Values at risk?

Sustainability risks and goals in the Dutch financial sector

DeNederlandscheBank
EUROSYSTEEM

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With due thanks to Henk Jan Reinders for his contributions.

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1 Introduction

The member states of the United Nations (UN) have formulated Sustainable Development Goals (SDGs) to lend direction to their sustainable development efforts. Sustainable development is development that meets current needs without compromising the ability of future generations to meet their own needs.[1] The 17 SDGs, with 169 associated targets and 244 indicators, provide a framework for global sustainable development. They range from eliminating poverty to countering climate change and from the sustainable use of natural resources to fighting inequality. While they do not bind the UN member states legally, they represent a commitment to achieving them. They also explicitly call on the member states' businesses, civil society institutions and citizens.

Financial institutions are increasingly expected to take sustainability into account. Sustainability affects them in a variety of ways (see Figure 1). Firstly, environmental and social challenges could expose them to increased risks. These risks are often referred to as Environmental, Social and Governance (ESG)[2] risks. While they do not necessarily need to be avoided, they must be managed. It may even be necessary to increase exposure to these risks in order to attain sustainability goals. The European Commission cited the management of environmental and social risks as one of the three main objectives in its Action Plan on Financing Sustainable Growth. It already invited the European supervisory authorities to explicitly embed environmental and social risks in the regulatory framework.

Secondly, financial institutions can use their influence to contribute to meeting environmental and social challenges. We refer to this as seeking to make an impact. Managing EUR 4.3 trillion[3] in investments and loans between them, Dutch-based financial institutions have a great potential impact on sustainable development. The SDGs are an instrument in seeking to make an impact. Although seeking to make an impact and managing risks are considered two completely different things, making an impact will most likely in the long run also contribute to mitigating the risks to which the financial sector is exposed.

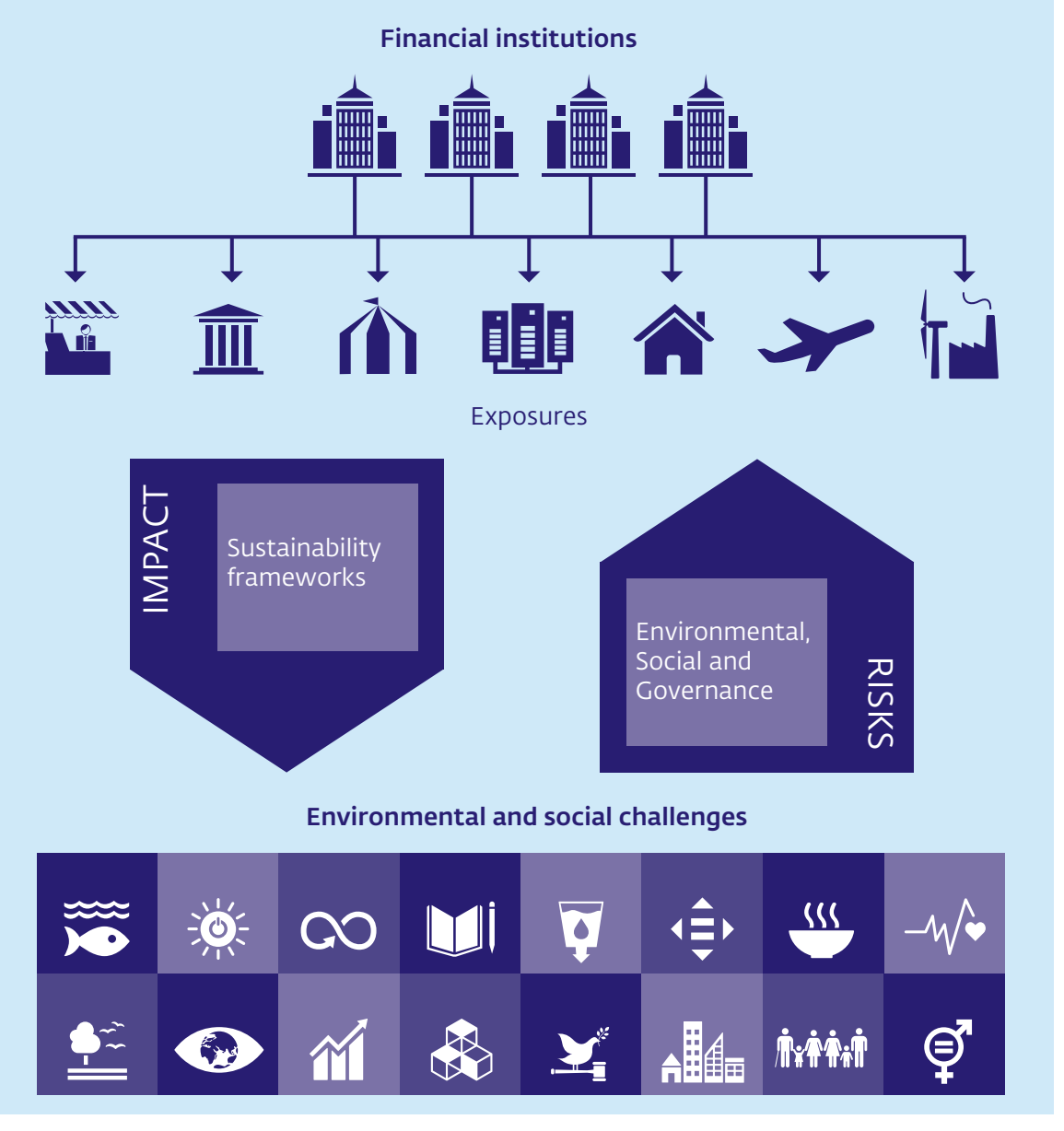
The impact which environmental and social challenges have on financial institutions is also of concern to our mission. We are committed to a reliable financial system and solid financial institutions. If financial institutions are exposed to environmental and social risks, their solidity can be under threat. Similarly, financial institutions must have sound and ethical operational management, which also implies they must deliver on commitments made and expectations raised, including in the area of sustainability.

1 As defined by the United Nation's Brundtland Commission.

2 Pension funds and insurance firms typically refer to integration of environmental, social and governance (ESG) factors, whereas banks tend to refer to environmental and social risk management (ESRM).

3 Source: DNB. Data as at Q4 2017.

Figure 1 The relationship between financial institutions and environmental and social challenges



Our mission contributes to sustainable prosperity in the Netherlands. Sustainable prosperity will benefit from financial institutions that demonstrate awareness of the environmental and social impact of their actions. We believe it is important that financial institutions are transparent about how they embed that awareness into their core processes.

This study explores the extent to which selected environmental and social challenges pose risks to financial institutions. It also takes stock of the processes that financial institutions have set up to lend direction to their sustainability policies. The study contributes to one of the key priorities in our Supervisory Strategy 2018-2022, which is "future orientation and sustainability". Section 2 presents our conclusions and recommendations. Developments in the Dutch financial sector in the area of sustainability are described in section 3. Section 4 identifies the extent to which selected environmental and social challenges pose risks to financial institutions. Section 5 discusses how financial institutions embed environmental and social risks into their risk management. Lastly, section 6 describes how financial institutions lend direction to their sustainability policies.

2 Conclusion and recommendations

Dutch financial institutions are exposed to environmental and social risks. One of our previous studies shows that financial institutions are exposed to risks related to climate change. The present report builds on this, providing insight into the relationship between environmental and social challenges and financial risks. It shows that in addition, there are risks inherent to water stress, raw material scarcity, human rights controversies and biodiversity loss.[4] The Dutch financial sector's exposure to the most water-scarce regions totals EUR 97 billion, while exposure to the most critical raw materials is EUR 56 billion. Human rights controversies also arise regularly with respect to businesses in which Dutch financial institutions invest. In addition, there are clear examples of the negative impact which biodiversity loss has on economic activity. These four risks are not exhaustive – other environmental and social risks also warrant more detailed study.

Most Dutch financial institutions have yet to fully integrate their sustainability ambitions into their operational management. All 25 large and medium-sized financial institutions we surveyed have articulated sustainability policies, and more than two-thirds (70%) have expressed their commitment to contribute to various sustainability standards and frameworks. They also issue sustainability reports on a regular basis. Mechanisms used to lend direction to sustainability policies are not very common yet. Of the institutions we surveyed, 36% have set indicators and targets for their sustainability policies, while 20% evaluate the impact of their efforts on a regular basis. Financial institutions are exposed to reputation risk if they fail to live up to expectations or to deliver on their promises.

2.1 Recommendations for financial institutions

We recommend that financial institutions analyse environmental and social risks closely and mitigate them where needed. This study shows that the Dutch financial sector is exposed to environmental and social risks. Financial institutions need to have a 360-degree view of the risks they face and be aware of how environmental and social risks contribute to their aggregate risk position. This enables them to take mitigating action. Risks may of course vary considerably from one institution to the other. Even were data restrictions exist, scenario analysis and stress tests can provide improved insight into the magnitude of risks. It is important that institutions take a holistic approach to risk management and take the relationships between various environmental and social risks into consideration.

We recommend to further develop environmental and social risk management instruments. Financial institutions already have instruments

4 It is not always possible to determine the exact magnitude of a risk, given the current limits to scientific insight into the relationship between environmental and social challenges and economic activities, limited data availability and high levels of complexity (see section 4).

at their disposal to manage environmental and social risks, but there is room for improvement. For example, most of the financial institutions we surveyed integrate ESG factors into their investment or loan decisions in one way or another, but the indicators they use are not always an appropriate measure of the risk involved. Similarly, they primarily integrate ESG factors into new investment decisions. Only a handful analyse entire portfolio exposures to environmental and social risks.

We recommend that financial institutions safeguard that they live up to expectations and deliver on their promises in the area of sustainability. This requires them to design high-quality instruments to lend direction to their policies. The practical examples set out in section 6 may serve as inspiration for embedding sustainability policies more firmly into their operational management.

2.2 Our follow-up steps

We are working to expand and share knowledge of environmental and social risks. We believe it is important for financial institutions to understand the impact of environmental and social risks on their short-term and long-term term solidity. We also seek to provide more insight into the impact which environmental and social challenges have on financial institutions and financial stability. We do this in partnership with others, among them the Sustainable Finance Platform in the Netherlands and the Central Banks and Supervisors Network for Greening the Financial System (NGFS). In the European arena we also contribute to the embedment of these risks in the supervisory framework.

3 Developments in the Dutch financial sector

Dutch banks, insurance firms and pension funds say sustainability considerations are gaining prominence in their organisations. They are making strides in incorporating such considerations into core processes like lending decisions, investment decisions and risk management.

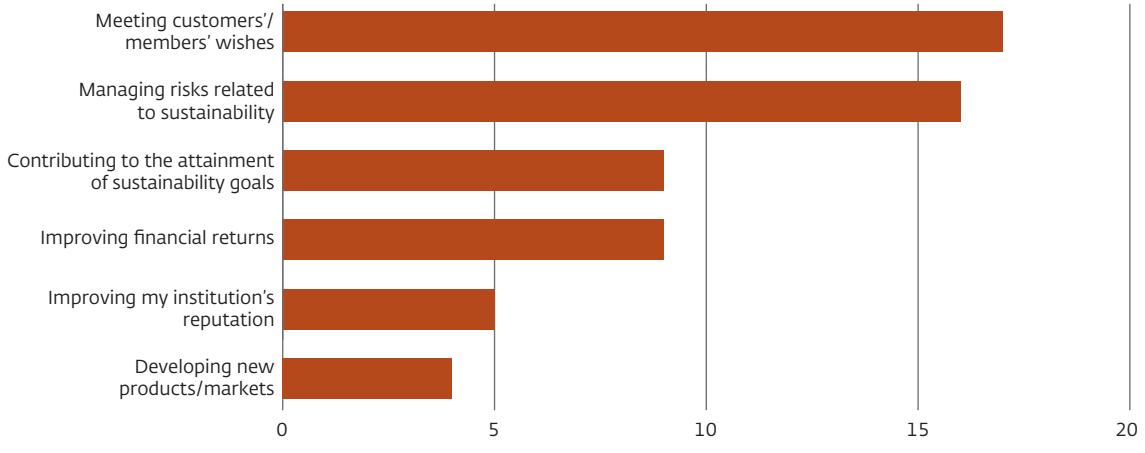
We conducted a survey among 25 large and medium-sized financial institutions to bring into focus developments in the area of sustainability. Comprising open-ended and closed questions, it addressed principles and objectives of sustainability policies, implementation methods, monitoring, reporting and evaluation. We asked ten large and medium-sized banks, ten pension funds and five insurance firms[5] to participate, and all of them completed the survey. Taken together, they hold EUR 3.5 trillion in assets, representing 82% of the Dutch financial sector's total assets. The observations reported in this section and in sections 5 and 6 are based on this survey and on interviews we held with stakeholders in and outside the sector.

Financial institutions say they take sustainability factors into consideration mainly to meet their customers' wishes and limit environmental and social risks. The majority of the Dutch financial institutions view sustainability as a theme that could over time create value for the institution, specifically because it will allow them to meet their customers' or members' wishes (see also Box 1). Institutions also say they are addressing sustainability with the aim of managing risks and, ultimately, improving their returns (see Figure 2). Some take a comprehensive approach, in which sustainability is a key pillar of their corporate strategy and business model.

Financial institutions are developing various products and processes as part of their sustainability efforts. Banks and insurance firms are actively offering their customers sustainability-related products. For example, some products they design contribute to achieving climate goals, such as mortgage loans used to make the home more sustainable. Similarly, savings and investment products targeted at sustainable businesses have gained popularity.

5 Investments made on behalf of third parties and lending were disregarded in the case of insurance firms and pension funds. With respect to banks, our survey focused on lending.

Figure 2 Motives of financial institutions for considering sustainability aspects*



Source: DNB.

* Number of times the sustainability aspect is cited in the top three.

Pension funds[6], banks and insurance firms are making strides in integrating sustainability factors into their asset management and lending operations. Section 5 addresses this in more detail, viewed from a risk management perspective.

Sustainable products are still relatively limited in terms of their volume. Insurance firms and pension funds have small investment portfolios with which they seek to make an impact. Nearly all of the institutions we surveyed say such portfolios represent less than 5% of their total invested assets.

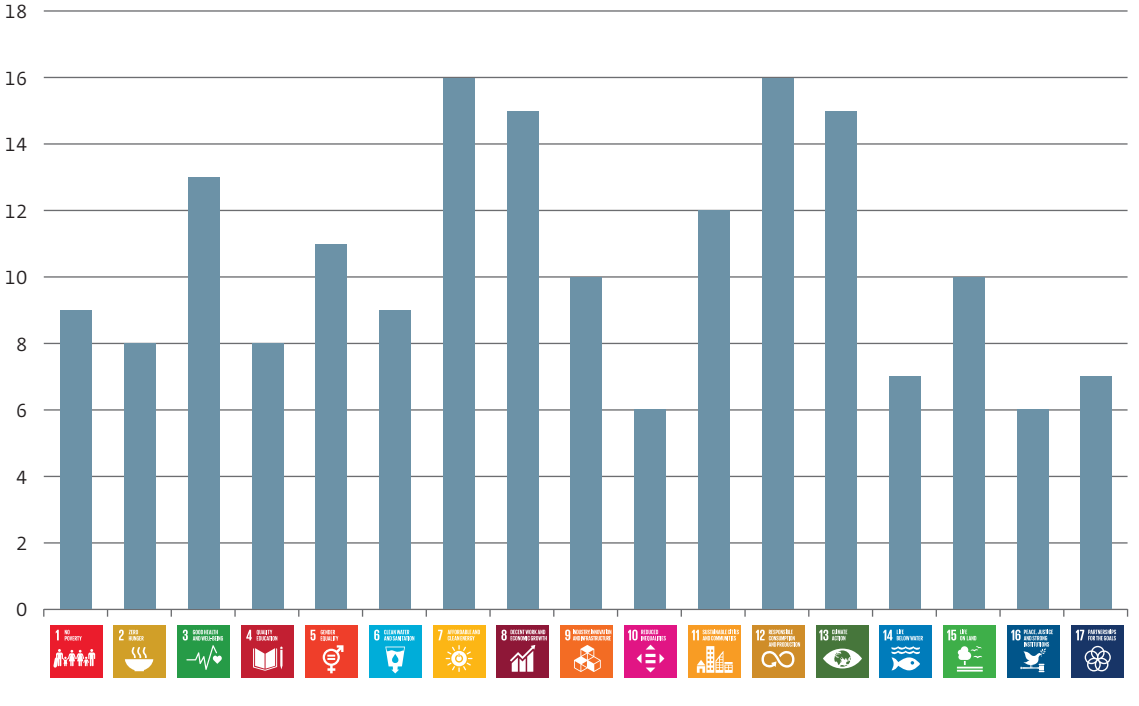
Of the ten banks we surveyed, nine expect to see growth or substantial growth in the volume of the sustainable products on their balance sheet. This could include expanding volumes of green bonds. Thus far, their issuance represents a mere 1.2%[7] of total bond issues.

6 Several Dutch financial institutions are global frontrunners in terms of embedding sustainability into investment and lending operations. See also DNB (2016).

7 Source: Dealogic. Issuance of green bonds as a percentage of total bond issues between Q1 2014 and Q2 2018.

Most respondents work with the United Nation's Sustainable Development Goals (SDGs) as the framework that lends direction to their sustainability policies.[8] In most cases, they select specific SDGs from the 17 main goals (see Figure 3), and some say they seek to contribute to the achievement of all 17. Whereas insurance firms, in particular, tend to select a small number of SDGs, banks and pension funds are more likely to apply a broader range of goals. The most frequently cited SDGs are affordable and clean energy (SDG 7), decent work and economic growth (SDG 8), responsible consumption and production (SDG 12) and climate action (SDG 13).

Figure 3 Number of surveyed institutions that cite each of the SDGs as a focus area



Source: DNB.

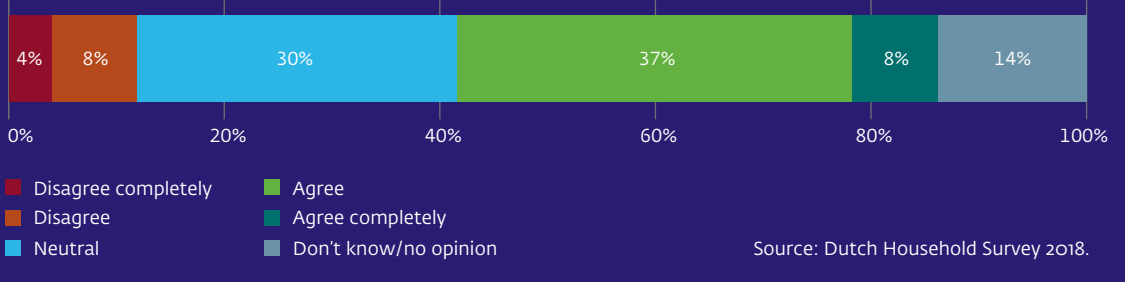
8 There are also financial institution that apply the SDGs to define their investment universe, as a framework for positive impact, or both. In addition, there are those that measure their portfolios' alignment with the SDGs.

Box 1 Households value a sustainable financial sector

Households attach great importance to sustainable investment. Of the more than 2,000 households that participated in the Dutch Household Survey[9] 68% said they believe it is "somewhat important" to "very important" that their savings or investments are invested along the lines of sustainability. When asked whether they are prepared to receive less interest on their savings in return, around 56% of the households said they would settle for somewhat less, whereas 29% said sustainability considerations should not affect interest on their savings.

Sustainability enhances public confidence in financial institutions. Around 45% of the households said that if their bank or pension fund takes climate impact or harm to the environment into consideration in its investment decisions, this has a positive impact on their confidence in that institution, while 30% expressed a neutral stance (see Figure 4).

Figure 4 Impact of sustainability on confidence in financial institutions



Source: Dutch Household Survey 2018.

Statement: "If my bank or pension fund takes climate impact or harm to the environment into consideration in its investment decisions, this has a positive impact on my confidence in that institution."

9 Dutch Household Survey (DHS) 2018.

4 Environmental and social risks

Environmental and social challenges may expose financial institutions to risks. We examined the scope of physical, transition and reputation risks caused by water stress, biodiversity loss, raw material scarcity and human rights controversies.

In addition to climate change, other environmental and social challenges could also expose financial institutions to risks. One of our previous studies shows that financial institutions are exposed to risks related to climate change.[10] For example, a higher incidence of extreme weather events can drive up insurance claims, and lenders must respond to the implications of mandatory energy efficiency requirements for office buildings and other properties. In its most recent Global Risks Report[11], the World Economic Forum analysed the most pressing risks to life on Earth (see Figure 5). Such environmental and social issues do not jeopardise the solidity of financial institutions by definition. Viewed from a risk management perspective, it is essential to identify the environmental and social challenges that have a material impact on the balance sheets or operations of financial institutions.

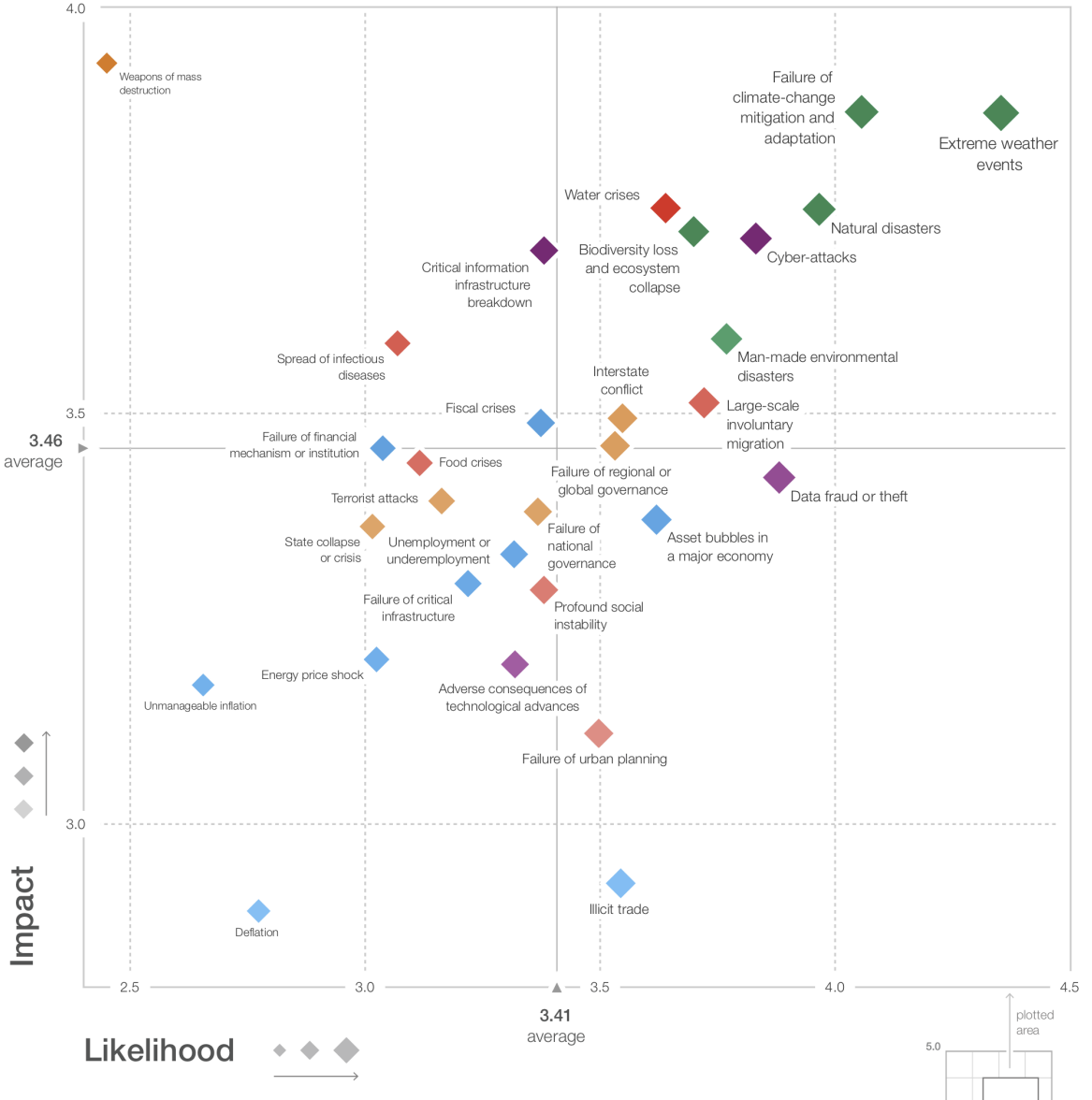
Environmental and social challenges may result in physical, transition and reputation risks. Environmental and social issues may have an impact on the solidity of financial institutions. The associated risks are physical, transition[12] and reputation risks. In turn, these manifest themselves in the form of credit, market, operational and underwriting and other risks. For example, a debtor's financial position may deteriorate due to geological or environmental changes that impact its operations (physical risk). Increasing government regulation and standardisation or a shift in consumer preferences may affect a business's market value or creditworthiness (transition risk). Not least, negative media exposure related to environmental and social issues may cause reputation loss or even result in legal claims (reputation risk). Table 1 lists a number of ESG risks that may involve physical, transition and reputation risks.

10 DNB (2017), Vermeulen et al. (2018).

11 WEF (2018).

12 For definitions of physical risks and transition risks see also NGFS (2018) and BoE (2018).

Figure 5 The Global Risks Landscape 2019[13]



Top 10 risks in terms of **Likelihood**

1. Extreme weather events
2. Failure of climate-change mitigation and adaptation
3. Natural disasters
4. Data fraud or theft
5. Cyber-attacks
6. Man-made environmental disasters
7. Large-scale involuntary migration
8. Biodiversity loss and ecosystem collapse
9. Water crises
10. Asset bubbles in a major economy

Top 10 risks in terms of **Impact**

1. Weapons of mass destruction
2. Failure of climate-change mitigation and adaptation
3. Extreme weather events
4. Water crises
5. Natural disasters
6. Biodiversity loss and ecosystem collapse
7. Cyber-attacks
8. Critical information infrastructure breakdown
9. Man-made environmental disasters
10. Spread of infectious diseases

Categories

- Economic
- Environmental
- Geopolitical
- Societal
- Technological

Source: World Economic Forum.

13 Risks are plotted in terms of likelihood and impact over the next ten years. Source: WEF (2019).

Financial institutions are unable to assess the magnitude of many environmental and social risks. Assessment of the magnitude of a risk facing financial institutions requires i) exposure of financial institutions to a hazard; ii) a risk channel from the hazard to the institution; iii) a measure of the sensitivity to exposure to the hazard. In the next sections, we will examine exposures and risk channels relating to a number of environmental and social challenges. It is not always possible to determine the exact magnitude of a risk, given the current limits to scientific insight into the relationship between a hazard and economic activities, limited data availability and a high degree of complexity.[14] Even where data restrictions or uncertainties exist, conducting scenario analyses or stress tests can help approximate the magnitude of a risk.

The remainder of this section will discuss to what extent water stress, raw materials scarcity, biodiversity loss and human rights controversies expose financial institutions to risks. Many environmental and social risks may also present risks for businesses and, indirectly, for financial institutions investing in or lending to them (see Table 1). We selected these four themes because there are risk channels, the themes impact a substantial number of sectors and data sources[15] are available for analysis of the financial sector (see Table 1). Our selection by no means implies that other environmental and social risks are smaller or less important, other environmental and social risks also merit further study.

14 For example, biodiversity loss reduces the resilience of the ecosystem, which impacts businesses that are dependent on related ecosystem services. It is, however, difficult to determine with any degree of certainty which ecosystem services exactly will be affected, when this will happen and what the critical threshold will be (see also section 4.2).

15 For example, more granular data are available on financial institutions' securities holdings than on outstanding corporate loans. For this reason, the next paragraphs will frequently cite securities holdings.

Table 1 Selected environmental or social risks[16]

SDG	Related environmental or social risk	Number of sectors for which the risk is material	Principal risk types
SDG 3. Good Health and Wellbeing	Air quality	17	Transition
SDG 6. Clean Water and Sanitation	Water and wastewater management	31	Physical, transition and reputation
SDG 7. Affordable and Clean Energy	Energy management	37	Transition and physical
	Fuel management	15	Transition and physical
SDG 8. Decent Work and Economic Growth	Human rights and community relations	8	Reputation and transition
	Diversity and inclusion	11	Reputation
SDG 12. Responsible Consumption and Production	Waste and hazardous material management	25	Reputation
	Materials sourcing	19	Physical
	Lifecycle impacts of products and services	40	Physical
SDG 13. Climate Action	GHG emissions	23	Transition and physical
SDG 14. Life Below Water SDG 15. Life on Land	Biodiversity impacts	15	Physical
SDG 16. Peace, Justice and Strong Institutions	Data privacy and security	16	Reputation

Sources: DNB, SASB.

16 The selected environmental and social risks and the number of sectors for which they are material are based on the Sustainability Accounting Standards Board's Materiality Map. The list of related environmental or social risks is not exhaustive. The principal risk types represent DNB's judgement.

The mere conclusion that there is an exposure to a risk is not to be construed as a call to eliminate that risk. By definition, financial institutions are exposed to risks. They are required to manage all the risks that are relevant to them, including environmental and social risks. While divestment can be the right way forward in specific cases, risks can typically be managed efficiently (see also section 5). This is even more relevant, given that seeking to achieve sustainability goals could result in increased exposure to other environmental or social risks.

For example, a water treatment plant in a water-scarce region in northern India has increased exposure to the risk related to water stress. Accordingly, the financial institution financing the project has increased exposure to water stress, while it also contributes to the achievement of SDG 6, availability of clean and safe drinking water. Managing the risk related to water stress, rather than eliminating it, enables the financial institution mitigate the risk and seek to achieve an impact at the same time.

4.1 Risks related to water stress

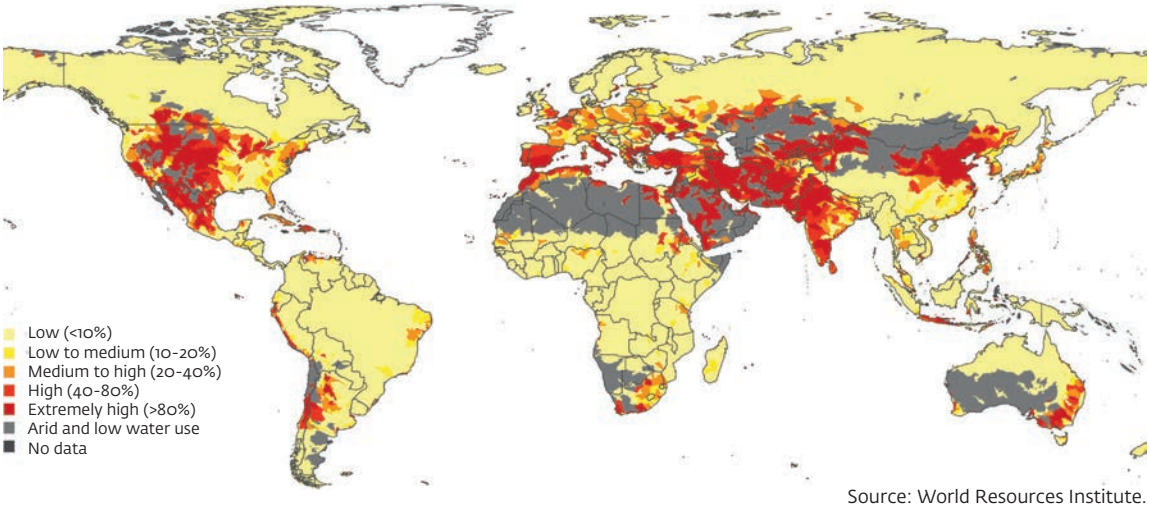
Life on earth depends on water, but the world's economy cannot do without it either. Population growth and economic growth exacerbate the world's water scarcity. With regard to the Dutch financial sector, we established the proportion of the facilities of financed businesses that operate in water-stressed regions. As it turns out, Dutch financial institutions have invested at least EUR 97 billion in businesses operating in extremely water-scarce regions.

Fresh water is of vital importance to people, the economy and the environment. Not only is it important for humans, it also used in numerous economic activities. Many sectors, such as agriculture, mining and energy production, strongly depend on it.[17] Extreme fresh water scarcity even compromises overall stability in a region.[18] Water features prominently in SDG 6 and SDG 12.

Globally, water scarcity increases strongly due to growing prosperity and rising population levels. Water stress is the lack of sufficient available fresh water resources to meet water usage demand. In scientific terms, water stress is high if 40% or more of the available resources are needed to meet the demand.[19] Under such circumstances, periodic shifts in supply or demand are very likely to cause actual shortages. If this percentage rises to 80%, water stress is said to be extremely high. According to the PBL Netherlands Environmental Assessment Agency, fresh water demand is projected to rise by 25% in the period up to 2050.[20,21] This means a substantial part of the world's surface will experience water stress (see Figure 6). More than 40% of the world's population will be living in regions with high to extremely high water stress by 2050. Increased water demand due to population growth and growing prosperity is a more important cause of water stress than shifting or declining supply due to climate change.[22]

17 Jensen and Namazie (2007).
18 Ligtvoet et al. (2017).
19 Vörösmarty, Green, Salisbury, and Lammers (2000), Luck, Landis and Gassert (2015).
20 PBL Netherlands Environmental Assessment Agency (2018).
21 Between 2000 and 2050, the OECD (2012) expects a peak increase in demand by the manufacturing industry (+400%), electricity (+130%) and households (+130%) sectors. This means the availability of fresh water for irrigation in the agricultural sector will decrease.
22 Luck et al. (2015).

Figure 6 Projected water stress in 2040



Source: World Resources Institute.

Water stress is the ratio between demand and supply of fresh water.

Businesses operating in water-stressed regions are exposed to increased risk. Industry sectors such as agriculture, mining and energy production use large volumes of water.[23] Drought may therefore expose these sectors to physical water risk. A period of prolonged drought in Australia in 2002 illustrates that this is a material risk. It led a to one percentage point lower GDP growth, while the added value of the agricultural sector fell by 29%.[24]

Without adequate measures to counter water stress, GDP in some areas could shrink by more than 6.0% in 2050.[25] In addition to physical water risk, the prioritisation of demand for water may also lead to a transition risk for businesses. A situation of scarcity will put pressure on non-essential business activities.[26] Making capital and loans available to businesses in water-stressed regions also exposes financial institutions to these risk channels.

23 Lamb (2016), Morrison, Morikawa, Murphy, and Schulte. (2009).

24 Australian Bureau of Statistics (2004).

25 World Bank (2016).

26 For example, Coca Cola has had to close three of its plants in areas with severe water shortages in India (see FSRN, 2016). In one of these cases, the Indian government ordered the shut-down for extracting too much groundwater (see The Guardian, 2014).

We identified the exposures of financial institutions to businesses operating in water-stressed regions. Water stress[27] varies strongly from region to region. To determine a business' exposure to water stress, the level of water stress must be established at the geographic coordinates of each individual business facility. Unilever, for example, headquartered in the United Kingdom and the Netherlands, operates roughly 900 facilities around the globe. To conduct our analysis, we used a dataset compiled by research agency Four Twenty Seven, which contains the geographic coordinates of around 918,000 facilities of 2,000 major listed businesses[28], and linked the data to detailed water stress data from the World Resources Institute (WRI). To calculate the exposures, we classified each of the facilities into the five water stress categories, from low to extremely high. The exposures of the Dutch financial sector were allocated to the various categories pro rata to the number of business facilities in those categories, which were weighted equally.[29]

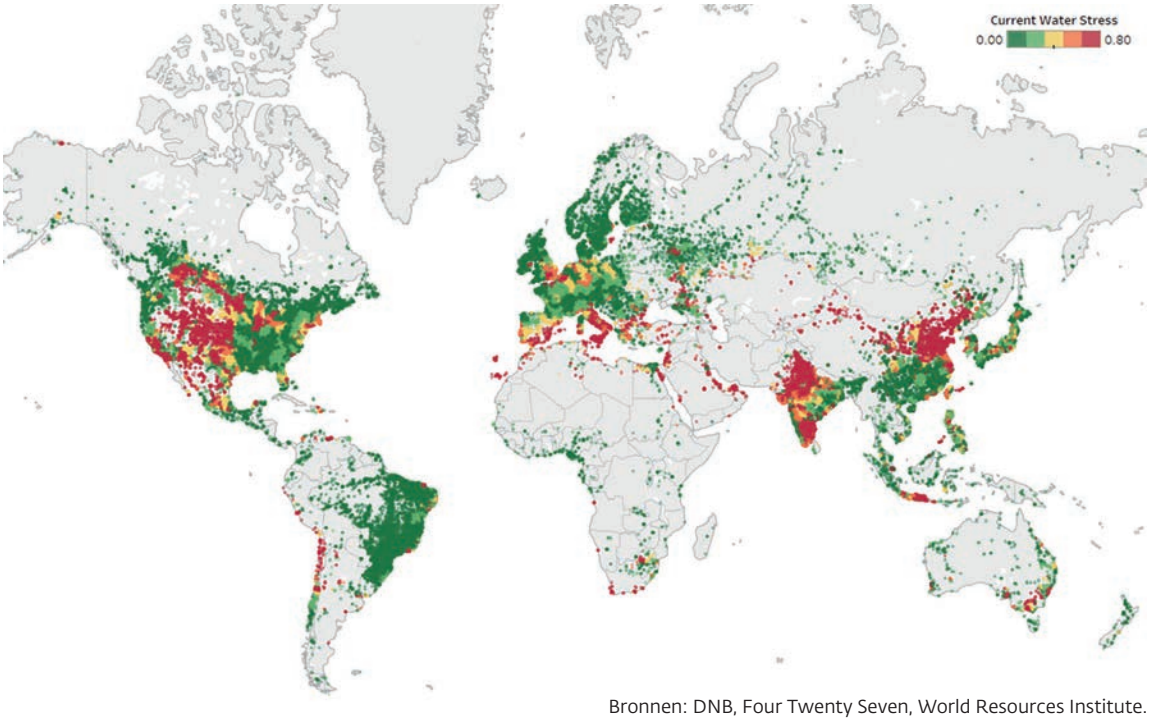
A significant proportion of the operating facilities of businesses in financial institutions' equity portfolios are located in regions with high or extremely high levels of water stress. Of the businesses in the equity portfolios of Dutch financial institutions as at end-2017, over 180,000 (20%) facilities were located in extremely water-stressed regions (see Figure 7). These regions are subject to the highest risk of scarcity turning into shortages, which could result in a facility's operations being blocked or restricted.

27 There are also other risks related to water in addition to water stress, such as reputational risk associated with pollution or excessive use of water. This section only discusses the water stress aspect of water.

28 Almost all businesses in the MSCI ACWI and S&P 500 indices.

29 The following may serve to illustrate our method. Pension fund X invests EUR 1 million in business A which operates facilities I and II, which are assumed to be of equal importance to the business. Facility I is located in an area with low water stress, whereas facility II is in a region subject to extremely high water stress. This means that the pension fund has a EUR 0.5 million exposure to low water stress and a EUR 0.5 million exposure to extremely high water stress. We performed this analysis for the equity portfolios of financial institutions that include businesses for which facility-specific data are available. We then added up the exposures in each water stress category.

Figure 7 Facilities of listed businesses in the equity portfolios of Dutch financial institutions*



Bronnen: DNB, Four Twenty Seven, World Resources Institute.

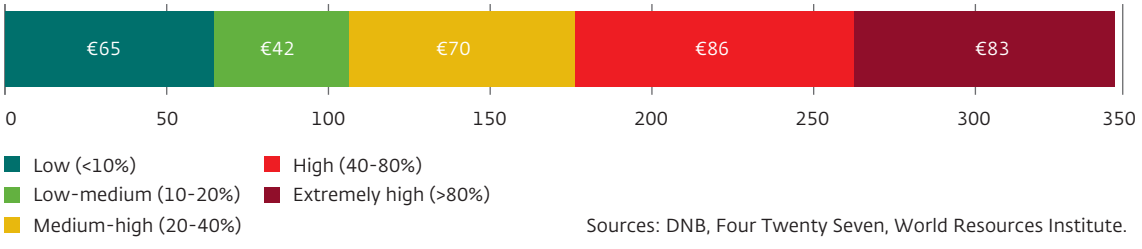
* The colours of the dots indicate the water stress level for the facility, ranging from green, signifying low water stress, to red, signifying extremely high water stress.

The Dutch financial sector has a combined exposure of EUR 83 billion to facilities located in extremely water-stressed regions in its equity portfolios (Figure 7). This comprises approximately 17% of all equity holdings. Given that pension funds have relatively large equity holdings, they account for 94% of this exposure. At 3.9% and 2.1%, respectively, the exposures of insurance firms and banks are limited.[30]

30 Even after homing in specifically on sectors to which water is vitally important, such as agriculture, mining and energy production, the exposure to businesses operating in extremely water-scarce regions still remains significant, at EUR 37 billion. Water dependency is determined on the basis of the SASB Materiality Map, the CERES Toolkit Sector and Industry Water Risk Database and Jensen and Namazie (2007).

Figure 8 Equity exposure of Dutch financial institutions to water stress levels, Q4 2017*

EUR billions



Sources: DNB, Four Twenty Seven, World Resources Institute.

* Dutch financial institutions hold EUR 487 billion in equities. Water stress data are available for EUR 346 billion in equity holdings.

Our analysis also looks forward, based on WRI water stress projections for 2040[31], in addition to determining current water stress levels. Assuming unchanged water policies and asset allocations, the exposure to extremely water-stressed regions will climb to EUR 91 billion.

Of the bank loans to large businesses, EUR 14 billion is exposed to extreme water stress. The volume of bank loans outstanding of EUR 810 billion many times exceeds the banks' equity investments of over EUR 13 billion. A EUR 71 billion dataset[32] shows that bank loans issued to multinational corporations amounting to EUR 14 billion (20%) are exposed to extremely water-scarce regions.[33] The remaining part of the lending portfolio will most likely also feature substantial exposures to water-stressed regions.

A more detailed understanding of individual investments is needed to assess the magnitude of the risk related to water stress. Water stress can have a major impact on society and businesses, and hence on the investments of financial institutions. That impact will depend on the nature of a business' operations, their water dependency, and the quality of businesses' and local governments' water management programmes. These are factors, that financial institutions could consider in their risk assessment and acceptance processes.[34]

31 See http://www.wri.org/our-work/project/aqueduct/.

32 Our analysis is limited to bank lending to the largest listed corporations, as facility-specific data are available for these businesses only.

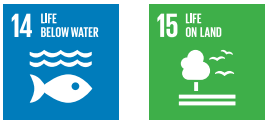
33 Due to data restrictions, we refrained from analysing water stress exposure of loans issued to smaller businesses.

34 De Ceres Investor Water Toolkit describes an overall approach to water risk, while the UN Principles for Responsible Investment specifically consider water risk in agriculture and businesses that are dependent on agriculture.

4.2 Risks related to biodiversity loss

Biodiversity loss presents a threat to humans and economy alike. Reduced pollination and declining resilience of ecosystems and species illustrate the consequences of biodiversity loss for economic activity. While determining the exact impact of biodiversity loss on the solidity of financial institutions remains challenging, specific risk channels are clearly identifiable.

Various authoritative scientists and organisations[35] consider biodiversity loss one of the biggest environmental challenges facing mankind. The number of bird, mammal, amphibian and coral species facing extinction is increasing.[36] The number of animals is also going down: research has shown a 75% decline in flying insect biomass in German protected areas over a 27-year period.[37] For some insects, the reduction exceeds 40% in the Netherlands over the same period.[38] The past 40 years have shown a global decline of 60% in population sizes of vertebrates.[39]



Biodiversity is vital to businesses as well as humans. The significance of biodiversity is best understood when looking at what are termed ecosystem services, which are benefits humans gain from the natural environment. Businesses depend on ecosystem services, because they directly use natural resources and make use of environmental functions such as waste decomposition and detoxification.[40] Ecosystem services depending on biodiversity include pollination, pest and disease control, fresh water and soil formation, and climate regulation.[41] Biodiversity plays a crucial part in SDG 14 and SDG 15.

35 See for example Rockström et al. (2009) and OECD (2012).
36 Hilton-Taylor et al. (2008).
37 Hallmann et al. (2017).
38 Hallmann et al. (2018).
39 WNF (2018).
40 For an overview of ecosystem services see: European Commission (2013). Ecosystem services also include the availability of fresh water (section 4.1) and raw materials (section 4.3).
41 F&C (2004).

The consequences of biodiversity loss for economic activity are complex and not yet fully understood, but there are clear examples.[42] Although more systematic research into the adverse consequences of biodiversity loss for economic activity is needed, clear examples can be given. Firstly, a decline in population and diversity of insects reduces animal pollination. In turn, this reduces crop yields for fruit, seeds and nuts.[43] In 2005, 9.5% of the production value of food for human consumption, or EUR 153 billion, was under threat from reduced pollination.[44]

Secondly, the loss in diversity of species and varieties will reduce the ecosystem's resilience. For example, monocultures, in which a single variety of a particular species is grown, are more sensitive to pests than fields with a greater diversity in varieties. Lastly, mixing varieties makes a species more resilient. For example, varieties that are crucial to the world's food supply can be improved using varieties that are resistant to specific diseases or are less affected by climate change. This will improve protection from these threats.

Capital providers such as financial institutions can also be exposed to increased risk. The channels described above would appear to affect the agricultural sector the most, through reduced crop yields. This in turn could impact buyers of agricultural products, such as consumer goods producers. This adverse impact could also expose capital providers such as financial institutions, which invest in these businesses, to increased risk. Besides this physical risk, financial institutions will also be exposed to reputation risk if they invest in businesses that contribute to biodiversity loss, for example through deforestation. Lastly, transition risks could manifest themselves. Businesses and financial institutions may have to cope with shifting consumer preferences. Moreover, if a government introduces measures to counter deforestation and land use change, the value of a business's land held for development (stranded land)[45] can sharply decline.

42 OECD (2012).

43 De Groot et al. (2016), Klein et al. (2007), Gallai, Salles, Settele, and Vaissière (2009).

44 Klein et al. (2007), Gallai et al. (2009).

45 See for example Chain Reaction Research (2017).

Financial institutions are starting to demonstrate awareness of their potential impact on biodiversity loss. Deforestation and conversion of natural habitats into farmland are major causes of biodiversity loss.[46] Dutch financial institutions do not yet conduct any systematic risk analyses, but biodiversity, deforestation and forest conversion increasingly feature in their sustainability policies. This is the case mainly in the context of institutions seeking to make an impact, rather than as part of their risk management. A select group of financial institutions have meanwhile made progress in terms of measuring the impact of their exposures on biodiversity.[47] A few have already set specific goals, for example by restricting their lending to businesses that do not cause deforestation.[48]

Businesses and financial institutions may experience increased pressure to assess and mitigate their impact on biodiversity. Initiatives are being taken internationally to raise awareness of the ramifications of biodiversity loss, including by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) and the Natural Capital Coalition (NCC). These contribute to improved understanding of the risks involved. Notably, the United Nations' member states will meet in 2020 to draw up a Convention on Biological Diversity.

46 PBL Netherlands Environmental Assessment Agency (2014).

47 See for example Berger et al. (2018).

48 Brink, Riemersma, Simons, and De Wilde (2016).

4.3 Risks related to resource scarcity

Non-renewable raw materials are vital in technological processes, for example those used in renewable energy. Scarcity or geopolitical factors increase their supply risks, however. We determined the exposure of Dutch financial institutions to businesses that depend on such raw materials. Their combined exposure to the raw materials subject to the highest supply risk appears to be around EUR 56 billion.

Strong consumption growth and the use of technology are set to increase the scarcity of raw materials. In 2015, 84 billion tonnes of raw materials were produced globally. If government policies remain unchanged, this is estimated increase to 180 billion tonnes in 2050.[49] Extraction, processing and consumption of raw materials result in harm to the natural environment and pollution caused by waste.[50] This is why SDG 8 and SDG 12 focus specifically on the impact of raw materials extraction on a sustainable future.

Many raw materials, such as metals and minerals, are of vital importance in modern technology. Smartphones, for example, contain up to 50 different metals. Many of those are used for their unique properties, which makes them difficult to substitute. This applies in particular in renewable technology applications, such as electric vehicles, solar panels and wind turbines. Relatively scarce raw materials are needed to manufacture these devices. Cobalt and graphite, for instance, are used in batteries, while indium and silver are used in solar panels and dysprosium in wind turbines. If the targets set under the Paris Climate Agreement are to be met, demand for these materials is set to surge.[51]

Availability of raw materials depends not only on natural reserves, but also on geopolitical factors. Renewables, such as agricultural products, rubber and wood, may become scarce but cannot be depleted.[52] For non-renewables, the EU strongly depends on sourcing from non-Member States (see Figure 8). The European Commission has drawn up a list of critical raw materials that are critical to the European economy.[53] They are considered critical if they are both essential to the European economy and subject to increased supply risk for the European Union.

49 UNEP (2017).

50 CPB Netherlands Bureau for Economic Policy Analysis (2018).

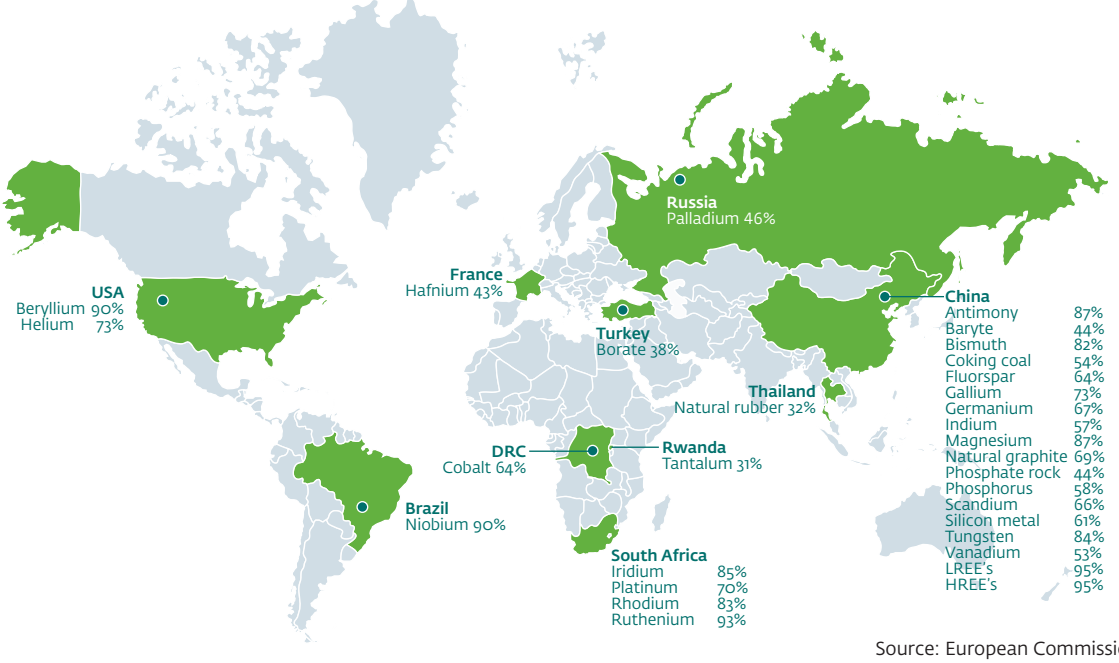
51 TNO (2018), UNEP (2017).

52 That said, supply risks can also emerge for renewables. For example, natural rubber may become scarce because setting up production in plantations can take several decades. With today's technology, recycled natural rubber does not offer a substitute for primary natural rubber.

53 The European Commission's list is limited to non-energy, abiotic raw materials. Other types of raw materials can also be subject to scarcity.

Figure 9 Shares of source countries in the extraction of critical raw materials

Averages for 2010-2014



Source: European Commission.

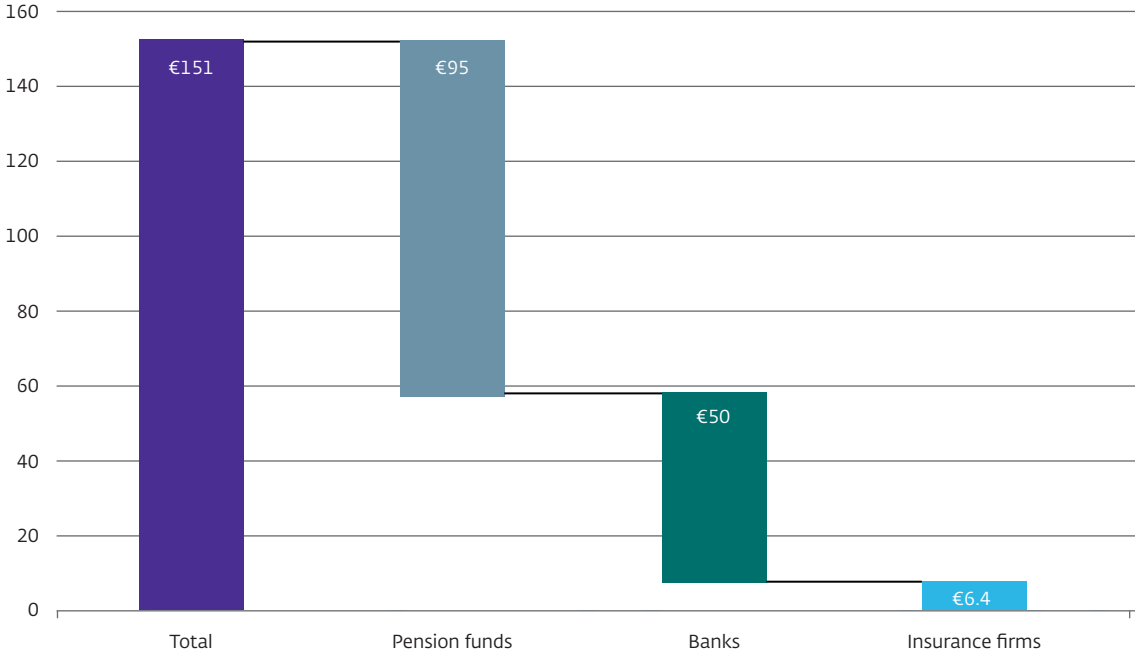
Supply risk is a function of the reserves of a raw material and geopolitical factors. The supply of many raw materials is dominated by a small number of countries (see Figure 9). China, for example, is the principal supplier of many raw materials that are critical to the EU. Export restrictions or trade conflicts may jeopardise supply security.

Both the European Union and the Dutch government are committed to a circular economy transition in a bid to reduce supply risk. The European Commission is of the opinion that using raw materials more efficiently and recycling them will help mitigate supply risk. This is one of the pillars of its EU Circular Economy Action Plan.[54]

54 European Commission (2018).

Figure 10 Exposure of financial institutions to business that depend on critical raw materials

EUR billion



Sources: DNB, TNO.

The Dutch government has also set clear ambitions. Its national Circular Economy programme states that the use of primary raw materials, including minerals and metals, should be halved by 2030. The Dutch economy should be fully circular by 2050.[55,56]

Building on research conducted by Netherlands Organisation for Applied Scientific Research (TNO)[57], we established how many loans and investments Dutch financial institutions held in businesses that depend on critical raw materials. Businesses that depend on critical raw materials are exposed to increased risk.[58] If businesses have

55 No definition of circularity is given, however.

56 Ministry of Economic Affairs and Climate Policy (2016).

57 Netherlands Organisation for Applied Scientific Research TNO. (2015).

58 This risk is also referred to as a linear risk. See also Ramkumar et al. (2018).

difficulty obtaining the raw materials they need for their manufacturing processes, their business model will come under threat. For 64 potentially critical raw materials, TNO examined in which products and product groups these are used. Based on international trade data, we subsequently estimated the shares of these product groups in various industry sectors.[59] Using granular data on securities holdings of Dutch financial institutions and corporate loans issued by banks, we established the exposure of financial institutions to business whose products depend on critical raw materials.

Our analysis shows that the Dutch financial sector has invested at least EUR 151 billion in businesses that depend on critical raw materials (see Figure 10). At EUR 95 billion, pension funds have the largest exposure, which encompasses 9.0% of their securities portfolio. The banks' exposure, of EUR 50 billion, almost entirely consists of loans, representing 6.2% of the Dutch banks' corporate loans portfolio combined (EUR 810 billion). The exposure of insurance firms is smaller, at EUR 6.4 billion (2.8%), as a much larger proportion of their securities portfolios is invested in government bonds.

There are differences in terms of criticality between raw materials, which means the risks for businesses that depend on them vary. For example, many investments are made in businesses that depend on iron, aluminium and copper, whose supply risk is relatively low. Fewer investments are made in businesses that depend on such materials as cobalt and indium, which carry a significantly higher supply risk. Figure 11 provides a breakdown according to long-term supply risks.[60] This variable is composed from several indicators: i) the number of years of the raw material's uninterrupted production, ii) the extent to which it is an auxiliary product in the production of other raw materials, and iii) the geographical concentration of its reserves.

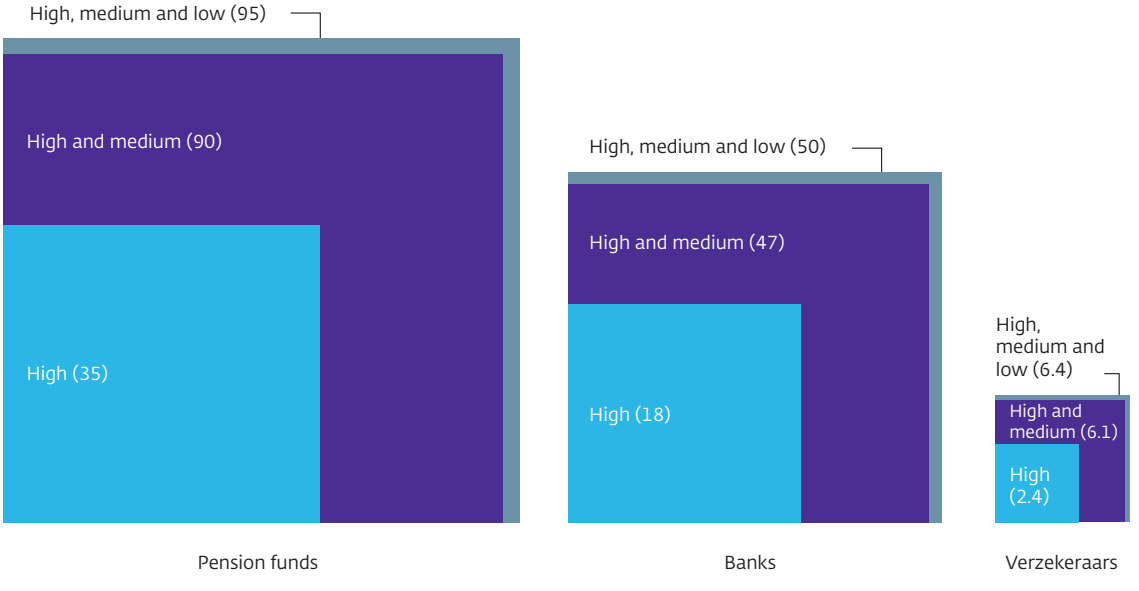
Dutch financial institutions have a combined exposure of around EUR 56 billion to industries that depend on raw materials with the highest supply risk. This amount represents their investments in businesses that depend on the most critical raw materials (see Figure 11). The exposure to businesses that depend on raw materials whose long-term supply risk is high or medium totals EUR 143 billion. Most of the exposure relates to pension funds' shareholdings and banks' outstanding loans.

59 For each industry (on a NACE 2-digit level), exposure of financial institutions to a product group in which a critical raw material is needed is attributed pro rata to that product group's international trade volume.

60 TNO refers to long-term supply security. To avoid possible confusion about semantics, we refer to long-term supply risk, as high supply security implies a low risk.

Figure 11 Exposure of financial institutions to critical raw materials, broken down by long-term supply risks

EUR billion



Sources: DNB, TNO.

Based on the TNO score for each material, we allocated it to the high, medium or low bucket.
The three buckets each have a proportional share of the number of materials.
They overlap, as many products contain a large number of raw materials.

The significant exposure to critical raw materials points to increased risks. Dutch financial institutions invest in businesses that depend on critical raw materials. As a consequence, they will face increased market and credit risks as soon as businesses have to deal with raw materials supply issues.[61] Approximation of the magnitude of this physical risk would require data about the impact of limited availability of raw material on the relevant business' profit, and, ultimately, on their share price and repayment capacity.

61 Our study disregards macroeconomic risks and risks caused by price effects.

As part of their loan acceptance process, investment decisions or engagement programmes, financial institutions could devote attention to this risk. They are well-advised also to take account of legislative ambitions relating to more efficient use and recycling of raw materials.

It is important that financial institutions adopt a holistic perspective in their risk management. Some materials used in generating renewable energy have a high long-term supply risk. Mitigating one risk, such as climate-related risk, could result in an unintended increase in another risk. For example, if carbon emissions are reduced exclusively by using sustainable technologies, the supply risk of specific scarce raw materials could increase. This implies that a holistic approach to risk management is needed, taking account of the relationships between various risks.

4.4 Risks related to human rights controversies

The role of multinational corporations in the protection of human rights abroad is increasingly coming under public scrutiny. Financial institutions that are associated with human rights controversies are exposed to reputation risk. In the present study, we demonstrate that human rights controversies are a recurring phenomenon in the portfolio of financial institutions.

Multinational corporations have an important role in the protection of human rights. Several guidelines have been issued over the past decade that set out the role played by multinational corporations in respecting human rights in the countries in which they operate. For example, the Dutch government subscribed to the OECD Guidelines for Multinational Enterprises[62], thereby articulating its expectations of businesses that operate internationally. In addition to the OECD Guidelines, the Dutch government also views the United Nations Guiding Principles on Business and Human Rights (UNGPs) as a standard for businesses. Furthermore, Dutch insurance firms and banks signed up to national covenants on international corporate social responsibility (IMVO covenants), which supports compliance with them in complying with the OECD Guidelines and the UNGPs. Also, human rights are an integral part of the SDGs, as almost every single one involves human rights in one way or another.

By granting loans and making investments, financial institutions could be associated with human rights violations committed by businesses in their portfolios. Financial institutions are a link in a large and complex value chain. They invest in and lend to a multitude of businesses (see Table 2), while also purchasing a variety of products and services. Under the IMVO covenants, they team up with the government, trade unions and civil society organisations to address controversies in their portfolio.

62 The Guidelines also apply to financial institutions.

Table 2 Size of the network of Dutch financial institutions

Total number of businesses in which Dutch pension funds and insurance firms hold shares	11,897
Average number of large corporate customers of Dutch-based banks	4,743
Average number of SME customers of Dutch-based banks	27,594

Source: DNB.

Financial institutions can play an important role in countering human rights violations. At the same time, if they are associated with controversies involving businesses in their portfolios they are exposed to reputation risk. If financial institutions are associated with violations of human rights or labour rights or harm to the environment this may result in reputational damage.

The financing provided for the Dakota Access Pipeline in the United States is a case in point. A consortium of 17 banks financed the pipeline, which various human rights organisations claimed violated the rights of the indigenous population. The US bank Wells Fargo lost upwards of USD 3 billion in revenue as customers terminated relationships with the bank in response to this case.[63] Controversies can also drive up investment risk due to operational, legal and reputation risks.

Investments in or loans issued to businesses listed in the MSCI controversies database is an indicator of reputation risk. We linked granular shareholding data for Dutch financial institutions to the MSCI ESG controversies database. MSCI defines a controversy as an instance or ongoing situation in which company operations or products allegedly have a negative environmental, social, or governance impact.
The severity of a controversy depends on its nature and the scale of its impact. MSCI keeps it on record if the most recent developments were less than two years ago, after which its severity rating is reduced incrementally every subsequent year.

63 http://ieefa.org/reputational-risk-dakota-access-pipeline-lenders/

Table 3 Examples of human rights controversies for each category

MSCI category	Description of human rights controversy in a business
Very severe	*Brazil ((November 2015): Multiple Casualties and Widespread Property Damage Due to Tailings Dam[64] Collapse* 17 people killed and at least 2 reported missing. Approx. 600 people displaced and 150 homes destroyed by mudflow from the dam. The spill also disrupted domestic and drinking water supplies of over 250,000 people, including indigenous communities, residing downstream of the dam.
Severe	*IndoMet Coal Project: Displacement of Indigenous Community and Concerns over Environment and Health Impacts in Central Kalimantan, Indonesia (November 2013)* Approx. half of the 700 indigenous residents in Maruwei village expressed their opposition to the project due to displacement; air and water pollution; loss of livelihood from fishing and rubber trees; threats to public health; and flooding concerns.
Moderate	*Cerrejón Mine: Wayuu Indigenous Community Claims Damages Over Alleged Impact of Mine Activities (Colombia, September 15)* Reports that a two-year old Wayuu indigenous child from La Guajira suffered serious respiratory health problems due to environmental pollution allegedly from Cerrejón mine.

Source: MSCI.

Dutch financial institutions hold shares in and issue loans to businesses for which human rights controversies have been recorded. Around 643 controversies involving human rights were found in businesses whose shares are held by Dutch financial institutions at year-end 2017, 28 of which were very severe (see Figure 12). These Dutch investments were worth EUR 85 billion, representing 17% of the total equity portfolio. Of this amount, EUR 4.0 billion (0.8%) was invested in businesses that had been involved in very severe controversies.

As Dutch pension funds have large equity portfolios, they account for EUR 79 billion, with EUR 3.9 billion being attributable to insurance firms. Roughly one-third of these investments are portfolio investments, and two-thirds represent investments made by pension funds and insurance firms through investment funds. The Dutch banks' relatively small equity portfolios mean they account for only EUR 1.7 billion. Human rights controversies were also found in the banks' corporate loan portfolios. A limited dataset of large loans featured 40 controversies, one of which was very severe.

64 A basin used by mining companies to store a residue resulting from ore processing.

They were found in businesses to which around EUR 11 billion (10%[65]) in loans had been issued. The total amounts presented in Figure 12 also contain a minor proportion of bonds, in addition to the equities and loans referred to above.

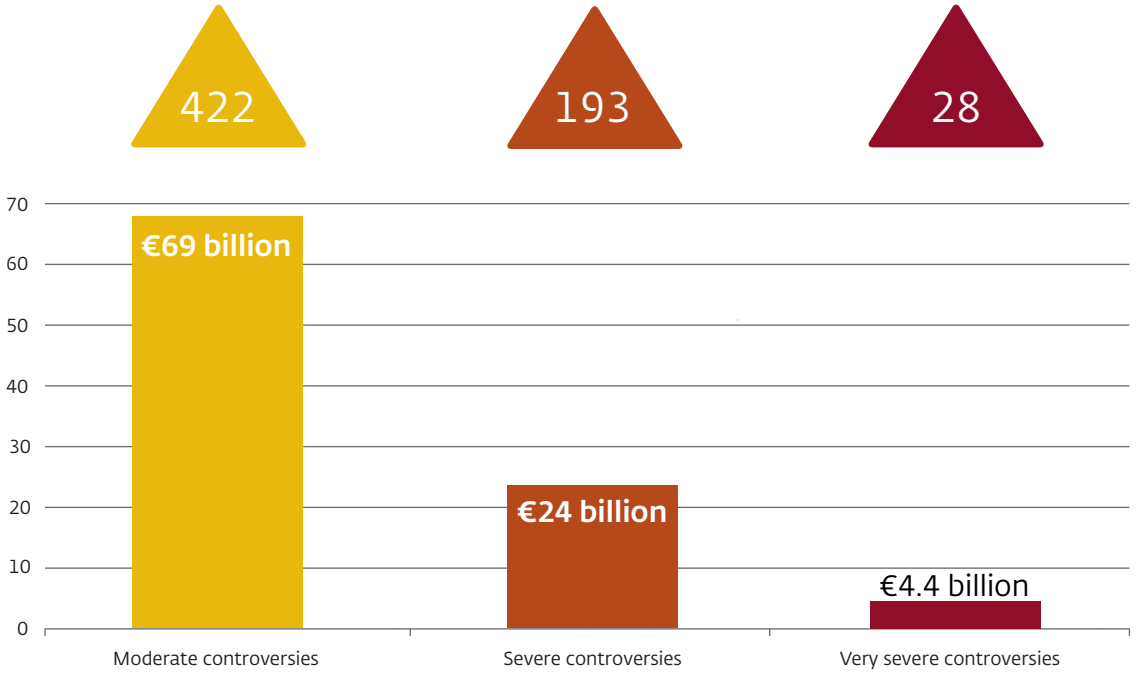
It is of fundamental importance that financial institutions are alert to controversies in their portfolios. In the context of the guidelines discussed above, financial institutions make an effort to examine potential human rights violations in their chains and use their influence to address any identified instances. Furthermore, limiting or responding to controversies can mitigate their own reputation and market risk. The OECD has found a sharp increase in reported controversies in which financial institutions were involved in recent years.[66] It cannot be inferred from these data whether the number of controversies increased or were detected more often, for example due to increasing use of internet and social media. Special-interest groups have an increasing array of options available for holding a financial institution formally to account over violations of international guidelines, for example through the OECD's National Contact Point for Responsible Business Conduct.

Financial institutions have a range of instruments at their disposal to address controversies in their portfolios. Banks and insurance firms must know their customers and must not enter into relationships that might harm confidence in their institution.
To prevent this, they conduct customer due diligence assessments. Pension funds and other investors conduct investment analyses of the businesses they plan to invest in, which allow them to identify potential and actual controversies. If financial institutions find controversies in their portfolio companies, they can use their influence to address these, for example as part of their engagement process (see also section 5). In some cases, a financial institution may opt to terminate the relationship altogether. It is important that financial institutions remain committed to identifying and addressing controversies throughout the investment period. Dutch pension funds, insurance firms and banks recently reached agreement on how to formulate their policies and respond to controversies, as part of their IMVO covenants.

65 Percentage of the EUR 105 billion portfolio we examined.
66 OECD (2018).

Figure 12 Human rights controversies found in the portfolios of Dutch financial institutions

Numbers and EUR billions



Sources: DNB, MSCI.

The number of human rights controversies is based on the MSCI ESG controversies database. They comprise all categories of human rights controversies, as well as child labour controversies.

5 Managing environmental and social risks

Financial institutions have a range of instruments at their disposal to manage environmental and social risks. They usually apply instruments prior to making new investments. Many institutions lack a clear framework documenting the role which ESG factors play in investment decisions. In addition, there is a need for ESG indicators that are an appropriate measure of the risk. Accordingly, financial institutions have limited insight into the environmental and social risks in their current investment portfolios.

Financial institutions use a range of instruments to incorporate sustainability considerations into their risk management. In 2016, we examined sustainable investment in the Dutch pension sector and looked into the way in which sustainability aspects were addressed as part of risk management.[67] Based on the survey we investigate which risk management instruments[68] financial institutions use. We assigned them to four categories in Table 4: (1) adjusting the investment universe, (2) adjusting the investment analysis and investment criteria (3) applying active stakeholdership, and (4) monitoring.

There are large differences in terms of the extent to and manner in which Dutch financial institutions use these instruments. Almost all of them use an *exclusion policy*, but there are huge differences in what exactly they exclude, such as coal or tobacco. Insurance firms and pension funds increasingly consider *ESG factors* in assessing potential investments, considering for which sectors such indicators are financially material, often on a qualitative basis. We found stark differences between institutions as to whether there are specific guidelines describing the role such assessments play in investment decisions. In addition, a number of financial institutions, notably pension funds, apply ESG factors in selecting their assets. Banks assess environmental and social risks in corporate loan applications, typically on a qualitative basis.

Furthermore, insurance firms and pension funds seek to enhance the long-term value of their investments by means of *engagement*. Some of the large banks also apply engagement processes for their corporate customers. In some cases, engagement is based on actual ESG risks identified and in some other cases on actual controversial operations of customers. Banks have fewer engagement programmes designed to contribute to sustainability goals, compared with pension funds and insurance firms.

67 DNB (2016).

68 Although almost all instruments have a risk management component, they can also be used to make a positive impact on environmental and social challenges.

Table 4 Risk management instruments

Category	Instruments
1. Adjusting investment universe	■ Exclusion policy ■ Selection based on ESG indicators
2. Adjusting investment analysis and criteria	■ Quantitative assessment of ESG factors ■ Quantitative weighting of ESG scores[69]
3. Active stakeholdership	■ Engagement ■ Voting
4. Monitoring	■ Portfolio analysis ■ Scenario analysis, stress test

Some banks experiment with including sustainability aspects in their pricing, for example by granting a discount on mortgage loans if energy conservation measures are taken.

Lastly, very few financial institutions assess their portfolios for exposures to environmental and social risks (see also section 6).

ESG indicators are currently under development, and they should reflect the underlying risks more closely. Financial institutions adopt their own indicators or purchase them from external data providers. Commonly used indicators (Table 5) are often of unproven validity, owing to limited data availability and unclear causal relationships. They typically relate to a business's policy, controversies found and external certification.

For example, a typical indicator of environmental pollution is based on the question as to whether a business has a policy in place aimed at reducing environmental pollution. However, it is not inconceivable that firms in high-pollution sectors are even more likely to pursue such policies. Hence, there is room for further refinement of the indicators in this area.

69 Lenders, including banks, can use this as a basis for risk pricing.

Table 5 Examples of ESG factors and indicators found in investment policies

ESG risk	ESG factor	ESG indicator
Environmental	Climate change	■ Carbon intensity ■ Participation in Carbon Disclosure Project (CDP)
	Environmental pollution	■ Policy countering environment pollution
Social	Human rights	■ Human rights policy ■ Workforce-related incidents policy
	Employment conditions	■ Workforce-related incidents ■ Policy reducing safety incidents
Governance	Corruption	■ Corruption policy
	Bribery and fraud	■ Business ethics controversies

In itself, applying risk management instruments such as ESG integration does not necessarily contribute to sustainable development. Although ESG integration is often categorised as a form of sustainable investment, it is primarily used to mitigate the financial institution's own financial risks, which does not necessarily foster environmental or social change. After all, there is no fixed relationship between mitigating an individual institution's risk and contributing to sustainable development. For example, excluding businesses that engage in unsustainable operations will not necessarily reduce those operations or make them more sustainable. Similarly, reducing the relative volume (underweighting) of carbon-intensive sectors in an investment or lending portfolio will not necessarily reduce carbon emissions on a macro level.

6 Implementing sustainability policies

Most Dutch financial institutions have not yet fully integrated their sustainability ambitions into their operational management. Many of the 25 financial institutions we surveyed have formulated specific sustainability policies and show ambition, but only a few have set clear indicators and targets or periodically monitor progress. Financial institutions expose themselves to stakeholder criticism and reputation risk if they fail to live up to expectations or to deliver on their promises.

We analysed how Dutch financial institutions lend direction to their sustainability policies. Figure 13 shows the number of surveyed institutions that meet a selected set of variables. These relate to designing policies, making commitments, setting targets, and establishing monitoring and reporting procedures in the area of sustainability. The analysis is based on the survey among the 25 large and medium-sized Dutch financial institutions referred to in section 3, interviews we held and documentation submitted by the financial institutions. Figure 13 analyses how Dutch financial institutions lend direction to their sustainability ambitions. The variables only test whether a financial institution uses instruments to do so. We did not investigate the instruments and do not express any opinion about the substance of a sustainability policy or the quality of instruments used.

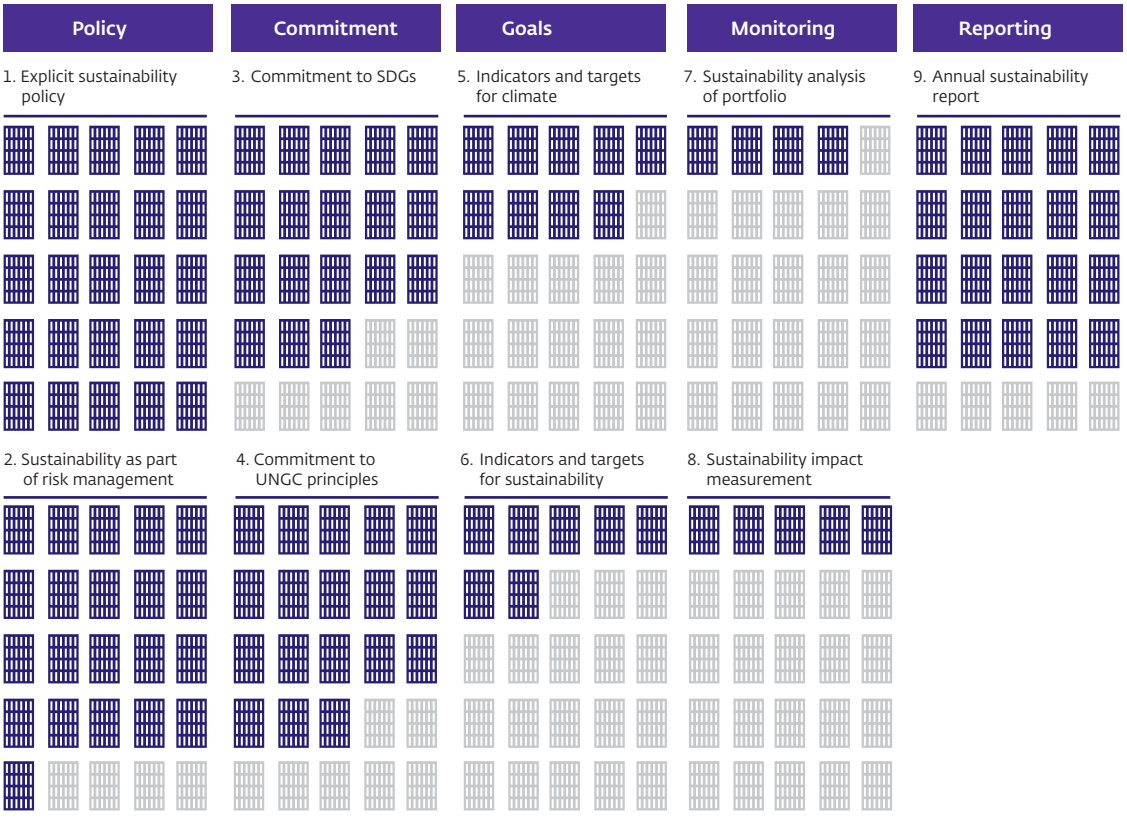
Financial institutions often commit themselves to several sustainability standards and design their own sustainability policies. All of the surveyed financial institutions have defined an explicit sustainability policy (variable 1). In their policy documents, they acknowledge the impact of their operations on society. 18 of the 25 institutions we surveyed (72%) make specific reference to the SDGs to put their sustainability policy into practice (variable 3). They consider the SDGs a universal sustainability narrative. Most of the financial institutions that had developed sustainability policies before the SDGs were developed have linked their policies to the SDGs. In addition to the SDGs, institutions also commit themselves to other standards, such as the principles of the United Nations Global Compact (variable 4).

One-third of the financial institutions we surveyed have set concrete indicators and targets to ensure they achieve their ambition. Most of the 18 institutions that vow to contribute to the SDGs have not set any targets.[70] The targets of the nine institutions that have set them (36%) mostly relate to the carbon intensity of their portfolios (variable 5). Seven of the institutions we surveyed (28%) have set their own targets for one or more sustainability themes to which they have expressed commitment (variable 6). We did not find any marked differences between pension funds, insurance firms and banks. Often, targets are related to increasing the volume of sustainable investments, with no description of the intended impact on society.

70 Our study disregards targets which institutions set for their own operational management.

Figure 13 Sustainability ambitions in the operational management of financial institutions

Number of the 25 financial institutions surveyed



Source: DNB.

Note: The coloured buildings indicate how many of the surveyed institutions are characterised by the following variables:
1. The institution has formulated an explicit sustainability policy.
2. The institution integrates environmental and social risks into its investment or lending decisions.
3. The institution has publicly announced that it seeks to contribute to one or more of the SDGs.
4. The institution has explicitly committed itself to acting in line with the principles of the United Nations Global Compact.
5. The institution uses quantitative indicators relating to climate, such as the carbon footprint of its portfolio.
6. The institution has set quantitative indicators and targets for its portfolio, other than under variable 5, with respect to environmental or social impact, or both, or the volume of its sustainable investment portfolio.
7. The institution analyses its portfolios for environmental and social risks. Measurements of the portfolio's carbon footprint were disregarded.
8. The institution conducts environmental and social impact measurements for all or part of its investments.
9. The institution publishes an ESG report or an integrated report in line with GRI each year.

Sustainability plays a role in making investment decisions. 21 of the financial institutions we surveyed (84%) say they manage environmental and social risks (variable 2). To do so, they identify the ESG factors that are material to each type of investment and industry sector, considering any material factors in their investment or loan decision. A more detailed discussion is presented in section 5.

A mere 4 out of the 25 financial institutions analyse their portfolios for environmental and social risks periodically. While many of the institutions we surveyed determine which environmental and social risks they consider material, only 4 (16%) say they analyse their portfolios for these risks on a recurring basis (variable 7). Among banks in particular such an analysis is exceptional. The remaining 21 institutions do not systematically establish, if at all, whether their portfolios are exposed to environmental and social risks related. By contrast, most institutions analyse their portfolios for carbon intensity, notably pension funds and banks.

The measurement of how investments impact the achievement of sustainability targets is still under development and is only occasionally applied. Banks, insurance firms and pension funds say the SDGs are not directly suitable for impact measurement. Various initiatives[71] aimed at making the impact more measurable are under way. Five financial institutions (20%) conduct impact measurements for the targets they have set (variable 8). Some also contribute to domestic and international working groups that are developing methodologies for measuring this and making them available on a pre-competitive basis. Many of the institutions we surveyed say they are planning to develop impact measurements.

71 For example, a working group of the Sustainable Finance Platform defined SDG impact indicators.

Box 2 Observed practices

Financial institutions must integrate their sustainability policies fully into their operational management. To ensure achievement of sustainability ambitions, it is important that effective focus and accountability mechanisms are in place. Below, we list several exemplary practices as they emerged from our study.

Goals

- Financial institutions actively identify expectations among their stakeholders regarding sustainability.
- Financial institutions that vow to contribute to sustainability goals set indicators and targets to make their contributions specific and measurable.
- Financial institutions that lend priority to specific sustainability goals take any negative impact this may have on achieving other sustainability goals into consideration.

Monitoring

- Financial institutions analyse the environmental and social risks related to their portfolios on a regular basis. They have policies in place on how to address increased risks.
- Financial institutions have processes in place to ensure that current investments are in line with their sustainability policies on an ongoing basis.

Impact measurement

- Financial institutions that vow to contribute to sustainability targets endeavour to adequately measure the impact of their efforts.
- Financial institutions that measure their impact are transparent about the method they use. If the method they use has not yet reached a sufficient maturity level, they refrain from making claims about their impact.

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