strategy
Several firms and funds have committed to educating customers and/or investors on how to build a more sustainable portfolio to be less vulnerable to climate-related and environmental risks. For instance, one of them says it considers this vital to deepening the strategic partnership with the pension fund. Other firms and funds with institutional customers also consider education a part of their fiduciary role. Lastly, a firm or fund said that, partly at the request of its customers and/or investors, it sets specific climate-related targets, such as:

- reducing the carbon footprint;
- aiming for a relative share (in percentage terms) and an absolute share (in monetary terms) of assets invested in certain Sustainable Development Goals;
- mapping the shares of energy sources (coal, gas, oil, nuclear and renewable) in energy-related investments;
- measuring the size of the portfolio invested in carbon-intensive sectors;
- measuring the sustainability of real estate and infrastructure investments (Global Real Estate Sustainability Benchmark).

Good practice: Strategic asset allocation
Several firms and funds say they include sustainability in all their (strategic) investment decisions by default. One firm or fund assesses all potential investment objects and ideas against the following elements: integration of ESG factors, stewardship, responsible behaviour, sector-based exclusions and future prospects.

Some firms and funds assess all investments against (external) ESG benchmarks or link all investments to a measure of carbon emissions. This allows investments to be valued and certain investments to be excluded.

One firm or fund uses the expected impact of climate change as a risk measure in its risk appetite statement. To this end, it develops climate scenarios and incorporates them into the annual strategic asset allocation study (SAA). In addition, it quantifies the impact of climate change on relevant economic variables.

Good practice: Real estate investments
A firm or fund investing in real estate expresses its responsible asset management in its strategy by defining risk factors and by taking specific measures related to its investment policy that contribute to climate adaptation. For all real estate products, it weighs climate risks deliberately against appropriate and feasible controls. It added "Climate change and energy transition" as an investment theme to its strategic investment policy.

37 Pension funds must comply with the Pensions Act (*Pensioenwet*), which implements the Institutions for Occupational Retirement Provision Directive (IORP II), requiring them to manage climate-related and environmental risks.

3.2 Governance

Firms and funds must have a solid governance structure in place that enables them to identify, manage and report potential risks to which they are exposed. The governance structure that is suitable for managing climate-related and environmental risks depends on the nature and complexity of the firm or fund's activities and the risks to which it is exposed.

We consider the following examples that we have observed to be good practices as they combine a clear organisational structure with unambiguous responsibilities all the way up to board level, as well as transparent reporting lines. This enables the board to make informed decisions regarding climate-related and environmental risks and monitor them effectively.

Good practice: Including a sustainability manager in the governance structure
A firm or fund assigned ultimate responsibility for setting climate targets and identifying ESG and climate risks to the board. The management team and fund managers coordinate and monitor these targets and their implementation by the first-line, in collaboration with a sustainability manager and business risk management. They report to the board on a quarterly basis.

Good practice: Setting up special committees headed by the board
A firm or fund has established an ESG Council, which is responsible for defining ESG risks and opportunities in line with the ESG policy it has formulated. The Chief Investment Officer participates in the ESG Council. Another firm or fund has set up a Sustainability Strategy Committee to develop a climate strategy. Lastly, a firm or fund has established an overarching Sustainability Committee tasked with developing policies, targets and reports. One of the board members sits on this committee.

3.3 Risk management

The cycle firms and funds use to manage conventional financial risks provides a good starting point for managing climate-related and environmental risks. For risk management to be effective it is crucial that firms and funds understand how climate-related and environmental risks translate into conventional financial risks. Due to their specific characteristics, climate-related and environmental risks may warrant adjustment of current risk management practices. In addition, updating risk models and methods requires ongoing attention because knowledge and experience in this field are continuously evolving.

The good practices we have observed provide insight into how firms and funds can integrate climate-related and environmental risks into their risk management cycle, as shown in the figure below. Risk management is an ongoing process. Monitoring current risks can lead to identification of new risks. Clicking on a stage in the figure below will take you directly to the corresponding good practices in this section.

3.3.1 Risk identification

Good practice: Mapping the impact of physical climate-related risks
Based on climate data, a firm or fund has mapped physical climate-related risks and opportunities in the Netherlands. It then identified the climate-related risks to which its current investments were exposed, broken down into short-, medium- and long-term risks. This firm or fund is working to further quantify these risks, as well as their concurrence, and develop analyses to inform decision-making on purchases, sales and management of individual investments.

3.3.2 Risk assessment

Good practice: Scenario analysis – determining the impact on revenues and ICAAP/capital requirements
Several firms and funds have used scenario analyses, such as the transition to a climate-neutral economy and the economic impact of carbon taxes, to quantify how their fee income could suffer from a fall in the value of their investments. They compared the financial outcomes of the different scenarios with their current business risk scenario to determine the implications for their ICAAP.

Risk assessment at investment asset level

Good practice: Incorporating climate-related and environmental risks into the investment process
As part of its due diligence process, a firm or fund analyses potential impacts of climate-related risks on the business model, products and services of a company it is considering investing in. This analysis can be extended to include environmental risks.

Good practice: Assigning physical risk scores at company level
A firm or fund uses external indices and data providers to assess the physical climate-related risks at the level of the individual companies in its investment portfolios. It establishes a normalised score for each company, consisting of three components: 1) operational risks, 2) supply chain risks and 3) market risks. For the latter component, it mainly considers where companies realise their sales and how the relevant sector has thus far anticipated the impact of climate change.

Good practice: Index to assess environmental risk of soil degradation
Soil degradation is an environmental risk that can adversely affect the production capacity – and thus the financial position – of farms and other businesses, as well as reduce the value and marketability of agricultural land. A firm or fund with investment products in farmland has therefore co-developed a soil index. This index indicates current soil quality as well as potential for improvement. The firm or fund expects the index to increase knowledge and understanding of soil quality and simplify quality monitoring.

Sector-level risk assessment

Good practice: Traffic light model using scenario analysis and dashboard
For the purpose of its investment strategy, a firm or fund used a generic scenario with stress tests to identify the potential short-, medium- and long-term impact of climate change on economic growth, inflation and different asset classes in different sectors. It has also developed and annually updates a dashboard that provides insight into the speed of the transition to a low-carbon economy.

Portfolio-level risk assessment

Good practice: Scenario analysis and Paris alignment
Several firms and funds use scenario analysis to assess the impact of climate-related events at portfolio level. Some do this with the help of data providers. To assess transition risks, some measure the extent to which their funds are in line with the Paris Agreement and benchmark their funds against peer funds.[38]

3.3.3 Risk mitigation

Good practice: Portfolio composition
Several firms and funds apply one or more of the following measures to manage climate-related and environmental risks in their portfolios:

- *Concentration limits*
  Revenues from different forms of fossil fuels may not exceed a certain percentage of total revenues.
- *Exclusion policy*
  Companies, sectors or practices negatively associated with ESG factors are excluded. Concrete examples include companies that depend on coal for more than a specific percentage of their revenues, companies with significant coal reserves and power companies whose carbon intensity is not in line with the Paris Agreement.
- *Unwinding investments*
  Companies in mining and coal that do not meet a number of criteria are divested to bring portfolios in line with the Paris Agreement.
- *Investments with positive impact*
  Deliberate investments are made in companies that have specific positive characteristics, score high on ESG criteria or are making clear progress in this respect. Another example is the deliberate acquisition of homes and offices with green energy labels (A, B and C).

Good practice: Engaging in dialogue with investee companies
Several firms and funds approach investee companies that, for example, lack clear carbon emission reduction targets or do not report on them transparently. They engage with these companies on potential climate-related and environmental risks associated with their operations and on how to mitigate those risks. Firms and funds also engage in discussions with companies that need or are heavily dependent on fossil fuels for their revenues to determine whether they have a strategy to reduce this dependence.

3.3.4 Risk monitoring

Good practice: Indicators and targets for a real estate portfolio
A firm or fund has identified the physical and transition risks that affect its investments. It has adopted a number of indicators for these risks, such as carbon emissions, and monitors them on a quarterly basis. It has set specific targets at fund level, such as improving the energy index of residential investments and the percentage of the portfolio meeting green energy labels for Dutch retail and office buildings. To achieve these targets, current investments are made more sustainable through carrying out renovations that reduce energy consumption, making investments in renewable energy sources and/or acquiring highly sustainable new properties.

38 See: Paris Agreement

Good practice: Carbon footprint, water consumption and waste streams
Several firms and funds measure the carbon footprint of their portfolio and set related targets. Multiple metrics are used, such as absolute carbon emissions per million euro of invested capital (based on ownership) and the weighted average carbon intensity of a portfolio or benchmark.[39] A firm or fund also monitors actual energy consumption in managed property portfolios as well as water consumption, waste streams and carbon emissions to set reduction targets.

3.4 Disclosure [40]

Making climate and environment-related disclosures creates the transparency that is vital if climate-related and environmental risks are to be managed effectively. It increases understanding of the risk profile and resilience of financial institutions. It also helps financial institutions gain insight into their exposure to climate-related and environmental risks, and it enables them to manage the financial consequences of these risks.

We acknowledge that it is important to develop consistent and widely applied standards for measuring and disclosing climate-related and environmental risks. This requires effort from various parties, including the financial sector. Many Dutch financial institutions, including firms and funds, have committed to helping achieve the goals of the Dutch Climate Agreement in 2019. Signatories have pledged to take stock of their climate impacts and communicate them transparently. They will also have action plans ready by 2022, explaining the actions they are taking in terms of their financing and investments to contribute to achieving the Paris Agreement's goals of reducing carbon emissions. A number of firms and funds have integrated other international initiatives in their publications, such as the recommendations of the Taskforce on Climate-related Financial Disclosures (TCFD).[41] The aforementioned Sustainable Finance Disclosure Regulation (SFDR) also applies to firms and funds.[42] The AFM has already published a report setting out its initial findings on firms and funds' level of compliance with the disclosure obligation under the SFDR regarding the sustainability risks inherent in their portfolios.[43]

We consider the following examples that we have observed to be good practices as they build on the above-mentioned industry-developed agreements while also providing new ways of reporting relevant climate and environment-related information.

Good practice: Reporting in line with the TCFD framework
A number of firms and funds publicly disclose all or part of their climate-related risk information in line with the TCFD framework. They describe how they address climate-related risks in terms of their governance, strategy, risk management and targets. For example, several firms and funds report on targets relating to carbon emissions (scope 1 and 2) in their investment portfolios and on their own carbon emissions. Only a few also report on scope 3.

39 We note that the European Supervisory Authorities ('ESAs') have also provided such a calculation method in their recent SFDR Q&A.
40 This refers to financial disclosure; it must not be interpreted as disclosure to customers or participants.
41 The Taskforce on Nature-related Financial Disclosure (TNFD), which was established in mid-2021, aims to develop a framework for reporting on environment-related risks. It will build on the TCFD's framework and is expected to be available in 2023.
42 With the introduction of the Sustainable Finance Disclosure Regulation (SFDR), firms and funds must provide information on the extent of sustainability of the (sub)funds they manage. These disclosures can be made in line with the TCFD framework.
43 AFM (2021) *Implementatie SFDR. Onderzoek naar implementatie van SFDR vereisten voor beheerders van Nederlandse beleggingsinstellingen* [link].

Good practice: Reporting on carbon-intensity reduction targets and a water-neutral portfolio

A firm or fund has set a climate change target of at least a 30% reduction in carbon intensity by 2030 compared to 2010. This target is in line with IPCC calculations of the carbon emission reductions needed to limit global warming to 2 degrees Celsius.[44] The total carbon intensity is a weighted average based on the relative importance of companies in the portfolio. This firm or fund aims to achieve a water-neutral portfolio by 2030. It measures this by the amount of water consumption in areas of scarcity expressed per million euro invested. As with carbon intensity, this is adjusted for any growth in enterprise value, and it is a weighted average of all investments.

44 See: IPCC - Intergovernmental Panel on Climate Change

Q&A

Q – Does DNB expect Dutch investment firms, managers of undertakings for collective investment in transferable securities ("UCITS") and management companies of investment funds (referred to below as "firms and funds") to take climate-related and environmental risks into account?

A – Yes,

we expect firms and funds to understand and manage the potential impact of climate-related and environmental risks, as these risks can be a source of conventional financial risks.
Under current prudential regulations, firms and funds must have a policy aimed at identifying and managing all material financial risks. This follows from Section 3:17 of the Financial Supervision Act (*Wet op het financieel toezicht – Wft*) as elaborated in the Decree on Prudential Rules for Financial Undertakings (*Besluit Prudentiële Regels Wft - Bpr*).

- For an investment firm and a UCITS manager, this follows mainly from Sections 23, 23a and 23j of the *Bpr*.
- For a management company of an investment fund, it follows from Section 26.1 of the *Bpr* that such a management company is obliged to pursue, with regard to the investment funds it manages, a policy aimed at controlling risks that may affect the solidity of those institutions. It also follows from Article 40(2) of Commission Delegated Regulation (EU) No 231/2013 that a management company's risk management policy must comprise such procedures as are necessary to enable the manager to assess, for each investment fund it manages, its exposure to all relevant risks. Commission Delegated Regulation (EU) 2021/1255 clarifies that this includes sustainability risks.

In addition, based on Section 3:17 of the Wft, in conjunction with Section 24a or 24a1 of the Bpr, some firms and funds must have sound, effective and comprehensive strategies and procedures in place to continuously ensure that the amount, composition and distribution of regulatory capital and liquid assets match the size and nature of the risks to which they may be exposed and which they may pose to others (i.e. Internal Capital & Liquidity Adequacy Assessment Process – ICLAAP). If a firm or fund is required to prepare an ICLAAP, we expect it to include all relevant climate-related and environmental risks. If the firm or fund does not consider climate-related and environmental risks to be material, it will be sufficient to submit an analysis showing why these risks do not affect the institution's risk profile.

This Q&A focuses on both climate-related and environmental risks. Climate-related and environmental risks can be broken down into physical and transition risks.

- Physical risks are related to the climate-related and environmental damage. These risks can be both acute and chronic. Acute physical risks result from extreme climate-related and environmental events. These include droughts, floods, storms, heat waves or environmental catastrophes that result in soil, air or water pollution. Chronic physical risks result from long-term climate and environmental events that cause, for example, sea level rise, changed significantly precipitation, desertification, biodiversity loss and land use change.
- Transition risks result from climate-related and environmental policies, technological developments or changing consumer and market sentiment aimed at mitigating or preventing climate-related and environmental damage. Transitioning to a climate-neutral and environmentally-friendly economy exposes the economy and the financial sector to transition risks.

Climate-related and environmental risks are a source of conventional financial risks. For instance, physical risks can jeopardise business continuity, reducing business value and worsening the ability to generate profits and repay debts. Through investments in these companies and sectors, this exposes funds and firms to market risks, which can lead to write-downs and losses on investments. A (sudden)

transition can increase the probability of write-downs on investments and assets that have an adverse impact on the climate and the environment. Firms and funds whose fee income is linked to the value of their assets under management will see their income go down. Finally, firms and funds run the risk of incurring liability claims or reputational damage if they are associated with controversial investments and greenwashing.
Not only do climate-related and environmental risks potentially have an impact on the soundness and reputation of firms and funds, but their customers are also increasingly aware of the social and environmental impact of their investments. As a result, they are imposing more and more requirements on the activities of firms and funds. In the case of pension funds, these are already underpinned by statutory requirements.

Climate-related and environmental risks have distinctive characteristics that require a special focus from both supervisory authorities and financial institutions. For instance, these risks are characterised by the enormous scope and scale of their consequences, their uncertain and long time horizon and their dependence on short-term (policy) action. Moreover, climate-related and environmental risks interact, making it important to consider them in conjunction.

By issuing this good practices document, we aim to provide guidance to firms and funds on how to integrate climate-related and environmental risks into their strategy, business model, governance, risk management and disclosure.

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DISCLAIMER

These good practices are non-binding recommendations to investment firms, managers of collective investment schemes in transferable securities and management companies of investment funds on how to apply the Financial Supervision Act (*Wet op het financieel toezicht – Wft*), specifically Section 3:17 of the *Wft* and its further elaboration in Decree on Prudential Rules for Financial Undertakings (*Besluit Prudentiële Regels Wft - Bpr*). They set out our expectations regarding observed or envisaged behaviour in policy practice that reflects an appropriate application of the rules to which this good practices document pertains.

We encourage investment firms, managers of collective investment schemes in transferable securities and management companies of investment funds to take our expectations into account in their considerations and decision-making, without them being obliged to do so, while also taking into consideration their specific circumstances. The Good Practices document is only indicative in nature and therefore does not alter the fact that some financial institutions should apply the underlying regulations differently, and possibly more strictly. It is the individual institution's responsibility to take this into account.

Impact of climate and environmental risks of 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 scale and distribution of physical and transition risks and on the electronic money or payment institution's business model. This impact and its materiality will have to be determined by the institution itself in its materiality analysis.

Table: 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 operations by 2050.

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Legislative framework for pension funds

The legislation and regulations governing pensions are laid down in the Pensions Act (*Pensioenwet – Pw*), the Pension Fund (Financial Assessment Framework) Decree (*Besluit FTK*), the Pensions Act Implementing Decree (*Besluit Uitvoering Pw*) and Mandatory Occupational Pension Schemes Act (*Wet verplichte beroepspensioenregeling – Wvb*) and the Financial Supervision Act (*Wet financieel toezicht – Wft*). 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 *Pw* 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 managing climate risks (EIOPA, 2019).

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 addressing the cross-sectoral focal points in the "Focal points for managing risks" tab. The good practices refer explicitly to the legal provisions in some places.

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

Section 5:68 of the *Wft* and Section 21a of the Market Abuse Decree (*Besluit Marktmisbruik Wft*).	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 *Besluit FTK*.	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 its investments. The associated risks are therefore part of the risk management and the own risk assessment.
Section 21 of the *Pw* and Section 48 of the *Wvb*, Section 2 of the *Besluit uitvoering Pw*	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 *Pw* and *Wvb* states what is meant by this, including 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 *Pw* and Section 130(3) of the *Wvb*	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 *Pw* and Section 110e of the *Wvb*) or stakeholder body (Section 115c of the *Pw*) 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 *Pw*, Section 29b of the *Besluit FTK*	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 *Pw*; Section 42 of the Gatekeeper Improvement Act; Section 11 of the *Besluit uitvoering Pw*, 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 and on 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: 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 habitability of our world.
Transition	Depreciation of assets of carbon-intensive companies due to policy measures such as carbon tax/negative impact on revenue model 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

The good practices are practical examples that, in our view, are good examples of integrated climate and environmental risk management. These serve as inspiration for how institutions can address the cross-sectoral focal points. The good practices are organised according to the aforementioned focal areas. To assist institutions that are in the early stages of embedding climate and environmental risks into their core processes, we conclude with an example of step-by-step implementation of these risks in the organisation.

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[45] ("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. The board first conducts an environmental analysis, looking at upcoming laws and regulations, court rulings, European sustainability targets and initiatives, stakeholder wishes and the steps other pension funds are taking in the area of sustainability. In addition, the board conducts a materiality analysis of sustainability risks. In order to gain a fuller understanding, the board analyses the short, medium 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 for a relevant impact analysis. Location data are also important with regard to physical risks and biodiversity loss. 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"[46] or "social risk". The board is keen to do its part in the transition to a climate-neutral world, including placing emphasis on biodiversity loss and the societal aspects of doing business. Moreover, 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 and adhering the IMVB Covenant or the Paris Climate Agreement. 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 also bears in mind potential 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.

45 The good practice has been written from the perspective of a pension fund administering a defined benefit scheme. However, the good practice also provides guidance on risk management for premium pension institutions and pension funds administering defined contribution schemes

46 In line with the ESRS, double materiality is defined as impact materiality and financial materiality. Impact materiality is about the institution's impact on people and the environment, whereas financial materiality refers to the impact of people and the environment on an institution's financial performance. See ESRS 1 General requirement for an explanation of what should be considered material.

DNB considers 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, as may be the case regarding the characteristics of a real estate portfolio, for example. 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.

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 periodic 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. The pension fund is aware of any limitations in surveying preferences. Participants may not have sufficient knowledge of socially responsible investment (SRI) and therefore may not have the expertise or knowledge to provide an opinion. In pension schemes, participants' preferences must be averaged into a single opinion for a collective investment portfolio.
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. In a newsletter to participants, the board provides insight into how participant preferences are reflected in policy choices and it reports on their impact.

DNB considers this a good practice because:

- the board proactively solicits participants' preferences, but is also aware of the risks involved. 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 *Pw* (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 and documents them as part of its overall strategy.

Beliefs of the fund's board:

- Climate and environmental risks are not sufficiently priced in at present. 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 (CO_2 emissions 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 exposure to physical climate risks – especially for asset classes such as real estate and infrastructure – and exposure to risks of biodiversity loss. Have insight into developments in data and methods needed to determine the impact of this exposure, both in financial terms and otherwise.
- 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).

DNB considers 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 address them appropriately.
- this partially fulfils Section 102a of the *Pw*, Section 13a of the Pension Fund (Financial Assessment Framework) Decree, Section 1 of the *Pw*, 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, and 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 of the potential impact of biodiversity loss of the equity and corporate bond portfolio.
6. When appointing a new asset manager, the selection process includes whether the asset manager has signed the Principles for Responsible Investment (PRI).
7. The fund has explored signing the Finance for Biodiversity Pledge.

DNB considers this a good practice because:

- the pension fund translates strategic goals into measurable performance indicators (KPIs). KPIs are an effective 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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2 Governance

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. To broaden their view, discussions are also being held with several asset managers. Topics include the causes of climate change and biodiversity loss, laws and regulations, national and international climate policies, standards and frameworks, and the use of models and scenario analyses for climate and environmental risks and potential social 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 assess whether the knowledge standards are being met and in which areas there 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.

DNB considers 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 continually develops its expertise and experience in the area 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
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 theme Climate.	The board discusses the SRI policy and its implementation at least quarterly. This includes asking questions on 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.	The sustainability manager attends all management board meetings where the topic of climate is discussed.
Sustainability manager	The sustainability manager supports the Climate portfolio holder on the management board.	The sustainability manager attends all management board meetings where the topic of climate is discussed.
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, the risk manager 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 for 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.

Bodies	Responsibility	Process
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).

DNB considers 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 *Pw*.

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.

DNB considers 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 appetite and the risk management cycle

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."

DNB considers 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 type 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.

DNB considers 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 survey among its participants. Furthermore, the fund uses SASB standards and PAI indicators as inputs.

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 lack of 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 reliable, up-to-date picture of the risks. This process requires data for individual ESG risks for the entire portfolio. The pension repeats the identification process frequently, enabling it to identify new risks in a timely manner. The impact identification is repeated based on the assumption that more and improved ESG data is available for individual investments each time. The following table shows a number of risks from the shortlist (non-exhaustive):

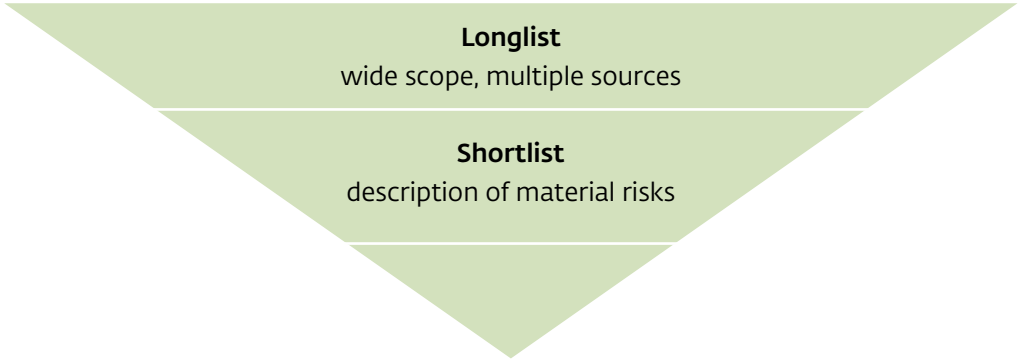
Table 2: Examples of ESG risks

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	**

DNB considers 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. This means that it can make estimates on a best-effort basis, as it is not yet possible to properly take into account all 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 assessment, the better the fund can estimate the extent of the risk.
- this partially fulfils Section 18 and Section 18b of the Pension Fund (Financial Assessment Framework) Decree.

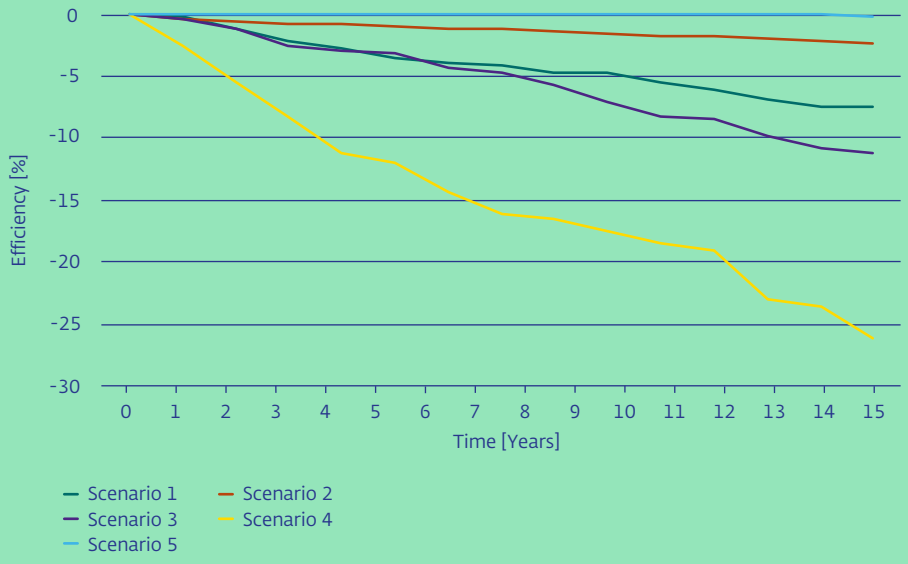


Good practice: using various forward-looking methods in risk identification

To understand its financial risk, the pension fund has 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? Which assets could potentially become stranded? Next, the pension fund looks at its exposure to stranded assets and transition-prone sectors and companies dependent on water. For physical risk, the fund looks at exposure to mortgages and properties in areas prone to floods and pile rot. For biodiversity loss, the pension fund examines exposure to key ecosystem services using sector and location data. The fund also analyses the progress of companies towards a climate-neutral economy with the help of the Transition Pathway Initiative.

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 has asked for a bottom-up analysis, where possible, to gain a thorough understanding of exactly where risks affect its investments. Furthermore, the pension fund does not want the scenarios to assume an interest rate rise relative to the baseline, as this assumption is highly uncertain and very decisive for the outcome.

Figure: Climate risk for equities



DNB considers 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. Data and methods do not exist for all climate and environmental risks that are adequate enough to conduct a detailed forward-looking analysis and calculate the financial impact. It may nevertheless 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. By examining a range of possible future scenarios, assuming the precautionary principle and thinking in "what if" scenarios, the board can get a sense of what the 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 (see here, in Dutch) where indicators can be found for many ESG risk factors.

Table 3: Overview 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). 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. 10% of the portfolio was found not to be 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. This is shown in Table 5.

Table 4

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

Table 5

Metric	Impact	Probability	Impact			Risk
			■	■	■	
Scenario 1 (stress)	equities 23%; credits 10%; real estate 8%	■	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%	■
Scenario 2 (stress)	equities 18%; credits 8%; real estate 8%	■				■
Scenario 3 (plausible)	equities 10%; credits 5%; real estate 8%	■	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%	■
Scenario 4 (plausible)	equities 3%; credits 1%; real estate 2%	■				■

■ low ■ medium ■ high

Based on these assessments, the pension fund has set all three (gross) risks at high (see Table 6).

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

DNB considers 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. A number of pension funds use carbon indicators such as the carbon footprint, but mostly driven by investment policy objectives and less so 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.

DNB considers 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.

Table 7: ESG risk mitigation

ESG risk	Risk	Risk appetite	Within appetite?	Risk response	Mitigation tools	Effective-ness	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.

DNB considers 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 of delineating the absolute level of risk and makes it difficult to make adjustments in relation to the risk appetite. Pension funds sometimes aim 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 (KRIs) for each material risk that provide information on the risk. This list includes the most important risk indicators that it uses in risk identification and assessment. The pension fund then formulated risk tolerances in line with its risk appetite. For instance, the fund has formulated the carbon footprint as a KRI for climate risk. The greater 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 KRI, 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

DNB considers 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 the risks still correct? Is the impact of the risks being properly measured? Are the mitigation measures effective? Is the exclusion list still appropriate?

DNB considers 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 establishing a strategy to achieve them

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 wants to be able to determine the financial impact on the portfolio of climate change and biodiversity loss based on scenario analyses. 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

no.	Cycle	Action	Status	Notes	When
4	Assessment	Adding assessment of financial impact of biodiversity loss	■	See action no. 2	by 1/4/2022
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

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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 the 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, for example to optimise 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 purposes such as the annual report in order to comply with EU legislation and regulations on the Environmental Taxonomy (SFRD). Here, too, the pension fund board uses a data vendor and the NACE[47] code can be used to determine the extent to which the business activities of its investments are "green".

DNB considers 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

In the annual report, a pension fund board reports on climate and environmental risk management and includes a Socially Responsible Investment (SRI) section, containing:

- a risk analysis of the material risks and what measures the pension fund has taken to manage them;
- 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.

DNB considers this a good practice because:

- the pension fund board provides insight into the management of climate and environmental risks on the one hand, and insight into the SRI policy on the other.
- 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 *Pw* and Section 48 of the Mandatory Occupational Pension Schemes Act, Section 2 of the Pensions Act Implementing Decree.

47 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.

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Good practice roadmap

Good practices: roadmap

A pension fund board endorses the significance of sustainability and considers it important to have a good understanding of sustainability risks and opportunities. Alongside this intrinsic motivation, the board is aware that the *Pw* explicitly calls for institutions to address sustainability risks. Some time ago, the board drew up a programme with a roadmap. The board then decided that climate change and environmental degradation impacts should be examined for the following business topics: "business model and strategy", "internal governance", "risk management" and "information provision". Responsibility for the programme is vested in one of the board members.

Business model and strategy

A pension fund wants to know the impact of climate and environmental risks on its business environment and business model. The board takes the following steps:

Step 1	Conduct an environmental analysis	The board organises a session with all board members and an expert on climate and environmental risks. Together with this expert, board members examine the potential impact of climate change, environmental issues such as biodiversity loss, the wishes of their stakeholders (employer, participants, society), the growing body of laws and regulations in this area and European climate goals such as the "Green Deal". The board becomes aware that climate change and the transition to a sustainable society pose risks to the pension fund's investments. The board also realises that these investments may exacerbate climate change. Society, likely including pension fund participants themselves, is becoming more vocal regarding sustainability and investments in companies with high carbon emissions.
Step 2	Conduct a materiality analysis	Board members then conduct a materiality analysis to understand the impact of different climate and environmental risks on the fund's investments. First, they identify how physical and transition climate risks translate into financial risks. A higher carbon tax, new legislation or physical climate effects such as drought, water scarcity and floods, can cause their investments to drop in value, even to the point of becoming stranded assets. The exact financial impact is difficult to determine because climate risks and the impact they cause are surrounded by uncertainty. Board members therefore choose to calculate exposure to potential stranded assets and transition-prone sectors (with the assistance of their asset manager). They then conduct a simple stranded asset scenario analysis (what if a significant proportion of these assets do indeed become stranded assets?). Based on this analysis, the board assesses that the exposure to transition risk is high, making it a material risk. Based on the other outcomes of the session, the board plans to further analyse the materiality of physical climate risk and risk stemming from biodiversity loss.

Step 3	Define a strategy	The pension fund's ambition is to reduce its exposure to climate transition risk and "green" its investment portfolio. The board members then formulate specific goals for the coming period: 1. We have formulated an investment belief regarding climate and environmental risks. 2. We have been in discussions with our asset managers and are aware of opportunities to reduce climate transition risk and make climate neutral/positive investments (e.g. through exclusions, voting at shareholder meetings, engagement, benchmark adjustment). 3. We conducted a market survey and are aware of (i) what other asset managers are doing with regard to sustainability and what products are available in the market with a focus on climate and environmental risks (in particular climate transition risk), and (ii) what collective actions/stewardship initiatives are available that we could consider joining. 4. Based on (2) and (3), we drew up a plan to reduce climate transition risk with short- and medium-term actions. 5. We formulated a roadmap that includes follow-up actions such as a materiality analysis for physical climate risk, biodiversity loss and social risks and setting a specific goal to green our portfolio.
Step 4	Monitoring	Board members formulate indicators for reports to monitor climate transition risk, such as exposure to stranded assets. In addition, KPIs are used to monitor progress towards targets.

DNB considers this a good practice because:

- board members have taken steps to understand a wide range of climate and environmental risks and they have assessed and prioritised the impact of these risks. They have also set targets to manage these risks and the board has formulated clear follow-up steps.

Governance

The pension fund is taking the initial steps to embed climate and environmental risks in its governance.

Step 1.	Responsibilities	A few board members will have climate and environmental risk in their portfolios. Second-line responsibilities are specified.
Step 2.	Knowledge	The board will attend two thematic sessions on climate and environmental risks, and one board member will attend a training course.
Step 3.	Embedding in policy frameworks	Ambition and targets are set and asset manager mandates adjusted.

DNB considers this a good practice because:

- responsibilities are assigned so that climate and environmental risks receive attention and are on the board's agenda.
- the board ensures that there is sufficient knowledge in the organisation to manage climate and environmental risks.
- the board adjusts the policy framework.

Risk management

A pension fund creates a roadmap to integrate climate and environmental risks into its risk management cycle. The pension fund is adapting its risk framework so that when assessing "traditional" risks such as "market" and "operational risk", specific attention is paid to how risks linked to climate and environmental change and other sustainability risks affect these traditional risks. An initial materiality analysis revealed that climate transition risk may have a material impact on the pension fund's financial risk. Risks also arise from the fund's strategic goals.

Step 1	Risk appetite	Formulating an "explicit" risk appetite for climate and environmental risks, such as a low risk appetite for a material negative impact of climate and environmental factors on the value of investments in the case of market risk.
Step 2	Risk tolerances	Formulating risk tolerances, such as maximum exposure to stranded assets.
Step 3	Risk identification	Preparing a longlist of potential climate and environmental risks and an overview of how these risks may affect the pension fund (transmission channels). The Principal Adverse Impacts (PAI) indicators and the SASB standard (Sustainability Accounting Standards Board) are used as input for the longlist.
Step 4	Risk identification	Preparing an overview of risks arising from the strategic ESG goals/SRI policy and from failing to achieve these goals (such as the impact on reputational risk if sustainability measures fail or in the case of a potential increase in concentration risk).
Step 5	Risk identification	Formulating appropriate risk indicators for each risk such as for climate transition risk: exposure to stranded assets, transition-sensitive sectors and carbon footprint. Using expert judgement and stranded asset analysis, determine which risks from the longlist are potentially material. These risks are then shortlisted.
Step 6	Risk assessment	Assessing the shortlisted risks against the risk appetite and risk tolerances.
Step 7	Risk mitigation	Choosing mitigation tools if necessary, such as engagement and exclusion. If the risk cannot be easily mitigated, documenting this and formulating alternative actions.
Step 8	Risk monitoring	Adding risk indicators to existing risk reports to monitor risks, including exposure to stranded assets.
Step 9	Improve risk management	Creating an overview with follow-up actions to improve ESG risk management at each step of the cycle (such as when identifying the materiality of physical climate risk, biodiversity loss and social risks).

DNB considers this a good practice because:

- the pension fund includes the risks it runs from climate change and other environmental issues in its risk management.
- the pension fund incorporates the risks arising from the choices made on the strategic goals or SRI policy in its risk management.

Information provision

Step 1	Data requirement	Creating an overview of the data needed for a materiality analysis and to monitor and report on climate and environmental risks.
Step 2	Reports	Updating the website to feature the fund's sustainability ambitions. The board is aware that doing so carries a reputational risk if the ambitions are not in line with the fund's actual sustainability activities. Reporting on the materiality of climate and environmental risks and control measures in the annual report. The pension fund is taking the first steps to embed climate and environmental risks in its information provision.

DNB considers this a good practice because:

- the board is aware of the data needed for climate and environmental risk management.
- the board reports on the strategy and management of climate and environmental risks.

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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 275a, Integrating sustainability risks into the prudent person principle.

For the management of risks under Section 3.17 of the *Wft*, insurers must comply with the requirements set out in the Solvency II Directive and the Solvency II Delegated Regulation, including risk management and the assessment of insurers' own risk and solvency. Insurers' good practices are based on the topics in the "Focal points for managing risks" tab of the Guide, which in turn are derived from Section 3:17 of the *Wft*. 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 issued the Opinion on climate change risk scenarios in the ORSA and also issued an Application 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 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 and on the insurer's business model. This impact and its materiality will have to be determined by the institution itself in its materiality analysis.

Table: 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 an insurer's buildings and operations.	Climate change could result in large price increases for (non-life) insurance and possibly lead to uninsurability of risks. This could affect an insurer's viability.
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 affect the range of products or services an insurer offers, which may affect its revenues.

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Good practices for management of climate and environmental risks of insurers

The good practices are practical examples that, in our view, are good examples of integrated climate and environmental risk management. These serve as inspiration for how institutions can address the cross-sectoral focal points. The good practices are organised according to the aforementioned focal areas. To assist institutions that are in the early stages of embedding climate and environmental risks into their core processes, we conclude with an example of step-by-step implementation of these risks in the organisation.

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 and biodiversity loss in order to incorporate them in its strategy. This insight is needed not only in the short term, but also in the medium and long term, as some potential consequences are likely to appear not within a few years, but in the longer term (>10 years). 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. The institution opts for the orderly transition scenario (in line with the Paris Agreement) of less than 2 degrees of global warming by 2050 and compares that with business-as-usual scenario[48] (6 degrees of global warming) and with the soft decarbonisation scenario (3 degrees of global warming) as described in EIOPA's Application guidance[49]. 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.

DNB considers 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.
- the insurer uses available documents such as EIOPA's Application guidance on climate change materiality assessments and climate change scenarios in ORSA (August 2022).

48 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.
49 See EIOPA (2022). Application guidance on climate change materiality assessments and climate change scenarios in ORSA.

Good practice: a non-life insurer integrates climate and environmental risks 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 and biodiversity loss on the organisation and its environment is high on its priority list. The insurer assesses whether its product range and investments should be adjusted 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[50], 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 a goal of reducing the carbon footprint of its 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.

DNB considers 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 specific, measurable performance indicators (KPIs) that make it easy to monitor progress.

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50 Join the Alliance – United Nations Environment – Finance Initiative (unepfi.org)

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.

DNB considers 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 even better awareness, insight is also provided into the risks the company faces, for example through the use of risk heat maps, an overview of climate-related damage and of possible stranded assets. External experts are regularly invited to these knowledge sessions, to train and challenge session participants on climate and environmental risks and 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 sustainability risks and opportunities into the strategy and set specific targets in this area, the institution's management board has set up a temporary advisory board with external and internal experts to gather basic knowledge, experience and advice.

DNB considers this a good practice because:

- in this way, the insurer ensures that sufficient expertise is present within the executive and supervisory bodies to assess the institution's exposure to climate and environmental risks, respond appropriately to risks, identify opportunities, arrive at informed and balanced decisions and maintain 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 insurer matures in its management of climate and environmental risks and opportunities, it integrates and embeds these risks more and more thoroughly. 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 assesses whether the management of climate and environmental risks within the insurer is in line with laws and regulations.
- the actuarial function is responsible for assessing how sustainability risk is taken into account in underwriting, technical provisions and reinsurance.
- internal audit is responsible for verifying that climate and environmental risk are managed appropriately in accordance with policies and procedures.

DNB considers 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, along with the general rules as expressed in Article 258.

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.

DNB considers 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.

DNB considers 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 the appropriate activities, including with regard to the climate and the environment.
- these KPIs have been established and made measurable, meaning they can be accounted for externally.
- this fulfils Section 1:118(3) of the *Wft* and Article 275 of the Delegated Regulations with regard to the inclusion of ESG considerations in the remuneration policy.

3. Risk appetite and the risk management cycle

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

An insurer has translated the defined risks 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 reputational risk associated with a failure to adhere to climate commitments.
Since the insurer has a large representation in the agro sector and the risk of biodiversity loss has not yet been adequately identified, additional research will be conducted in the next few years on the specific impact on this sector and the possible consequences for the insurer. The current nitrogen crisis and the impact it is having on the agro sector is taken as an example.

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 high priority. The insurer therefore decides to monitor the sustainable portfolio over the next three years against a benchmark in accordance with the recent SAA/ALM[51]. The insurer then assesses progress towards sustainability targets, undertakes possible actions based on this assessment.
The insurer is giving thought to the investment issue in relation to the transition risk. Are we going to exclude investments, or are we going to try to get companies to "go green" through our investments (engagement)? The insurer also considers the potential social consequences of exclusion. It is agreed to present this choice to the highest decision-making body at its next meeting.

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51 ALM: asset liability management; SAA: strategic asset allocation

The risk appetite is specified in the strategy as follows:

- the insurer aims to have a direct positive impact on climate change with a significant percentage of its investments by 2030 (impact investing). Impact investing means investing in Sustainable Development Goals (SDGs) 7 (Affordable and clean energy), 13 (Climate action) and 15 (Life on land – restoring ecosystems and biodiversity). It has been agreed that a percentage of assets will be invested in line with SDGs 7, 13 and 15 by the end of the year. The insurer defines the "impact investing" KPI for this purpose.
- the insurer analyses the differences in returns and volatility between green and non-green investments in order to monitor the strategy. For this purpose, the "green investment" share KPI is defined based on data from an ESG data provider.
- 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[52]).
- 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*).

DNB considers 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).

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 dissatisfaction	Operational (reputational) risk

52 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. It is used to aid in the preparation of economic statistics and statements.

DNB considers this a good practice because:

- it gives the insurer insight into 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	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 exercise results in a matrix of probability and impact and on the final scores for the gross risks, see table 2. The gross risk for extreme weather scores *medium*. In the actions in this example, 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 needs to be mitigated immediately.

Table 2

Climate risk	Consequences	Affected risks	Probability	Impact	Gross risk	Action
Extreme weather	Losses due to damage to insured properties and damage to investment properties	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

DNB considers 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 DNB's Q&A (see Q&A Climate-related risks and insurers).
- 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.[53] 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.

DNB considers this a good practice because:

- the insurer quantifies the exposure to transition risk by means of a scenario focused on this 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.

DNB considers 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 an initial rapid action aimed at a temporary solution to directly contain the damage.

53 See An energy transition risk stress test for the financial system of the Netherlands (2018).

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 stated ambition of being an ESG insurer does not match reality.		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 biodiversity loss scenario.	6 months
Assessment	Available data on insured properties is insufficient for flood risk.	Underwriting risks due to incomplete picture of insured risks.		Expand 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 climate risk mitigation. Coordination with asset manager and exploration of alternatives.	2 years
Mitigation	The exclusion policy in one scenario allows losses that are greater than the risk tolerance.	Reputational damage due to non-fulfilment of ambitions and financial risk due to unknown large exposure.		Further specify exclusions policy.	3 months

DNB considers 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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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 in 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 in the area of Environmental Taxonomy (Non-Financial Reporting Directive (NFRD)/Corporate Sustainability Reporting Directive (CSRD)). Here, too, the insurer uses a data vendor and the NACE[54] code 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.

DNB considers 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.

54 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 its 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* and the *Decree on disclosure of non-financial information*. The insurer provides disclosures according to the "double materiality principle"[55] from the EU *Non-Financial Reporting Directive* (NFRD). 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 (in Dutch)
- Global Reporting Initiative
- Decree adopting further rules concerning the content of the annual report of insurers (in Dutch) and Decree on the disclosure of non-financial information (in Dutch)
- EU Non-Financial Reporting Directive (NFRD)
- AFM on 'Sustainable Finance Disclosure Regulation (SFDR)'.
- Principles for Sustainable Insurance

DNB considers this a good practice 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 in line 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

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Good practice stappenplan

55 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.

Good practice: roadmap

The managing board of a non-life insurer agrees that the theme of sustainability can have an impact on the business. Although the board estimates that the impact will likely be only minor, it considers it important to have a good understanding of sustainability risks and opportunities. Alongside this intrinsic motivation, the board is aware that Solvency II has explicitly called for institutions to address sustainability risks since August 2022. The board also stands behind the financial sector's commitment as set out in the Climate Agreement of April 2021, which was co-signed by the Dutch Association of Insurers.

To put its money where its mouth is, some time ago the management drew up a programme with a roadmap/action plan to raise internal awareness and improve monitoring of physical and transition risk developments. The board then decided that climate change and environmental degradation impacts should be examined for the following business topics: "business model and strategy", "internal governance", "risk management" and "information provision". Responsibility for the programme is vested in one of the board members.

Roadmap for internal transition	
Business model and strategy	
Step 1a	The insurer wants to understand the potential impact of climate change and environmental degradation on the company's business model and strategy. To this end, the insurer conducts an (environmental) analysis into the physical and transition risks that may affect different parts of the business. This (environmental) analysis serves as the input for a closer look at its strategy and risk management.
Step 1b	*Own organisation:* Partly to promote internal awareness, the board wants to gain insight into the organisation's physical risk and carbon footprint, along with the environmental impact associated with its operations, such as energy consumption. In consultation with staff, an action plan (including a cost estimate) is drawn up to reduce the environmental impact and carbon footprint so that the company can be climate-neutral by 2050 and have zero environmental impact.
Step 1c	*Product range and existing commitments:* The board then looks at the insurance portfolio. In addition to the (environmental) analysis, the board discusses the ORSA climate scenarios, also looking at the potential impact of these scenarios on the business model and strategy. These scenarios include one involving severe weather and one in which the carbon tax suddenly doubles. In addition, the fire portfolio is screened for flood-prone areas and the potential impact of forest fires. Areas that require more analysis, for example due to lack of risk information, are looked at in greater detail. As an example, a relevant question in this context is whether an insured house is located in a forest or is just beyond the forest edge. Furthermore, the product range is scrutinised in a discussion of the company's risk appetite. This raises questions such as "Do we need to adjust policy conditions now or in the near future to avoid certain risks?", "Can we continue to insure properties in flood-prone areas?" or "Are there preventive measures that can be taken to mitigate certain risks?". Finally, the customer base is also analysed by activity (e.g. exposure to the agricultural sector). Certain sectors are likely to be hit harder by climate change than others. The insurer therefore wants to understand whether this also applies to its own customer base. Moreover, it examines whether it faces additional risk due to possible "over-exposure" in the various sectors that are at risk from climate change. The results of the analysis are also discussed with the reinsurers to get clarity on the potential risks, and to check whether additional reinsurance is needed now or will be needed later for certain risks, or whether it might become difficult to get reinsurance for certain risks in the future. The insurer does not intend to make any immediate changes with regard to its liabilities. It is decided to conduct more internal research into the product range and customer profile. It is agreed to collect data to answer the questions about exposure. Since the non-life insurance products have short terms, acute risks are unlikely to arise.

Step 1d	*Investments:* Although the investment portfolio is small, the insurer will still consider whether the investment policy should be adjusted now or in the near future. Many assets are liquid, but a small proportion is invested in sectors that could be affected by transition risks. The board consults with the asset manager and other stakeholders (customers, participants, staff) on the best investment strategy: "Are we going to exclude certain (types of) companies (with possible social consequences), or should we try, possibly in collaboration with other financial institutions, to influence voting on sustainability issues at the companies we invest in?" Another question that arises is whether it is desirable to invest more explicitly in sectors that make a positive contribution to sustainability. Eventually, it is agreed with the asset manager that the insurer will cooperate with the manager's other clients when it comes to voting in shareholder meetings on sustainability-related issues, where appropriate. In this way, despite the modest investment portfolio, they can exert more influence. The aim is to have an investment portfolio that is at least 50% climate-neutral or climate-positive by 2030.
Governance	
Step 2a	*Knowledge and responsibility:* Responsibility for the sustainability theme is assigned to a board member. As resources are limited, the insurer relies as much as possible on in-house knowledge and experience. The employees involved in sustainability attend meetings and seminars to boost their knowledge of the topic. The (external) actuary and risk manager are also asked to submit sustainability proposals. A number of meetings on the sustainability theme are planned to get the rest of the staff on board. These meetings will not only look at national or global developments, but also focus on the insurer's civic role.
Step 2b	*Embedding in policy frameworks:* Board-level commitment is also expressed in a special sustainability section in the strategy document, in which the company expresses the ambition of having carbon-neutral operations by 2030. It further includes a goal of making its insurance products climate-neutral as much as possible by 2030. This aspiration is translated into specific policy by stating that damage repair should take this ambition into account. The aim is to have an investment portfolio that is at least 50% climate-neutral or climate-positive by 2030. In addition to this strategy adjustment, sustainability is included in the existing policy frameworks, and the mandates of the asset manager and the terms of reference of the actuarial and risk management functions are adjusted.
Risk management	
Step 3	Based on the risk assessment for the purpose of the strategy, the company also looks at whether the risk management process needs to be adjusted. Questions that then need to be answered include: "Are there new risk indicators we should monitor?", "What additional information do we need when making commitments?" and "What information should be available when making investment decisions?" Based on this inventory, the insurer, in consultation with the risk management function holder, adapts the risk framework so that, when assessing "traditional" risks such as market and underwriting risk, particular emphasis is placed on how risks associated with climate change and environmental degradation affect these traditional risks. Where possible, standard data are enriched with indicators and data relevant to sustainability risks, such as detailed information on location and use of insured properties. Climate and environmental risks are explicitly identified in the periodic risk monitor. The aforementioned scenarios are evaluated at least annually, examining both the impact and likelihood of different natural disasters. Based on this risk monitor, risk management priorities are set for the coming period and, if necessary, actions are initiated to mitigate risks that exceed the risk appetite, e.g. by purchasing additional reinsurance cover or by adjusting (underwriting) conditions. Data collection is prioritised.

Information provision	
Step 4	The board decides to update the website as it wants to feature the company's sustainability ambitions. The board is aware that doing so carries a reputational risk if the ambitions are not in line with the company's actual sustainability activities. The insurer intends to provide insight into its progress on its strategic ambitions both in its annual reports and on its website. It also intends to publish relevant indicators as part of its disclosure initiatives. For instance, in consultation with the asset manager, it intends to disclose information on its voting record at shareholder meetings and on the "green/grey" ratio of its investment portfolio.

DNB considers this a good example for an insurer because:

- the insurer in this methodical manner, despite limited resources and impact, is still fulfilling the major ambitions as stated in the national Climate Commitment.
- the insurer pays serious attention to emerging risks due to climate and environmental change that may also impact its business model or strategy.
- in this way, the insurer fulfils the legal obligations arising from Solvency II in a proportionate manner.

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