Good Practice

Integration of climate-related risk considerations into banks' risk management

DeNederlandscheBank
EUROSYSTEEM

Content

1 Climate-related risks

2 Regulatory context

3 Good Practices

Introduction

Climate-related risks can translate into physical and transition risks that have a financial impact on the balance sheets of banks. These climate-related risks can potentially result in large financial losses and may present new challenges for banks' risk management practices.

DNB expects that banks understand the potential impact of climate-related risks on their balance sheets. Any material climate-related risk should be governed in a way consistent with sound risk management similar to any other type of material risk. DNB's interpretation of how existing regulation applies to climate-related risk management is detailed in the enclosed Q&A [link].

DNB has assessed existing practices in the Dutch banking sector related to the management of climate-related risks. This Good Practice document aims to share some of the good practices that were observed by DNB, with the intention to inform the sector as a whole. These good practices provide non-binding guidance on how banks can organise their processes and procedures to manage the climate-related risks related to their activities.

Climate change poses new challenges to the risk management of banks. Both physical and transition risks can be characterised by significant uncertainty and nonlinearity, while their probability of occurrence may not be reflected in historical data. These challenges thus warrant timely and concerted actions by banks, but also by the wider private and public sector.

Chapter 1 demonstrates how climate change can be a driver of conventional risk types, such as credit, market and operational risk. Chapter 2 sets out the applicable legislation and regulations. Chapter 3 presents the good practices that are in line with sound governance, risk management and disclosure of climate-related risks.

1 Climate-related risks

Banks may be vulnerable to the financial risks related to the physical consequences of climate change (physical risks) as well as the transition to a climate-neutral economy (transition risks). These two risk channels are drivers of conventional risk types, such as credit, market and operational risk.

Physical risk channel

- Physical risks arise from more frequent and severe climate events. The manifestation of these risks can be acute or chronic. Acute physical risks result from direct climate events such as droughts, floods, storms and heatwaves. Chronic physical risks result from longer-term climate events which bring about gradual deterioration, such as changes in precipitation and sea level rises.

Transition risk channel

- Transition risks result from the process of adjustment towards a carbon-neutral economy. These adjustments are driven by changes in climate-related policy, disruptive new low-carbon technologies and/or shifting market sentiment. The failure to appropriately address these changes may also directly increase reputational and/or liability risks for banks.

The table on the next page outlines examples of how climate change can be a driver of conventional risk types through these two risk channels. A more detailed analysis of these risk channels can be found in DNB's report *Waterproof?* (2017) [Link].

Climate change as a potential driver of financial risks is also acknowledged internationally.[1] The Network for Greening the Financial System (NGFS) published its first comprehensive report in April 2019,[2] in which central banks worldwide recognise that climate-related risks are a source of financial risk for the financial sector.

The NGFS report also highlights the distinctive characteristics of climate-related risks which may require them to be managed differently. These distinctive elements include the potential correlated, and non-linear impact of climate change on all business areas and the timing mismatch between short-term actions and irreversible long-term impact.

1 DNB's report *Values at Risk* (2019) shows that other sustainability risks also have an impact on the financial sector [link]
2 *A call for action: Climate change as a source of financial risk*, April 2019 [link]

Table 1 An overview of examples of how climate change can be a driver of conventional risk types

Risk channel	Sub-type	Credit risk	Market risk	Operational risk	Other risk types
Physical	Chronic Acute	Severe weather events and long-term changing weather patterns may reduce collateral values which increases credit risk via a higher loss given default	Severe weather events may result in loss of asset values and increase volatility on e.g. commodity and/or forex markets	Severe weather events may damage the bank's branches, data centres and operations	Severe weather events leading to macro-economic shocks may increase liquidity risks
Transition	Policy Technology Market sentiment	New climate policies, technologies and market sentiment may generate stranded assets for CO_2-intensive industries which increase probability of default (via lower debt-servicing capacity) and loss given default (via lower collateral values)	New climate policies, technologies and market sentiment may generate stranded assets for CO_2-intensive industries which trigger an abrupt repricing on e.g. equity and/or bond markets	New climate policies may lead to higher liability risks of operational activities, such as outsourcing	New climate policies, technologies and market sentiment may increase reputation risks related to greenwashing[3]

3 Greenwashing refers to the process of conveying a false impression about financial products or activities appearing greener or more socially responsible than they actually are

2 Regulatory context

Current regulation stipulates that material risks should be governed in a way consistent with sound risk management. As climate-related risks may manifest itself through existing risk types that potentially result in significant financial losses, banks should manage these risks in a way that reflects an appropriate application of the applicable regulation. In her capacity of prudential supervisor, DNB therefore expects banks to incorporate climate-related risks into their governance and risk management arrangements in line with the principle of proportionality.

Incorporating climate risks in banks' risk management is in line with CRD IV, which in Article 74 stipulates that banks must have in place robust governance arrangements, including effective processes to identify, manage, monitor and report the risks to which they are or might be exposed to. This provision has been implemented in, among others, section 3:17 of the Wft, which requires sound business operations in which financial risks are managed.

Section 24a of the Decree on Prudential Rules for Financial Undertakings (Besluit prudentiële regels – Bpr), which expands on Section 3:17 of the Wft, also requires a bank to have in place robust, effective and comprehensive strategies and procedures to ensure that the level, composition and division of its own equity capital are in accordance with the size and the nature of the risks it faces not only in the short term, but also in the long term. In view of the long-term nature of climate-related risks, DNB considers this provision applicable with respect to climate-related risks. Articles 23 and 24 of the Bpr provide a more detailed explanation of this within existing governance, risk management and reporting processes.

If climate-related risks are regarded as not material, for instance because an individual bank is not or could not be exposed to them, then an analysis describing why they do not impact its risk profile would be sufficient. Institutions are expected to be transparent about this in their reporting (e.g. in their ICAAP submission).

Further explanation is provided in the Q&A [link].

3 Good practices

This chapter presents a set of good practices that outline how climate-related risks may be integrated into banks' practices. This guidance is based on the results of a recent DNB analysis of current market practices. These good practices revolve around three thematic areas that represent the core elements of how banks operate: governance, risk management and disclosures.

These good practices provide non-binding guidance on how banks can organise their processes, procedures and policies to manage the climate-related risks of their activities. This non-binding guidance is based on observed or envisaged practices that reflect an appropriate application of the applicable legislation and regulation to which this good practice document pertains.

By adopting the good practices in a manner proportionate to their nature and scale, banks will become more resilient to the financial risks from climate change. However, these good practices are non-exhaustive and other actions may thus be warranted depending on the bank's activities and how climate change evolves over time.

The three buttons on the right side of this page function as a clickable directory for this chapter.

Governance

Risk management

Disclosure

a) Governance

Robust governance arrangements are critical for effective risk management and should therefore demonstrate an understanding of the structural nature of climate change, its distinctive elements and its potential financial impact. The appropriate governance structure for climate-related risk management will always be dependent on the nature and complexity of the bank's activities and the type of climate-related risks to which it is exposed.

The following observed examples are considered good practices as they demonstrate a clear organisational structure with well-defined and transparent lines of responsibility for the management of financial risks stemming from climate change. This allows banks to appropriately address climate-related considerations in their risk management frameworks, while also contributing to organisation-wide awareness of the financial risks to which the bank is exposed.

Good practice: Organisation-wide strategic approach towards climate-related risks

A bank set up an internal change programme to develop a strategic approach to understanding the climate-related risks to which it is exposed in the short and longer term. The management board supervised the process and was responsible for the implementation of this strategic approach. The board's remuneration was linked to the achievement of related targets.

Elements of this approach include:

- Gain an objective understanding of how climate change impacts the bank's risk profile.
- Determine if and how its strategy and governance arrangements should be adapted to manage any climate-related risks the bank is exposed to.
- Assign responsibility across all relevant layers of the organisation for the implementation of the required changes, including clear targets, planning and budget arrangements.

Good practice: Integration of climate-related considerations in policy framework

A bank integrated a general climate policy within its governance arrangements, ensuring accountability for climate-related risks across all layers of the risk organisation (CRO, risk committees and risk function). This includes formal escalation procedures to report material risks to the management board. The general climate policy is cascaded down to business line and portfolio level by setting sector-specific requirements for the management of climate-related risks.

b) Risk management

Banks' existing risk management frameworks are an appropriate starting point to assess financial risks arising from climate change. However, given their distinctive characteristics, climate-related risks may lead to new requirements for the risk management practices of banks.

The observed examples on the next pages are considered good practices as they demonstrate how banks can make climate-related risks measurable and actionable. An objective understanding of how climate change impacts conventional risk types is critical for effective risk management.

The good practices are structured around four inherent functions of a bank's risk management framework: risk identification, risk assessment, risk mitigation and risk monitoring[4]. This framework constitutes an iterative risk management cycle which serves as an appropriate basis to understand which actions may be required to manage material climate-related risks effectively. This risk management cycle is visualized on the right side of this page. The image functions as a clickable directory for this section.

4 *EBA Guidelines on Internal Governance*, section 20.3: "RMF's role in identifying, measuring, assessing, managing, mitigating, monitoring and reporting on risk" [link]

Risk identification

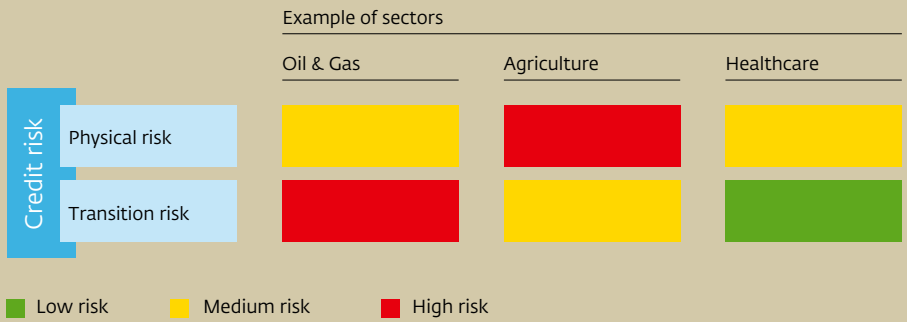
Good practice: A climate-related risk heat map to identify potential risk concentrations

A bank developed a heat map to identify which of its activities are exposed to climate-related physical and transition risks. This mapping can be segmented across sectors and/or countries, depending on the nature of the risks.

This heat map forms the basis for a more granular analysis by, for example, assessing any climate-related concentrations the bank is exposed to. This was based on the following metrics, among others:

- CO_2-intensive assets (and other greenhouse gases).
- Energy label distribution of CRE/RRE portfolios.
- Collateral positioned in higher-risk flood plains.

Figure 1 Schematic example of climate-related risk heat map



Good practice: The use of climate scenario analyses to inform strategic decision-making

A bank developed climate scenarios to identify emerging risk drivers in the short and long term. These scenarios cover the conventional business planning cycle (3-5 years) as well as longer term horizons (5+ years). The results of these scenario analyses are used to inform strategic decision-making.

An example of such a scenario includes one based on the Paris agreement outcome that lays out an emissions trajectory consistent with keeping the increase in the global average temperature to 2°C above pre-industrial levels. This scenario includes assumptions on:

- The impact of climate-related policy and technology shocks.
- Potential differences across regions, countries and/or markets.
- Time horizons over which changes will materialise.

Risk assessment

Good practice: The use of stress-testing to assess the materiality of climate-related risks

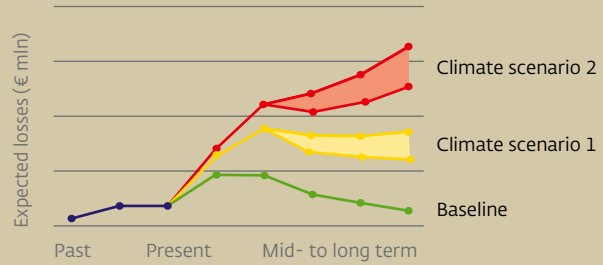
A bank uses stress testing to assess the materiality of the climate-related risks to which it is exposed.

These climate stress tests are part of the bank's ICAAP. The stress scenarios include:

- Physical risk - A flood risk stress scenario to assess physical risks in certain geographical regions in the Netherlands. High-risk regions are identified using publicly available flood risk maps with a high degree of granularity (i.e. postal code level). Within high flood risk areas, a bank may assume a decrease in the value of the real estate collateral of its loans. The decreasing collateral values directly impact the estimated LGD of the exposures in scope. Accordingly, the internal risk rating of their client portfolio was adjusted by several notches to accommodate for an expected increase in PD as a result of the indirect impact of the flood on the (local) economy. These effects will be heterogeneous across the affected households depending on the granularity of the stress test.
- Transition risk - A disruptive energy transition scenario to assess sensitivity of the corporate loan portfolio to transition risks. It assumes a scenario where fossil fuels will be replaced by renewable energy, leading to sharp PD increases of clients in the fossil fuel value chain. By using information on links between companies in different sectors, companies with indirect links to fossil fuel companies (upstream and downstream) are also considered at risk. In this scenario, not only the PD and LGD of the fossil fuel company are affected, but also those of companies in the wider production chain.[5]

The materiality of the stress scenarios is assessed by calculating its risk classification, impact on provisions, profitability and capitalization.

Figure 2 Schematic example of climate-related stress test results



5 For further insight into the formulation of transition scenarios, please refer to the DNB energy transition stress test [link] and the Bank of England's discussion paper on the 2021 biennial exploratory scenario on the financial risks from climate change [link]

Good practice: Methodology to assess the relation between carbon footprint and climate-related risks

A bank developed a methodology to assess the correlation between the carbon footprint of its clients and the associated climate-related risks for the bank. This methodology is developed for specific CO_2-intensive sectors. Such a methodology assesses a bank's exposure to climate-risk based on the following dimensions:

- Regulatory impact: extent to which the client is directly subject to climate-related regulations (e.g. production limits, carbon taxes).
- Substitution impact: extent to which the client is indirectly impacted by climate-related regulation through shifting customer demands and technological advances.
- Transfer impact: extent to which client's climate risk is transferred to the bank through its financing (e.g. whether impact materialises within tenor of financing).

The assessment is performed on a periodic basis and its outcomes are used to update model parameters for selected sectors.

Risk mitigation

Good practice: Implementation of concrete climate-related risk mitigation measures

A bank implemented a set of concrete measures to reduce or avoid climate-related risks that are not in line with its risk appetite. These measures are developed in response to the bank's own assessment of the climate-related risk concentrations to which it is exposed. These mitigation measures include:

- Clients in sectors highly vulnerable to emerging climate policy are subject to tenor limitations.
- Clients with real estate collateral that do not meet minimum sustainability criteria will be subject to a lower LTV limit.
- Clients for which their production is directly dependent on weather conditions are required to take out insurance against extreme weather events (e.g. seasonal droughts).
- Clients in CO_2-intensive industries are required to have a sustainable energy transition strategy in place.

Good practice: Mitigation of physical risk affecting bank's own operations

A bank geographically dispersed its critical functions (e.g. servers & data centres) across different diked areas to reduce flood-related risks related to its own operations.

Risk monitoring

Good practice: Integration of climate-related risk indicators in risk appetite statement

A bank integrated climate-related risk indicators in its risk appetite framework. These climate-related indicators consists of objective, measurable metrics. The limits cascade down to portfolio and sector level depending on the type of indicator. These limits comprise of quantitative and qualitative elements. Examples of such indicators are:

- Concentration in CO_2-intensive assets.
- Carbon emission footprint of portfolio.

Figure 3 Schematic example of climate-related key risk indicators

Key risk indicator	Metric	Limit	Checkpoint
Concentration in CO_2-intensive sectors	%	10	8
Carbon emission footprint	Kt CO_2	250	225

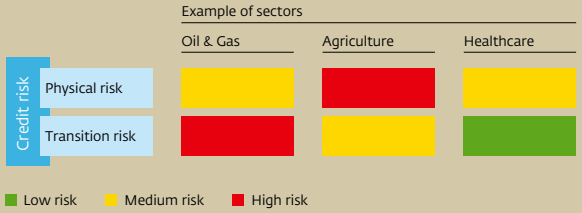
Good practice: Integration of climate-related risk assessment in due diligence process

A bank integrated a climate-risk assessment as part of the due diligence in its client and transaction approval process. This climate-risk assessment includes any physical and transitional risks the client is exposed to, but also how these may materialise in any reputational risks for the bank. This assessment results in a climate-risk rating for each client (red, amber, green). Clients with red ratings are rejected unless additional approval of a specialised climate risk officer is provided. Approved clients with red or amber ratings will be periodically monitored to assess the climate-related risks for the bank.

Figure 4 A summary of good practices in risk management

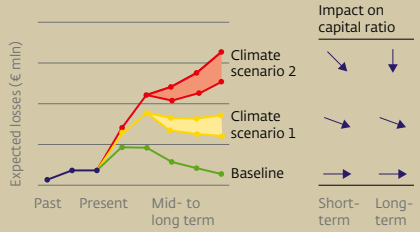
Good practices for integrating climate-related considerations into the risk management cycle

Identification of how climate-related risks may impact bank's exposures



The identification of physical risks (i.e. impact of a changing climate) and transition risks (i.e. impact of transition to a carbon-neutral economy) may be done through analysis of conventional risk types, such credit, market and operational risk. This risk identification may be visualized through a heat map that can be segmented across sectors and/or countries, depending on the nature of the risk.

Assessment of the materiality of climate-related risks



Scenario analyses and/or stress-testing can be used to assess the materiality of the climate-related risks the bank is exposed to. Relevant stress scenarios are bank-specific, but may include:

Transition risk
A disorderly transition scenario with significant policy and/or technology shocks
- E.g. stress PD-levels of CO_2-intensive portfolios as a result of emerging carbon tax regulation

Physical risk
Extreme weather event scenarios, such as a severe drought or a large-scale flood
- E.g. stress LGD-levels of mortgage portfolios in a flood scenario

Monitoring of material climate-related risks at portfolio and client level

Key risk indicator	Metric	Limit	Check-point
Concentration in CO_2-intensive sectors	%	10	8
Carbon emission footprint	Kt CO_2	250	225

Monitoring whether climate-related risks are in line with the bank's risk strategy can be done at portfolio and individual client level.

The risk appetite statement can for instance be used to monitor the climate-related risks the bank is willing to accept. Key risk indicators can be set both at bank-wide and sector level.

Mitigation of any material climate-related risks through risk reduction and avoidance

Risk reduction

Ways to reduce exposure to material climate-related risks may include:

Diversifying portfolios by reducing
- E.g. concentrations of climate-vulnerable collateral

Encourage clients to transfer risk
- E.g. to take insurance against extreme weather situations

Risk avoidance

Ways to avoid exposure to material climate-related risks may include:

Implementing an exclusion policy
- E.g. coal-fired power plants financings

Integrating climate risk indicators in lending criteria
- E.g. maximum tenor for sectors vulnerable to emerging carbon policy

c) Disclosure

The collection and disclosure of climate-related information creates a degree of transparency essential for effective risk management and transparent shareholder involvement. This may ultimately contribute to a more efficient allocation of capital.

DNB acknowledges that the availability of data on climate-related risks may sometimes be incomplete, which may hamper climate-related disclosures at present. However, it is important that banks gain a holistic overview of the data that is available and the data that is unavailable, and that they develop a plan for overcoming critical data gaps.

The Dutch financial sector has made considerable progress in developing industry standards for climate-related disclosure requirements. As part of the Dutch climate agreement, a group of 50 Dutch financial institutions, including 12 banks, signed up to a commitment for reporting on the climate impact of their loans and investments from 2020 onwards[6]. Other international initiatives, such as the Recommendations of the Task force on Climate-related Financial Disclosures (TCFD), have been adopted and integrated in reporting by a number of banks.

The following observed examples are considered good practices as they build on the aforementioned industry standards by developing new ways to collect and share relevant climate-related information.

Good practice: Disclosure of carbon footprint of lending and investment portfolio in annual report

A bank discloses greenhouse gas (GHG) emissions of a large share of its lending and investment portfolio in its annual report. This data was obtained based on new methodology for carbon accounting developed in partnership with several other banks. The bank distinguishes between three forms of GHG emissions in its disclosure:

- Generated emissions: GHG emissions arising from various economic activities. This refers to carbon that is emitted into the atmosphere.
- Avoided emissions: GHG emissions that are avoided from fossil-fuel power generation due to renewable energy. These avoided emissions do not remove existing carbon from the atmosphere.
- Sequestered emissions: GHG emissions stored in carbon sinks, such as trees, plants and soil. This refers to the actual removal of carbon from the atmosphere.

Good practice: Active client engagement to bridge existing data gaps

In order to increase data availability, a bank has implemented a policy to promote active engagement with their clients to bridge any existing climate-related information gaps to increase its ability to identify and manage any climate-related risk concentrations to which it is exposed.

6 The parties are free to choose their own methodologies but are committed to a process geared towards sharing their experiences with each other. This makes it possible to compare results and further improve these methodologies. In addition, these institutions aim to establish action plans by 2022 to act as a roadmap for fulfilling their commitment to reducing CO_2 emissions

Q&A

Q – Does DNB expect Dutch banks to take climate-related risks into account?

A – Yes:

Current regulation stipulates that material risks should be governed in a way consistent with sound risk management. As climate-related risks may manifest itself through existing risk types that potentially result in significant financial losses, banks should manage these risks in a way that reflects an appropriate application of the applicable regulation. In her capacity of prudential supervisor, DNB therefore expects banks to incorporate climate-related risks into their governance and risk management arrangements in line with the principle of proportionality.

Incorporating climate-related risks in banks' risk management is in line with CRD IV, which in Article 74 stipulates that banks must have in place robust governance arrangements, including effective processes to identify, manage, monitor and report the risks to which they are or might be exposed to. This provision has been implemented in, among others, section 3:17 of the Wft, which requires sound business operations in which financial risks are managed.

Section 24a of the Decree on Prudential Rules for Financial Undertakings (Besluit prudentiële regels – Bpr), which expands on Section 3:17 of the Wft, also requires a bank to have in place robust, effective and comprehensive strategies and procedures to ensure that the level, composition and division of its own equity capital are in accordance with the size and the nature of the risks it faces not only in the short term, but also in the long term. In view of the long-term nature of climate-related risks, DNB considers this provision applicable with respect to climate-related risks. Articles 23 and 24 of the Bpr provide a more detailed explanation of this within existing governance, risk management and reporting processes.

If climate-related risks are regarded as not material, for instance because an individual bank is not or could not be exposed to them, then an analysis describing why they do not impact its risk profile would be sufficient. Institutions are expected to be transparent about this in their reporting (e.g. in their ICAAP submission).

Climate-related risks can translate into material financial risks for banks through two main channels of transmission: physical risk and transition risk. Both physical risks and transition risks may materialise on the asset side of a bank's balance sheet, in relation to the activities it carries out.

- Physical risk - Exposures are vulnerable to the physical consequences of changing weather, such as damage to real estate (collateral), or write-downs of companies whose property or processes are exposed to physical consequences of climate change.
- Transition risk - New climate policies[7] (resulting in increasing regulation and standardisation), technical developments and/or shifts in consumer preferences may affect businesses' market value or creditworthiness. This means the risks associated with the transition to a low-carbon economy could lead to a write-down of loans to and investments in companies.

7 The Dutch Climate Act establishes climate targets for the government. The main objective is to reduce emissions by 49% in 2030 (compared to 1990) and by 95% in 2050.

Failing to address these risks can also result in reputational and legal risks, which can materialise on both the asset side (e.g. pressures leading to early termination of a loan agreement) and the liability side of the balance sheet (e.g. many depositors who rush to withdraw their money).

Climate change poses new challenges to the risk management of banks. Both physical and transition risks can be characterised by significant uncertainty and nonlinearity, while their probability of occurrence may not be reflected in historical data. These challenges thus warrant timely and concerted actions by banks, but also by the wider private and public sector.

We have set out these risks in detail in our report *Waterproof? An exploration of climate-related risks for the Dutch financial sector* (2017) [link].

DNB's report *Values at risk?* [link] shows that other ecological and social risks (e.g. loss of biodiversity) may also be relevant to the financial sector, as these can translate into financial risks through the same channels (physical and transition). We encourage institutions to take a holistic approach to environmental, social and governance risks when integrating them into their risk management framework.