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Meld. St. 9

(2021–2022)

Report to the Storting (white paper)

The Government Pension Fund 2022

MINISTRY OF FINANCE

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Recommendation of the Ministry of Finance of 1 April 2022,
approved by the Council of State on the same day.
(Government Støre)

1 Responsible long-term investment

The Government Pension Fund is an intergenerational fund. The Fund is owned by the State and comprises the Government Pension Fund Global (GPFG) and the Government Pension Fund Norway (GPFN). The purpose of the Fund is stipulated in the Government Pension Fund Act . The savings shall support the funding of pension expenditure under the National Insurance Scheme and further long-term considerations in the spending of government petroleum revenues, thus ensuring that the petroleum wealth benefits both current and future generations.

The Ministry of Finance holds the formal responsibility for the management of the Government Pension Fund under the Act. Norges Bank and Folketrygdfondet carries out the operational management of the GPFG and the GPFN, respectively, within management mandates stipulated by the Ministry. The investment objective of the two Funds is to achieve the highest possible return, given an acceptable level of risk. Within the scope of this objective, the Funds shall be managed responsibly. A clear financial objective, together with responsible, long-term fund management, ensures that the Government Pension Fund will benefit both current and future generations.

Norges Bank and Folketrygdfondet make decisions about individual investments and exercise the ownership rights of the Funds independently of the Ministry of Finance. The investment strategy for the Funds and the investment framework are defined by the Ministry, with key choices having been endorsed by the Storting. A clear division of roles highlights responsibilities. The governance structure ensures that key decisions affecting risk and return, as well as decisions regarding the responsible investment framework, are endorsed by the Fund's owners; the people of Norway, represented by the Government and the Storting. At the same time, there must be sufficient delegation of responsibility to ensure that operational management decisions are made close to the markets and companies in which the Funds are invested. Transparency and broad endorsement of the investment strategy and the investment management framework support understanding of the risk assumed. This establishes a foundation for remaining committed to the chosen strategy, also during periods of considerable financial market turbulence.

The investment management framework for the Government Pension Fund is established by the Government and the Storting, but the Fund is not a policy tool. However, withdrawals from the GPFG contribute to the funding of welfare schemes and political priorities. The financial objective of the Fund and the ability to fund public expenditure are closely related. Over time, the GPFG has become an ever more important source of public expenditure funding. In 2021, about one quarter of fiscal budget expenditure was funded from the GPFG.

According to the fiscal policy guidelines, annual withdrawals from the GPFG shall over time correspond to the expected long-term annual real rate of return on the Fund capital; estimated at 3 percent. The guidelines further stipulate that petroleum revenue spending in any given year shall be adapted to the economic situation. This implies that one may spend more than the expected real rate of return during periods of economic setback, but also that spending should be less in economic upturns. Persistently running large fiscal deficits would impair the long-term sustainability of public finances.

Large increases in the Fund capital over the last two decades have offered scope for a significant increase in petroleum revenue spending. Historically, large petroleum revenue transfers into the Fund have increased the Fund value, even during periods of stock market decline. In coming years, periods without increase, or

periods of decline, in the Fund value must be expected. The Fund value will increasingly be determined by the development in the international financial markets. As the Norwegian welfare state has increasingly been funded by transfers from the GPFG, public finances have become more vulnerable to market fluctuations. Increased vulnerability and reduced Fund growth prospects suggest that caution should be exercised in the continued phase-in of Fund revenues into the Norwegian economy.

The investment strategy

The Ministry of Finance emphasises the importance of an investment strategy that is professionally acknowledged and tailored to the distinctive characteristics and purpose of the Fund. The strategies for the GPFG and the GPFN have been developed over time, based on thorough assessments, professional recommendations and practical experience. The investment strategy is defined in the management mandates for the two Funds and reflected in, inter alia, the composition of the benchmark indices established by the Ministry. The strategic benchmark index defines a capital allocation between equities and fixed-income securities, and reflects the owner’s investment preferences and risk tolerance. The equity share for the GPFG is 70 percent, while it is 60 percent for the GPFN. Fixed-income securities account for the remainder.

The choice of equity share is the decision with the greatest impact on overall risk in the Fund. A larger equity share entails higher expected return, but also increased volatility in the value of investments and a higher risk of loss. By endorsing the chosen equity share, the Fund’s owners; the people of Norway, represented by the Government and the Storting, have expressed what is considered an acceptable level of risk. The investment strategy further entails the Fund capital being primarily invested in listed markets.

A key premise underpinning the strategy is that overall risk can be reduced by broad diversification of investments across asset classes, regions, countries, industries, companies and issuers. The composition of the equity and fixed-income benchmarks implies that investments are diversified across a large number of equities and bonds. The benchmarks have been designed to facilitate close replication at a low cost and are also used to measure the investment management performance of Norges Bank and Folketrygdfondet.

Most of the Fund risk is determined by general equity and bond market developments. Norges Bank and Folketrygdfondet may deviate somewhat from the benchmark indices in their operational investment management, within risk limits stipulated in the mandates. The intention behind this is to ensure cost-effective adoption of the benchmark indices, as well as to exploit distinctive Fund characteristics or advantages to generate excess return. The GPFG management mandate further allows some limited scope for investments in unlisted real estate and unlisted renewable energy infrastructure. The investment strategies for the GPFG and the GPFN are discussed in chapters 2.2 and 4.2, respectively (in Norwegian only). Potential implications of increased inflation for developments in the value of the GPFG are addressed in chapter 2.6 (in Norwegian only).

Strong performance in 2021

Market developments in 2021 reflected that the global economy was rebounding from the coronavirus pandemic, with robust growth in many countries. Expansionary monetary and fiscal policy served to boost overall demand. Moreover, higher commodity and energy prices have contributed to a steep increase in consumer prices. Higher inflation and a positive economic growth outlook created expectations of monetary policy normalisation in many countries, with an increase in key policy rates. This development caused long-term interest rates to increase during the year, and led to weak returns on fixed-income securities globally. At the same time, company earnings reverted to pre-pandemic levels during 2021, and high equity returns were registered globally. However, new virus outbreaks, inflationary pressure and monetary policy normalisation caused stock market uncertainty over the course of the year. The second half of the year, in particular, was characterised by considerable share price volatility.

There were also major differences between sectors and countries. The energy, finance and technology sectors delivered the strongest performance, while interest rate-sensitive sectors such as telecommunications, power and water utilities accounted for the weakest performance. Geographically, returns were highest in North America.

The market value of the GPFG increased by NOK 1,432 billion in 2021, to reach NOK 12,340 billion. The increase is primarily the result of positive financial market returns. The return on the GPFG in 2021 was 14.5 percent, measured in the currency basket of the Fund and before the deduction of investment management costs. The market value of the GPFN at year-end 2021 was NOK 333 billion, which represents a NOK 41 billion increase over the course of the year. The return on the GPFN last year was 14.0 percent, measured in NOK and before the deduction of investment management costs.

Norges Bank and Folketrygdfondet seek to achieve the highest possible return, net of costs and given an acceptable level of risk, within the limits stipulated in the mandates from the Ministry of Finance. In 2021, Norges Bank achieved a return on the GPFG that was 0.74 percentage points higher than the return on the benchmark index, while Folketrygdfondet achieved an excess return of 0.97 percentage points in the management of the GPFN. The Ministry emphasises the overall performance achieved in the GPFG and the GPFN over time. The average annual return on the GPFG over the last 20 years has been 0.2 percentage points higher than the return on the benchmark index. The average excess return on the GPFN has been 1.0 percentage point per year since 2007. The Ministry is satisfied with this performance, given the level of risk assumed. Measured as a proportion of assets under management, investment management costs last year were 4.0 basis points for the GPFG and 5.4 basis points for the GPFN.

The performance of the GPFG and the GPFN is discussed in chapters 2.4 and 4.4, respectively (in Norwegian only).

Responsible investment

The Government Pension Fund Act requires the Fund to be managed responsibly within the scope of its financial objective. Environmental, social and corporate governance considerations form an integral part of the management of the GPFG and the GPFN, in line with the mandates laid down by the Ministry of Finance. The mandates require Norges Bank and Folketrygdfondet to adopt responsible investment principles in accordance with internationally recognised standards. By advocating long-term value added and responsible business conduct, responsible investment serves to further the objective of achieving the highest possible return, given an acceptable level of risk.

Norges Bank and Folketrygdfondet make decisions about individual investments and exercise the ownership rights of the Funds independently of the Ministry. The responsible investment framework comprises, inter alia, advocacy of good corporate governance and responsible business conduct principles, as well as contributing to the development of international standards, company dialogue on relevant topics and issues, as well as voting in annual general meetings of investee companies.

Norges Bank has, as part of its responsible investment efforts, prepared expectation documents on several issues, including, inter alia, climate, human rights, children's rights, as well as tax and transparency. The documents are directed at the boards of directors of investee companies, and are used as, inter alia, a basis for the Bank's ownership dialogue with the companies. Folketrygdfondet has prepared expectation documents for companies on, inter alia, strategy, capital structure and financial objectives, anti-corruption, remuneration, human rights, climate and the environment.

The Ministry of Finance has adopted Guidelines for Observation and Exclusion of Companies from the GPFG (the ethical guidelines). The guidelines feature both *product-based* exclusion criteria, which encompass the production of tobacco, cannabis, coal and certain weapon types, and *conduct-based* exclusion criteria, which encompass, for example, serious or systematic human rights violations and severe environmental damage. An independent Council on Ethics appointed by the Ministry

of Finance makes recommendations on the observation or exclusion of companies under the ethical guidelines. Decision-making authority rests with the Executive Board of Norges Bank . For the coal criterion, the Bank may make decisions without any prior recommendation from the Council on Ethics. Before exclusion is decided, the Bank shall consider whether other measures may be suited for reducing the risk of continued violation of ethical norms, or may be more appropriate for other reasons. The Bank shall consider the various tools at its disposal in relation to each other and use these in an integrated manner. Active ownership may be effective in reducing the risk of violating ethical norms by influencing companies to change their conduct. What is the most appropriate tool must be considered on a case-by-case basis.

The investments of the Fund attract considerable attention. Even a strong framework for risk management, responsible investment and ethically motivated guidelines cannot serve as a guarantee against blameworthy situations in Fund portfolio companies. It is neither feasible, nor appropriate, to organise investment management with a view to preventing the Fund from ever being exposed to unwanted situations.

Responsible investment is a rapidly evolving field in which new knowledge is gained and new practices are established. The Government wants to make the GPFG world leading in responsible investment and the management of climate and nature risks. The Government's ambition will be addressed through continual development of the responsible investment framework for the Government Pension Fund in view of, inter alia, developments in internationally recognised principles and best practices. In this white paper, the Ministry is further proposing that the responsible investment framework for the GPFG is to be reviewed on a regular basis; see the discussion in chapter 3.1 (in Norwegian only).

The responsible investment of the GPFG and the GPFN is discussed in more detail in chapter 2.3 and 4.3, respectively (in Norwegian only).

Review of active management in the GPFG

The Ministry of Finance conducts regular reviews of Norges Bank's management of the GPFG at the beginning of each term of the Storting. The purpose is to contribute to transparency and insight into Norges Bank's management of the Fund. The reviews are important to ensure confidence in the investment management and may strengthen the ability to adhere to long-term investment strategies, also during periods of weak performance. The Ministry is presenting a new review in this white paper.

The mandate from the Ministry of Finance permits Norges Bank to deviate from the benchmark index defined by the Ministry. A key issue considered in the regular reviews is whether the limit on such deviations, measured by expected tracking error, should be adjusted. The tracking error limit expresses by how much the annual percentage difference in return between the GPFG's actual investments and the benchmark index can be expected to vary. The limit has been held at 1.25 percentage points since 2016.

As part of the review, the Ministry of Finance appointed an expert group comprised of Professors Rob Bauer of Maastricht University, Charlotte Christiansen of Aarhus University and Trond Døskeland of NHH Norwegian School of Economics. The Ministry has also received analyses and assessments from Norges Bank. In addition, an open seminar on the Bank's active management of the GPFG was held in March 2022.

The analysis of the expert group shows that Norges Bank's deviations from the benchmark index explain only a minor part of the historical fluctuations in the overall return on the Fund. Measured in this way, the management of the GPFG may be characterised as close to the benchmark. The expert group has calculated that the Bank's active management over the period from January 1998 to September 2021 has served to increase the market value of the GPFG by an estimated NOK 228 billion before the deduction of investment management costs and NOK 170 billion net of investment management costs.

In its performance evaluation, the expert group has used models to interpret historical performance. The expert group's analysis indicates, inter alia, that parts of the excess return may be explained by somewhat higher market risk in the Fund than in the benchmark index. The findings from the analysis also show that some of the Bank's strategies have achieved significant excess return that can probably be attributed to investment management skill rather than chance.

Since 2017, unlisted real estate has not been included in the strategic benchmark index defined by the Ministry of Finance. Such investments are made within the scope for deviations from the benchmark index. Norges Bank states that investments are made in listed and unlisted real estate within an integrated strategy. The overall real estate investments have since 2017 reduced the return on the Fund somewhat. The Ministry notes that unlisted investments must be evaluated over a time period of more than a few years.

The Ministry's overall assessment is that Norges Bank's active management has been satisfactory and that the GPFG should continue to be managed with a certain element of active management. The Ministry agrees with Norges Bank's assessment that the scope for deviations would appear to be sufficient given the current portfolio and investment strategy, and is therefore not proposing any changes to the tracking error limit at present. If the scope for investment in unlisted assets were to be expanded, it would be appropriate to conduct a new assessment of the scope for deviations and how the framework for deviations from the benchmark index is arranged.

The review of Norges Bank's active management is discussed in more detail in chapter 2.5 (in Norwegian only).

Climate risk management in the GPFG

Climate change affects the global economy and financial markets. In the years to come, company earnings may be influenced by climate policy, technological development, changing stakeholder preferences and physical implications of climate change. Uncertainty with regard to climate change and how companies and the global economy will be affected gives rise to financial risk, which needs to be managed by investors like the GPFG. Such risk is challenging to assess, and is one of several types of risk to which the Fund is exposed.

Climate and environmental considerations have for many years been an important dimension in the ongoing development of the investment strategy, the responsible investment framework and the ethical guidelines for the GPFG. Norges Bank manages climate risk within the limits in the mandate adopted by the Ministry. Climate risk assessments form an integral part of risk management, investment decisions and active ownership. Norges Bank is already devoting considerable resources to this effort. It is important to emphasise that the GPFG has a financial objective, and that it is not a part of the Bank's mandate that the Fund shall contribute to the attainment of specific climate objectives. There is a broad political consensus on this.

An external expert group appointed by the Ministry to assess the significance of financial climate risk and climate-related investment opportunities to the GPFG submitted its report in August 2021. The group's assessment is that the key to reducing climate risk is an effective and predictable climate policy. The GPFG is, according to the group, relatively robust to moderate climate change and a predictable climate policy. In contrast, dramatic climate change or sudden policy shifts may pose major challenges to global financial markets and to the GPFG. The expert group notes that overall climate risk in the financial system is high, but finds no basis for assuming that such risk is systematically mispriced over time. This implies that one cannot expect a better ratio between risk and return for the Fund by excluding investments in specific industries. The experts therefore believe that the principles underpinning the investment strategy for the Fund should remain unchanged.

The expert group is of the view that the mandate from the Ministry of Finance should be premised on a high level of ambition in climate risk management. The group recommends the inclusion of a mandate provision requiring the Bank's responsible investment efforts to be

based on a long-term goal of zero greenhouse gas emissions from investee companies, in accordance with the Paris Agreement. This must, according to the group, be combined with regular reporting and the use of targets that are revised on a regular basis. The expert group is of the view that active ownership is the key instrument for managing the GPFG's climate risk. It is noted that targeted and effective active ownership may influence the robustness of investee companies, and also contribute to strengthening the general ability of financial markets to price climate risk and reduce transition risk.

Norges Bank is of the opinion that the expert group's recommendations provide a solid basis for the Bank's continued follow-up of climate risk and climate-related investment opportunities and takes the view that many of the recommendations represent a formalisation and evolvement of the Bank's current efforts. The Bank notes that the management of climate risk in the Fund has developed over time and will continue to develop on the basis of new insights. The management mandate should therefore be general and based on principles. The Bank agrees with the expert group that climate risk management must be premised on the Fund's role as a financial investor and that the main features of the investment strategy and the benchmark index should remain unchanged, including the principle of broad investment diversification. The Bank also agrees with the expert group's view that there is no basis for assuming that climate risk is systematically mispriced.

The Ministry of Finance agrees with the expert group's and Norges Bank's assessment that there is no reason to assume that climate risk is systematically mispriced over time. Nor is there any reason to assume that the Fund has any advantage or systematically better information on climate risk than other investors. This means that although overall climate risk in the financial system is high, one cannot expect a better ratio between risk and return by changing the composition of the benchmark index. The Ministry emphasises that the Fund is not managed with a view to the attainment of any other objective than the highest possible return. The principles underpinning the investment strategy for the Fund should therefore remain unchanged, as recommended by both the expert group and the Bank.

As a long-term global investor, it is in the interest of the GPFG that the goals under the Paris Agreement are attained and that the transition to a zero-emission economy takes place in an orderly manner. An effective and predictable climate policy and a gradual decarbonisation of the economic system would reduce the risk of financial instability and abrupt changes in the value of the Fund's investments.

As owner, the GPFG has a financial interest in companies managing the transition to a zero-emissions economy and adequately reporting thereon. Improved climate-related corporate reporting would strengthen the ability of financial markets to price climate risk. This may contribute to an orderly transition to global net zero emissions and thereby to a gradual reduction in financial market risk associated with that transition.

The Ministry shares the view of both the expert group and Norges Bank that responsible investment and active ownership will be of key importance in climate risk management in the GPFG due to, inter alia, the long-term and systemic nature of such risk. In its dialogue with companies, the Bank should continue to set expectations that companies plan for different climate scenarios, including at least one scenario in which the goals under the Paris Agreement are attained, and assess the climate risk associated with their own activities. It is in the financial interest of the Fund that Norges Bank set expectations on companies' strategies and plans for managing the transition. It is, at the same time, important for companies' strategy and activities to be assessed in a real-world context, including the regulatory and climate policy framework in which companies operate. Companies' strategy must in any event support their long-term profitability. The key to reducing climate risk is, as noted by the expert group, an effective and predictable climate policy. This falls outside the responsibilities of the GPFG as a financial investor. However, the climate risk in the Fund will be affected by what climate policy is being pursued.

The Ministry emphasises that Norges Bank's reporting on its climate risk management must be in conformity with recognised principles and standards, and evolve to reflect new knowledge and practises over time.

The Ministry is in this white paper proposing to strengthen the GPFG efforts on climate risk. This will require Norges Bank to establish principles for the management and measurement of climate risk and to use various measurement methods, including stress tests based on future development scenarios, one of which is a scenario consistent with global warming of 1.5 degrees. Moreover, the Bank's responsible investment shall be based on the long-term goal that investee companies align their activities in a way that is consistent with global net zero emissions in accordance with the Paris Agreement. This long-term goal shall be supplemented by regular reporting on, inter alia, companies' forward-looking decarbonisation pathways, in accordance with leading frameworks for such reporting. The Bank must report on what principles and assessments underpin decisions on participation in various climate-related initiatives. The Bank must also report on climate risk in conformity with recognised principles and standards. The Bank's reporting should be considered in relation to the EU taxonomy, but it is too early to consider the potential application of that framework at present. The responsible investment framework for the GPFG shall be reviewed on a regular basis.

These initiatives will contribute to an integrated approach to climate risk management, which is premised on the Fund's financial objective. This approach encompasses both framework, management and reporting, with climate risk being integrated in risk management, investment decisions and active ownership across all investment management activities.

Climate risk in the GPFG is discussed in more detail in chapter 3.1 (in Norwegian only).

The GPFG environmental investment mandates

The Ministry of Finance has in the management mandate for the GPFG required Norges Bank to establish specific environmental investment mandates. These mandates are subject to separate reporting requirements. The environmental investment mandates form part of the Bank's active management and count towards the limit on deviations from the benchmark index. The Ministry announced, in the white paper on the Government Pension Fund in 2021, that it in view of international sustainability reporting developments would assess whether the reporting requirements for the environmental investment mandates should be expanded somewhat. Such assessment would be based on the premise that the GPFG, including the environmental investment mandates, shall contribute to the highest possible long-term return, given an acceptable level of risk. As a basis for the Ministry's assessments, Norges Bank was requested to consider a potential expansion of the reporting requirements, as well as to provide an account of developments in the market for environmentally-related investments. The expert group that examined climate risk management in the GPFG has also discussed the environmental investment mandates.

Norges Bank is of the view that it would not be appropriate to expand the specific reporting requirements to include climate and environmental effects or the mandates' overall exposure to environmentally-related activities. The Bank states that this needs to be considered in the context of the Ministry's assessment as to how the recommendations of the expert group that examined climate risk should be follow up on, that sustainability reporting standards are still at an early stage of development, as well as the financial objective of the environmental investment mandates.

The expert group that examined climate risk management in the GPFG noted, inter alia, that it may introduce ambiguity in the division of responsibilities if the owner (the Ministry of Finance) includes instructions in the management mandate as to how the investment manager (Norges Bank) shall deviate from the benchmark index. The group recommends that the Ministry consider a different solution for regulating the environmental investment mandates and make the Fund's environmentally- and sustainability-related investments more apparent. A potential alternative outlined by the group is to replace the NOK 30–

120 billion range by a reporting requirement for all investments within specific categories in the Fund. If a more ambitious climate risk management and reporting arrangement is contemplated for the Fund as a whole, the expert group would deem it appropriate to consider whether there is still a need for separate environmental investment mandates.

The Ministry is in this white paper proposing to remove the management mandate requirement for the establishment of specific environmental investment mandates. This needs to be considered in the context that the Ministry is now proposing to strengthen and develop the framework for, and follow-up of, climate risk in the management of the GPFG, cf. the discussion in chapter 3.1 (in Norwegian only). The Ministry is proposing, inter alia, more comprehensive and integrated climate risk management and reporting, including the assessment of potential future use of the EU taxonomy.

The Ministry emphasises that it is the management mandate *requirement* for environmental investment mandates that it proposes to remove. This does not mean that the Fund's investments in climate- and environmentally-related activities *must* be reduced. Norges Bank may still invest more in environmentally-related companies than would be implied by the benchmark index, if deemed appropriate by the Bank. It is for Norges Bank to assess how the active management should be structured, in accordance with the established division of responsibilities.

The Fund may still be invested in unlisted renewable energy infrastructure, within the current cap of 2 percent of the Fund. Removing the requirement for specific environmental investment mandates will imply, in somewhat simplified terms, that the cap on unlisted renewable energy infrastructure investments is increased from NOK 120 billion to just over NOK 240 billion, based on the market value of the GPFG at the beginning of 2022.

The environmental investment mandates are discussed in more detail in chapter 3.2 (in Norwegian only).

Amendments to the ethically motivated guidelines

The Guidelines for Observation and Exclusion of Companies from the GPFG (the ethical guidelines) were amended in certain respects in 2021. The background was the Ethics Commission's report NOU 2020:7; *Values and Responsibility*. The amendments included the introduction of a criterion for the exclusion of companies that produce cannabis for recreational use, a new criterion targeting sales of weapons that are used in ways that constitute serious and systematic violations of international law, and an expansion of the corruption criterion to also encompass «other serious financial crime». In addition, some provisions of the guidelines were clarified. Furthermore, the mandate of Norges Bank was amended, by including the UN Guiding Principles on Business and Human Rights (UNGP) among the standards on which the Bank's responsible investment shall be based. It was also specified in the mandate that Norges Bank shall have procedures for the approval of markets in which the Fund is invested, and that such approval shall take place on a regular basis. The amendments to the ethical guidelines are discussed in more detail in chapter 3.3.1 (in Norwegian only).

The Ethics Commission proposed that lethal autonomous weapons should be added to the list of weapons that are encompassed by this product criterion under the guidelines. The Ministry agrees with the Commission's assessment that such weapons raise several issues, as stated in last year's white paper on the Government Pension Fund. However, the Ministry concluded that there must be a reasonable and agreed understanding of what autonomous weapons are before such a criterion can be applied. It was proposed, against that background, to await the international process that Norway is participating in on the ethical and legitimate use of, inter alia, autonomous weapons, and to revert to this issue when such process has resulted in clarification. The Standing Committee on Finance and Economic Affairs stated in Innst. 445 S (2020–2021) that it expects a product criterion for lethal autonomous weapons to be introduced when a sufficiently precise definition is available. The Standing Committee requested an update

on the status of this effort in the next white paper on the Government Pension Fund.

The Ministry notes that several processes are taking place internationally in relation to autonomous weapons, in which Norway also participates, including, inter alia, under the UN Convention on Certain Conventional Weapons (CCW). The expert group under CCW held a number of meetings in the autumn of 2021, but has yet to reach agreement on substantive recommendations. Consequently, the backdrop is fundamentally the same as when the Storting deliberated last year's white paper on the Government Pension Fund. There is, however, a broad consensus that this process must continue and that the CCW is the appropriate framework for this. This process may admittedly take some time. The Ministry of Finance will revert to the Storting when relevant clarifications and a sufficiently precise definition is available. See chapter 3.3.2 for further details (in Norwegian only).

Experience with the coal criterion and the climate criterion

It was announced in last year's white paper on the Government Pension Fund that the Ministry of Finance would in this year's white paper provide an account of experience with both the climate criterion and the coal criterion under the ethical guidelines. Feedback has been obtained from Norges Bank and the Council on Ethics as a basis for the Ministry's assessments.

According to Norges Bank, 95 percent of coal extraction and 80 percent of coal-based power production has been excluded from the Fund or placed under observation under the product-based coal criterion. The Bank is of the view that this shows that the criterion is largely functioning as intended. Norges Bank points to several considerations which suggest, in the view of the Bank, that one should exercise caution when it comes to reducing the threshold values established for the criterion. According to the Bank, a potential reduction of the threshold values would mean, inter alia, greater challenges in relation to data and analysis, while at the same time increasing the risk that companies that should have been subject to such criterion are not captured by said criterion, or of incorrect exclusions. The Ministry agrees with Norges Bank's assessments of the product-based coal criterion and proposes that this criterion remain unchanged.

A total of four companies have been excluded from the GPFG under the conduct-based climate criterion. All of these have significant production of oil from oil sands. The Council on Ethics reports that the Council has devoted considerable resources to examining companies under the climate criterion, without this having resulted in a corresponding volume of recommendations for the exclusion or observation of companies. The Council on Ethics notes that the scope of the Council's efforts in relation to the climate criterion and the Bank's climate risk efforts means that the Council and Norges Bank are to a large extent examining the same industries and companies. The Council on Ethics has experienced company being sold through risk-based divestment, before the Council on Ethics has completed its assessment. Moving forward, it is the assessment of the Council on Ethics that the efforts of the Council are unlikely to result in any significant exclusion or observation of companies. The Council on Ethics is therefore of the view that it should be considered whether the Bank's climate-related efforts should also include the assessment of companies under the climate criterion, in the same way as how the coal criterion is applied.

Norges Bank notes that the application of the climate criterion requires complex assessments of relationships at the industry and company level, as well as access to detailed information on the activities and plans of companies. Norges Bank notes, like the Council on Ethics, that the Bank's company-specific climate risk efforts often overlap with the climate criterion efforts of the Council on Ethics, and that such overlap is likely to increase in the time to come. Going forwards, Norges Bank is also of the view that it may over time be appropriate to consider permitting the Bank to make decisions on observation and exclusion under the climate criterion at its own initiative, as under the coal criterion.

The Ministry notes that the application of the climate criterion is complex and requires considerable insight,

and is of the view that an arrangement corresponding to that introduced for the coal criterion should also be workable for the climate criterion. The Ministry is proposing, against this background, to give Norges Bank the right to take the initiative for exclusion or observation of companies under the climate criterion.

The coal criterion and the climate criterion are discussed in more detail in chapter 3.4 (in Norwegian only).

Long-term perspectives on the GPFG

A Commission to examine long-term perspectives on the GPFG was appointed in September 2021. The Commission is tasked with examining what developments may be of relevance to the GPFG some years into the future, as well as their potential implications for the management of the Fund. Relevant risks in this context are financial risk, in particular, but also reputational risk for the GPFG and Norway, as well as security and foreign policy risk. The Commission shall examine whether developments may have an impact on the premises underpinning the investment strategy for the Fund, and whether there are circumstances suggesting that some of the changes made to the investment strategy in recent year should be reassessed. The Commission is chaired by Ulf Sverdrup (Director of the Norwegian Institute of International Affairs (NUPI)), and shall submit its report by 1 October 2022. See chapter 3.5 for further details (in Norwegian only).

The GPFN's large ownership stakes on the Oslo Stock Exchange

In 2019, the Ministry of Finance was advised by Folketrygdfondet to consider amending the management mandate for the GPFN as the result of its ownership stakes in the Norwegian equity market having reached levels where there is a risk of breaching the 15-percent ownership stake limit in Norwegian companies.

The Ministry of Finance has not reached a final conclusion on the ownership stake challenge in the GPFN. The Ministry has initiated a new comprehensive assessment of various alternatives for solving the ownership stake issue.

The Government aims to establish a separate unit in Tromsø, which can serve to strengthen central government presence and develop professional investment management centres in Northern Norway. Whether this is going to be a new unit of Folketrygdfondet, a unit subordinated to Folketrygdfondet, a new independent unit or part of another central government investment management body, is among the issues that need to be examined in more detail. See chapter 5.1 for further details (in Norwegian only).

Remarks on Russia

Russia went to war against Ukraine on Thursday 24 February 2022. The Government announced in a press conference on Sunday 27 February 2022 that Norway would be joining the EU sanctions against Russia, that the Ministry of Finance would instruct Norges Bank to immediately freeze all investments in Russia and that the GPFG would divest all of its holdings in Russia.

On Monday 28 February 2022, the Ministry of Finance sent a letter to Norges Bank instructing it to freeze all of the Fund's investments in financial instruments issued by Russian enterprises, the Russian State or entities linked to the Russian State, with immediate effect and until further notice. Notice was also given that the investment universe of the Fund will no longer include Russia, including financial instruments, real estate, infrastructure and cash; see further details on the investment universe of the Fund in chapter 2.2.1 (in Norwegian only). The Ministry of Finance asked, against this background, Norges Bank to prepare a proposal for a plan to execute the divestment, which pays heed to the applicable sanctions and considers the Fund's interests in general.

In its reply letter of 15 March 2022, Norges Bank highlights that the Moscow Exchange has been closed since 28 February 2022. In addition, extensive sanctions that restrict trading have been introduced. Since it is not possible to execute trades in the Russian stock market, Russia was omitted from all FTSE Russell indices at a price of close to zero from 7 March 2022. Russia was also omitted from the Fund's benchmark index from the same date. In its letter, Norges Bank further notes that

the divestment cannot be executed a present because the market does not function in a normal manner. The divestment will also have to pay heed to sanctions and to the Fund's interests in general, and will have to be executed over time. The Ministry of Finance will revert to the Storting with an account when the divestment has been completed. Russia is now also encompassed by the government bond exemption for the GPFG; see the discussion in chapter 2.3.4 (in Norwegian only).

2 The Government Pension Fund Global: Framework, strategy and results

(in Norwegian only)

3 The Government Pension Fund Global: Further development of investment strategy and management

3.1 Climate risk

Background

Climate change will affect companies and economic development worldwide. In the years to come, company earnings may be influenced by climate policy, technological developments, changing stakeholder preferences upon the transition to a low-emission economy, as well as the physical implications of climate change. Climate risk arises because there is uncertainty about these factors and how the changes will occur, and because these changes will manifest themselves over a very long time period. This gives rise to financial risk, which needs to be managed by investors such as the GPFG.

Climate and environmental considerations have for many years been an important dimension in the ongoing development of the responsible investment framework and the ethically motivated guidelines for the GPFG. Norges Bank is already devoting considerable resources to such efforts. Climate risk assessments form an integral part of risk management, investment decisions and active ownership. These efforts have been discussed in several previous white papers on the Government Pension Fund. The Bank manages climate risk within the limits in the mandate stipulated by the Ministry. It is nonetheless

important to emphasise that the GPFG has a financial objective, and that it is not a part of the Bank's mandate that the Fund shall contribute to the attainment of specific climate objectives. There is a broad political consensus on this.

It is challenging to analyse the implications of climate change for individual companies, industries and markets, and thereby for investors. Climate risk is a complex and multifaceted financial risk factor with certain characteristics that distinguish it from other issues that investors need to consider. Climate risk management requires knowledge of both climate change risk and its potential implications and, correspondingly, of both potential government measures and their implications. Numerous regulatory and voluntary measures and initiatives are currently under discussion and implementation, both nationally and internationally. The financial industry is developing new analysis tools for climate risk management, and the academic literature in this field is continually expanding.

It was noted in the white paper on the Government Pension Fund in 2021 that the Ministry of Finance had launched an effort to expand knowledge of how risks and opportunities resulting from climate change, climate policy and the green shift may affect and be managed by investors such as the GPFG. An expert group had been appointed to prepare a report on the significance of financial climate risk and climate-related investment opportunities, as well as to discuss alternative ways of addressing these in investment management. Moreover, Norges Bank had been asked to analyse and assess the Fund's exposure to climate-related risk and investment opportunities. The Ministry also referred to that the comments made by the Standing Committee on Finance and Economic Affairs in Innst. 136 S (2020–2021), the Commission on Ethics' green paper NOU 2020:7; *Values and Responsibility,* including the consultative comments on which, would be drawn upon in the abovementioned effort. It was announced in the white paper that the Ministry was planning to present a comprehensive review of the said effort in the white paper on the Government Pension Fund in 2022.

The expert group presented its report «Climate Risk and the Government Pension Fund Global» in a seminar on 20 August 2021. Norges Bank presented its analyses at the same time, cf. letter of 2 July, and the Bank has subsequently assessed the expert group's recommendations and the operationalisation of these in a letter of 19 December 2021.[1]

Details on the report from the expert group

On 4 February 2021, the Ministry of Finance appointed an external expert group chaired by Martin Skancke (Chair of PRI, member of TCFD[2] and board member of Storebrand). Other members of the group were Kristin Halvorsen (director of CICERO), Tone Bjørnstad Hanstad (investment professional at Ferd Capital) and Karin S. Thorburn (professor at NHH Norwegian School of Economics).

The group was asked to assess the significance of financial climate risk and climate-related investment opportunities for a fund such as the GPFG, as well as to discuss alternative ways of addressing these in the management of the Fund. The group was also asked to assess whether new climate-related knowledge impinges on key premises underpinning the investment strategy and on operational management. Finally, the group was asked to shed light on how climate risk is managed by other comparable funds.

The expert group's assessments

The expert group considers climate risk to be a relevant and potentially significant risk for the Fund, but at the same time different from other issues that investors need to consider. This has to do with the risk manifesting itself over a very long time horizon, raising fundamental ethical issues and potentially having dramatic implications. Considerable uncertainty also makes it hard to quantify.

[1] The letters are available on the Ministry's website.

[2] The Task Force on Climate-related Financial Disclosure (TCFD) is a working group appointed by the Financial Stability Board.

It is the assessment of the group that the key to reducing climate risk is an effective and predictable climate policy. An ambitious and successful climate policy internationally reduces the physical climate risk to the Fund, while a predictable and orderly climate policy reduces transition risk.[3]

The GPFG is, according to the group, relatively resilient to moderate climate change and a predictable climate policy. In contrast, dramatic climate change or sudden policy shifts may pose major challenges to global financial markets and to the GPFG.

The expert group notes that climate risk may affect different sectors of the economy in different ways. Transition risk arises when the economy is to be decarbonised. A large, long-term and broadly invested investor such as the GPFG has no place to «hide», and thus cannot solve the problem by divesting holdings and shifting the risk to other investors. Even if one investor sheds risk, that risk will still remain in the financial system. Inadequate climate risk management in the portfolio companies may result in lower economic growth, and thereby lower return on the Fund over time. It is therefore in the best interest of the Fund for the goals under the Paris Agreement to be attained and for the transition to a zero-emission society to take place in an orderly manner.

The expert group notes that overall climate risk in the financial system is high, but finds no basis for assuming that climate risk is systematically mispriced in the long run. This implies that one cannot expect a better ratio between expected risk and return for the Fund by excluding investments in specific industries. The group therefore believes that the principles underpinning the investment strategy for the Fund should remain unchanged.

The expert group notes, moreover, that some investors for ethical reasons will choose to exclude carbon-intensive companies because they do not wish to contribute to such emissions, while other investors believe that the appropriate approach is continued ownership interests in carbon-intensive companies, combined with a duty to influence these to reduce their emissions. The group also refers to investor initiatives that seek, based on zero-emissions targets, to contribute to the decarbonisation of companies through active ownership, and not by transferring ownership to other investors. The group notes that tensions may arise between ethical obligations under the Paris Agreement and an ethical obligation to manage savings such as to generate a satisfactory financial return. If the world as such is not heading for zero emissions, it is according to the expert group also not realistic to expect the companies in a broadly invested portfolio to be headed for net zero.

The expert group notes that so-called ESG[4] indices are used by investors that want to shift company weights away from market weights in order to capture risk factors they believe may have been misjudged by the market. The group is sceptical about the argument that one will, by shifting company weights away from market weights, still have a well-diversified portfolio that will achieve a market return, while the ESG risk of the portfolio has been reduced. Research shows that such modifications reduce expected risk-adjusted return, and the group is of the view that it would be inappropriate to assume that free insurance against risk exists. By choosing other company weights than the market as a whole, one assumes a risk that the portfolio will develop differently from the market as a whole, i.e. active management. Climate-adjusted indices are discussed in further detail in Box 3.1.

The expert group has focused on climate risk for the GPFG, but its recommendations are, according to the group, also valid if one expands the perspective to examine the potential implication of the climate risk facing the Fund for Norway's national wealth, the overall wealth of the State, as well as fiscal policy.

[3] The climate risk facing the Fund is comprised of both physical risk and transition risk. Physical risk is the risk that investments will be affected by physical implications of climate change, such as extreme weather, flooding, draught and heat waves. Transition risk is about the potential implications of climate policy, technological developments and changing stakeholder preferences upon the transition to a low-emission society for the Fund's investments. This also includes any climate-related investment opportunities that may result from the transition.

[4] Environmental, Social and Governance (ESG).

The expert group's recommendations

According to the expert group, international best practice for climate risk management on the part of investors is not unequivocal. This is a rapidly evolving field, and it is the assessment of the group that a number of different approaches may be used to map the status of the Fund's efforts in relation to other investors with which it would be relevant to compare it. The group is of the view that it should be an ambition of Norway to make the GPFG a world leader in climate risk management, and makes four general recommendations. These are primarily focused on the Ministry of Finance's management of the GPFG. The recommendations of the group are accompanied by proposals for specific amendments to the mandate.

A set of principles for managing the GPFG's climate risk

The expert group proposes a set of principles that should be adopted by the Ministry for how climate risk in the GPFG should be managed. According to the expert group, these are designed to withstand the test of time; see Table 3.1.

Comprehensiveness	There should be a broad assessment of known and unknown climate-related threats and opportunities related to the GPFG
Framework	Address the GPFG's climate risk in the context of other financial risks, based on the investment mandate and guidelines
Appetite	The desired climate risk and financial risk for the GPFG should be based on the expected return and the GPFG's risk-bearing capacity
Resilience	Emphasise political endorsement of investment management principles, including the importance of a diversified portfolio, good corporate reporting, scenario analysis and stress testing
Incentives	The mandate should specify a clear division of responsibilities between the Ministry of Finance and Norges Bank, as well as incentives for the Bank to integrate climate risk in an investment management approach aimed at achieving the highest possible return, given an acceptable level of risk
Standardisation	Climate risk assessment and reporting should be harmonised and integrated with financial risk assessment and reporting, but adapted to the distinctive characteristics of climate risk
Communication	The GPFG should collaborate with other investors in its active ownership, as well as share information and knowledge with the public

Table 3.1 The expert group's proposed climate risk management principles for the GPFG

Source: The expert group on climate risk in the Government Pension Fund Global.

Anchoring climate risk management in the management mandate

The group is of the view that the mandate should be premised on a high level of ambition in climate risk management. The group recommends the inclusion of a mandate provision requiring responsible investment to be based on a long-term goal of zero greenhouse gas emissions from investee companies, in accordance with the Paris Agreement. This must, according to the group, be combined with regular reporting and the use of targets that are revised on a regular basis. It also suggests that the Ministry of Finance's climate risk management strategy should be reviewed on a regular basis. The group emphasises that this is a matter of anchoring the Bank's responsible investment activities framework, and is not intended to restrict composition of the Fund benchmark.

Further development of Norges Bank's active ownership

The expert group is of the view that active ownership is the key instrument for managing the GPFG's climate risk. It is noted that targeted and efficient active ownership may influence the resilience of investee companies, and also contribute to strengthening the general ability of financial markets to price climate risk and reduce transition risk. According to the group, active ownership with special attention to capital discipline may serve to strengthen the general ability of financial markets to price climate risk, fund new opportunities and ensure a profitable transition to a low-emission economy. If active ownership turns out to be unsuccessful, and it is concluded that the outlook for the company is characterised by weak profitability, limited investment opportunities and little ability to change, Norges Bank may choose to divest. If there is an unacceptable risk that the company is linked to severe environmental damage or to an unacceptable extent causes greenhouse gas emissions, ethically motivated observation or exclusion may be considered; see chapter 2.3.3 for further details (in Norwegian only).

The expert group finds that Norges Bank has in practice adopted a somewhat restrictive attitude to formalised active ownership collaboration with other investors, and believes that developments in such forms of collaboration may give cause for reconsideration of this stance. Many investor initiatives would like the Fund as a participant, and the group emphasises that it would in any event by necessary for the Bank to prioritise which initiatives it finds it appropriate to join.

The group recommends, furthermore, the establishment of regular reviews of Norges Bank's responsible investment activities, corresponding to the reviews of its active management. The key priorities in the responsible investment framework should be endorsed by the Fund's owner, while the Bank is best placed to decide day-to-day priorities.

A key aspect of the Bank's climate risk activities will, according to the group, still be to contribute to improved understanding and knowledge of climate change as a financial risk factor through, inter alia, research project participation and the development of climate risk analysis and management standards. The group proposes that this should be highlighted by stipulating in the mandate that the development of climate risk analysis and management standards shall be accorded priority in the Bank's contributions to the development of relevant international responsible investment standards.

Specific mandate provisions on the measurement, management and reporting of climate risk

The expert group notes that a high degree of transparency is necessary in climate risk management, and that this needs to be reflected in the mandate requirements on the reporting of such risk. The group makes the following recommendations in this regard:

- A requirement in the mandate for climate risk to be specifically incorporated into the Bank's own responsible investment principles and for these to reflect sound climate risk management considerations in line with internationally recognised principles and standards. Such a requirement will, according to the group, ensure that climate risk management evolves on an ongoing basis in response to new knowledge and practises.
- Norges Bank should stress test the portfolio against various climate policy pathways on a regular basis. This will provide a more complete impression of the climate risk facing the Fund. Such stress testing should be consistent with the TCFD reporting

requirements, including the requirement for stress testing to include at least one scenario in which the goals under the Paris Agreement are attained, which requirement the Fund should also apply to investee companies. Stress testing will also contribute to an improved understanding on the part of the Ministry of Finance of risk in relation to the national wealth and public finances.
- The long-term target of net zero emissions should be supplemented by regular reporting on what emission pathway companies are moving along. Such forward-looking reporting is likely to eventually become part of the TCFD recommendations[5]. However, considerable effort will be required to resolve methodological problems and ensure an appropriate design of such reporting standards. It would thus be inappropriate to commit to any specific type of quantitative target at present, but the Fund's reporting should be developed in line with best practice internationally on an ongoing basis.
- An appropriate expansion of the reporting would be to also report on other climate related themes once a reporting framework for such themes has been established, such as for example biological diversity.
- The reporting requirements for the Fund as a whole should be considered in the context of developments in internationally recognised principles and standards, including the EU taxonomy.

Analysis and assessments from Norges Bank

In a letter of 2 July 2021, The Ministry received analysis from Norges Bank of the Fund's climate risk exposure and climate-related investment opportunities. In addition, the Bank has in a letter of 19 December 2021 commented on the expert group's recommendations and on how these can be operationalised in investment management.

The Bank endorses the expert group's proposals

Norges Bank endorses the expert group's recommendations and believes these to provide a good basis for the Bank's continued follow-up of climate risk and climate-related investment opportunities. Many of the expert group's recommendations represent a formalisation and evolvement of the Bank's current efforts. The Bank notes that the follow-up of climate risk in the Fund has developed over time and will continue to develop on the basis of new insights. The management mandate should therefore be general and based on principles.

Norges Bank shares the expert group's ambition of making the GPFG a world leader in climate risk management. The Bank notes that it does have experience and expertise in all fields highlighted by the expert group, although efforts need to be reinforced and more resources need to be devoted to those fields. Although climate risk is an important financial risk factor, it is but one of the many risk factors to which the Fund is exposed.

The Bank shares the expert group's view that climate risk management must be premised on the Fund's role as a financial investor and that the main features of the investment strategy and the benchmark index should remain unchanged, with the principle of broad investment diversification as a cornerstone. The Bank also agrees with the assessment that the Fund is relatively resilient to climate change on a moderate scale, as well as to climate policy measures that entail an orderly transition to a low-emission economy.

Norges Bank also shares the expert group's view that active ownership should be the primary tool for managing climate risk in the Fund. The Bank refers to the expert group's proposal for a long-term responsible investment target, which it endorses. This will, according to the Bank, provide a clearer direction for active ownership and the Bank's climate-related activities. The Bank notes, however, that it is important for the Ministry

[5] TCFD has prepared a framework and recommendations for climate-related risk reporting. Such reporting is intended to, inter alia, help companies identify climate-related threats and opportunities. The working group presented its recommendations in the summer of 2017. TCFD has since published several status reports on implementation of the recommendations, as well as a number of guidance notes, most recently in 2021, with more of a focus on transition plans and forward-looking indicators and quantitative targets.

to clearly communicate that this is a responsible investment target which is intended to support the objective of achieving the highest possible return. Nor would it be appropriate to create an expectation that the Bank shall automatically divest holdings in companies that fail to deliver a given emissions pathway.

The Bank will increase active ownership activities that target the highest-emitting companies, and especially companies with inadequate climate reporting that have not published any climate plan. The Bank will encourage companies to set specific and credible emissions targets and report on these going forwards.

Norges Bank will, furthermore, seek to document the effects of active ownership activities. The Bank has a number of climate risk management tools at its disposal and will, inter alia, assess how risk-based divestment may to a greater extent than at present be used to reduce climate risk exposure, how voting may be better utilised as a climate risk management tool, and whether the Bank should submit climate-related shareholder proposals. Norges Bank notes that the expert group is of the view that the Bank should focus more on collaboration and contribute actively to the development of climate reporting standards. The Bank notes that it is already giving priority to initiatives that seek to improve companies' climate reporting and is continually considering whether to become involved in additional initiatives in this field.[6]

The Bank is stress testing the equity portfolio against various climate scenarios and would be able to start reporting on this in line with the expert group's recommendations and the TCFD framework. The Bank will strengthen its analysis of forward-looking emission pathways for individual companies, but notes the methodological challenges in this regard.

The Fund should still have a broad market-based benchmark index

The Bank comments that climate risk is but one of the many risk factors to which the Fund is exposed. Climate change needs to be addressed by all investors, but it is challenging to determine how climate change will affect the Fund's investments. At year-end 2020, the Fund invested in about 9,000 companies. These companies are to varying extents exposed to climate risk. Norges Bank estimates that about 80 percent of the market value of the Fund's equity portfolio consists of companies classified by the index and analysis provider MSCI as neutrally exposed to transition risk. This implies that the business model of these companies is currently held to be resilient to higher carbon emission prices.

Based on studies of the relationship between climate risk and financial asset prices, the Bank shares the expert group's view that there is no basis for concluding that climate risk is systematically mispriced. Norges Bank believes, against this background, that one should be cautious about making major changes to the principles that have thus far underpinned the investment strategy for the Fund. If the Fund is to be managed with a view to achieving any other objective than the highest possible return, this should be reflected in the investment management mandate.

The transition to a low-emission society will involve the transitioning of existing companies, the gradual downscaling of existing companies and the development of new companies. A broad, market-weighted index will, according to the Bank, be a sound starting point for ensuring that the Fund is exposed to any opportunities that arise. Any deviations from market weights should be well-founded and serve a specific purpose.

Various index providers have constructed climate-adjusted equity indices, but these are not, according to the Bank, investable for a large fund such as the GPFG. Such indices are less transparent and verifiable than the current benchmark index. They include much fewer companies than the Fund's equity benchmark, are less representative of the global equity market and less diversified. Both transaction costs and the risk of return fluctuations from year to year will increase with such climate-adjusted indices. In addition, the ownership stakes in individual companies would increase

[6] For an overview of the various initiatives that Norges Bank participates in; see chapter 2.3.2 (in Norwegian only).

significantly, to between 30 and 40 percent in some companies.

Norges Bank has also examined the scope for tailoring an index to the distinctive characteristics of the Fund. According to the Bank, such an index would, however, pose many of the same challenges as the climate-adjusted standard products.

Norges Bank would, against this background, advise against replacing the current broad, global equity index with a climate-adjusted index. The Bank states, inter alia, the following: «Such an investment choice would have to be based on the assumption that financial climate risk is systematically mispriced and that this can readily be reflected in an index. Alternatively, it would have to be based on the assumption that the Ministry or the index provider has better information on financial climate risk than the market. The Executive Board is of the view that none of these assumptions would be correct.»

The Bank is already managing climate risk as an integral part of its investment management

Norges Bank has over time accumulated extensive climate expertise. The Bank manages climate risk and makes use of any climate-related opportunities that arise.

The transition to a low-emission economy requires companies to continue transitioning. Norges Bank's key tools for inducing companies to move in such a direction are active ownership and contributions to the development of market standards. The Bank will encourage companies to set emissions targets that pay heed to the Paris Agreement and to specify such targets for the short, medium and long term. The Bank communicates its expectations to companies and follows up on these through both dialogue and voting.

Norges Bank invests in opportunities that arise in the climate transition, both through the environmental investment mandates and its general equity management. At the end of the first half of 2021, 12.6 percent of the equity portfolio was invested in equities classified as environmentally-related, 1.2 percentage points of which were held under the environmental equity investment mandates.[7]

The Bank's investment decisions are based on assessments of the future earnings outlook for various sectors and companies. For investments in sectors such as power generation, mining and other heavy industry, developments in climate regulations and new technology form a key part of these assessments. Such investment decisions require market proximity and knowledge. Norges Bank states that climate-related investment may be well suited for active management since there is considerable uncertainty about what solutions will turn out to be financially viable in the longer run.

The Bank monitors climate risk in investee companies – both on an ongoing basis and through annual, thematic reviews. This forms the basis for, inter alia, risk-based divestment. Over the coming years, the Bank is planning to further reduce its exposure to companies with especially high, long-term risk.

Risk monitoring has recently being strengthened by way of the Bank now also making assessments in advance of the index provider's inclusion of companies in the index on which the Fund's benchmark is based. This implies that the Bank may choose not to invest in some companies, despite these being included in the benchmark against which the performance of the Bank is measured. These will primarily be small companies with very inadequate climate risk management, as well as high-emission companies and companies that contribute to deforestation. Of the companies added to the benchmark in 2021, the Bank identified nine companies that it did not want to be invested in.

The Fund's carbon footprint, as measured by emission intensity, has been reduced

The carbon footprint of the equity portfolio was at year-end 2020 about half of what it was seven years ago. The footprint is measured by the emission intensity[8] of companies, and the reduction is not necessarily caused

[7] Cf. letter of 15 October 2021 from Norges Bank to the Ministry of Finance.

[8] Emission intensity is a measure of how much CO_2 companies emit relative to their revenues. Emission intensity at company

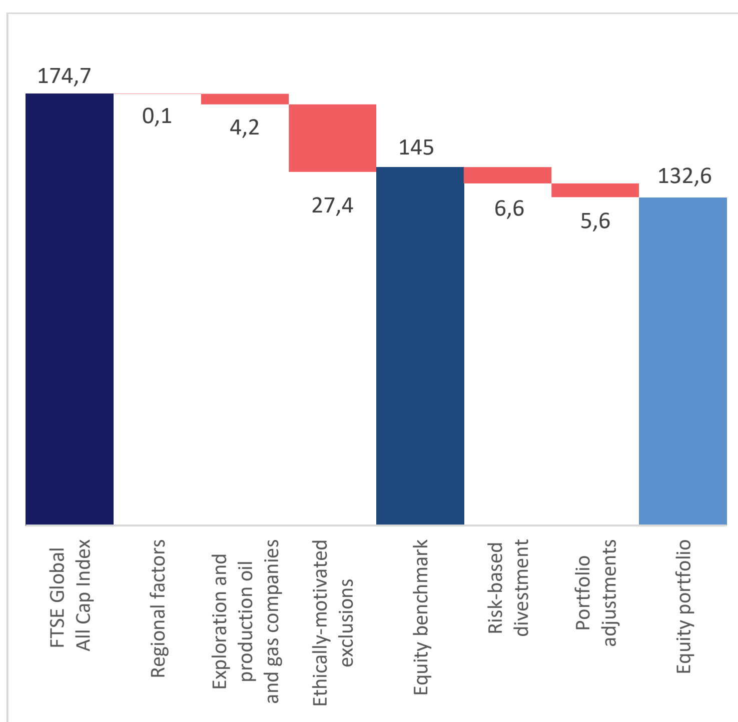

Figure 3.1 Carbond footprint[9] for FTSE Global All Cap and the Fund's equity benchmark and portfolio, as per 31 December 2020

Source: Norges Bank.

by investee companies having reduced their emissions. The reduction is in large part caused by the value of low-emission companies, such as for example technology companies, having increased more in recent years than the value of high-emission companies, such as for example oil companies. This may mean that climate risk is increasingly being priced into the market, but the development may also be driven by other factors.

The Bank's risk-based divestment and its investments under the environmental investment mandates contributed, according to the Bank, to the carbon footprint of the equity portfolio being nine percent lower than the carbon footprint of the benchmark index at yearend 2020; see figure 3.1.

The carbon footprint of the equity portfolio is in large part concentrated in a relatively small number of companies in high-emission industries, such as raw materials and metals production, heavy industry, oil and gas extraction, as well as power generation. The 100 companies with the highest greenhouse gas emissions in these industries account for almost 60 percent of the overall carbon footprint of the equity portfolio. These companies represent about 8 percent of the equity portfolio value.

30 of the 100 companies with the highest emissions have set various emission reduction targets.[10] A number of these 100 companies are integrated oil and gas companies with ambitions of becoming some of the leading renewable energy producers of the future. The Bank has since 2018 been in dialogue with 59 of the 100 companies with the highest emissions.

Scenario analyses contribute to a better understanding of transition risk

Climate risk is subject to considerable uncertainty due to, inter alia, limited access to relevant high-quality data and little scope for basing the analyses on historical data. There is, moreover, considerable uncertainty with regard to both *whether* and, if applicable, *when events resulting from* physical climate change will occur, as well as what will be the implications for financial markets. Overall uncertainty is higher the further into the future one looks.

In order to analyse transition risk, Norges Bank has stress tested the equity portfolio against climate scenarios with a temperature increase of 1.5, 2 and 3° C, respectively, towards 2080. The Bank finds that the point estimates for long-term decline in the value of the GPFG are between one and nine percent, which amounts to between NOK 50 and 750 billion in net present value terms, based on the value of the Fund at yearend 2020. Each of the point estimates are subject to considerable

level is aggregated to the portfolio level by applying companies' portfolio weights. This approach is in accordance with the TCFD recommendations.

[9] The carbon footprint, as expressed by emission intensity, is measured as the number of tonnes of CO_2 equivalents per million US dollars in revenues. Emission intensity at company level is aggregated to the portfolio level by applying companies' portfolio weights.

[10] Norges Bank states in its responsible investment report for 2021 that 56 of the 100 companies with the highest emissions had set various emission reduction targets by yearend 2021.

uncertainty and should not be interpreted as a prediction about the future.

The Bank notes that such scenario analyses may highlight the financial challenges facing some companies in sectors such as manufacturing industry, oil and gas, materials, as well as power and water utilities, as the result of higher carbon emission prices, and may thereby serve as an operational management tool.

In order to analyse the physical climate risk facing the Fund, the Bank has examined a high global warming scenario. The long-term decline in the equity portfolio value is in this scenario estimated at about four percent, or NOK 300 billion based on the current value of the Fund. The point estimate is, as noted, subject to considerable uncertainty.

The Bank highlights the weaknesses of such scenario models, including, inter alia, their non-inclusion of potential second-order effects,[11] as well as the effects of companies' transition plans.

The Ministry's assessments

The assessments and recommendations of the expert group and Norges Bank pertain to several key features of both the Ministry's regulation of the Fund and the Bank's operational management, including the composition of the benchmark index, the Bank's responsible investment activities, public reporting and the Ministry's follow-up of the Bank's investment management. Climate risk management in the GPFG has developed over time. Some of the recommendations represent a formalisation and evolvement of the Bank's existing activities, while others will entail a further expansion and reinforcement of such activities. The Ministry endorses all key aspects of the expert group's and Norges Bank's assessments.

The current investment strategy should remain unchanged

The objective for the investments in the GPFG is to achieve the highest possible return, given an acceptable level of risk. Within the scope of this overarching financial objective, the Fund shall be a responsible investor. Good long-term returns depend on sustainable development in economic, environmental and social terms. The Fund shall neither be a climate policy instrument, nor shall it be managed with a view to achieving any other objective than the highest possible return.

Broad diversification of the investments and limited scope for deviation from the market-based benchmark index defined by the Ministry are key premises underpinning the investment strategy for the Fund. The investments therefore closely track the benchmark index, and the composition of the benchmark is the predominant determinant of overall return and risk in the Fund. The Fund's climate-related risk and investment opportunities will thus in large part mirror those of global equity markets.

As long as financial markets are well-functioning and characterised by strong competition, there is, as noted by both the expert group and Norges Bank, little reason to assume that climate risk is systematically mispriced over time. Nor is there any reason to assume that the Fund has any advantage or systematically better information on climate risk than other investors. This means that although overall climate risk in the financial system is high, one cannot expect a better ratio between return and risk by changing the composition of the benchmark index, for example by excluding investments in specific industries. This does not mean that new information, for example an unexpectedly high carbon price, may not have a strong impact on the value of individual companies and sectors. Access to relevant company information will also for climate risk be of decisive importance to the ability of financial markets to correctly price risk.

The Fund should not be managed with a view to the attainment of any other objective than the highest possible return, for example by climate-adjusting the benchmark index or by establishing a climate objective for the management of the investment portfolio. The

[11] Second-order effects such as migration, political turmoil and financial instability are not included in such models. The interaction between climate change and potential second-order effects is highly complex and therefore difficult to estimate. This is a key reason why these effects are not incorporated into the models developed to analyse investment portfolio climate risk.

Ministry is therefore of the view that the principles underpinning the investment strategy for the Fund should remain unchanged, as recommended by both the expert group and the Bank.

The Fund holds small ownership stakes in more than 9,000 companies worldwide. How rapidly listed companies cut their emissions will thereby be reflected in the Fund. The speed of emission reductions will depend on, inter alia, climate policy, technological developments and changing stakeholder preferences. Some existing companies will disappear, others will transform themselves, and new companies will be established. A broad, market-weighted index will be a sound starting point for ensuring that the Fund is exposed to opportunities that arise, as also noted by Norges Bank.

An integrated approach to climate risk

Climate risk will for the next two decades predominantly be associated with the transformation of global energy systems. In the somewhat longer run, climate change and the implications of such change will depend on the extent to which the world has succeeded with the said transformation and with reducing greenhouse gas emissions. An unsuccessful transformation may mean dramatic physical climate change and negative economic repercussions. This may significantly affect the financial assets of a long-term fund such as the GPFG.

It is challenging to analyse the implications of physical climate change and changes resulting from the transition to a low-emission economy for individual companies, industries and markets, and thereby for investors such as the GPFG. Climate risk is a major risk for the GPFG, but is nonetheless just one of the many risk factors to which the Fund is exposed. Climate risk must thus be integrated into overall risk management, within the scope of the overarching financial objective for the Fund.

There is still much we do not know about climate risk, and it is challenging to analyse such risk using traditional methods and models. There is limited historical data to draw upon, the probabilities of various outcomes are not known, the risk will manifest itself over a very long time horizon and is characterised by potentially dramatic implications and considerable uncertainty which it is hard to quantify. Much uncertainty on many levels means that the range of potential outcomes may be very broad.

Both the expert group and Norges Bank believe the Fund to be relatively resilient to moderate climate change and a predictable climate policy. However, dramatic climate change or sudden policy shifts may pose major challenges to global financial markets and the GPFG.

However, companies, industries and markets are all affected differently. Some sectors will be more directly affected by climate policy measures than others, but this does not mean that climate risk is necessarily highest in those sectors, as also noted by the expert group. Sectors characterised by high emissions, for example the petroleum sector, will be directly affected by higher emissions prices. It is reasonable to assume that this is reflected in the price of assets in this sector. Other sectors may be affected by climate risk in more indirect ways – for example the financial sector. It may be more challenging for markets to price such risk, because it is less visible. It is important to adopt an integrated approach to managing risk that one does not fully know or understand.

The Ministry emphasises that Norges Bank should establish principles for the measurement and management of climate risk. Several different methods should be used, such as for example stress tests based on future development scenarios.

Responsible investment is central in managing climate risk

It is in the best interest of the GPFG, as a global long-term investor, for the ambitions underpinning the Paris goals to be realised, i.e. that the global economy transitions to a zero-emission economy in the second half of this century and that this takes place in an orderly manner. The transition may take place in various ways. Different scenarios involving the same temperature increase at the end of this century show that how the transition takes place will have a major impact on the transition risk facing the world, the global financial markets and the GPFG. The Ministry notes, like the expert group and Norges Bank, that an effective and predictable climate policy and a gradual decarbonisation of the economic system would reduce the risk of

financial instability and abrupt changes in the value of the Fund's investments.

Direct emissions from listed companies currently account for about one fifth of total global greenhouse gas emissions. Emission reduction and carbon sequestration in the listed part of the economy need to be considered in the context of other parts of the global economy. According to the UN Intergovernmental Panel on Climate Change, there is considerable uncertainty associated with scenarios that are based on major negative emissions, such as for example carbon sequestration in oceans, forests and soils, as well as CO_2 capture and storage. This uncertainty is caused by, inter alia, a current lack of sufficient opportunities or technologies on the required scale. Carbon is accumulating in the atmosphere. This means that the longer it takes before emissions are reduced, the larger negative emissions will be required to reach the global net zero-emissions target. Large emission cuts will be needed to attain this target and to limit the temperature increase.

The financial risk facing the Fund is affected by how the transition takes place. The economy needs to be decarbonised and companies need to transform themselves. Different investee companies will be affected differently. High-emission companies will be especially exposed, but companies based on renewable energy are also exposed to transition risk as the result of, inter alia, uncertainty relating to how various energy prices will develop and which technologies will prevail. The energy sector is closely intertwined with the rest of the economy, and the transition to a low-emission society will have both direct and indirect effects on numerous sectors and industries.

As an owner, the GPFG has a financial interest in companies managing the transition to a zero-emissions society and in adequate reporting thereon. Improved climate-related corporate reporting would serve to strengthen the ability of financial markets to price climate risk. This will contribute to an orderly, global transition to net zero emissions and thereby to a gradual reduction in financial market risk associated with that transition.

The Ministry endorses the view of both the expert group and Norges Bank that responsible investment and active ownership will be of key importance in climate risk management in the GPFG due to, inter alia, the long-term and systematic nature of such risk. In its dialogue with companies, the Bank should continue to convey expectations that companies plan for different climate scenarios, including at least one scenario in which the goals under the Paris Agreement are attained, and assess the climate risk associated with their own activities. It is in the financial interest of the Fund for Norges Bank to convey expectations on companies' strategies and plans for managing the transition. It is, at the same time, important for companies' strategies and activities to be assessed against the actual regulatory framework and climate policy measures under which they operate. Companies' strategies must in any event support their long-term profitability. The key to reducing climate risk is, as noted by the expert group, an effective and predictable climate policy. This falls outside the responsibilities of the GPFG as a financial investor. However, the climate risk in the Fund will be affected by what climate policy is being pursued.

With more resilient business models and more accurate risk pricing, transition risk in the financial system will be gradually reduced. Emissions developments in line with the net zero emissions ambition underpinning the Paris Agreement should, in the view of the Ministry, serve as the benchmark for Norges Bank's responsible investment activities and its dialogue with investee companies.

The Ministry takes a positive view on Norges Bank's planned expansion of active ownership activities that target the highest-emitting companies, and especially companies with inadequate climate reporting that have not published any climate plan. Norges Bank should also continue to use other tools than the exercise of ownership rights in its climate risk management.

The Ministry is of the view that standard setting and participation in investor initiatives aimed at the development of models, methods and standards for better market practise, in addition to support for research projects, will continue to be key active ownership tools for the Bank, which will serve to strengthen the ability of financial markets to effectively price climate risk. The Ministry also agrees with the expert group's assessment that the Bank needs to report on which principles and assessments underpin decisions on participation in various collaborations and initiatives.

Norges Bank needs to approach climate risk in an integrated and systematic manner. The Bank should continue to integrate climate risk assessments in its risk management, investment decisions and responsible investment activities. This will enable accumulated expertise and knowledge to be utilised throughout the organisation.

Anchoring of responsible investment in a long-term target

The Ministry endorses the expert group's recommendation to base responsible investment on a long-term target of zero emissions from investee companies, in line with the Paris Agreement, and believes that this will support financial climate risk management in the GPFG. A long-term target will serve to emphasise that responsible investment, and especially active ownership, is a key aspect of climate risk management. This implies, inter alia, that the Bank needs to convey to companies an expectation that they have a strategy for maintaining profitability in a low-emission economy, as well as a credible plan for managing this transition. By being an active owner with clear expectations for companies' climate risk management and plans for the transition to a zero-emission society, Norges Bank can in its role of long-term financial owner contribute to a more orderly transition.

Norges Bank supports an anchoring of responsible investment in a long-term target, as proposed by the Ministry in this white paper. The Ministry emphasises, however, that this does not mean that the investment portfolio shall be managed with a view to achieving any other objective than the highest possible return, as stipulated by statute and in the management mandate. The Bank shall not automatically have to divest holdings in companies that fail to deliver a given emissions pathway. If the world as such is not heading for net zero emissions, it is also not realistic to expect the companies in a broadly invested portfolio to be headed for net zero emissions.[12]

The Bank's climate reporting needs to be based on recognised standards

Transparency is a prerequisite for ensuring the legitimacy of the Fund and inspiring confidence in investment management. The Ministry's mandate to the Bank highlights the importance of the maximum possible transparency, to the extent compatible with sound execution of the investment management assignment. Norges Bank shall continue to provide detailed reporting on operational management and compliance with specific mandate provisions.

Expanded reporting on how climate risk is managed will contribute to improved investment management transparency. The Ministry proposes, in line with the expert group's recommendation, to include a mandate requirement for regular reporting in relation to the long-term responsible investment target, including on companies' forward-looking emission pathways. Such reporting needs to be in line with leading international reporting frameworks. The Bank notes that such measurements raise methodological challenges, in addition to which there is still limited access to relevant high-quality corporate reporting on climate risk, in

[12] In January this year, the investor initiative *Net Zero Asset Owner Alliance* (NZOA) published a revised and updated version of its document *Target Setting Protocol*. This is a guidance note for initiative members on how to set and follow up on targets for decarbonisation of their portfolios in line with the Paris Agreement. It is noted in the document that it may be challenging for members to attain the defined targets, due to the growing gap between such targets and the (inadequate) decarbonisation thus far taking place in the economy. The importance of climate policy and regulations that facilitate decarbonisation is highlighted. It is noted, moreover, that reducing the carbon footprint by divesting holdings in certain companies and sectors will not have any positive effect on the funding of the transformation of emission-intensive sectors which is necessary in order for the world to succeed with transitioning to net zero emissions. It is, furthermore, emphasised that while divesting holdings may reduce the portfolio's carbon footprint, it makes no corresponding contribution to reducing emissions in the real economy.

general, and forward-looking aspects, in particular. The Ministry is of the view that it would be appropriate for the Bank to first concentrate its efforts and reporting on selected companies in the most exposed industries, and to thereafter expand such efforts over time.

Norges Bank is already stress testing the portfolio against various climate scenarios and will be reporting on this in line with the recommendations of the expert group and in accordance with the TCFD framework.

The Ministry emphasises that Norges Bank's climate risk management reporting needs to be in conformity with recognised principles and standards, and also needs to evolve to reflect new knowledge and practises over time. The Ministry takes note of the expert group's recommendation that the Bank's reporting should be considered in relation to the EU taxonomy, but that it is too early to consider the potential application of this framework at present. The Ministry expects the Bank to closely monitor developments in the said framework, and to assess the experience gained against the appropriateness of such reporting for the Fund.

Regular reviews of responsible investment

The Ministry of Finance aims for the Fund to be at the forefront of responsible investment, within the limits of being a large, global, long-term, state-owned fund. In this white paper, the Ministry is proposing regular reviews of the responsible investment framework. This framework and Norges Bank's responsible investment activities have developed over time and will continue to develop in the years to come. Responsible investment has also been reviewed several times, most recently by the Council on Ethics, which presented its green paper NOU 2020:7; *Values and Responsibility,* in 2020. In the white paper on the Government Pension Fund in 2021, the Ministry stated that it will continue to gather knowledge on leading international responsible investment practices. This will be of importance in, inter alia, evaluating and evolving responsible investment, and will be a key aspect of the follow-up of the Government's ambition of making the GPFG a global leader in responsible investment, as well as in the management of climate risk and nature risk, as set out in the Government's Hurdal platform.

The Ministry notes that the Standing Committee on Finance and Economic Affairs asked, in Innst. 136 S (2020–2021), for an assessment as to whether the limit on deviations from the benchmark index provides the Bank with the necessary scope for managing climate risk. The expert group notes that the scope for active management should be subjected to a general assessment, in order to ensure that climate-related assessments are taken into account. The Ministry reviews Norges Bank's management of the GPFG on a regular basis; see the discussion in chapter 2.5 (in Norwegian only). At present, Norges Bank is exploiting a minor portion of its scope for active deviations from the benchmark portfolio. The Ministry is of the view that any climate-related assessments that may affect the Fund's composition to such an extent that one may consider reporting these as a separate active strategy could be adequately accommodated within the current regulations.

Summary and follow-up

Climate risk does not give rise to a need for changing the benchmark index composition. The key features of the investment strategy should remain unchanged. Responsible investment activities, and especially active ownership, will be an important aspect of Norges Bank's climate risk management. The Bank needs, at the same time, to approach climate risk in an integrated and systematic manner, with such risk being managed as part of its overall risk management within the scope of the overarching financial objective for the Fund.

The Ministry is proposing, inter alia, the following to strengthen GPFG climate risk follow-up:

- Norges Bank needs to establish principles for the management and measurement of climate risk and use various methods for the measurement of such risk, including stress tests based on future development scenarios, one of which is a scenario consistent with global warming of 1.5° C.
- The Bank's responsible investment activities shall be based on the long-term goal that investee companies organise their activities in such a way that these are consistent with global net zero emissions in accordance with the Paris Agreement.
- The long-term target will be supplemented by regular reporting on, inter alia, companies'

forward-looking emission pathways, in line with leading reporting frameworks.

- The Bank needs to report on which principles and assessments underpin decisions on participation in various climate-related initiatives.
- The Bank needs to report on climate risk management in line with recognised principles and standards. The Bank's reporting should be considered in relation to the EU taxonomy, but it is too early to consider the potential application of that framework at present.
- The responsible investment framework for the GPFG shall be reviewed on a regular basis.

These initiatives contribute to an integrated approach to climate risk, which is premised on the Fund's financial objective and encompasses the climate risk framework, management and reporting, with climate risk being integrated in risk management, investment decisions and active ownership across all investment management activities. The Ministry is of the view that these measures also pay due heed to the comments of the Standing Committee on Finance and Economic Affairs in Innst. 136 S (2020–2021) and Innst. 556 S (2020–2021), respectively, on assessing the need for setting emission reduction targets and sub-targets for the GPFG within the scope of the financial objective for the Fund.

The Ministry will prepare specific proposals for amendments to the framework and mandate on the basis of, inter alia, the expert group's proposals after this white paper has been deliberated by the Storting. Proposed mandate amendments will in line with established practice be submitted to Norges Bank for comments prior to implementation.

Box 3.1 Climate-adjusted indices

The GPFG is managed with a financial objective of achieving the highest possible return, given an acceptable level of risk. This forms the basis for the Ministry of Finance's establishment of a benchmark index comprised of equities and bonds, which Norges Bank is required to follow quite closely. The equity benchmark makes up 70 percent of the overall benchmark index and is based on the global, market-weighted equity index FTSE Global All Cap. Market weights represent the theoretically preferred principle for the composition of a global equity index. An investor adhering to a market-weighted index will hold identical relative ownership stakes in all companies in the index and have a distribution of the investments which is identical to that of the average of all investors, and thereby the same return and risk as the global equity market. This provides a broad representation of the value creation in listed companies globally and a broad diversification of the investments across countries, industries and companies.

Index providers also provide indices tailored to other purposes than representing the broad, global equity market. One group of indices aims to reflect sustainability and ESG (Environmental, Social and Governance) indicators. For example, climate-adjusted indices reflect climate-related indicators, and generally provide less exposure to companies with high emissions of greenhouse gases and more exposure to companies that are categorised as climate-friendly. There is no established standard for such climate-adjusted indices, and different index providers therefore operate with different index composition methods.

Such theme-based indices have not existed long enough to provide a sound basis for historical return analyses. The index and analysis provider MSCI has been commissioned by the Ministry of Finance to analyse properties of climate-adjusted equity indices on the basis of its own model for such indices, and finds that the investments in climate-adjusted indices are typically less diversified than those in market-weighted indices.[1] The analysis also shows that the GPFG's ownership stakes in individual companies would increase significantly and become very high for a number of companies if the equity portfolio were to mirror a climate-adjusted index. In addition, higher transaction costs would be incurred, because investors need to buy and sell more securities if investing in line with these indices. The transaction costs will, according to MSCI, be especially high for large investors such as the GPFG.

Box 3.1 continued.

It is the assessment of both the expert group and Norges Bank that the Ministry should not replace the Fund's broad, global equity index with a climate-adjusted index. Norges Bank notes, like MSCI, that climate-adjusted indices will entail higher transaction costs, higher risk and an inferior ratio between expected risk and return. The Bank states, moreover, that such indices are more complex, less transparent and more difficult to verify than the current benchmark. Norges Bank warns, furthermore, against the risk that climate indices may exclude individual companies or sectors that do not meet certain climate-related criteria at present, but may play a role in the transition to a low-emission economy. A decision to replace the current equity benchmark with a climate-adjusted index may, correspondingly, imply that the Fund misses out on opportunities resulting from companies not included in the index transitioning. In addition, the Bank notes that refraining from making investments in individual companies or sectors, by mirroring a climate-adjusted index, is not a suitable tool for influencing company conduct.

It is the assessment of the Bank that if the Ministry were to adopt a climate index, that decision would have to be based on the assumption that financial climate risk is systematically mispriced and that this can readily be corrected by making use of such a climate index. Alternatively, such a decision would have to be based on the assumption that the Ministry or the index provider has better information on financial climate risk than the market. Norges Bank is of the view that none of these assumptions would be correct.

[1] *Report for the Norwegian Ministry of Finance – Modelling climate risk and climate benchmarks.* The report is available on the Ministry's website. The GPFG benchmark is based on FTSE Global All Cap. The estimates in the MSCI report are based on MSCI ACWI IMI, which has a high degree of similarity with the FTSE index, although there are some differences

Box 3.2 Carbon emissions from the companies included in the GPFG equity benchmark

MSCI has analysed carbon emissions from the companies included in the GPFG equity benchmark.[1] The methods and analysis used by MSCI are in conformity with international recommendations from the TCFD.

Global greenhouse gas emissions developments are closely related to economic growth, the energy-intensity of such growth, as well as the emissions volume per unit of energy used. There are major differences in these variables across regions and countries, as well as across sectors and companies.

Direct greenhouse gas emissions from the global equity market were just over 11 billion tonnes of CO_2 equivalents in 2020, measured by the market-weighted index MSCI ACWI IMI; see figure 3.2.[2] According to MSCI, this corresponded to about one fifth of global emissions. This emissions share must, inter alia, be considered in the context that several industries and markets with relatively high emissions are underrepresented on stock exchanges, such as agriculture and emerging markets.

While developed economies previously accounted for the majority of global greenhouse gas emissions, emissions from emerging economies have increased sharply after 1990. These now account for close to 70 percent of global greenhouse gas emissions. MSCI's estimates indicate that more than half of emissions in the global listed equity market come from companies listed in emerging markets, although these represent just under 13 percent of the market value of the global listed equity market as per June 2021.

Box 3.2 continued.

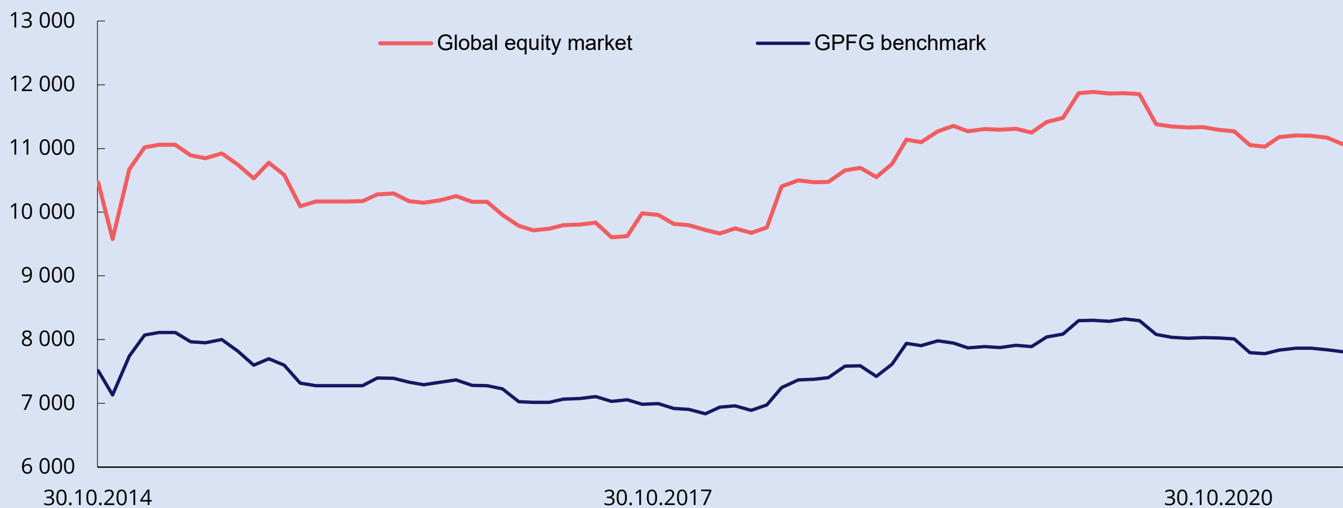

Figure 3.2 Greenhouse gas emission from the companies in the GPFG equity benchmark and MSCI's global equity index MSCI ACWI IMI. Millions tonnes of CO2 equivalents

Source: MSCI.

Emissions from the companies included in the GPFG equity benchmark are estimated to be about 30 percent lower than emissions from the global listed equity market; see figure 3.2. MSCI states that this difference can largely be explained by the exclusion of companies from the benchmark index, including companies excluded under the coal criterion in the ethically motivated guidelines and exploration and production petroleum companies that are excluded to reduce overall oil price risk in the Norwegian economy. The effect of these modifications to the benchmark index is most pronounced in emerging markets, which account for just over two thirds of this difference. This applies, in particular, to the sectors of power and energy supply, materials and energy. Differences in developed markets in Europe, North America and Asia are smaller and more concentrated on power and energy supply companies.

MSCI has, moreover, estimated overall emissions from the companies included in the benchmark index, scaled to reflect the Fund's ownership stakes in those companies. Such emissions are estimated to be about 76 million tonnes of CO_2 equivalents in 2020.

Table 3.2 shows changes in greenhouse gas emissions from the companies included in the benchmark index over the last five years, by sector and by region. The overall increase of 481 million tonnes of CO_2 equivalents over the entire 5-year period corresponds to a total of 6.5 percent. There have, however, been major differences in developments between regions and sectors. In developed markets, emissions have been gradually reduced by a total of 864 million tonnes. Emissions have been declining in almost all sectors, but especially in power and energy supply. This is matched by an increase in the portion of this sector accounted for by renewable energy. Emerging markets have developed in the opposite direction, with emissions having increased by 1,346 million tonnes. The increase in the carbon-intensive sectors of energy and materials, as well as power and energy supply, has been significant. However, this steep emissions increase needs to be considered in the context that the number of emerging market companies included in the index has increased considerably, in large part due to the 2018 inclusion of Chinese A equities in the index.

Box 3.2 continued.

	Europe	North America	Asia Pacific	Emerging markets	Sectors in total
Energy	0	-45	-7	255	203
Materials	-105	-57	-34	699	502
Industrials	-52	2	-32	151	69
Consumer Discretionary	-2	12	-1	21	30
Consumer Staples	-6	6	6	17	23
Health Care	0	1	0	5	6
Financials	-6	-46	-16	-3	-71
Information technology	0	4	1	5	10
Communication Services	0	2	0	1	2
Utilities	-196	-235	-73	194	-310
Real estate	1	4	9	2	17
Regions in total	-365	-353	-146	1,346	481

Table 3.2 Changes in emissions from the companies included in the GPFG benchmark over the period from June 2016 to June 2021, measured in million tonnes of CO_2 equivalents

Source: MSCI.

At company level, emissions from the companies included in the benchmark index are highly concentrated. MSCI estimates that 18 of the more than 9,000 companies included in the benchmark index account for one fourth of emissions.[3] MSCI has also examined factors that may influence the level of emissions from individual companies. MSCI finds that almost two thirds of the difference in emissions between individual companies can be explained by the size, regional affiliation and industrial classification of companies.

[1] *Report for the Norwegian Ministry of Finance – Modelling climate risk and climate benchmarks*. The GPFG benchmark is based on FTSE Global All Cap Index. The estimates in the report from MSCI are based on the index MSCI ACWI IMI, which is very similar to the FTSE index, although there are some differences. The report is available on the Ministry's website.
[2] In addition, the listed companies also had indirect emissions; see the MSCI report *Modelling climate risk and climate benchmarks*.
[3] MSCI estimates the Gini coefficient, a frequently used concentration measure, to be 0.92 for emissions from the companies included in the benchmark index.

Box 3.3 Modelling climate risk in the GPFG

MSCI has been commissioned by the Ministry of Finance to prepare a report on climate risk in the GPFG benchmark.[1] Assessing financial climate risk is challenging for several reasons. Climate risk is not comprised of one single risk factor, but is a composite of several different risk elements. Nor are there, unlike when estimating other types of financial risk, good historical data that can shed light on relationships between climate change and its return and risk implications. The insufficiency of historical data also impedes the estimation of climate-related loss probabilities.[2] It is therefore common practice to use scenario analysis, often linked to climate policy goals, to stress test portfolios against various climate pathways. The scenarios are based on composite models, which include, inter alia, modelling of scientifically established relationships between atmospheric carbon concentrations and physical climate change, such as sea level rise, draught, precipitation, etc. The economic growth implications of temperature increase are also estimated, along with the effects of climate policy measures. The projections are based on socioeconomic scenarios several decades into the future, thereby making findings critically dependent on variables such as economic growth, technological developments, consumer preferences, urbanisation and the degree of international collaboration. The model computations are therefore highly uncertain.

Nor do projections of climate-related costs and implications provide any precise estimate of expected loss on a portfolio. In well-functioning markets, it can be assumed that available information on climate-related implications is reflected in share prices. The valuations of the most carbon-intensive sectors have, according to MSCI, declined significantly relative to the equity market as a whole in recent years. MSCI emphasises, at the same time, that investors are only able to price in whatever information is available at any given time. Climate risk is primarily concerned with future circumstances, and the considerable uncertainty means that major changes may be registered when investors' expectations are updated with new knowledge. Analysis of different scenarios may in this context be an important tool for uncovering the uncertainties and the range of potential outcomes that investors are faced with.

Key analysis based on the MSCI climate model

The purpose of the MSCI climate model (CVaR) is to estimate the climate risk faced by listed companies. The model is based on scenarios in line with international recommendations from the NGFS,[3] with carbon price and energy consumption estimates being obtained from climate models developed by recognised research groups (IAM models).[4]

The MSCI model is based on the climate exposure associated with individual companies' existing assets. This is a good starting point for assessing what challenges individual companies are facing with regard to decarbonisation of their business and the resilience of their business models. However, the model lacks general equilibrium properties and consideration of how companies may potentially adapt over time is limited.[5] An advantage of a such a fairly simple model, is that it is relatively transparent at company level, but this reduces the quality of estimates for aggregated variables covering the equity market as a whole.

Estimates of companies' future emission costs are based on carbon prices, but may be used as a measure of so-called transition risk. The MSCI model estimates the direct and indirect carbon exposure of companies. The indirect exposure arises because higher carbon prices are shifted to customers and ripple through the value chain. Companies' carbon costs are calculated by combining direct and indirect carbon exposure with future carbon price estimates for various climate scenarios. Carbon prices represent the overall costs associated with various climate policy measures in the model.

Box 3.3 continued.

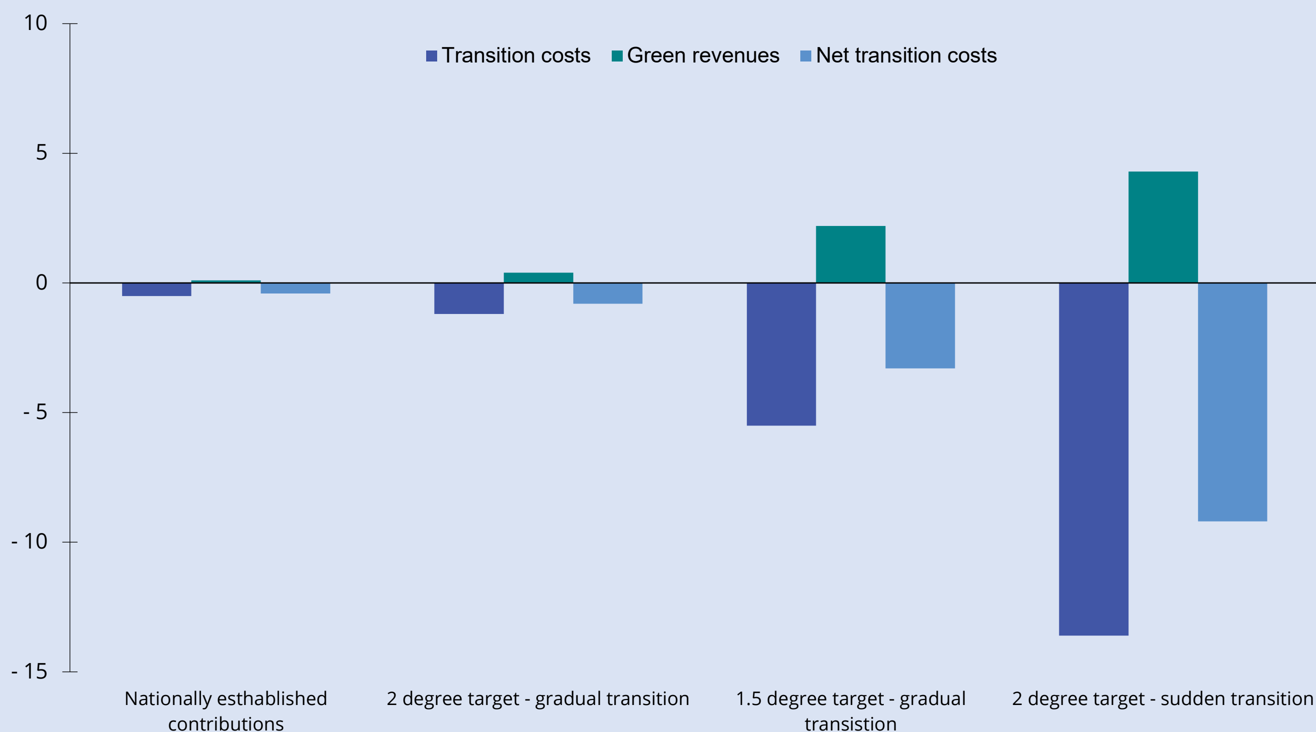

Figure 3.3 Aggregated transition costs measured as a percentage of market value for the companies included in the GPFG benchmark

Source: MSCI.

Concurrently, overall carbon costs represent a market potential for green solutions, for example technological carbon capture solutions. The MSCI model assumes that this market potential is exploited by companies that currently have green revenues, green technology or green patents. The total of these revenues and carbon costs constitutes the net transition cost in the market. This is discounted at a rate reflecting risk-adjusted capital costs, apportioned between equity and debt, and is measured relative to the market value of companies. The climate risk estimates of the model provide an indication of what net costs a company is expected to incur, relative to its market value, in a given climate scenario.

Figure 3.3 presents estimates of overall transition risk in the GPFG equity benchmark in different climate scenarios; see MSCI's report for further details. The risk associated with a gradual transition is moderate and significantly lower than that associated with a sudden and disorderly transition. A sudden transition will require considerably higher carbon prices, since companies will need stronger incentives in order to rapidly implement changes. It is estimated that the price of a tonne of CO_2 in such a scenario will exceed USD 800, and MSCI states that CO_2 taxes on a barrel of oil may increase to USD 166 in 2040. In comparison, carbon prices in Europe increased towards USD 100 at year-end 2021. Prices in Europe were considerably higher than in other markets around the world.

Box 3.3 continued.

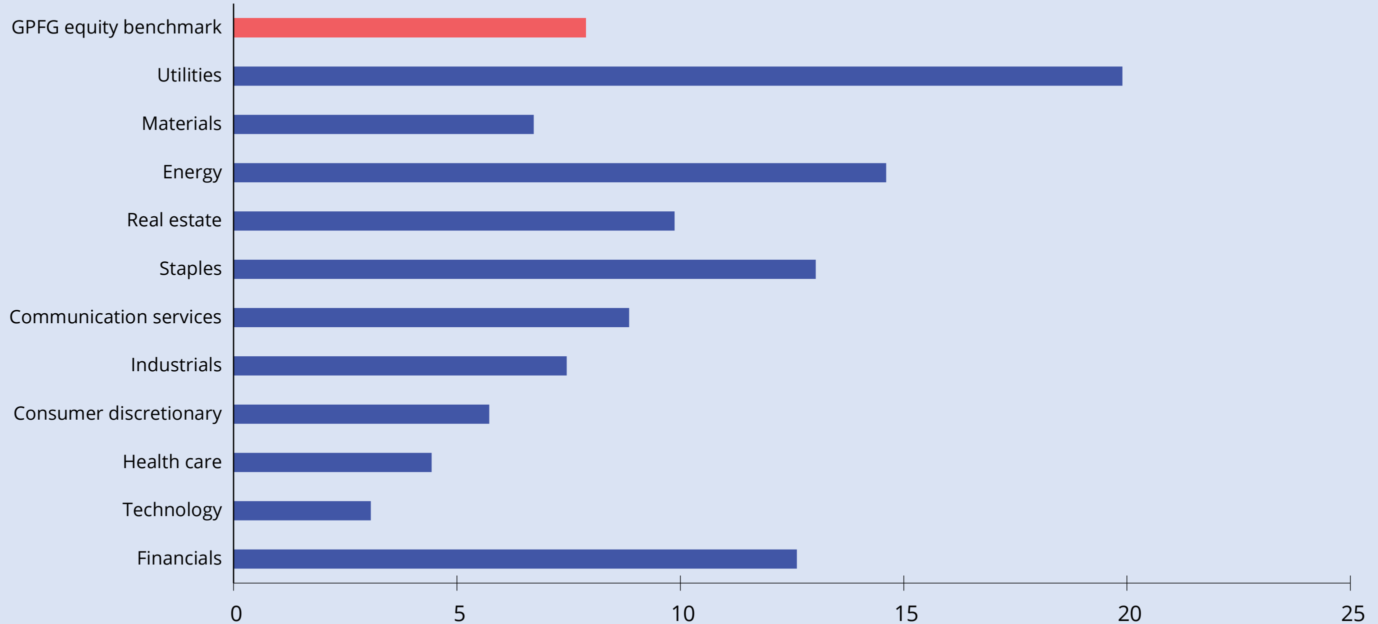

Figure 3.4 Physical cost estimates. Percentage of market value. GPFG equity benchmark and MSCI industrial sectors

Source: MSCI.

Net transition risk is unequally distributed across equity markets. The geographical location and industrial affiliation of companies are of major importance. Sectors such as power and energy supply, as well as energy and materials, have high CO_2 emissions and will be charged high carbon costs, but other sectors also have a number of companies that are indirectly exposed to higher carbon costs. Companies in Europe and in emerging markets are facing higher transition risk than companies in other regions. The high transition risk in Europe relative to other developed economies needs to be considered in the context that its sectoral composition is more carbon-intensive, while it is assumed that carbon prices will increase steeply in Europe.

MSCI emphasises that it is not only the level of transition risk that varies between the different scenarios, but also how large a portion of the economy and companies is affected. Most of the transition risk affects a minor portion of companies in the event of an orderly and gradual transition, while a sudden transition would affect many more companies.

If emissions are not adequately curtailed, temperatures will continue to increase and climate change will be expected to increase in scale, scope and frequency. Empirical studies show that climate change may reduce global economic growth and present capital markets with physical risk. MSCI is using information from insurance companies to model the physical costs associated with climate change, and the model's physical risk estimates assess these costs relative to the market value of companies. The cost estimates are linked to aspects of companies' assets and their exposure to climate change, such as physical location and the temperature sensitivity of production processes.

Box 3.3 continued.

This information provides a basis for assessing how climate change will affect the risk of physical damages to assets, disruption of production processes, lower labour productivity, etc. The estimates also take into account that climate change is globally interlinked. The effects are estimated until 2035, after which a general projection is made by assuming annual cost increases of 3 percent. The estimates put the net present value of the physical costs at 8-10 percent of the market value of the benchmark index. The physical risk has a broader impact than the transition risk, at both the company level and the sectoral level; see figure 3.4. Emerging markets and Asia are more severely affected, because countries in these regions are more exposed to flooding and extreme heat.

MSCI notes that the model estimates are subject to considerable uncertainty, and discusses some key components of the model. Carbon price estimates are of major importance to the level of transition risk. MSCI refers to academic studies that have found major variations across more than 200 different carbon price estimates. MSCI also discusses the physical risk estimates. It is noted that NGFS estimates that global GDP will be reduced by about 15 percent in 2100 as the result of further temperature increase. This estimate may seem low when compared to MSCI's own estimates, since it represents the accumulated effect over several decades and occurs in the distant future. MSCI notes that its climate model captures multiple effects. It is also noted that historical GDP reductions have entailed much larger equity market declines in percentage terms.

[1] *Report for the Norwegian Ministry of Finance – Modelling climate risk and climate benchmarks 2022*. The report is available on the Ministry's website. The GPFG benchmark is based on FTSE Global All Cap. The estimates in the MSCI report are based on MSCI ACWI IMI, which is very similar to the FTSE index, although there are some differences.

[2] Financial theory distinguishes between risk and uncertainty. While risk implies that the investor knows the probability distribution associated with the investments, uncertainty implies that the range of potential outcomes cannot be described.

[3] Network for Greening the Financial System (NGFS).

[4] Globally integrated assessment and evaluation models.

[5] General equilibrium models asses how changes in one sector or market price affect the rest of the economy. This ensures that findings at company level are consistent with developments in the rest of the economy.