Innovative Mechanism of Sustainable Investment in Environment and Climate

China Council for International Cooperation on Environment and Development (CCICED)

Sustainable Investing by State-owned Investors: International Practices and Policy Recommendations

Special Policy Study Report

CCICED

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Executive Summary

1. Background and Significance

The pursuit of the carbon neutrality and carbon peaking goals proposed by Chinese President Xi Jinping, and harmonious coexistence between humans and nature is a key part of China's green transformation and high-quality development. It also functions as a crucial channel for China's financial sector to better serve the real economy. Conducting studies on channeling private investments into the relevant industries in an orderly manner, therefore, plays a significant role in helping provide capital support for commercial entities that conform to China's green and low-carbon development strategy, and demonstrates great potential for sustainable development.

Since the release of the *Guidelines for Establishing the Green Financial System* by seven ministerial departments in 2016, China's green financial system has kept advancing. In terms of loans, by the end of 2022, the balance of green loans granted in RMB and foreign currencies exceeded Rmb22.03trn, a year-on-year increase of 38.5%, ranking first globally.[1] Regarding bonds, in 2022, China's issuance of green bonds, both domestically and internationally, reached nearly Rmb1trn, over Rmb870bn of which was issued domestically. Moreover, the types of bonds and the scale of issuance have continued to grow.[2] In contrast, other financial institutions, including pension funds and sovereign wealth funds, have not fully engaged in green finance. As upstream capital players, state-owned investors are characterized by their long-term and large-scale investments, which align well with the principles advocated by sustainable investing, including prioritizing long-term value, balancing the interests of all parties, and reducing negative externalities.[3] State-owned investors can play a greater role in channeling more funds into green industries. As their funds are mostly derived from public assets, regulators can guide state-owned investors to invest more in green and low-carbon sectors by formulating investment rules and incentive mechanisms.

A growing number of institutional investors have noticed that climate and environmental risks can have a material impact on a company's market value and reputation. For example, companies have seen a decline in both revenue and profits after the exposure of issues related to waste management, pollutant leaks, weather-related supply chain disruptions, and other ESG events. Additionally, the reputation of a company, which is a major part of its market value, is also damaged by these ESG issues. Furthermore, investors have become more concerned about a company's ability to mitigate risks posed by long-term environmental trends such as climate change and water scarcity. Investors with substantial fossil fuel assets, for instance, are increasingly exposed to risks of asset devaluation and stranding.

Globally, guided by the UN’s Principles for Responsible Investment (PRI) and Sustainable Development Goals (SDGs), state-owned investors have accumulated rich sustainable investment practices. At the company level, many financial institutions have incorporated low-carbon transformation into their strategic goals, managed the carbon footprint of their portfolios, and joined international organizations such as PRI, Climate Action 100+, and the Net-Zero Asset Owner Alliance (NZAOA). Concerning delegated investments, more and more institutions are incorporating ESG policy expectations in contractual documents, which outline the specific steps involved in setting up expectations, collecting data, evaluating performance, and reviewing decisions. Corporate behavior is then influenced through meetings, written advice, and voting, among other things. In internal investments, institutions mostly adopt ESG-related strategies such as ESG integration and negative screening. Some state-owned investors also directly invest in thematic assets such as renewables. In comparison, China’s state-owned investors are still in their infancy in terms of sustainable investing. Although regulatory authorities have issued guiding documents, sustainable investing has not yet been systematically included in the decision-making process. In addition, specific actions regarding the carbon emission of portfolios and sustainable investment practices are not adequately disclosed.

In this context, it’s imperative to draw lessons from the existing sustainable investment practices of state-owned investors through extensive research and analyze the key supportive policies behind such practices. Such effort is critical for guiding Chinese asset owners to play a more proactive role in sustainable investing. It will also leverage the influence of state-owned investors to help the entire investment system better reflect the climate and environmental factors, thereby facilitating the realization of carbon neutrality and carbon peaking goals.

2. Research Focus

The Special Policy Study on Innovation Mechanisms for Sustainable Investments in Climate and Environment is one of the special policy studies under CCICED’s Low-Carbon and Inclusive Transition project. Launched in September 2022, the SPS focuses on green finance research and aims to channel more funds into green and sustainable sectors. According to the 2015 CCICED report titled *Green Finance Reform and Green Transformation*, the green financial system includes five aspects: banking and credit, capital markets, insurance, PPP and green funds, and carbon markets. Given the achievements and extensive research in the banking and credit sector, the SPS team prioritized the sustainable investment practices of state-owned investors (pension funds and sovereign wealth funds) from 2022 to 2023. By summarizing the sustainable investment practices of world-leading pension funds and sovereign wealth funds, the SPS aims to provide recommendations for China to further enrich its green financial system, orienting more institutional investors to sustainable sectors, and promoting international exchange and cooperation.

As defined by the PRI (Principles for Responsible Investment), asset owners are organizations that hold long-term retirement savings, insurance, and other assets. Examples include pension funds, sovereign wealth funds, foundations, endowments, insurance and reinsurance companies, and other financial institutions that manage deposits. **In this report, the term "state-owned investors" specifically refers to public pension funds and sovereign wealth funds** in light of their strong public attributes. Government funds (e.g., the National Green Development Fund) and local low-carbon funds in China also have sovereign attributes and play a leading role in climate investments. However, they have not been included in this study considering that they focus more on direct project investments and are characterized by more prominent policy attributes. Compared to public pension funds and sovereign wealth funds, these funds operate on a smaller scale, with significant differences in sustainable investment practices and limited influence on secondary market asset managers.

To expand the green financial system to support and encourage more state-owned investors to invest in climate and environment, and to guide the greening of the entire financial system from the upstream funding sources, the SPS team focused on three research objectives: 1) to study the characteristics of state-owned investors and their role in promoting sustainable investments in the environmental and climate sectors, describe the overall trend of sustainable investing by state-owned investors worldwide and summarize their motivations; 2) to summarize the specific sustainable investment practices of international pension funds and sovereign wealth funds; and 3) to study the policy support required for state-owned investors to invest in climate and environmental sectors and incorporate ESG factors into investment decisions. This report focuses on sustainable investments in climate and environment, and will not discuss social and governance issues. The term ESG is occasionally used, as many actions taken by asset owners in sustainable investments are disclosed in the environmental pillar (E) of ESG reports. In this report, ESG investments specifically refer to considerations for environmental and climate issues during the investment decision-making process.

3. Key Findings: Seven Actions and Four Pillars of Policies

Based on roundtable discussions, interviews, case studies, and desk research, the report analyzes and summarizes the seven actions and four pillars of policies adopted by state-owned investors worldwide in sustainable investing. The seven actions represent sustainable investment practices of state-owned investors, while the four pillars of policies create a favorable policy environment for those actions.

Globally, leading state-owned investors have primarily implemented **seven actions**. In particular, the first three focus on overall actions at the level of financial institutions, while the remaining four target investment activities. Specifically, the seven actions are: **1) Incorporating low-carbon transition into strategic goals**: Algemeen Burgerlijk Pensioenfonds (ABP) included climate change and energy transition as one of the three major trends in its future development strategy. **2) Managing the carbon footprint of portfolios**: Japanese Government Pension Investment Fund (GPIF) accounts for Scope 3 emissions and compares them against benchmarks. **3) Participating actively in international processes and initiatives**: The California Public Employee Retirement System (CalPERS) actively participates in the relevant international guidelines or initiatives regarding responsible investment, net-zero targets, and information disclosure. **4) Accounting for ESG factors when screening and evaluating asset management firms**: The National Pension Service (NPS) of South Korea has established an additional rating system that takes responsible investment into account when selecting external managers. **5) Exercising stewardship (active ownership)**: In 2021, the Norwegian Government Pension Fund Global (GPFG) held nearly 800 discussions with investee companies on climate change. **6) Using ESG integration and negative screening strategies**: GPIF achieved 100% ESG integration across all asset categories. **7) Making sustainability themed investments**: The Government of Singapore Investment Corp (GIC) established a sustainable investment fund for cross-asset thematic investments.

There are **four pillars of policies** that can effectively support state-owned investors in sustainable investing: **1) low-carbon transition policies, 2) green financial system development, 3) investment rules, and 4) stewardship codes.** Specifically, the first two pillars of policies are universally applicable, covering financial institutions that are not state-owned investors. Low-carbon transition policies, such as the *Inflation Reduction Act* of the U.S. and the *Green Deal Industrial Plan* of the EU, facilitate the development of green industries, nurture quality sustainable investment projects, and attract more direct and indirect investments. The creation of a green financial system enables the discovery and transformation of green values, reduces the search cost for investors, and creates more financial support for green development. The International Sustainability Standards Board (ISSB) is currently promoting unified standards for sustainability and climate-related disclosures. Investment rules and stewardship codes directly target state-owned investors. On the one hand, owing to their prominent public attributes, regulators can formulate investment rules to incentivize or constrain certain investment behaviors. For instance, regulations in some U.S. states require ESG considerations in decision-making, and Norway mandates responsible management for pension funds, which led to the development of observation and exclusion guidelines. On the other hand, state-owned investors possess strong ownership advantages, as they are in the top stream of the capital chain. Many countries have introduced stewardship codes to clarify ownership-based obligations.

4. Policy Recommendations

To facilitate the realization of carbon neutrality and carbon peaking goals, China's green financial system needs to expand from its current model of green loans and green bonds issued by commercial banks to include systemic support from a broader range of financial institutions. Regulators need to establish clearer incentives and constraints and increase China's participation and leadership in international green financial governance by encouraging more active international cooperation.

Recommendations for policymakers and regulatory authorities are as follows:

First, efforts could be made to improve the policy framework for sustainable investing, establish effective incentive and constraint mechanisms, develop sound frameworks and mechanisms for green finance, and consistently optimize the low-carbon transition policy system. To start with, in terms of incentives and constraints, regulators could encourage state-owned investors to allocate a certain percentage of their funds to sustainable investment and financing, allowing pilot demonstration funds to incorporate ecological and environmental values into performance evaluation systems. This would increase flexibility in investment return requirements, and encourage innovative utilization of risk-sharing tools. At the same time, regulators could require state-owned investors to develop clear sustainable investment principles to gradually reduce the environmental and climate impacts of their operations and their portfolios. The developed investment principles need to establish clear strategic objectives and organizational safeguards, and set out clear requirements for working arrangements such as carbon emissions verification and disclosure. Additionally, regulators can also introduce stewardship codes to encourage investors, including state-owned investors, to exercise active ownership and encourage asset management institutions to engage in sustainable investing. Furthermore, policymakers could establish robust frameworks and mechanisms for green finance, further unify taxonomies, and promptly update the taxonomies to include the latest green technologies. Policymakers could introduce mandatory climate and environmental disclosure requirements at a proper time and unify the requirements with international standards, and promote innovation in green finance products to enrich investment targets. Lastly, policymakers could continue to optimize the low-carbon transition policy system. Fiscal and monetary policy support is required for green and low-carbon technological innovations, and efforts could also be made to progressively improve trading mechanisms for electricity, carbon emissions rights, and green power certificates, among other things.

Second, state-owned investors can play a greater role in the development of

international rules and standards concerning taxonomies, information disclosure, transition finance, and climate risk management. Therefore, they could be encouraged to actively participate in multilateral cooperation mechanisms and initiatives in areas of international consensus. On the one hand, policymakers can guide state-owned investors to selectively participate in the formulation of international guidelines or global initiatives and actively engage in core processes and key organizations, such as the PRI and ISSB. Such organizations play a crucial role in setting standards and regulating information disclosure, with extensive participation from state-owned investors worldwide. Furthermore, policymakers could continue to promote international cooperation in the fields of green finance and transition finance at the multilateral and bilateral levels, and expand the adoption and unification of classification models. Information disclosure could be enhanced, and the policy system for green finance could be improved to pave the way for state-owned investors to make sustainable investments. In addition, state-owned investors could be guided to play a greater role in actively leading more practical international sustainable investment and financing activities, for example, by exploring the establishment of a green partnership alliance with global state-owned investors or a global investment fund in the green sector.

Recommendations for state-owned investors: **Climate and environmental factors could be incorporated into corporate governance and investment decision-making, and consistent improvements of the sustainable investment framework are required. Regarding corporate governance**, state-owned investors could recognize low-carbon transition as a strategic goal, adjust the organizational structure, and establish decision-making processes that better account for climate and environmental factors. The carbon footprint of portfolios could be managed by employing scientifically sound measurement methods. Additionally, such methods need to be compared against international benchmarks with active disclosures. State-owned investors could give emphasis to international cooperation and engagement, stay informed about cutting-edge topics, and influence rulemaking through involvement in standard-setting institutions and international organizations focusing on the research of key agenda. **During the investment process**, climate and environmental factors could be considered as appropriate when screening and evaluating institutional investors and fund managers. Meanwhile, efforts could be made to exercise stewardship based on active ownership to mitigate risks, seize opportunities, and urge asset management institutions and fund managers to fully incorporate climate and environmental factors into investment considerations through voting, meetings, or written notifications. State-owned investors could also implement ESG integration and negative screening investment strategies, while stepping up investment and financing for the innovation and promotion of green technologies.

Keywords: State-owned Investors, Sustainable Investing, Investment Policies, Active Ownership

Acronyms & abbreviations

ABP	Algemeen Burgerlijk Pensioenfonds
AMAS	Asset Management Association Switzerland
APRA	Australian Prudential Regulatory Authority
ASIP	Association of Swiss Pension Funds
AuM	Assets under Management
CalPERS	California Public Employee Retirement System
CALSTRS	California State Teachers' Retirement System
CBI	Climate Bonds Initiative
CCICED	China Council for International Cooperation on Environment and Development
CIC	China Investment Corporation
CPPIB	Canada Pension Plan Investment Board
EFAMA	European Funds and Asset Management Association
ERISA	Employee Retirement Income Security Act
ESG	Environmental, Social, and Governance
FRC	Financial Reporting Council
FSC	Australian Financial Services Commission
GFANZ	Glasgow Finance Alliance for Net Zero
GIC	Government of Singapore Investment Corp
GPFG	Global Government Pension Fund
GPIF	Japanese Government Pension Investment Fund
GSIA	Global Sustainable Investment Alliance
IFRS SDDS	International Financial Reporting Sustainability Disclosure Standard
IIGCC	Institutional Investment Group on Climate Change
IPSF	International Platform for Sustainable Finance
IRA	Inflation Reduction Act
ISSB	International Sustainability Standards Board
MHCLG	Ministry of Housing, Communities and Local Government
NBIM	Norges Bank Investment Management
NCSSF	National Council of Social Security Funds
NGFS	Green Finance Network of Central Banks and Regulators
NPS	National Pension Service
NSSF	National Social Security Fund
NZAOA	Net-Zero Asset Owner Alliance
PCAF	Partnership for Carbon Accounting Financials
PFZW	Pensioenfonds Zorg en Welzijn (Dutch pension fund for the care and welfare sector)
PPF	Public Pension Fund
PRI	Principles for Responsible Investment
SASB	Sustainability Accounting Standards Board

SBFN	Sustainable Banking and Finance Network
SLBs	Sustainability-Linked Bonds
SSF	Swiss Sustainable Finance
SVVK-ASIR	Swiss Association for Responsible Investment
SWF	Sovereign Wealth Fund
TCFD	Task Force on Climate-related Financial Disclosures
TNFD	Task Force on Nature-related Financial Disclosures

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1. Introduction

Globally, an increasing number of governments have announced net-zero carbon emission targets. As of the end of 2022, 21 countries have enacted net-zero carbon emission legislation, 81 countries have issued policy documents on net-zero carbon emission objectives, 22 countries have made net-zero carbon emission declarations and commitments, and 53 countries have proposed and discussed carbon emission targets. [4]China has committed itself to peaking carbon emissions before 2030 and achieving carbon neutrality by 2060. The country has made huge strides in pursuing green finance, particularly in expanding the scale of green loans and bonds. Despite that, the Russia-Ukraine conflict in 2022 disrupted the energy supply, and the resulting high energy prices have had a major impact on energy security, inflation, and economic growth in Europe and beyond. Balancing energy security and carbon neutrality goals has become particularly important in the energy policy domain under the global energy shock. Renewables outperform the expensive fossil fuels with their cost advantages, and a larger share of renewables in the energy mix is also essential for long-term energy security. Although coal consumption in Italy, Finland, and Hungary increased year-over-year by the end of 2022, overall coal consumption in Europe did not rebound, and the global trend toward the low-carbon transition remains unchanged. With increasing global emphasis on climate change, green finance has seen rapid growth in recent years, enabling the real economy to shift to a more sustainable path of development. Article 2.1(c) of the *Paris Agreement* explicitly calls for making "finance flows consistent with a pathway towards low greenhouse gas (GHG) emissions and climate-resilient development". As a result, plenty of private funds and private investment strategies have shifted their focus to achieving the sustainable development goals outlined in the *Paris Agreement*.

Achieving the goal of carbon neutrality needs huge amount of funding. According to the *Global Landscape of Climate Finance 2021* released by the Climate Policy Initiative (CPI), an estimated US$4.35trn per year is needed by 2030 to meet the internationally agreed climate goals and transition to a sustainable, net-zero, and resilient future. However, in 2021, climate finance only reached the scale of US$0.85trn[5], leaving a substantial gap. The latest estimate by the International Energy Agency (IEA) also suggests that to achieve net-zero emissions by 2050, global investments in clean energy technologies need to double by 2030 from the recent average of US$1.2trn per year to US$4.2trn. [6]According to CICC's *Guidebook to Carbon Neutrality in China*, achieving carbon neutrality in China requires approximately Rmb139trn in total green investments. So far, most of the progress in green finance in the country has been reflected in indirect financing through large commercial banks. In contrast, other financial institutions, including pension funds, sovereign wealth funds, public funds, and private equity funds, are not adequately involved. A survey by the International Renewable Energy Agency (IRENA) indicates that over the past two decades, only about 20% of institutional investors have invested in renewables through funds, and less than 1% of institutional investors have directly invested in renewable projects.[7]

As upstream capital players, state-owned investors are characterized by their long-term and large-scale investments, and can play a greater role in channeling more funds into green industries. First, state-owned investors have long-term investment horizons, which give them an edge in incorporating climate and environmental factors into investment decisions over a longer time frame. They could also enjoy the long-term benefits generated by ESG considerations, while avoiding and addressing physical and transitional risks associated with climate change. Second, state-owned investors hold large assets across diverse categories, including equities, fixed-income securities, and alternative investments. These advantages support low-carbon transformation and innovation along industry chains across all stages. Additionally, thanks to economies of scale, state-owned investors are generally backed by strong overall capabilities and competent staff members, allowing them to build sustainable investing teams, develop business procedures, and carry out data collection and analysis all at a lower marginal cost. Third, state-owned investors are positioned upstream in the capital chain, enabling them to exercise ownership-based influence on asset managers and investee companies. They can drive changes throughout the capital chain from top to bottom via methods such as voting, meetings, and performance assessments. Investments by those institutions will further mobilize companies, projects, and capital markets to exert material impacts on areas such as climate change, sustainable infrastructure, and clean energy. As the majority of their funds comes from public assets, regulators can also guide more funds to cleaner asset categories through rule-making and restrictions (Figure 1).

Globally, state-owned investors have made progress in sustainable development. An increasing number of institutions are incorporating ESG policy expectations into contractual documents, which outline the specific steps involved in setting up expectations, collecting data, evaluating performance, and reviewing decisions. In comparison, China's state-owned investors remain in an early stage of sustainable investing. According to the *Annual Report on the Development of China's Ageing Finance (2021)*, the NCSSF started piloting ESG investment strategies in mature overseas markets. By the end of 2022, the NCSSF opened its ESG portfolio to public funds for bidding. As China's largest sovereign wealth fund, China Investment Corporation (CIC) released the *Sustainable Investment Policy* and the *Guidelines on Attaining Carbon Peak and Carbon Neutrality Goals and Practicing Sustainable Investing* in 2021 and 2022, respectively. In April 2022, the China Securities Regulatory Commission (CSRC) issued the *Opinions on Accelerating the Promotion of High-quality Development of the Public Fund Management Industry.* The Opinions emphasized the need for "professional institutional investors such as public funds to actively participate in the governance of listed companies and help promote the high-quality development of listed companies through both 'foot voting' and 'hand voting'."[8] In this context, studying the advanced practices of foreign state-owned investors will help Chinese institutions incorporate climate and environmental factors into corporate strategies as well as decision-making processes, and optimize information disclosure. By influencing asset managers and investee companies through responsible management, they will achieve low-carbon transformation.

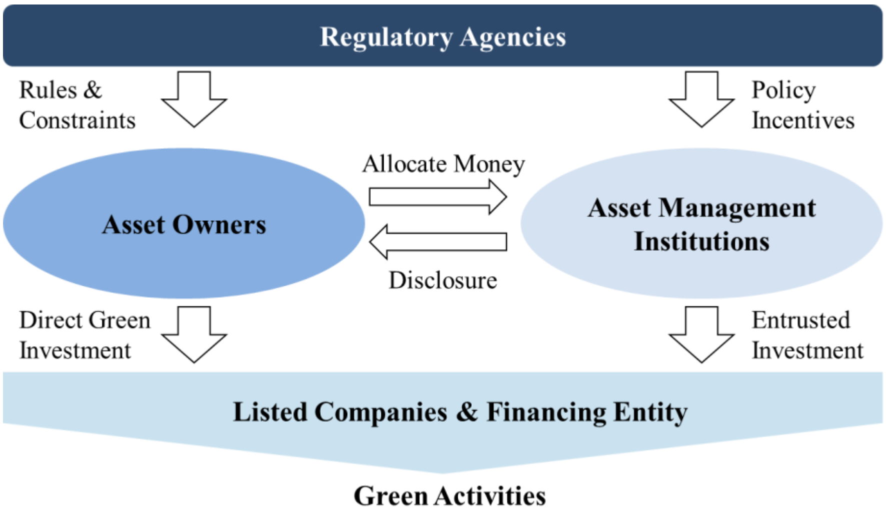

Figure 1 Transmission Mechanism of the Oversight on ESG Investing by Asset Owners

Source: CICC Research

2. Trends and Motivations of Sustainable Investing by State-owned Investors

According to statistics from Global SWF, the total assets under management (AuM) of global state-owned investors surpassed USD$30trn in 2020 (Figure 2), equivalent to one third of the global GDP. If just 1% of the USD$30trn is invested in sectors related to climate change, this would be approximately 3.7 times the current climate investment commitments of multilateral development banks, which would lay the foundation for state-owned investors to make green investments. In terms of national statistics, the United States leads the world by a significant margin with USD$10.9trn in total assets, followed by China and the United Arab Emirates as the second and third largest asset owners, with approximately USD$3.5trn and USD$1.9trn in total assets, respectively. With respect to the scale of individual sovereign wealth funds and public pension funds (Figure 3), the top three state-owned investors in the world are China Investment Corporation (CIC, USD$1.4trn), Japanese Government Pension Investment Fund (GPIF, USD$1.3trn), and Norges Bank Investment Management (NBIM, USD$1.1trn; NBIM manages the Norwegian Government Pension Fund Global). [9]In 2022, affected by geopolitical and macroeconomic factors such as the Russia-Ukraine conflict, energy supply shocks, and central bank interest hikes in the face of high inflation, the scale of funds managed by state-owned investors dropped for the first time in history. Yet the overall scale of sovereign assets has remained large, with a stable trend for growth.

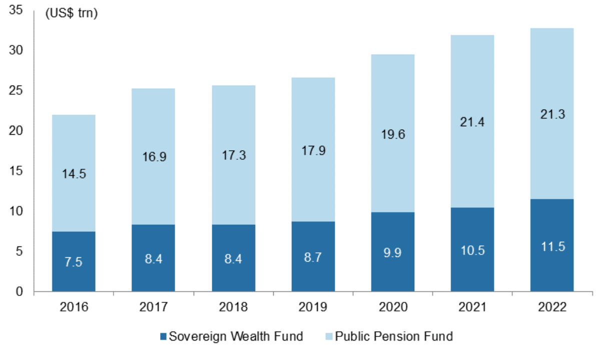

Figure 2 AuM of State-owned Investors

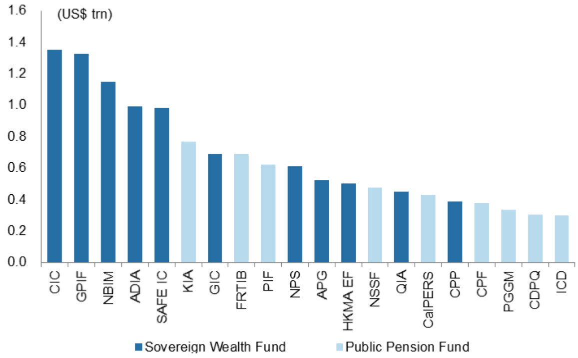

Figure 3 Top 20 State-owned Investors of the World in 2022

Source: Global SWF. 2023 Annual Report; Note: Global SWF regards GIC as a PPF and NSSF as an SWF; here adjustments are made based on China's realities.

2.1 Trends in Sustainable Investing

As the paradigm of ESG investments evolved, more investors have come to recognize the long-term value of sustainable investing, and institutional investors, including international pension funds and sovereign wealth funds, have become major players in sustainable investing. However, there is still room for further improvement in overall coverage. According to a survey by Schroders that covered 770 global institutional investors, including state-owned investors, a growing number of investors are seeking to measure, manage, and deliver impact. The survey indicates that institutional investors are particularly focused on four key areas: energy transition investments, pathways to net-zero emissions, ownership-based influence, and investment performance, as well as challenges related to greenwashing.[10] The survey also shows that 59% of investors believe that making tangible progress in the real world is the most important component of a proactive ownership strategy. The six most crucial areas are (i) governance & oversight, (ii) human rights, (iii) climate, (iv) human capital management, (v) inclusivity & diversity (such as gender equality), and (vi) natural capital & biodiversity. According to the Global Sustainable Investment Alliance (GSIA), the AuM of funds engaged in ESG-related investments amounts to US$35.3trn, accounting for approximately 36% of the global AuM, indicating significant room for growth.[11]

In project investments, renewables offer comparatively strong, stable, and long-term "bond-like" returns that align with the long-term capital of state-owned investors and present lower stranded risks, providing institutional investors with opportunities for diversification. State-owned investors have reduced their investments in fossil fuels by more than half compared to 2018, while investments in renewable projects have seen rapid growth. Particularly from 2020 to 2021, investments in renewables surpassed fossil fuel investments by a significant margin, accounting for over 10% of total direct investments. In 2022, although investments in renewable projects edged down, the figure remained approximately three times that of fossil fuel investments (Figure 4).[12]

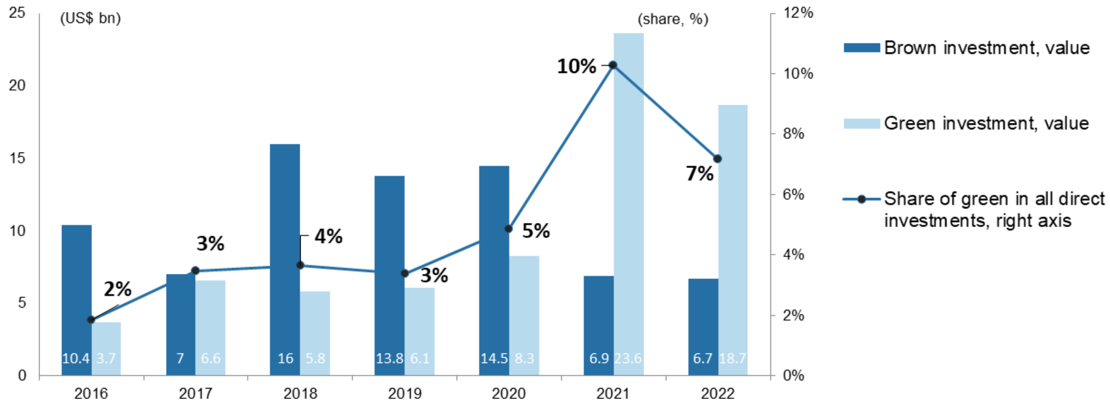

Figure 4 Trends of Investments in Renewable Projects and Fossil Fuels by State-owned Investors

Source: Global SWF. 2023 Annual Report.

2.2 Motivations for Sustainable Investing

During the early stages of sustainable investing, the traditional view was that fiduciary duty conflicted with ESG considerations. Some pension funds focused on maximizing financial returns in the short term and overlooked factors pertaining to sustainability, the environment, and social impact. In 2014, the UN PRI and the UNEP launched the Fiduciary Duty in the 21st Century program, aiming to "end the debate about whether fiduciary duty is a legitimate barrier to investors integrating environmental, social and governance (ESG) issues into their investment processes."[13] In the same year, the Law Commission of the UK published the Fiduciary Duties of Investment Intermediaries Report, which broadened the traditional scope of fiduciary duty and explicitly stated that pension trustees have a responsibility to act in the best long-term interests of beneficiaries. The report emphasized the consideration of social, environmental, and ethical factors in investment decision-making and called for action from the Pensions Regulator (TPR), the Financial Conduct Authority (FCA), and the UK government.[14] This report was seen as opening a new era of fiduciary duty.[15]

State-owned investors engage in sustainable investing for various reasons and are motivated and constrained by a range of policies (policy factors will be further discussed in Part IV). According to a survey by the World Wildlife Fund (WWF) on Swiss pension funds, the most vital considerations for making sustainable investments are: (i) the incorporation of ESG factors into fiduciary duty, (ii) external pressures from beneficiaries/NGOs/regulators, (iii) contribution to systemic shifts toward more sustainable economic development, (iv) driving internal corporate change, (v) national or international goals (such as SDGs), (vi) reputation and (vii) better returns, among other things.[16]

Through investigations, we believe that sovereign asset managers are driven by several motivations for engaging in sustainable investing:

First, amidst the long-term global trend of carbon neutrality, sovereign asset managers seek long-term financial returns by capitalizing on profitable growth opportunities in green sectors, with renewables at the core. The academic literature has yet to reach a consensus on whether sustainable investing, including ESG-related strategies, could deliver superior financial returns. A systematic study by Whelan et al.

spanning over 1,200 academic papers published between 2015 and 2020 found that 58% of the papers discovered a positive correlation between ESG progress and financial performance, 8% identified a negative correlation, and the remaining 34% found no significant impact or reached inconclusive results.[17] In practice, many sovereign asset investors emphasize the contribution of sustainable investment principles to portfolio returns over longer time horizons and increasingly recognize the long-term financial benefits of sustainable investing. For example, the Canada Pension Plan Investment Board (CPPIB) believes organizations that effectively anticipate, manage, and integrate sustainability-related factors that are material to their business are more likely to endure and create sustainable value over the long term.[18] GPIF is committed to minimizing negative climate and environmental impacts on financial markets, encouraging sustainable economic growth, and enhancing the long-term returns of all its managed assets. It contends that even if the stock prices of some companies in its portfolio rise thanks to business activities with negative ESG benefits that led to short-term revenue growth, those activities would have hurt society and the entire economy, ultimately compromising the portfolios of asset owners worldwide. Hence, avoiding such negative externalities and investing from a long-term perspective to secure pension reserves for future beneficiaries are at the core of their approach to ESG investing.[19]

Second, sovereign asset managers engage in sustainable investing to better mitigate and manage climate and environmental risks, which is the flip side of the first motivation. Sovereign asset investments typically face two types of climate risks: physical risks and transition risks. Physical climate risks arise from increases in the long-term temperature, more frequent extreme weather events, rising sea levels, and other losses arising from climate change. Transition risks, on the other hand, emerge from the shift towards a low-carbon economy. That can result from policy changes to achieve climate goals, as well as changes in technology and consumer behavior,[20] such as production shutdowns due to environmental litigation or stranded assets under low-carbon transition. Investors considering sustainable investing take into account factors beyond the economics. As such, they can proactively understand and mitigate the risks associated with environmental impact, as well as climate change-induced physical risks and transition risks, among others, thereby enhancing their risk-adjusted returns. For instance, through its analysis of portfolio transition risks, NBIM demonstrated that delaying the adoption of sustainable investment policies would result in greater financial losses for the fund compared to maintaining a trajectory aligned with the 2 ℃ climate target.[21] Hoepner[22], Sautner[23], et al. found that engagement with ESG issues significantly reduces downside risks for target companies, benefits shareholders, and yields the most pronounced risk reduction in terms of the environment and climate change.

Third, sustainable investing is seen as part of responsible investing at the corporate level, which is especially important for state-owned investors with public attributes. In other words, it is a form of responsible investing driven by considerations of social image and reputation, which not only encompasses climate and environmental investments but also often includes other critical social issues such as gender equality, education, healthcare, and more. Unlike ordinary enterprises, sovereign wealth funds often represent the image of the country, while public pensions are responsible for the pension of each retiree, and these public attributes constrain investment behavior. Sustainable investment by state-owned investors also reflects, in a sense, the transformation of national development concepts and citizens' pursuit of harmonious development between human-beings and nature. As pointed out by NBIM, sustainability and financial returns are closely intertwined, and companies neglecting global issues like sustainability may lose customers, face lawsuits, and suffer reputational damage, which can have economic consequences.[24] The CPPIB believes that companies that neglect responsible investing may experience above-average operational turbulence, higher legal risks, lack of community support, and a decline in brand value due to reputational damage. As such, it has established a reputation management framework that assesses all asset categories in its portfolio. Considerations related to sustainability play a crucial role in this assessment to prevent potential reputational damage to the fund.[25]

3. Sustainable Investment Practices of State-owned Investors

State-owned investors around the world have accumulated many practices in sustainable development. Based on the annual reports and ESG reports released by public pension funds and sovereign wealth funds as well as interviews, surveys, and roundtable discussions, we have summarized seven practices of state-owned investors at the corporate and investment levels. At the corporate level, leading state-owned investors include low-carbon transition in their strategic goals, manage the carbon footprint of their portfolio, and engage with international organizations. At the investment level, they account for ESG factors when screening and evaluating asset management firms, take on a stewardship role, employ investment strategies such as ESG integration and negative screening, and engage in sustainability themed investing.

3.1 The Corporate Level

3.1.1 Incorporating Low-carbon Transition in Strategic Goals

An increasing number of state-owned investors are recognizing the severity of climate change and elevating low-carbon transition to a strategic priority, driving capital markets towards a more sustainable path of development. Some state-owned investment institutions have revised their investment policies to prioritize climate change and environmental factors, and set medium-to-long-term net-zero investment targets in line with the *Paris Agreement*. However, setting net-zero emissions targets alone is insufficient. Asset owners need to use existing baselines, data, and other tools to project future emissions and report them comprehensively, including portfolio targets, sectoral targets, financing targets, and ownership targets. They can utilize tools developed by organizations like the NZAOA, which provides a set of goal-setting procedures and standards for reporting and achieving short-term climate targets.

ABP incorporated climate change and energy transition into its three major trends for future development, alongside nature conservation and social digitization, which highlights its commitment to climate change and energy issues.[26] The organization set mid-term targets for 2025 and 2030, and established a vision for 2050 to ultimately achieve a net-zero emissions portfolio in line with the *Paris Agreement* and *Klimaatakkoord*, the National Climate Agreement of the Netherlands. Specifically, by 2025, ABP aims to reduce the carbon footprint of its equity investments by 40% compared to 2015 and invest EUR15bn in clean and affordable energy. PFZW released its roadmap to climate-neutral investing by 2050 (Figure 5).[27] It aims to ensure net-zero investments by setting medium- to long-term sustainable investment proportions, negative screening strategies, shareholder engagement, and carbon intensity and emissions targets for specific asset categories, contributing to the goal of limiting global warming to below 1.5 ℃.

Figure 5 PFZW's Roadmap to Climate-neutral Investing by 2050

Source: PFZW. PFZW's Roadmap to Climate-neutral Investing by 2050, translated by Study Group (in Dutch: PFZW op weg naar klimaatneutraal beleggen in 2050)

Some state-owned investors have adjusted their internal organizational structures to support sustainable investment decision-making based on the requirements of ESG investing, such as establishing a sustainability committee or ESG committee. From an organizational perspective, having board members familiar with sustainable investing is crucial for integrating climate and environmental factors into the decision-making process.

The GIC describes sustainability as a key task for its management. Recognizing the growing significance of sustainability to financial performance, GIC established the Sustainability Committee in 2016 to review and implement sustainable development policies and the Sustainability Office to deepen sustainability research. The committee decides on matters related to GIC's stance on sustainable development, integrates sustainable development into investment and corporate procedures, and coordinates partnerships with global sustainable development organizations and initiatives. Its role also includes monitoring and addressing sustainable development issues including climate change, and conducting regular reviews of portfolio indicators such as weighted average carbon intensity. Additionally, GIC has a research team dedicated to climate change that studies short-term climate risks and long-term climate scenarios, proposing global warming scenarios that range from 1.5 ℃ to 4 ℃ by 2100.

The CPPIB established a multi-tiered organizational structure with clearly defined duties for sustainable investment (Figure 6).[28] To be more specific, the Board of Directors approves decisions such as proxy voting and sustainable investment policies based on recommendations from the Chief Sustainability Officer (CSO), the Investment Strategy and Risk Committee (ISRC), and the Sustainable Investing Committee (SIC). The CSO formulates and implements sustainable development strategies at the corporate level. The Head of Sustainable Investing (HSI) integrates the risks and opportunities pertaining to sustainability into investment projects. The ISRC approves the CPPIB's annual sustainable investment report and provides guidance on projects related to sustainable development. The Portfolio Execution Committee (PEC) oversees and reviews the execution of portfolios. The SIC, composed of senior representatives from across the organization, is the central forum for the monitoring and guidance of issues related to sustainability, including climate change. It shapes CPPIB's perspectives and positions concerning sustainable development in collaboration with the Sustainable Investing Group (SIG). The relevant investment and management departments work closely with the SIG to include sustainability considerations in investment decisions and asset management. They communicate with investee companies to keep them informed of proxy voting decisions, shareholder engagement, and other matters.

Figure 6 Departments for Sustainable Investing at CPP Investments

Source: CPP. 2022 Report on Sustainable Investing

3.1.2. Managing the Carbon Footprint of Portfolios

State-owned investors can enhance their understanding of the investment risks and opportunities related to climate change, and respond to stakeholder concerns by accounting for carbon emissions and comparing them with global benchmarks. This, in turn, improves their business reputation and helps them make more sustainable investment decisions.[29] In recent years, nearly one-third of pension funds have been tracking and disclosing carbon emissions in their portfolios, using common indicators such as carbon footprint, carbon emissions, and carbon intensity.[30]

In terms of accounting methods, the Partnership for Carbon Accounting Financials (PCAF) developed specific carbon accounting standards for the financial industry, building upon the Greenhouse Gas Protocol (GHG Protocol). The standard, titled the *Global GHG Accounting and Reporting Standard for the Financial Industry*, sets allocation factors and calculation methods for different asset classes, allowing financial institutions to calculate their investment-related carbon emissions. They can then report these emissions based on international disclosure frameworks such as the Task Force on Climate-related Financial Disclosures (TCFD). As of June 2023, a total of 401 institutions around the world have joined PCAF, with an AuM of US$92.1trn, covering asset management companies, commercial banks, investment banks, insurance companies, and other institutions.[31]

Regarding the scope of accounting and reporting, due to data availability and calculation methods, most state-owned investors only include direct emissions (Scope I) related to their own activities and indirect emissions (Scope II) associated with electricity use, primarily limited to equity assets.[32] However, Scope III emissions, which account for a major proportion of GHG emissions across asset classes, especially in industry, non-essential consumer goods, and energy, measure emissions throughout the entire supply chain rather than just within the state-owned investor itself. Addressing Scope III emissions is crucial for implementing effective emission reduction measures. [33] In this regard, the PCAF is also exploring ways to improve the availability and quality of statistics concerning Scope III emissions. Some pension funds at the forefront of ESG practices, such as GPIF, have expanded the scope of their GHG calculations since 2020 and now include indirect emissions from the sale of products and services (Scope III), and indirect upstream emissions from the procurement of products and services (Scope III upstream).

When it comes to the comparability of carbon emissions data, GPIF compares the carbon emissions of various asset classes with corresponding benchmarks (Figure 7). For domestic stocks, GPIF compares its portfolio's carbon emissions with the benchmark carbon emissions of the TOPIX index[34]. For foreign stocks, it compares them with the MSCI ACWI ex Japan index[35]. As for bonds, GPIF compares the emission figures with foreign bonds, thereby clarifying the level of its carbon emissions relative to similar assets both domestically and internationally. The GIC also emphasizes that it would compare disclosed information with statistics reported by companies in the same industry or region, as well as with its own data, to ensure valid quantitative analyses, consistent definitions, and verifiable results.

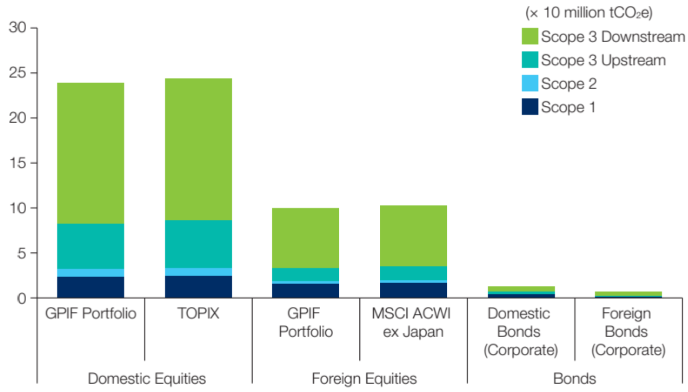

Figure 7 Carbon Emissions Disclosure by GPIF

Source: Government Pension Investment Fund. 2021 ESG REPORT

Table 1 Sector-specific Carbon Intensity Targets of CalPERS

Cluster	Sector	2025 target	2030 target	Sectoral carbon performance measure
Energy	Electricity utilities	0.288	0.138	Carbon intensity of electricity generation (metric tonnes of CO_2 per MWh)
	Oil and gas	51.52	40.95	Carbon intensity of primary energy supply (gCO_2e/Mj)
Transport	Automobiles	68	40	New vehicle carbon emissions per kilometre (grams of CO_2 per kilometre)
	Airlines	1071	616	Carbon emission per revenue tonne kilometre (gCO_2/RTK)
	Shipping	5.63	4.31	Carbon emissions per tonne kilometre (gCO_2t/t-km)
Industrials & materials	Cement	0.43	0.373	Carbon intensity of cementitious product (tonnes of CO_2 per tonne of cementitious product
	Diversified mining	49.79	41.54	Carbon emissions per tonne of copper equivalent (tonne CO_2e/tonne of steel)
	Steel	1.046	0.815	Carbon emissions per tonne of copper equivalent (tonne CO_2e/tonne of steel)
	Aluminium	4.004	3.069	Carbon intensity of aluminium production (tCO_2e/t aluminium)
	Pulp and paper	0.427	0.353	Carbon intensity of pulp, paper, and paperboard production (tonnes of CO_2 per tonnes of product)

Source: NZAOA. Advancing Delivery on Decarbonization Targets. 2022

From the perspective of measurement and targets, CalPERS established comprehensive sector targeted carbon intensity targets based on the Transition Pathway Initiative (TPI) developed by the International Energy Agency (IEA).[36] By setting carbon intensity targets for each industry for 2025 and 2030, as well as carbon performance indicators for high-emitting sectors (Table 1), CalPERS evaluates the decarbonization progress of its portfolio and assesses the carbon performance of companies and investors to determine their alignment with the 1.5 ℃ pathway. Investors, including the Climate Action 100+, are extensively utilizing these measures to provide information for state-owned investors in investment decision-making and facilitate joint action with shareholders of high-emitting companies.

3.1.3. Participating Actively in International Processes and Initiatives

Given the limited capacity and scope of state-owned investors, they can participate in sustainable development alliances or institutions/organizations targeting asset owners or broader financial institutions to access information and resources that facilitate shareholder engagement. That will also help reduce time and costs, and expand their influence over investee companies.[37] At the moment, multiple types of global green finance organizations focus on goals including responsible and sustainable investing, information disclosure, and net-zero commitments. State-owned investors play a particularly key role in realizing those goals.

With regard to responsible and sustainable investing, the UN introduced the Principles for Responsible Investment (PRI) in 2006. As of the end of 2022, 5,296 institutions have signed and joined the PRI, including 722 asset owners (Figure 8). The PRI proposed “incorporating ESG issues into investment analysis and decision-making processes” as one of the six investment principles, , encouraging investors to improve returns and better manage risks through responsible investing.[38] The PRI also recognizes the important role investors play in advancing DEI (diversity, equality, and inclusive) efforts for all groups in society, including women, people of color, indigenous communities, and others. After the *Paris Agreement* was signed, in light of the unique advantages of sovereign wealth funds in promoting long-term value creation and sustainable market outcomes, the One Planet Sovereign Wealth Fund Working Group was established during the One Planet Summit in 2017. It aims to integrate climate-related financial risks and opportunities into the management of large, long-term asset pools.[39]

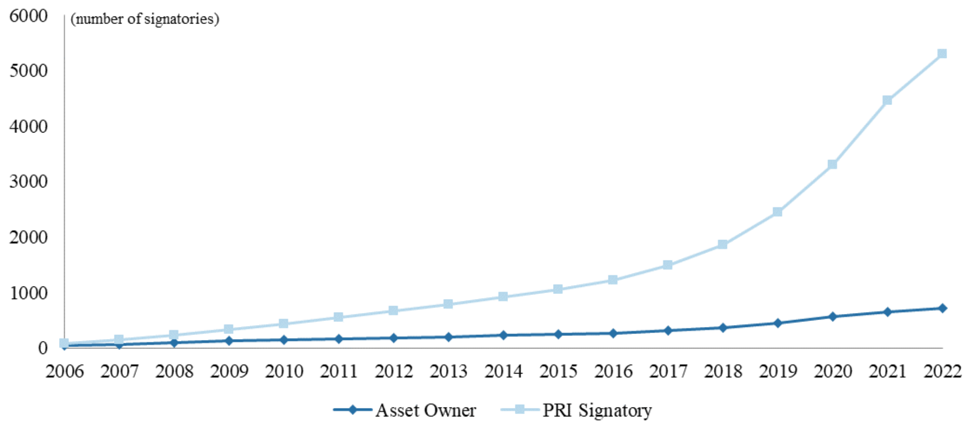

Figure 8 Number of PRI Signatories and Asset Owners Rapidly Growing

Source: PRI. https://www.unpri.org/signatories/signatory-resources/signatory-directory

Concerning regulation and disclosure, the Financial Stability Board of the Bank for International Settlements (BIS) established the TCFD in 2015 to encourage consistent climate-related financial disclosures by companies and enhance comparability. To achieve this goal, the TCFD developed 11 disclosure recommendations covering governance, strategy, risk management, and metrics and targets, aiming to improve transparency in disclosing climate-related risks and opportunities to investors, lenders, and insurance underwriters. At the moment, over 3,800 organizations, including over 1,500 financial institutions, have become supporters of TCFD recommendations, with US$217trn in assets.[40] Similarly, the Sustainability Accounting Standards Board (SASB) identified subsets of ESG issues most relevant to financial performance and enterprise value in 77 industries. This enables companies to provide industry-based sustainability disclosures about risks and opportunities that affect enterprise value. The ISSB and SASB are also aligning their standards to avoid duplication.

International organizations focusing on information disclosure typically target a broader range of asset owners and institutional investors, including state-owned investors. Many large sovereign funds and pension funds actively support and sign up for these organizations' disclosure standards for reporting. At the same time, state-owned investors exert their investor influence by pressuring investee companies to enhance their ESG disclosure. Between 2020 and 2022 alone, TCFD supporters more than doubled[41], organizations disclosing through CDP grew by 79%[42]. Investor pressure is one of the key factors driving the growth of sustainability disclosure requirements within regulatory frameworks.

Within the context of net-zero commitments, the NZAOA, established at the UN 2019 Climate Action Summit, is the financial sector's first organization to achieve the 1.5°C target. NZAOA members commit to achieving net-zero emissions of their portfolios by 2050 and establish intermediate targets every five years in line with the Paris Agreement. As of September 2022, 74 major institutional investors (including pension funds and sovereign wealth funds), with AuM totaling US$10.6trn, have joined the NZAOA.[43] The members of NZAOA recognize that the impacts of climate change are not isolated and require a systemic approach to measure, and consider ESG risks and opportunities. As such, they are particularly concerned about the social ramifications of organizational transitions, which include differentiated impacts on different genders, and aim to promote a fair transition. Similarly, the Institutional Investors Group on Climate Change (IIGCC) supports and enables the investment community to build a net-zero and resilient future through capital allocation decisions, stewardship, and engagement with companies, policymakers, and fellow investors. *The Net Zero Investment Framework*, published in March 2021 by the IIGCC, provides a common set of recommended actions, metrics, and methodologies through which investors can maximize their contribution to achieving global net-zero emissions by 2050 or sooner. By the end of 2022, through the IIGCC, 57 global asset owners have committed to achieving net-zero emissions for their portfolios by 2050, representing US$3.3trn in assets.[44]

Table 2 Overview of Major State-owned Investors' Participation in Representative International Initiatives

	Abbreviation	**Country**	**UN PRI**	**TCFD**	**Climate Action 100+**	**SASB**	**CDP**	**UN NZAOA**
Government Pension Investment Fund	GPIF	Japan	√	√	√			
Norges Bank Investment Management	NBIM	Norway	√	√		√	√	
Abu Dhabi Investment Authority	ADIA	Abu Dhabi						
Kuwait Investment Authority	KIA	Kuwait						
Government of Singapore Investment Corporation	GIC	Singapore		√	√		√	
Federal Retirement Thrift Investment Board	FRTIB	U.S.						
Public Investment Fund	PIF	Saudi Arabia						
National Pension Service	NPS	South Korea	√			√		
Algemene Pensioen Groep	APG	Netherlands	√	√	√	√	√	
Qatar Investment Authority	QIA	Qatar						
California Public Employees' Retirement System	CalPERS	U.S.	√	√	√	√	√	√
Canada Pension Plan Investments	CPP	Canada	√	√		√	√	
Central Provident Fund	CPF	Singapore						
Pensioenfonds voor Gezondheidszorg Geestelijke en Maatschappelijke	PGGM	Netherlands	√	√	√	√	√	
La Caisse de Dépôt et Placement du Québec	CDPQ	Canada	√	√	√	√	√	√
Investment Corporation of Dubai	ICD	Dubai						

Source: The SPS team produced the table based on ESG reports from public pension funds and sovereign wealth funds and official websites of the listed representative international initiatives. Note: The SASB column includes institutions reporting according to SASB guidelines as well as members of the International Financial Reporting Standards (IFRS).

Table 2 summarizes the current status of the leading state-owned investors' participation in representative international organizations, with nine of the top 20 having signed and joined the PRI. It is evident that pension funds such as APG, CalPERS, and NBIM are actively involved in international initiatives related to responsible investing, net-zero targets, and disclosure. In comparison, state-owned investors from South Korea, Singapore, and the Middle East are not fully involved.

3.2 The Investment Level

One of the key differences between state-owned investors and conventional asset managers lies in the scale of their delegated investments. Investments by state-owned investors can be categorized into delegated and direct investments. Delegated investments are realized through investment funds managed by investment advisors or fund managers. State-owned investors typically externalize specific geographic regions or asset categories for strategic purposes to yield stable returns through external managers with sector expertise. Direct investments, on the other hand, are made by internal investment managers within state-owned investors either in secondary market equity funds or through direct investments in specific asset classes. According to a joint survey by the Bank of New York Mellon and the Official Monetary and Financial Institutions Forum (OMFIF), public pension funds tend to have around 40% of their assets managed internally and allocate 60% of their assets to third-party managers for investments.[45]

Therefore, in the process of sustainable investing by state-owned investors, the management of both delegated assets and direct investments is central, regardless of the proportion of internally and externally managed assets. For delegated investments, the key is to select external investment managers who prioritize ESG factors and leverage the asset owners' influence through stewardship to encourage and oversee ESG integration in their investments. For direct investments, emphasis could be placed on the strategies for incorporating ESG factors into investment considerations and whether/how to engage in sustainability-themed investing. These issues are essential for state-owned investors to implement sustainable investment practices.

3.2.1 Accounting for ESG Factors when Screening and Evaluating Investment Companies

When screening and evaluating investment companies, some state-owned investors incorporate ESG factors into their selection criteria and performance assessments. In terms of pre-investment screening, the National Pension Service (NPS) of South Korea has established an additional rating system since November 2020 that considers responsible investing factors when selecting external asset managers.[46] In addition, NBIM proposed three guiding principles for investment partners and asset managers: first, integrating ESG factors into policies, strategies, and plans; second, identifying and mitigating significant ESG risks; and third, monitoring and reporting important ESG information.[47] CalPERS requires asset managers to provide information regarding ESG policies, integration methods, risk management methods, ESG performance records, and engagement activities.

In terms of post-investment evaluation, GPIF regards ESG integration as a critical factor in evaluating external asset managers. With respect to equity investments, GPIF incorporates the ESG activities of external asset managers into its evaluation, establishes long-term relationships exceeding five years with external managers, and assesses their investment performance on a quarterly or annual basis. Such efforts could encourage external managers to adopt a longer-term perspective in ESG investing. In fixed-income investments, it recommends investment opportunities in ESG bonds to external asset managers. All external asset managers it selected are signatories to PRI, and the fund also requires detailed reports from asset managers on their ESG-related investment capabilities and initiatives.[48] Similarly, the CPPIB evaluates how external asset managers incorporate sustainability considerations into their policies, processes, due diligence, monitoring, and reporting, as well as their commitments to resource allocation for these activities.[49]

3.2.2. Exercising Stewardship (Active Ownership)

There is no unified definition for the term "stewardship". As defined by the latest report of the UK-China Green Finance Taskforce, stewardship, also known as active ownership, refers to investors utilizing their scale and influence to fulfill their fiduciary duties, and actively leveraging shareholder rights to engage in sustainable investment governance of investee companies. [50] Corporate engagement plays a vital role as a measure for state-owned investors to participate and effecting change in the real economy. Voting participation and involvement in corporate governance are two complementary approaches, particularly in cooperation with other shareholders, as they can effectively influence corporate behaviors.

First, participation mechanisms for stewardship involve holding constructive dialogue with portfolio companies through voting and other means to them to comply with the *Paris Agreement*. Leading institutions select the most relevant issues directly impacting the company's ESG performance and stakeholder interests for extensive discussions.[51] Of all ESG topics, climate and environmental issues have become the most prominent matters during discussions between institutional investors and companies.[52] Norway's Government Pension Fund Global, managed by NBIM, incorporates climate risks and opportunities faced by investee companies, including factors such as the value chain, into its investment analyses. If NBIM holds a majority stake in companies facing substantial transition risks, it will engage them on substantive issues related to the company's net-zero agenda.[53] In 2021, the GPFG conducted 797 meetings with investee companies on climate change.[54] The GIC regularly engages with portfolio companies to identify and assess sustainability risks and opportunities, monitor progress in mitigating sustainability risks, and evaluate and enhance corporate governance standards. By doing so, it contributes to corporate strategies according to GIC's sustainability perspective and global collaborative network.

Second, asset managers are encouraged to incorporate non-financial factors, including ESG considerations, into investment decision-making. In March 2021, the CPPIB updated its Proxy Voting Principles and Guidelines, stating that it would vote against and seek the reappointment of committees overseeing climate change at companies where the board of directors fails to adequately consider the physical and transitional impacts of climate change. In addition to climate change issues, the CPPIB explicitly mentioned that it would be voting against boards that do not sufficiently consider gender diversity and suffer governance deficiencies. The CPPIB has built a sustainable investing team that works with other departments before and after making an investment, enabling real-time monitoring and evaluation of potential ESG-related risks and opportunities during investment decision-making.[55] The resulting long-term relationships between committees and departments foster trust, which transforms voting from a mere process into a continuous governance mechanism that facilitates the exchange of views.

Furthermore, investee companies are encouraged to consider how ESG risks and opportunities will impact their long-term value creation capabilities. CalPERS hopes that the board of directors of investee companies could be backed by members with expertise in managing climate change and other environmental risks, providing comprehensive disclosure of climate change strategies based on established reporting standards in annual reports and accounts. Moreover, companies are required by CalPERS to identify, manage, and disclose major environmental risks and opportunities relevant to their short- and long-term operations, including climate change, ecosystem and biodiversity loss or degradation, and water availability. CalPERS employs various engagement mechanisms, such as temporary (centering on specific events), routine, and coordinated efforts with broader initiatives. It implements a four-phase strategy, which includes: 1) identifying priority companies and issues; 2) analyzing companies and issues; 3) requesting companies to gather relevant information, sharing CalPERS's principles, and seeking views and solutions from target companies; and 4) reviewing progress on solutions to facilitate stewardship. Additionally, CalPERS conveys its expectations for companies in specific industries by sending investor sign-on letters.

Finally, in the process of exercising active ownership, broader social issues beyond climate and environmental concerns are also considered. The pursuit of gender equality is often embedded in stewardship to ensure that women have a voice in sustainable investing field and that funds account for the impact on women throughout the investment process. For instance, in early 2023, NBIM promoted two women to senior management positions, as a result, reaching a balanced gender ratio of six men and six women In contrast, five years ago, the management team was all men [56] In 2022, the organization stated in a letter to the Financial Services Agency of Japan and the Japan Exchange Group (JPX), "Based on our experience engaging with companies across our portfolio and in Japan, we believe diverse boards tend to be more effective and conducive to the formulation of resilient long-term strategies."[57]

3.2.3. Using ESG Integration and Negative Screening Strategies

According to the classification standards of the Global Sustainable Investment Alliance (GSIA), sustainable investment strategies can be put into seven categories based on the degree of active or passive involvement: norms-based screening, positive screening, negative screening, sustainability-themed investing, ESG integration, impact investing, and shareholder action. In terms of the investment scale, ESG integration and negative screening are currently the most prominent responsible investment strategies globally (Figure 9).[58]

Figure 9 Assets of Sustainable Investing by Strategies and Regions in 2020 (unit: US$ trn)
Source: GSIA. Global Sustainable Investment Review 2020

Negative screening is an early and relatively straightforward sustainable investment strategy. It involves excluding companies, industries, or regions from portfolios based on established principles (often associated with ethics) or ESG scores. For example, since 2012, the GPFG has gradually divested itself from companies with high financial risks arising from carbon-intensive business models.[59] In 2019, the Norwegian Parliament passed a proposal to divest itself from the fossil fuel industry, leading to the exclusion of 95% of coal mining and 80% of coal-fired power generation companies from the GPFG. In 2021, the fund divested itself from four coal companies with high and difficult-to-quantify coal risk exposure.[60] Similarly, CalPERS divested itself from 14 thermal coal companies in 2017 following unsatisfactory outcomes of shareholder action.[61] In the Netherlands, PFZW has mandated that from 2024 onwards, it will only invest in fossil fuel companies that fully comply with the *Paris Agreement*, with short- and medium-term targets.[62]

It is noteworthy that negative screening may potentially lead to regional and sector biases. For example, global portfolios may be biased towards European companies with higher ESG scores while reducing asset allocations to companies in developing countries[63]. They may also favor industries such as information technology and healthcare while minimizing exposure to the energy sector. In practice, investors have adopted a more consistent stance toward negative screening, and many state-owned investors find it to be suboptimal. The GIC, for instance, believes that it is more constructive to engage and support companies in their transition towards sustainability, rather than adopt a blunt divestment approach. Divestment should be considered as a last option when a company openly ignores sustainability risks and this has a detrimental effect on the company itself or its stakeholders or when there is a lack of willingness or viable pathways for transformation. The CPPIB also does not support a blanket divestment from large emitters like oil and gas companies, as it would mean losing the ability to enable energy evolution and apply constructive influence. Instead, it intends to provide funding for portfolio companies to adopt credible transition plans, invest in solutions and scalable green technologies, and empower the transformation of carbon-intensive sectors towards net-zero emissions.[64] In recent years, the progress of transition finance has facilitated the low-carbon transformation of high-carbon industries. In 2022, the G20 Sustainable Finance Working Group released the *G20 Framework for Transition Finance*, and there have been some real-world cases of transition finance in the European Union, Japan, China, and elsewhere. Asset owners can also support the low-carbon transformation of high-carbon industries by investing in products of transition finance.

While negative screening is a common approach, its substantive impact on climate and environmental issues may be limited, making it more suitable as part of risk and return assessment. With the gradual improvement in the quality of ESG data, investors can now conduct more detailed and sophisticated screening, and filter out companies that do not meet their criteria or demonstrate below-average scores concerning specific ESG factors. The blunt divestment strategy of negative screening is being replaced by ESG integration.

ESG integration is a strategy through which state-owned investors systematically incorporate ESG factors into investment decision-making and portfolio building across a range of asset classes through quantitative models or qualitative analysis[65]. This strategy aims to enhance risk-adjusted returns or reduce portfolio volatility on the basis of traditional financial risks and performance analyses.[66] Compared to negative screening, ESG integration is more demanding in terms of analysis frameworks, data quality, process design, and professional competence. GPIF, for instance, has been tracking the ESG index since 2017, achieving 100% ESG integration across all asset classes.[67] The NPS developed an ESG assessment system to rate investment companies based on ESG criteria, and it requires the evaluation of ESG factors when adding new securities to the investment pool. If a security receives the second-lowest rating, written opinions and an ESG report would be required.[68] Similarly, CalPERS has made ESG issues a strategic priority for the entire portfolio since 2011, integrating ESG factors into cross-asset class investment decision-making. The fund utilizes a wide range of data sources and tools, including the PRI Private Credit-Private Equity ESG Factor Map and MSCI's Intangible Value Assessment, for evaluation purposes.[69]

3.2.4. Making Sustainability-Themed Investing

State-owned investors can also directly invest in assets related to sustainable development, with the aim of achieving positive social and environmental impacts, and obtaining corresponding returns. Currently, sustainability-themed investments represent a relatively small proportion of sustainable investment strategies, but they present the highest growth rate, growing by 605% during the period from 2016 to 2020 with a CAGR of 63%.[70] It is important to note that although sustainability-themed investments have the most direct contribution to the environment and climate, state-owned investors cannot simply invest based on the climate and environmental contributions of investment targets. From a fundamental perspective, state-owned investors still have to consider the risk-return profile of such assets. An example is that although long-term investments in renewable energy assets with effective risk-sharing mechanisms are often preferred, a cautious approach is needed for early-stage technology demonstration projects with higher risks.

Sustainability-themed investments by state-owned investors are largely distributed in renewables. In specific investment practices, the infrastructure portfolio of CalPERS allocated US$4.76bn to renewables, energy-efficient infrastructure, sustainability certifications, and carbon-neutral assets, accounting for 51% of the portfolio's net asset value.[71] At CalPERS, over 37% of real estate assets are invested in sustainably certified buildings. Additionally, about US$1.2bn of enterprise credit portfolio and US$18.9bn of public equity portfolio is invested in companies identified as low-carbon solution providers. Furthermore, the CPP invested US$260mn in Renewable Power Capital (RPC) in the 2022 fiscal year to support the development of its onshore renewables platform.[72]

Some state-owned investors established sustainable investment funds to promote thematic investing. For example, the GIC set up the Sustainable Investment Fund in 2020 to drive cross-asset class thematic investments, including investments in companies engaged in decarbonization technologies such as batteries, hydrogen, carbon capture and storage, and nuclear fusion. The fund also holds major stakes in themes such as energy transition, electric vehicles, renewable energy, and sustainable materials in the Asian sustainable equity portfolio.[73]

4. Fostering a Sound Policy Environment for Sustainable Investing by State-owned Investors

At the policy level, countries worldwide have issued laws and regulations related to sustainable investing and ESG to support sustainable investing from all angles. According to PRI statistics, since 2000, there have been more than 800 new and revised mandatory and voluntary policies related to sustainable investing, with 225 policies issued in 2021.[74] **Policies that can support sustainable investing by state-owned investors generally fall into at least four categories: 1) low-carbon transition policies, 2) green financial system development, 3) investment rules, and 4) stewardship codes.** Specifically, the first two types of policies are universally applicable, covering financial institutions that are not state-owned investors. Low-carbon transition policies facilitate the development of green industries and provide quality sustainable investment projects for sustainable investing. The creation of a green financial system enables the discovery and transformation of green values, reduces the search cost for investors, and creates more financial support for green development. Investment rules and stewardship codes directly target state-owned investors. On the one hand, owing to their prominent public attributes, regulators can formulate investment rules to incentivize or constrain certain investment behaviors. On the other hand, state-owned investors possess strong ownership advantages, as they are in the top stream of the capital chain. Many countries have introduced stewardship codes to clarify ownership-based obligations.

Research on national support for low-carbon transition policies and the development of green financial systems is abundant. Among previous CCICED studies, the *Green Finance Reform and Green Transformation* project conducted in 2015 systematically examined the institutional framework of green finance. What's more, the 2022-2023 project *Policy Measures and Implementation Pathways for the Carbon Emission Peak and Carbon Neutrality Goals* also explored the subject. Therefore, this report only provides a brief discussion of the first two types of policies mentioned above, with a focus on investment principles and stewardship codes that have received less research attention but directly impact state-owned investors.

4.1 Macro Policies Supporting Low-carbon Transitions

In a world where more and more countries have set net-zero targets, national policies supporting the low-carbon transition are becoming increasingly diverse. Fiscal policies such as subsidies for solar power and new energy vehicles, as well as structural monetary policies like carbon reduction support tools and special refinancing loans for the utilization of clean and efficient coals, have created a favorable environment for the development of low-carbon industries. With these policies, investors have also found more suitable investment targets. For example, the U.S. *Inflation Reduction Act* (IRA), the *European Green Deal*, and the EU *Green Deal Industrial Plan* all aim to further empower low-carbon industries.

The IRA aims to combat inflation by lowering energy costs. The act plans to invest US$369bn in climate change and energy security, including tax credits for U.S. clean energy manufacturing companies, subsidies for electric vehicle purchases, and grants for smart agriculture, among other initiatives. Widely regarded as the largest climate investment act in U.S. history, the bill could potentially help the country reduce GHG emissions by over 40% from the 2005 level by 2030, according to a preliminary assessment by the U.S. Department of Energy (DOE). With its broad coverage of clean energy manufacturing investments, the act could potentially drive the development of global industries such as solar power, electric vehicles, and energy storage, while also promoting the adoption of emerging technologies like carbon capture and hydrogen production. Of particular note is the optimized incentives for solar power generation in IRA, which extends the investment tax credit (ITC) deadline by 10 years to 2033 and raises the maximum tax credit rate from 26% to 30%. Additionally, the act also extends the production tax credit (PTC), previously applicable only to wind power projects, to solar power projects as well. Unlike the one-time ITC deduction, generators of renewables can now apply for PTC subsidies of 2.6 cents per kilowatt-hour annually over a 10-year period, which benefits large-scale solar power projects. These subsidy policies help reduce the cost of generating renewables at a faster pace, promote the development of renewables, and cut carbon emissions in the power generation sector. According to estimates by the U.S. Committee for a Responsible Federal Budget, a total of US$750bn in energy and climate incentives will be required between 2023 and 2042. However, imposing a 15% minimum corporate tax on companies with profits exceeding US$1bn alone will allow the government to raise US$850bn in tax revenue, fully offsetting the incentives for green industries.[75]

The EU's statement on the *Green Deal Industrial Plan* indicates that 37% of the EUR725bn allocated to the Next Generation EU recovery fund will be dedicated to the green transition.[76] The Plan proposes four pillars to create a more favorable environment for improving the manufacturing capacity of clean technologies and products, and enhancing Europe's global competitiveness in net-zero emission industries. The four pillars include: 1) a predictable and simplified regulatory environment, 2) speeding up access to finance, 3) enhancing skills, and 4) open trade for resilient supply chains, aiming to promote green industries and manufacturing in the EU through multiple channels.[77] While complementing the *European Green Deal* and the REPowerEU plan, the Plan also lays a solid foundation for subsequent legislation related to the green industry. The Next Generation EU program disclosed the funding channels for incentives offered to green industries within the EU, with most of the funds coming from EU bond issuances. The program aims to raise EUR800bn through various debt instruments and issuance tools by the end of 2026, with 30% of it realized through the issuance of green bonds, making it the world's largest sovereign green bond initiative so far. From January to June 2022, the Next Generation EU program issued EUR120bn in bonds, including EUR28bn in green bonds. During the same period, the EU raised EUR57.9bn through short-term borrowing.[78] The market-oriented approach alleviates the financial burden of investment incentives for green industries while increasing the EU's debt burden. However, the transparent and market-based financing model provides an open framework for studying the EU's return on investment, which helps policymakers adjust incentive policies accordingly.

These macro-level supportive policies for green projects help enhance the expected cash flows of projects, thereby attracting more direct and indirect investments. Meanwhile, the continuous expansion of the scale of industrial projects fosters economies of scale, further reducing the costs of the green transition and generating positive feedback.

4.2 Policies on Green Finance and Green Financial Ecosystem

At the moment, in regions such as the EU and China that started early in the development of green finance, a green financial system enabling low-carbon development has initially taken shape, covering five pillars: 1) standard systems including definitions and taxonomies, 2) financial institution oversight and disclosure requirements, 3) incentive and constraint mechanisms, 4) product and market systems, and 5) international cooperation.[79] The following paragraphs briefly elaborate on each of these pillars.

First, the accurate definition of green terms and the establishment of taxonomies and standard systems have played a role in standardizing green financial practices and clarifying the scope of support. For example, in June 2019, the Technical Expert Group (TEG) of the European Commission released three reports: *EU Taxonomy*, *EU Green Bond Standard*, and *Voluntary Low Carbon Benchmarks*. Together, these reports form the basis of the EU's *Sustainable Finance Action Plan* and serve as benchmarks for establishing a new regulatory framework for Europe's financial sector. They represent a major step for the EU in addressing climate change and achieving sustainable development goals.[80] Specifically, the final report and policy recommendations concerning the *EU Taxonomy* were submitted to the European Commission by the TEG in March 2020, which classified sustainable activities and outlined the "transition activities". Furthermore, the report also proposed and established technical screening criteria based on the principles of "do no significant harm" and "make a substantial contribution". This further expanded the scope of sustainable finance assessment, promoting the transition from "climate finance" and "green finance" to "sustainable finance".[81] Although the basic framework for sustainable investing in the EU is comparatively well-established, many areas, such as the precise definition of "do no significant harm", still need further clarification. The divergent interpretations of such details could lead to uncertainties for investors, and have been the focus of discussions surrounding the *EU Taxonomy* in recent years. It is also an area for further improvement.

Second, disclosure mechanisms have enhanced the transparency of green financial practices and ensured effective regulatory oversight. The ISSB, which is under the IFRS Foundation, is set to publish, release, and implement the final version of the IFRS Sustainability Disclosure Standards (ISDS), the first global standard system for sustainability and climate-related disclosures, in June 2023. The ISDS will include the *IFRS S1 Exposure Draft: General Requirements for Disclosure of Sustainability-related Financial Information* and *IFRS S2 Exposure Draft: Climate-related Disclosures*.[82] During the meetings held in February and March 2023, the 14 member countries of the ISSB reached a consensus on key modifications to the detailed requirements to achieve integrated disclosures beyond the disclosure requirements covered in S1 and S2 drafts.[83] They also determined that S1 and S2 will officially take effect on January 1, 2024.[84]

Third, incentive and constraint mechanisms help mobilize institutions to engage in green finance and ensure orderly green financial practices. According to disclosures by the Sustainable Banking and Finance Network (SBFN), as of September 2021, 282 policy documents, including laws, regulations, and industry norms, related to national sustainable finance frameworks, had been issued by 43 emerging market member countries, including China. These policies aim to improve the management of environmental and social risks in the financial sector and promote capital flows with a positive impact on climate, environment, and society.[85] For example, on January 1, 2021, the European Central Bank (ECB) formally included Sustainability-Linked Bonds (SLBs) in the collateral framework for Eurosystem credit operations, linking their interest structure to sustainability performance targets.[86] The Hungarian National Bank, on the other hand, offers preferential interest rates on loans for energy-efficient housing purchased, built, or renovated between January 1, 2020, and December 31, 2023. Although these incentives and constraints do not directly impact state-owned investors, they can drive the prosperity of the entire green finance market, improve the profitability of green projects, and lay the foundation for state-owned investors to invest in climate and environmental sectors in the long term.

Fourth, the product and market systems are the direct channels through which green finance supports the real economy, and a diverse range of financial products can broaden the scope of potential investment targets for state-owned investors. In recent years, the issuance of green bonds, social responsibility bonds, sustainability-linked bonds (loans), and transition bonds has grown rapidly. According to the Climate Bonds Initiative (CBI), as of September 30, 2022, the cumulative issuance of global Green, Social, Sustainability, Sustainability-Linked, and Transition Bonds (GSS+ bonds) reached $US3.5trn.[87] In particular, SLBs incentivize issuers to achieve predetermined sustainability performance targets (SPTs) through contractual terms. In 2022, Anglo American issued US$742mn of SLBs tied to KPIs on GHG emission reduction, freshwater extraction, and job creation. If the KPIs are not met, the final two coupon rates will increase by 40 basis points for each unmet target. Moreover, Anglo American introduced detailed decarbonization strategies and absolute emission reduction targets for direct emissions to slash GHG emissions in Scopes 1 and 2 and minimize water resource extraction in water-stressed areas. It is also committed to creating more off-site employment opportunities based on on-site work. In addition, Real Estate Investment Trusts (REITs) that focus on renewable energy infrastructure finance their activities based on the underlying assets of energy infrastructure. This can reduce the burden of capital-intensive investment for companies, attract a broader range of investors, and drive the advancement of the green finance market.

Fifth, international cooperation mechanisms enhance the international recognition of green finance standards and products, while improving market participation. Various multilateral platforms and cooperative mechanisms, such as the G20 Sustainable Finance Working Group, the United Nations Environment Programme Finance Initiative (UNEP FI), the Network of Central Banks and Supervisors for Greening the Financial System (NGFS), and the International Platform on Sustainable Finance (IPSF), have jointly promoted international exchanges in green finance and deepened global cooperation. In June 2022, the IPSF, co-launched by China and Europe, released an updated version of the *Common Ground Taxonomy*, which included 72 economic activities recognized by China and Europe as making significant contributions to mitigating climate change.[88] UNEP FI is a partnership between UNEP and the global financial sector to mobilize private sector finance for sustainable development. It has developed industry-based principles, such as the PRI, and launched goal-specific initiatives like the NZAOA and the Sustainable Blue Economy Finance Initiative.[89]

4.3 Investment Rules

Unlike the previous two categories of policy support, investment rules are specific requirements targeting specific investors and directly constrain the investment behavior of state-owned investors. For example, regulations in some states in the U.S. explicitly require the incorporation of ESG considerations into decision-making, while Norway mandates responsible management of pension funds and has developed observation and exclusion guidelines. **Regulatory investment rules are central to sustainable investing by state-owned investors.** These rules not only prompt state-owned investors to consider climate and environmental factors but also provide clear policy signals that stimulate investor confidence. Furthermore, a survey by the World Wildlife Fund (WWF) indicates that external pressures such as regulations play a key role in motivating pension funds to engage in responsible investing, while the absence of legislation and regulation hinders their involvement.[90]

Over the past decade, regulatory policies for sustainable investing by state-owned investors have seen rapid progress, and a relatively comprehensive policy framework has taken shape. This section elaborates on the existing sustainable investment rules targeting state-owned investors worldwide (see Appendix 1), with a focus on Europe, the U.S., and the Asia-Pacific region. Sustainable investment rules are generally issued by three levels of **issuing entities**: 1) national (local) governments or legislative bodies (national or state-level investment policies or legislation is often regarded as the highest level of regulatory requirements, which is the case in places like the EU and California), 2) national treasuries or financial regulatory authorities such as the Norwegian Ministry of Finance and the Financial Services Agency of Japan, and 3) industry associations: many countries have established responsible investment associations, asset management associations, and pension fund associations, which also issue recommendations or guidelines pertaining to sustainable investing by state-owned investors. Examples of industry associations include the Investment Management Association of Singapore (IMAS) and the Swiss Association for Responsible Investments (SVVK-ASIR).

4.3.1 National/Local Laws and Regulations

In recent years, regulators in many countries and regions have enacted mandatory provisions through legislation or regulatory amendments to enforce sustainable investing by state-owned investors. Developed countries such as the U.S. and European countries boast mature capital markets and are the birthplaces of responsible investing, which is why most of the existing laws and regulations on responsible investing are issued by European countries and state governments of the U.S. In particular, the adoption of laws and regulations on sustainable investing has become more frequent over the past decade, imposing stricter regulatory requirements on investors. Based on the practices of developed countries, legislative bodies generally do not provide extensive details on investment specifics but focus on clarifying the fiduciary duties of pension funds or other specific funds. They enforce the inclusion of ESG factors in investment decision-making and impose certain disclosure requirements, which is the case in places like the EU, the UK, and France.

In 2014, the European Union introduced the *Non-financial Reporting Directive* through legislation, which mandates companies with over 500 employees to disclose information on the environment and other aspects. In 2016, the EU specifically addressed investment requirements for pension funds through the IORP II Directive, which requires pension funds of a certain scale to consider ESG issues and disclose how they incorporate these risks into their investment policy statements. Moreover, these requirements will be converted into national laws within a specified timeframe.[91] The EU has also been exploring personal retirement savings schemes. In 2016, the European Insurance and Occupational Pensions Authority (EIOPA) proposed the Pan-European Personal Pension Product (PEPP), and the corresponding regulation has also come into force since March 22, 2022, which encourages PEPP providers to consider the UN's PRI in their investment decisions. It also enhances transparency by motivating PEPP providers to disclose the ESG performance of the funds and explain how they consider ESG factors.[92]

As one of the European markets with leading progress in sustainable investing, the UK has established a comprehensive ESG policy framework, which has incorporated various market entities such as listed companies, pension funds, and institutional investors. As early as 1999, the UK introduced amendments to the Local Government Pension Scheme (Management and Investment of Funds) Regulations, requiring each managing institution to prepare, maintain, and publish a written statement of the investment principles for pension funds, which must include social, environmental, or ethical considerations.[93] In 2005, the UK Department for Work and Pensions first included incorporated environmental, social, and ethical considerations in pension safeguard regulations, namely the *Occupational Pension Schemes (Investment and Disclosure) Regulations* and the *Statement of Investment Principles*. Since 2014, ESG policy regulations in the UK have been revised approximately every two years. Key institutions such as the Financial Reporting Council, Law Commission, and London Stock Exchange have played a crucial role in this process.[94] In particular, the 2018 amendment to the *Occupational Pension Schemes (Investment and Disclosure) Regulations*[95] extended the fiduciary duty to include ESG considerations and climate change-related disclosures.

France has consistently been at the forefront of sustainable practices in the EU and beyond, particularly in terms of policy initiatives and mandatory regulations for investors. Article 225 of *Grenelle II*, adopted in 2010, stipulates that listed companies, companies with an annual balance sheet total or turnover exceeding EUR100mn, and companies with an average of 500 permanent employees are obligated to disclose certain social and environmental information in their annual management reports. The law requires explanations for any undisclosed information, whereas previously only listed companies were subject to such disclosure requirements. Article 224 of the law also mandates that public funds must mention how they account for ESG objectives in their investment policies through their annual reports and documents.[96] In 2015, France enacted the famous *Law on Energy Transition for Green Growth* to lead global climate governance legislation.[97] The law officially brought asset managers and institutional investors under regulatory supervision. Article L533-22-1 of the law specifies that portfolio management companies must disclose their policies regarding the incorporation of ESG quality standards into their investment strategies to beneficiaries and the public, and explanations must be provided for any non-disclosure.[98]

In the United States, early ESG regulatory policies primarily focused on listed companies, but in recent years, states like California and Illinois have introduced more legislation targeting asset owners and sustainable investments. A notable example is the legislation in California. In 2015, the state passed *Senate Bill 185*, which prohibits its two major retirement funds, the CalPERS and the CalSTRS, from making new or additional investments in thermal coal companies. The legislation requires the funds to divest from all fossil fuel assets and gradually transition to clean energy by July 1, 2017.[99] Passed in 2019, *Senate Bill 964* mandates the two funds to disclose financial information related to climate risks in their publicly traded portfolios, alignment with climate objectives, and other relevant information.[100]

In addition to European countries and the U.S., in 2020, the Ministry of Health, Labor, and Welfare of Japan revised the Basic Policy on Reserves (BPR), requiring the Japanese government pension funds under its supervision to incorporate ESG factors into investment decision-making.[101] South Korea's *National Pension Act*, amended in 2015, also requires the NPS to consider ESG issues in its investment decision-making process or provide reasons for not considering them.[102] In South Africa, following the revision of Section 28 of the *Pension Funds Act* in 2011, pension funds were required to establish investment procedures related to fund conditions and regulations, taking into account factors concerning long-term returns that include ESG considerations.[103]

4.3.2 Regulations and Guidelines Issued by Treasuries or Financial Regulators

The Norwegian Ministry of Finance plays a crucial role in governing the sustainable investment practices of the GPFG. In the *Management mandate for the Government Pension Fund Global*, the ministry states that a good long-term return depends on sustainable economic, environmental, and social development. Furthermore, the mandate also requires a thorough due diligence review of the unlisted real estate and unlisted renewable energy infrastructure portfolios, including the assessment of risks associated with health, safety, environmental, corporate governance, and social factors.[104] In 2014, the ministry issued the Guidelines for Observation and Exclusion of Companies from the Government Pension Fund Global, which outlined the criteria for the observation and exclusion of GPFG companies.[105] From the perspective of products, the guidelines require the GPFG to observe or exclude companies that: 1) derive 30% or more of their revenue from thermal coal, 2) base 30% or more of their activities on thermal coal, 3) extract more than 20mn metric tons of thermal coal annually, or 4) operate a power generation capacity of over 10,000 megawatts from thermal coal. In terms of business conduct, the guidelines require observation or exclusion of companies causing severe environmental damage or exhibiting unacceptable GHG emissions at the company level. As of December 31, 2021, a total of 104 companies have been excluded for violating the product criteria, and 48 companies have been excluded for violating the conduct criteria.[106] In April 2019, the ministry approved the GPFG to engage in unlisted renewable energy investments and lifted the limit for its thematic investments related to the environment from NOK60bn to NOK120bn.[107]

The U.S. Department of Labor (DOL) is an executive agency under the federal government responsible for national employment, wages, benefits, labor conditions, and employment training. It plays a role in shaping pension fund investment regulations. In 2016, the DOL issued *Interpretive Bulletin 2016-01*, which allowed for the inclusion of ESG factors in investment policy statements or the integration of tools, metrics, and analyses related to ESG to assess investment risks and returns. However, it did not impose mandatory requirements.[108] Subsequently, in 2018, the department issued *Field Assistance Bulletin 2018-01*. It states that to the extent ESG factors involve business risks or opportunities that are properly treated as economic considerations themselves in evaluating alternative investments, the weight given to those factors should be appropriate to the risk and return profiles relative to other relevant economic factors. However, it also pointed out that fiduciaries under the Employee Retirement Income Security Act (ERISA)[109] must always prioritize economic interests when providing retirement benefits and should not excessively rely on the correlation between ESG factors and financial returns. Therefore, some argue that *Field Assistance Bulletin No. 2018-01*, while intended to provide further clarification, may create confusion between encouraging and discouraging ESG investments.[110] In November 2022, the DOL issued sustainable investment regulations allowing pension fund managers to consider ESG factors in investment decision-making. However, the regulation was overturned by the U.S. Senate this March on the grounds that consideration of ESG factors could potentially harm pension fund returns.[111] President Biden later vetoed the Senate's decision. Hence, the latest sustainable investment rules remain effective.[112]

4.3.3 Norms and Recommendations from Industry Associations

Industry associations and other self-regulatory organizations inherently play a role in enabling supervision, fairness, self-discipline, and coordination as leaders and promoters of sustainable investment principles. Switzerland has one of the most comprehensive pension systems in the world, with a robust system of self-regulatory organizations, covering the Swiss Association for Responsible Investments (SVVK-ASIR), the Asset Management Association Switzerland (AMAS), and the Association of Swiss Pension Funds (ASIP). These industry associations typically oversee and guide their members' business activities, issue professional codes of conduct and recommendations, and provide guidance on green and sustainable investing.

The SVVK-ASIR offers its members services related to responsible investing, including portfolio screening and monitoring based on specific standards and exclusion recommendations. In 2019, the association published the *Engagement and Exclusion Process*. The document outlined how investors should assess companies' violations, choose whether to engage with a company, and set engagement goals, and the complete process and decision-making logic leading to exclusion and re-inclusion.[113]

The Asset Management Association Switzerland is a representative association of the Swiss asset management industry. It aims to strengthen Switzerland's position as a leading asset management center with high standards of quality, performance, and sustainability.[114] In 2020, the association and Swiss Sustainable Finance (SSF) co-released *Sustainable Asset Management: Key Messages and Recommendations*. It advised institutional investors such as pension funds, insurance companies, and sovereign wealth funds to assess climate risks in the decision-making process, engage in addressing these risks, and disclose their investment policies.[115]

Encompassing over 900 pension funds, the ASIP represents about two thirds of the persons insured by occupational pension funds and holds approximately CHF650bn in pension assets. In 2022, it published the *ESG Guidelines for Swiss Pension Funds*, which explicitly defined the fiduciary duties of pension funds. It stated that the ESG anchoring in investment regulations can be implicit or explicit. The former mandates the direct consideration of ESG risks, while the latter requires the incorporation of climate policies and strategies, which should be documented in the investment regulations. Additionally, explicit ESG anchoring also means that ESG risks should be considered in investment decision-making.[116] In the same year, the ASIP issued the

ESG Reporting Standard for Pension Funds. The standard advises Swiss pension funds to report the sustainability of their investments, which facilitates the horizontal comparison of the sustainable investing efforts made by Swiss pension funds.[117]

4.4 Stewardship Code

Many countries have adopted regulations on how state-owned investors can better fulfill their stewardship duties and explicitly defined their responsibilities based on investor rights and influence. These regulations directly address the issue of stewardship for state-owned investors. Examples include the *Swiss Code of Best Practice for Corporate Governance*, the *UK Stewardship Code*, and Japan's *Guidelines on the Duties of Pension Fund Managers*. The emphasis on stewardship duty varies across countries and is closely related to the characteristics of their financial systems. For instance, the U.S. boasts a well-established corporate system and places greater emphasis on voting rights in stewardship.

ESG stewardship has become a key channel for institutional investors to directly drive companies to capture transition opportunities. The approach is now recognized and promoted by overseas regulators, the international asset management industry, and international authorities including the UN, with expanding influence. In China, ESG stewardship remains in an early stage, but it aligns well with major goals such as carbon neutrality, promoting high-quality development of listed companies, and the two-way opening-up of the capital market, with broad application prospects. This report conducted thoroughly examined the current status of ESG stewardship worldwide and summarized the best practices of ESG stewardship policies at home and abroad. In terms of issuers, there are three representative and globally influential stewardship models, which are stewardship codes formulated by: 1) domestic regulatory or quasi-regulatory bodies, 2) industry organizations, and 3) third-party organizations (as shown in Table 4)[118]. The following paragraphs will focus on the stewardship codes adopted by countries and regions that best represent the three models.

Table 4 Typical Stewardship Codes

Issuer type	Country/region	Name	Year published	Issuer
Regulator	UK	The UK Stewardship Code	2010	Financial Reporting Council
	Japan	Principles for Responsible Institutional Investors	2014	Financial Services Agency
Industry Organization	U.S.	Stewardship Framework for Institutional Investors	2017	Investor Stewardship Group
	EU	EFAMA Stewardship Code	2011	EFAMA
	The Netherlands	Dutch Stewardship Code	2011	Eumedion
	Switzerland	Guidelines for Institutional Investors	2013	Association of Swiss Pension Fund Providers
Third Party	South Korea	Korea Stewardship Code	2016	Korea Corporate Governance Service
	Singapore	Singapore Stewardship Principles for Responsible Investors	2016	Stewardship Asia Centre

Source: Asset Management Association of China, ZD Proxy. Institutional Investors' Participation in the Corporate Governance of Listed Companies: A Review of Overseas Regulations and Leading Practices [M]. Beijing: China Financial & Economic Publishing House, Nov 2021.

4.4.1 National/Local Stewardship Codes: Case Study of Stewardship Practices in the UK and Japan

The first type of stewardship code includes rules and guidelines formulated by domestic regulatory or quasi-regulatory bodies. This approach is adopted by many countries, with adjustments made to accommodate the actual needs of their respective capital markets. The UK and Japan are the most typical examples of this category of stewardship codes.

Drawing lessons from the 2008 financial crisis, the FRC introduced the first version of the *Stewardship Code* for institutional investors in 2010, the world's first stewardship code, laying the groundwork for the establishment of such guidelines in other countries[119]. *The UK Stewardship Code* adopts a voluntary, non-mandatory model of implementation, which has gradually proven effective and influenced countries and regions worldwide. *The UK Stewardship Code 2020* stipulates that pension funds, insurance companies, fund management institutions, and other financial service providers must publicly disclose their long-term approach to maintaining and enhancing investment value. They are also required to consider the ESG performance of investee companies[120]. In terms of stewardship codes for pension funds, the UK introduced the Occupational Pension Schemes Regulations through the Department for Work and Pensions (DWP). According to the Occupational Pension Schemes (Investment and Disclosure) (Amendment) Regulations 2019[121], asset owners are required to explain how they exercise their investment rights and monitor investee companies, as well as their voting behavior.

Unlike the UK, Japan introduced stewardship codes as part of the country's corporate governance reform, with a greater focus on long-term governance issues. Japan's Ministry of Finance revised the country's *Stewardship Code*[122] three times in 2014, 2017, and 2020, which elevated the importance of ESG factors and refined the relevant stipulations. Specifically, the 2020 revision included ESG considerations as part of the "stewardship" duty. The GPIF, with a prominent regulatory background, makes investment decisions in strict accordance with the *Basic Policy on Reserves* and the *Guidelines on the Duties of Pension Fund Managers* issued by the Ministry of Health, Labor, and Welfare. The latter was revised in 2018 to recommend that compliance with the Stewardship Code should be adopted as a major criterion for screening asset management institutions. In the 2020 revision of the Basic Policy on Reserves, the GPIF required funds in which it invests to incorporate ESG factors into their investment actions.

4.4.2. Stewardship Codes by Industry Organizations: U.S. and the Netherlands

The second category of stewardship codes, issued by industry organizations, primarily manifests as mandatory rules on stewardship established by industry organizations such as investor associations, although the ESG-related regulations in this category are mostly voluntary. The U.S. and the Netherlands are representative examples of this category.

The U.S. model features a legally binding regulatory framework that requires institutional investors to comply with and enforce stewardship rules. Typical examples of this model include the pension rule systems of the U.S. Department of Labor (DOL) and the Securities and Exchange Commission (SEC). The country has developed a comprehensive and legally binding regulatory framework, with institutional investors' participation in shareholder meetings at the core, to promote their involvement in the corporate governance of listed companies. To regulate the operation of pension funds, the DOL issued the *Employee Retirement Income Security Act* (ERISA) in 1974, which clearly states that all pension funds subject to ERISA must participate in shareholder meetings of publicly traded companies and fulfill their fiduciary duties to their clients. Subsequently, the DOL emphasized in public letters and documents that institutions entrusted with managing pension funds should take such measures as participating in shareholder voting and establishing voting policies. It also provided detailed guidelines and instructions on how institutional investors should participate in shareholder voting and fulfill their obligations.[123]

To enable the sound governance and sustainable development of listed companies in the Netherlands, Eumedion drafted the *Dutch Stewardship Code*, which came into effect on January 1, 2019. The code includes a series of best-in-class practices and principles aimed at adoption by EU participants. It encourages responsible investing and ESG engagement through active voting and supervision of investee companies. The code also requires asset owners and asset management institutions to develop responsible stewardship policies and explain how they practice stewardship for listed companies in the Netherlands.

4.4.3. Stewardship Codes by Third Parties: South Korea and Singapore

The third category of stewardship code is developed by third parties, mostly independent organizations in the field of corporate governance, with South Korea and Singapore as representative countries. South Korea introduced the draft document of the *Korea Stewardship Code* in 2016 through the Financial Services Commission to regulate institutional investors' fulfillment of investment responsibilities and encourage contribution to reducing GHG emissions. The NPS adopted the code starting in 2018, and as of August 31, 2022, the number of participating institutions has jumped to 193.[124] Singapore, on the other hand, saw the release of the revised version of the *Singapore Stewardship Principles for Responsible Investors* by the Stewardship Asia Centre, established by Temasek, in 2022. In response to the latest market developments, this revised version incorporates ESG principles into investment decision-making. While compliance with these principles remains voluntary, the revised version encourages signatory companies to submit evidence of stewardship governance to the Secretariat of the Steering Committee annually. The revision has received support from the Monetary Authority of Singapore (MAS) and the Singapore Exchange (SGX).[125]

5. Practices and Policy Environment of Sustainable Investing by Chinese State-owned Investors

According to the annual reports released by the Global SWF from 2021 to 2023, the total assets managed by Chinese state-owned investors reached US$3.5trn at the end of 2022, approximately 20% of the country's GDP in 2022, with an average annual growth rate of about 9.7% over the past three years. In particular, state-owned financial enterprises such as China Investment Corporation (CIC) constitute a major component of sovereign wealth funds. The total assets of CIC reached US$1.4trn in 2022, with a CAGR of about 13.6% from 2020 to 2022. In addition, the National Social Security Fund (NSSF), managed by the National Council for

Social Security Fund (NCSSF), is a significant part of public pension funds. The total assets of the NSSF reached US$0.5trn in 2022, with a CAGR of about 12.3% from 2020 to 2022. The NSSF focuses on delegated investments, which account for about two thirds of its assets. By the end of 2021, domestic investments by the NSSF account for approximately US$0.4trn, or 91.0% of its total assets, while overseas investments amount to about US$0.1trn, or 9.0% of its total assets.[126]

5.1 Practices at the Institutional Level

5.1.1. Sovereign Wealth Fund: CIC

In 2022, the scale of assets managed by sovereign wealth funds decreased for the first time in history, dropping from US$11.5trn in 2021 to US$10.6trn in 2022. During the same period, the assets of CIC grew by 11%, overtaking the GPFG as the world's biggest sovereign wealth fund.

In 2021, based on its own experiences and peer practices, CIC issued the *Sustainable Investment Policy*, which emphasized the promotion of sustainable investing in four areas: 1) actively seizing sustainability themed investment opportunities, including both publicly traded equities in mature markets and non-public market asset classes; 2) integrating ESG considerations into the entire investment process, spanning evaluation and selection, due diligence, investment decision-making, and post-investment management; 3) optimizing the negative list mechanism and safeguarding the bottom line; 4) maintaining close communication and cooperation with industry peers and organizations, leveraging the leading role of sovereign wealth funds, mobilizing private funds to support related industries and entities, and promoting global economic sustainability.[127]

To address global climate change and contribute to the realization of carbon peaking and carbon neutrality goals, CIC issued the *Guidelines on Attaining Carbon Peak and Carbon Neutrality Goals and Practicing Sustainable Investing* in May 2022. The *Guidelines* presented the company's roadmap for achieving carbon neutrality and reducing portfolio emissions over the next five years and beyond, as well as a systematic plan for promoting high-quality sustainable investing at CIC. It also defined key tasks in areas including operations, research, asset allocation and investment, risk management, and international cooperation.[128] In terms of asset allocation and investment, the guidelines state that the company will "incorporate climate change factors into asset allocation from a strategic perspective, formulate differentiated sustainable investment assessment guidelines based on asset class, impose higher standards on existing and new deals with carbon footprints to improve asset quality and performance, and look into and invest in new opportunities from climate change." Concerning risks, the company stated it would "integrate averting climate change risks into the comprehensive risk management and strengthen risk management in key areas."

In recent years, CIC has prioritized carbon peaking and carbon neutrality and fully implemented the concept of sustainable development. In terms of publicly traded equities, it has established sustainable investment strategies and climate improvement sub-strategies with a focus on green and low-carbon investments. CIC has expressed its long-term portfolio preferences through explicit allocations to relevant indices. In non-public markets, the company continues to invest in renewables, with an emphasis on climate improvement.

Furthermore, CIC has also made targeted investments in physical assets, general private equities, and other asset classes.

CIC has released sustainable investment policies and established carbon neutrality and carbon peaking goals. Moving forward, the company could further promote its sustainable actions to set a fine example for other business organizations and institutional investors in the capital market. Through our seminars and field visits, we found that the current regulatory assessment requirements for state-owned investors do not adequately reflect the specificity of sustainable investment, which to a certain extent restricts state-owned investors from exploring new ways of investment and financing. The state-owned investors can try to use a certain proportion of funds to carry out pilot demonstration of sustainable investment and financing, allowing pilot demonstration funds to incorporate ecological environment value into the performance evaluation system, and then to increase flexibility in investment return requirements.

5.1.2. Public Pension Funds: NSSF

The investment philosophy of the NCSSF originates from its mission to ensure fund security and maintain and increase the value of assets. As specified in the *Regulations on the National Social Security Fund*, the NCSSF "should prudently manage and operate the National Social Security Fund, ensure security, seek returns, and focus on long-term results". Through more than twenty years of practice, the NCSSF has developed an investment philosophy of "value investment, long-term investment and responsible investment", which fully aligns with the concept of sustainable investing widely advocated and adopted in international investments.

In recent years, the NCSSF has made active ESG efforts. In 2020, it selected overseas investment managers in light of internationally recognized ESG investment strategies to conduct ESG investment trials by offering an aggressive product that covers global responsible investment equities. The NCSSF has been exploring a combination of direct and delegated investments and established an ESG investment task force to address key challenges in sustainable investing and improve the overarching design. In 2022, the NCSSF issued the *Guidelines of the National Council for Social Security Fund for Industrial Investment*[129] to clarify the medium- to long-term development plan for industrial investment, and elevate the strategic importance of sustainable investing in public pension funds. The *Guidelines* pointed out that efforts should be made to establish a sustainable investment management system that features Chinese characteristics and conforms to international practices; principles of sustainable investing should be practiced to increase investments in ESG-themed funds and projects and incorporate ESG factors into due diligence and assessment systems for industrial investment; and that investors should facilitate shareholder action, improve corporate governance structures, and enhance the quality of investee companies. In June 2022, the Ministry of Finance and other four departments issued the *Measures for the Management of the Budget Performance of the Social Insurance Fund*, pointing outthat the "performance indicators of the social security fund mainly involve economic performance, social performance, sustainable performance, satisfaction, etc.". In addition to the economic performance, sustainable development is also explicitly incorporated in the performance indicators.

The NCSSF has accumulated a range of sustainable investment practices. In the next stage, it could engage in more extensive promotions to inform more stakeholders of the sustainable practices of NCSSF and the challenges facing it, while constantly improving its transparency and influence in terms of sustainable investing.

5.2 Status Quo and Flaws of Policy Systems

China initially established a macro policy system that supports low-carbon transformation. On September 22, 2020, President Xi Jinping stated at the 75th session of the UN General Assembly that "China will scale up its Intended Nationally Determined Contributions by adopting more vigorous policies and measures. We aim to have CO2 emissions peak before 2030 and achieve carbon neutrality before 2060." This set ambitious and challenging low-carbon transformation goals at the national level. Subsequently, the whole of Chinese society responded to the carbon peak and carbon neutrality targets, and the effort to address climate change proceeded in an orderly manner, with continuous improvement in macro-level policies. In October 2021, the Central Committee of the Communist Party of China (CPC) and the State Council issued the *Working Guidance for Carbon Dioxide Peaking and Carbon Neutrality in Full and Faithful Implementation of the New Development Philosophy*, which proposed 31 key tasks in 10 areas, providing a roadmap for peaking carbon emissions and achieving carbon neutrality. The State Council later issued the *Action Plan for Carbon Dioxide Peaking Before 2030*, which specified the ten major actions along the path toward carbon peak. This also marks the establishment of an overarching design guiding China's carbon peaking and carbon neutrality efforts. Subsequently, the central government, local governments, and industries introduced a series of policies, including implementation policies for key sectors and a wide range of support and guarantee policies. For instance, in 2022, more than 40 policy documents were issued by Chinese government departments in the fields of the energy transition, energy conservation and carbon reduction, industry, urban and rural development, transportation, and more. These efforts have further improved the "1+N" policy system for carbon peaking and carbon neutrality.

These policy documents specified the need to strictly control fossil energy consumption, encouraged investment in renewables and green & low-carbon industries, and set specific targets for indicators such as carbon intensity, the proportion of fossil energy consumption, and forest coverage. However, compared to the U.S. *Inflation Reduction Act* and the EU's *Green Deal Industrial Plan*, China's existing decarbonization policies lack explicit and quantitative requirements for funding support. For example, China's Ministry of Finance issued the *Opinions on Financial Support for Carbon Peaking and Carbon Neutrality* in 2022. It outlines the key targets and areas of financial support, such as renewables including PV, wind power, and biomass energy, low-carbon, zero-carbon, and carbon-negative technologies, and other green technologies for energy conservation and environmental protection. However, the guidelines remain at the macro level and lack detailed explanations of financial support, without setting clear targets for the amount or proportion of funds to be allocated.

In recent years, China's policy framework for green finance has seen major progress, but there is still ample room for improvement. In 2016, led by the People's Bank of China, seven Chinese government departments jointly issued the *Guidelines for Establishing the Green Financial System*, which improved the overarching framework of green finance. Since then, standards including the *Green Bond Endorsed Projects Catalogue*, *Guidelines for Financial Institutions Environmental Information Disclosure*, *Environmental Equity Financing Tool*, *Carbon Financing Products*, and *China Green Bond Principles* have been released. As the policy and standard systems become more comprehensive the green finance market is also expanding. Furthermore, along with the high-quality development of pilot zones for green finance reform and innovations, China is exploring a path of green finance development with distinctive Chinese characteristics. China's environmental disclosure requirements are relatively limited in coverage and most are not mandatory. However, in general, China's efforts in promoting green finance started relatively late, and there are still some weaknesses in its policy framework. Firstly, there are subtle discrepancies in standard setting among different industries in this country, leading to inconsistencies in the application scope, project classification, and level of accuracy of these standards. For instance, the *Green Bond Endorsed Projects Catalogue 2021* excludes industries related to fossil fuels, but this adjustment has not been reflected in the *Green Industry Guidance Catalogue 2019*. Secondly, China's green industry catalogue is not compatible with those released by developed countries, which somewhat hinders international cooperation and communication in green finance. Lastly, there is a lack of standards for specific sectors within green finance, such as green wealth management. The scope of environmental information disclosure as required is limited, with no strong enforcement measures in place. The *Environmental, Social, and Governance Reporting Guide* of the Hong Kong Stock Exchange (HKSE) has come into effect in 2022 and covers quantitative indicators such as GHG emissions, total staff number, and employee training hours to help listed companies prepare ESG reports. The HKSE plans to implement a new climate information disclosure framework in 2024, which would require listed companies to provide disclosures under the new framework in their ESG reports. Furthermore, considering the different industries involved and the varying levels of ESG development, the HKSE has set a two-year transition period for issuers (2024 and 2025), with the mandatory disclosure starting no later than 2026. However, most of the requirements for environmental disclosures are not mandatory in Chinese mainland. Most A-share listed companies refer to the *Guidelines for Environmental Information Disclosure of Listed Companies on the Shanghai Stock Exchange* and the *Shenzhen Stock Exchange Social Responsibility Instructions to Listed Companies.* Both documents encourage the disclosure of information such as resource consumption and waste disposal in social responsibility reports. However, these guidelines do not have binding force or specify quantitative requirements for ESG indicators, **As for product variety**, the existing green financial products in China lack variety and fail to meet the demands of market entities. Currently, China's green financial products mainly consist of green loans and green bonds, with green loans accounting for more than 80%of all green financial products as of the end of 2022.[130] However, the development of funds, insurance, and carbon financial products has been slow.

While China has introduced a wide range of national low-carbon and green finance policies, the country has almost yet to release few corresponding investment rules, and the effectiveness and constraint of the relevant documents differ from those adopted by developed countries. Developed countries such as the UK, France, and the U.S. have enshrined sustainable investment in law. They require investors such as pension funds to incorporate ESG factors into investment decision-making or restrict further investments in fossil fuel companies through legislation. In China, however, asset owners do not have to abide by any mandatory rules when making investments. In 2009, the China Banking Association (CBA) published the

Guidelines of China Banking Sector and Financial Institutions Corporate Social Responsibility to explore the social responsibilities of the banking industry.[131] The *Green Investment Guidelines (For Trial Implementation)* issued by the Asset Management Association of China in November 2018[132] raised awareness of environmental risks among fund managers, clarified the definition of green investing, and encouraged capable asset managers to engage in ESG investing. However, the guidelines are not a binding document. In China, documents including the *Guidelines for Establishing the Green Financial System* and the *Green Investment Guidelines (For Trial Implementation)* merely encourage long-term capital owners such as funds to engage in green investing and play a demonstrative role as responsible investors. Yet without enforceability, they may not motivate investors to make sustainable investments. Sustainable investing urgently requires the support of policy documents at a higher level. Government departments have to introduce investment rules to unlock the potential for more investors to engage in sustainable investing. A national framework of responsible investment or investment guidelines for asset owners to observe and exclude investments would scale up China's sustainable investments, provide standardized instructions and examples for investment behavior and strategies, and secure sovereign asset investments.

A comprehensive stewardship code applicable to all industries has yet to be established. Based on the development of mature capital markets, as the market matured, institutional investors have become more involved in the corporate governance of listed companies. In this respect, practices in other countries and regions provide valuable and ample references for China's capital market. Certain industries in Chinese mainland have issued industry regulations on stewardship, such as the insurance industry's *Proposal for ESG Stewardship of Insurance Asset Management in China*, the CSRC's *Code of Corporate Governance for Listed Companies*, and the Asset Management Association of China's *Guidelines for Proxy Voting by Fund Management Companies on Behalf of Funds*. Despite that, there is no national stewardship code applicable to financial institutions or asset managers across all industries. China's financial regulators could move fast to introduce rules concerning Chinese institutional investors' participation in corporate governance at an appropriate juncture in light of the development of the country's capital market and national realities. Such efforts can effectively encourage institutional investors to engage in corporate governance.

In conclusion, China faces major challenges in its low-carbon transition. Bank credit alone is insufficient to meet the funding needs of Rmb139 trn for achieving carbon neutrality[133], which requires broader participation from financial institutions. Meanwhile, the pursuit of high-quality development fully aligns with the broader concept of economic, environmental, and social development defined by sustainable investing, with clear demands on channeling more funds into the environmental and climate sectors. However, as China's green financial system is still developing, it has yet to provide sustainable investment rules and a comprehensive stewardship code applicable to all industries. At the current stage, asset owners are still exploring ESG practices, which demand policy support and official guidance.

6. Policy Recommendations for Promoting Sustainable Investing by State-owned Investors

To facilitate the realization of carbon neutrality and carbon peaking goals, China’s green financial system needs to expand from its current model of green loans and green bonds issued by commercial banks to include systemic support from a broader range of financial institutions. This report, supported by CCICED, provides recommendations for policymakers, regulatory authorities, and state-owned investors based on sustainable investment practices of state-owned investors worldwide and examines the status quo and flaws of sustainable investment in China.

Recommendations for policymakers and regulatory authorities:

Recommendation 1: First, efforts could be made to improve the policy framework for sustainable investing, establish effective incentive and constraint mechanisms, develop sound frameworks and mechanisms for green finance, and consistently optimize the low-carbon transition policy system.

First, in terms of incentives and constraints, regulators could encourage state-owned investors to allocate a certain percentage of their funds to sustainable investment and financing, allowing pilot demonstration funds to incorporate ecological and environmental values into performance evaluation systems. This would increase flexibility in investment return requirements, and encourage innovative utilization of risk-sharing tools. At the same time, regulators could require state-owned investors to develop clear sustainable investment principles to gradually reduce the environmental and climate impacts of their operations and their portfolios. The developed investment principles could establish clear strategic objectives and organizational safeguards, and set out clear requirements for working arrangements such as carbon emissions verification and disclosure. Regulators could also promote a fair transition to address the impact on socially vulnerable groups. This could be achieved through supportive policies that offer more effective community services, reemployment programs, and training and unemployment benefits. While addressing climate and environmental issues, regulators could also promote inclusive social development, with a focus on matters such as livelihood, employment, and gender equality at the community level.

Second, regulators could issue a stewardship code to encourage institutional investors, including state-owned investors, to exercise active ownership and press asset management institutions to make sustainable investments. A stewardship code will also allow authorities to regulate institutional investors’ stewardship practices in at least four areas: 1) establish and disclose stewardship policies on sustainable investing, 2) supervise and engage with investee companies to enable sustainable investment practices, 3) disclose voting principles and measures adopted for climate and environmental issues, and 4) report stewardship duties to clients and beneficiaries. Also we recommend including asset owners, asset management institutions, and relevant service providers in the stewardship code to unify the behaviors of key decision-makers in the capital chain and serve the long-term interests of beneficiaries.

Third, a green financial system with sound mechanisms could be established to expand the implications of green finance and provide effective incentives and constraints for non-bank financial institutions. Efforts could be made to unify taxonomies, with prompt updates that include the latest green technologies. Authorities could also introduce mandatory climate and environmental disclosure requirements to promote convergence with international rules, such as the IFRS® Sustainability Disclosure Standards of the ISSB. Viable innovation of financial products could be encouraged to enrich investment targets, such as SLBs, transition bonds, green insurance, and REITs that focus on renewable energy infrastructure. We also advise regulators to prompt institutional investors to incorporate green investing into their evaluation systems, channeling private capital into frontier carbon neutrality technologies and facilitating the green transition of companies and industrial chains. When building a green financial system, state-owned investors and other financial institutions need to work together to form an ecosystem of sustainable investment. This covers four areas. First, strategic synergy, that is, convergence in strategic goals. The second is process coordination, which covers the whole life cycle from project development, investment decision-making, risk control to exit. Third is product synergy, in which financial institutions can better understand the investment characteristics of state-owned investors, and provide them with more choices by developing rich financial products.

Fourth, continued efforts are needed to optimize policy support for the low-carbon transition and increase fiscal and monetary support for innovative green and low-carbon technologies, achieving a combination of efficient markets and active government. Despite such efforts, the core objective of state-owned investors is still to yield high returns for beneficiaries and achieve appreciation. Therefore, channeling more funds into the green sector fundamentally requires enhancing the risk-adjusted returns of green projects. From this perspective, the key to promoting sustainable investing by institutional investors is to appropriately intervene in the real economy to improve the correlation between sustainability performance and financial performance. A range of policy tools would be required to achieve this. 1) Establish a return-on-investment mechanism to improve predictable cash flow such as increasing public investments in clean energy infrastructure and R&D, providing subsidies, tax exemptions, and fiscal interest subsidies for low-carbon projects. 2) Lower the financing costs of green projects, such as by establishing refinancing tools. 3) Improve market mechanisms for monetizing green value (e.g., electricity markets, carbon markets, state certified emission reduction, green power certificates, and other trading platforms) and to send clear policy signals to investors. 4) Build a risk-sharing mechanism among governments, financial institutions and investors, and use tools such as the first-loss layer, guarantee and insurance to reduce the risks of green projects. 5) Encourage diversified capital market participation and improve market exit mechanisms. These interventions in the real economy can strengthen the correlation between sustainability performance and financial performance, allowing investors to guide capital toward the realization of sustainable goals in a manner consistent with their financial objectives and obligations.

Recommendation 2: State-owned investors could be encouraged to actively participate in multilateral cooperation mechanisms and initiatives in areas of international consensus. As a result, they can play a greater role in the development of international rules and standards concerning taxonomies, information disclosure, transition finance, and climate risk management.

First, policymakers could encourage state-owned investors to actively participate in multilateral cooperation mechanisms and initiatives in areas of international consensus and advocate for rules and propositions beneficial to China through statistics and case studies, promoting consensus in relevant fields. China has promoted and engaged in the development of a series of multilateral cooperation mechanisms, including the UNEP FI, the SBFN, the G20 Sustainable Finance Working Group, and the NGFS, which laid the groundwork for further participation in multilateral mechanisms. For example, the G20 Green Finance Study Group, established through joint efforts by China and the UK in 2016, was upgraded to a working group in 2021 and developed the G20 Sustainable Finance Roadmap. This move consolidated the consensus among countries on financial support for the green transition and provided a basis for systematically advancing sustainable finance worldwide. In the future, policymakers can guide state-owned investors to selectively join the formulation of international guidelines or global initiatives and actively engage in core processes and key organizations, such as the PRI and ISSB. Such organizations play a crucial role in setting standards, regulating disclosures, promoting transition finance, and enhancing climate risk management, with extensive participation from state-owned investors worldwide.

Second, policymakers can promote cooperation in green finance and transitional finance at both multilateral and bilateral levels, further unify taxonomies, enhance information disclosure, improve the policy system for green finance, and pave the way for state-owned investors to make sustainable investments. Specifically, China and Europe could develop a transitional finance taxonomy based on the *Common Ground Taxonomy*. They could also promote the adoption of the *Common Ground Taxonomy* or its adaptation as the basis for developing national taxonomies through platforms like the IPSF. China and Europe could keep improving the taxonomy while addressing practical challenges, such as providing a clearer definition of "do no significant harm" to avoid divergent interpretations. Additionally, the EU has strengthened its standards for determining green investing. The latest Proposal for a Directive on Green Claims requires environmental claims to be independently verified by third parties and supported by scientific evidence to reduce greenwashing risks. In this regard, China can collaborate with the EU and adopt leading practices in calculating, managing, and disclosing carbon footprints.

Third, state-owned investors can be guided to play a greater role in actively leading the development of more pragmatic international sustainable investment and financing activities to explore the establishment or co-establishment of a green alliance or a global investment fund together with state-owned investors from around the world. This can facilitate exchanges among domestic and international investors on responsible investing. Platforms established through organizations like China Sustainable Investment Forum (ChinaSIF) and Norwegian Sustainable Investment Forum (NorSIF) can invite sustainable investing leads from sovereign wealth funds to share their practices. The annual ChinaSIF forum also serves as a channel for popularizing the concept of responsible investing.

Recommendations for State-owned Investors:

Recommendation 3: Climate and environmental factors could be incorporated into key areas such as corporate governance and investment decision-making, and consistent improvements of the sustainable investment framework are required.

First, state-owned investors could recognize low-carbon transition as a strategic goal, adjust the organizational structure, and establish decision-making processes that better account for climate and environmental factors. Sustainability factors could be systematically considered at the institutional level, which involves the establishment of low-carbon transition roadmaps, sustainable investment strategies, sustainable investment teams, and investment frameworks. It is important to note that sustainable investment policies must align with the obligation to generate returns. Failure to achieve this consistency may lead to political and regulatory risks, reputational risks, and litigation risks associated with an excessive emphasis on sustainable investing, particularly narrowly-defined ESG investment strategies. In practice, sustainable investment strategies require organizational structure and talent support. For instance, the Chief Sustainability Officer (CSO) of the CPPIB provides professional advice for environmental and climate-related proxy voting by its board; sovereign wealth funds in Norway have had an environmental investment strategy and a team dedicated to the strategy since a very early stage, which allowed them to accumulate extensive experience. As the strategies for environment and climate became more integrated, these fund managers were integrated into the entire investment team, facilitating the spread of environmental and climate-related expertise within the organization.

Second, the carbon footprint of portfolios could be managed by employing scientifically sound measurement methods. Specifically, efforts could be made to build carbon footprint calculation models by sector, collect and organize sector-specific data on carbon emissions intensity, and determine the applicable weighting methods. State-owned investors can also compare their portfolio's carbon footprint with international benchmarks and actively disclose the benchmarking results in annual reports or ESG reports. Climate stress tests for specific portfolios could be carried out to improve the capabilities for managing climate-related physical risks and transition risks. In addition to calculating and disclosing their own carbon footprint, state-owned investors can also actively influence their respective asset management institutions to calculate and disclose carbon footprints. In order to create comparable data sources, state-owned investors could recommend that outsourced asset managers adopt international standards for disclosure, while refraining from intervening in specific disclosure practices to avoid adding excessive administrative costs to the asset managers.

Third, state-owned investors can participate in relevant international initiatives and adopt leading international practices. Moreover, involvement in standard-setting institutions and international organizations focusing on the research of key agenda allows state-owned investors to contribute to the formulation of international rules and stay ahead of peers.

Fourth, during the investment process, climate and environmental factors could be considered as appropriate when screening and evaluating institutional investors and fund managers. State-owned investors could, for example, include climate and environmental indicators in compensation incentive mechanisms. They may also build a sustainable index system for investment institutions and fund managers, systematically evaluate their sustainable investment capabilities during the screening process, and monitor their performance on an ongoing basis.

Fifth, efforts could be made to exercise stewardship based on active ownership. To begin with, state-owned investors could establish effective governance structures, institutional rules, and decision-making processes to support and guarantee the implementation of stewardship practices. Additionally, they may build a selfassessment system for sustainable investing (or an ESG scoring system) or rely on third-party services to evaluate the sustainable governance of asset management institutions and investee companies (both listed and non-listed entities) and identify substantial issues. Furthermore, based on the assessment results, state-owned investors could urge asset management institutions and fund managers to fully incorporate climate and environmental factors into investment decision making through voting, meetings, or written notifications, with a focus on substantial issues identified at key companies. Finally, state-owned investors could also continue to monitor and access the engagement outcomes and optimize engagement strategies to achieve the low-carbon transition of investee companies.

Sixth, we recommend establishing sustainable investment guidelines for various asset classes and building a sustainable investment benchmark system to play a guiding role in investment across all asset categories. In addition to broad-based indexes, customized ESG benchmark indexes could be developed. In equity investments, the adoption of ESG integration and negative screening strategies could be scrutinized, and a company's ESG performance, particularly environmental factors, could be incorporated into investment decision-making. For example, based on a pre-determined scoring system, when a target company's ESG score falls within the bottom 20%, state-owned investors could require written justifications for its inclusion in the portfolio. Asset managers could incorporate ESG factors into their overall risk-return assessments, instead of simply assessing the volume of ESG investments. State-owned investors could also carefully consider the adoption of negative screening strategies. Even if a sovereign asset owner divests itself from fossil fuels, any excess returns may quickly be offset by other funds, which diminishes the practical significance of addressing climate change. Globally, many state-owned investors also believe that pressing companies to engage in low-carbon transition is preferable to blunt divestment strategies. Of course, if positive outcomes cannot be achieved through active engagement over a period of time, "voting with your feet" can still have an impact, as it demonstrates the resolve of state-owned investors.

Seventh, state-owned investors could proactively engage in sustainability themed investing. For instance, they may invest more in green technologies, renewables, and green supply chains. Projects in these areas come with long investment cycles and relatively stable returns, which align with the long-term capital of state-owned investors and present lower stranded risks. State-owned investors could also develop sound risk-sharing mechanisms based on the overall conditions of their portfolio, with appropriate capital allocation. Additionally, state-owned investors could join hands with peers or other institutional investors to establish a global investment fund focusing on the green sector to share experiences and risks. With the cost reduction of photovoltaic, wind power and other costs and the enhancement of competitive advantages, a large amount of capital has entered the renewables sector. Under this background, sovereign asset owners can consider setting up impact investment sub-funds to guide funds into relatively immature fields, such as ecological environmental protection, soil and air pollution control, biodiversity protection and other fields.

Appendix 1 Sustainable Investment Practices for Global State-owned Investors

Case Study 1: GIC Private Limited

Established in 1981 under the Singapore Companies Act, GIC Private Limited (GIC or Singapore GIC) is an investment fund owned by the Singapore government (a sovereign wealth fund or SWF). GIC was established to manage government foreign reserves, including excess reserves of the Monetary Authority of Singapore (MAS, Singapore's central bank and financial regulatory authority).

GIC does not disclose the exact size of its managed assets. GIC describes them as 'well over US$100bn',[134] and they are estimated at US$744bn by Global SWF.[135] GIC invests almost entirely abroad,[136] in part because making domestic investments would entail foreign exchange transactions potentially at odds with exchange rate policy efforts. GIC manages all government assets in a single pool, without regard to their source, with the aim of achieving good long-term real returns. GIC does not own the assets that it manages for the government, and conversely it does not have substantial defined liabilities. Nonetheless, its assets and investment returns can be understood to support a range of government liabilities, expenses, and liquidity needs, including for monetary operations (exchange rate stability), social security, and fiscal budgets.

GIC invests across public and private markets, using in-house investment teams and external investment managers. For public markets, external managers have at times been responsible for as much as 20% of the portfolio.[137] GIC implements a long-term investment horizon, defined by lower liquidity requirements and greater tolerance for near-term risks.[138] The primary metric for evaluating GIC's investment performance is the annualized rolling 20-year real rate of return. At March 31, 2022, this stood at 4.2%. Twenty-year and 5-year nominal CAGRs were 7.0% and 7.7%, with volatility of 8.7% and 6.5%, respectively.[139]

1.1 The Drivers behind GIC's Sustainable Investment Approach

1.1.1 Legal, Institutional, and Investment Frameworks

The general context for GIC's investment approach (including its sustainable investment approach) comprises GIC's legal framework and objectives,[140] its institutional framework and governance structure,[141] and its investment and risk management framework.[142] All three of these dimensions of GIC's general operating environment (corresponding to the three areas of the Santiago Principles) establish that GIC's investment activity is conducted on an *exclusively financial basis*. In fact, GIC states clearly in its description of its implementation of the Santiago Principles that it *does not invest other than for economic and financial considerations*.

The implication of this exclusively financial basis for all of GIC's investment activities is that its sustainable investment approach is developed and executed with the intention of improving financial performance, rather than to pursue environmental or social goals. This creates well-defined constraints on GIC's sustainable investment activities. In particular, its sustainable investment practices are limited to the strategies, tactics, and investments that add value to the portfolio. This financial orientation for sustainable investment takes both specific forms (e.g., investing in industries of the future) and general forms (e.g., managing financially-material ESG risks, such as climate transition risks, across the portfolio).

The primary motivation for GIC's sustainable investment approach can therefore be understood in relation to its financial objectives. This is reflected in the investment beliefs underpinning GIC's sustainability practices, which are developed and acted upon only *within the scope* of observed or plausible relationships whereby environmental or social sustainability factors impact financial performance.

1.1.2. Investment Beliefs

GIC's investment beliefs linking sustainability to financial performance are clearly described in its annual reports[143]:

- Sustainability is fundamental to the long-term health of the global economy, and therefore integral to GIC's mandate to preserve and enhance the purchasing power of government assets.

- Climate change is one of the defining issues of our era. Climate change and other sustainability issues can have a material impact on companies and physical assets, affecting their operations and financial performance and shaping their long-term value.[144]

- Companies with strong sustainability practices offer prospects of better risk-adjusted returns over the long term, and that this relationship will strengthen over time as market externalities get priced in and are incorporated into the decisions of regulators, businesses, and consumers.[145]

- Investments may entail trade-offs between different sustainability objectives, especially in the short term, necessitating a holistic and long-term approach. For example, retiring coal-fired power plants on an aggressive timeline may be positive for the environment, but without a holistic transition plan in place, this could hurt affected communities through loss of livelihoods and increased costs of living.

- Sustainability should be integrated in a way that recognizes the diverse industries and markets in which GIC operates as well the trade-offs and time needed for companies to make the transition.

- In the context of GIC's commitment to enabling the global transition to a net-zero economy through its investments and operations, it is critical to focus on making a positive impact in the real economy. To do this, it is more constructive to actively engage and support companies in their transition towards long-term sustainability than to mechanically divest from certain industry sectors.[146]

In addition to those listed above, a number of GIC's sustainability-related beliefs are described in its research output, interviews of its management staff, and its engagement of standards setters:

- Sustainability is nuanced across sectors, regions, and markets.[147]

- Climate change, water security, and geopolitics count among the global systemic risks that matter most to investors.[148]

- GIC can add meaningful value to investee companies by providing patient capital and helping to shape their strategy, elevate their governance standards, and connect them to GIC's global networks.[149]

- Climate change affects GIC's investments in two ways[150]:

    - Financially material climate risks, including physical risks and transition risks. Physical risks cover acute risks, such as wildfires and floods and chronic risks, heat stress and water stress, which lead to diminishing labor, manufacturing, and agricultural productivity over time. Transition risks are usually caused by changes in regulations (e.g., carbon taxes) and improvement in technology – e.g., when cost deflation in renewable energy disrupts conventional utilities.

    - Investor flows out of carbon-intensive companies will have a significant impact on the value of GIC's investee companies, driven by selling pressure in the short term and a rising cost of capital in the long term. Conversely, inflows to less carbon-intensive companies will improve their valuation in the short- and long-term, based on GIC's public statements.

- Carbon markets can play an important role in investment strategies, including to hedge transition risks, though they also create a number of risks. Investors' participation in carbon markets is currently limited by structural obstacles.[151]

- Emerging markets exhibit positive long-term fundamentals, and are thus a focus for GIC's investments. One key avenue to access this structural theme is through infrastructure investment. According to Swiss Re's forecast, infrastructure investment is projected to grow strongly over the next 20 years, particularly in emerging Asia (comprising over half of projected global infrastructure investment), in which sustainable infrastructure, particularly in energy, is expected to be a major driver of this growth.[152]

1.2 GIC's Sustainable Investment Approach

1.2.1. Incorporating Low-carbon Transition into Strategic Goals

GIC describes sustainability as a top management priority. GIC developed a Framework for Sustainability[153] with three dimensions (O-D-E):

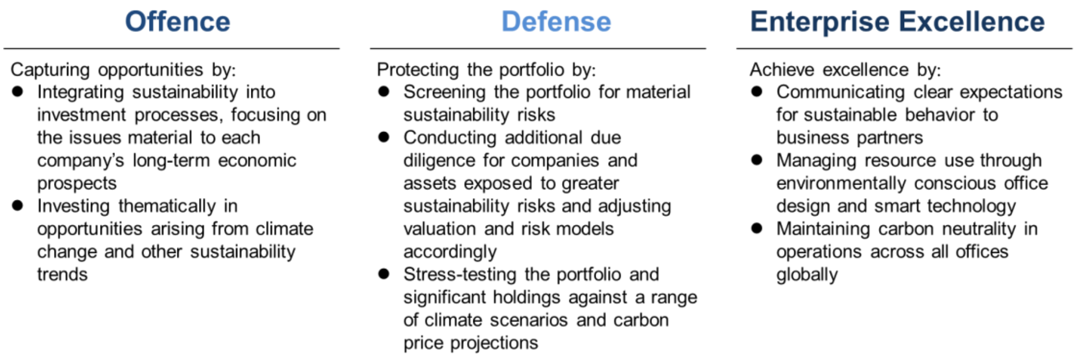

Figure 1. Framework for sustainability ("O-D-E ")

Source: GIC. Framework for Sustainability.

GIC has established a number of cross-cutting functions to oversee, coordinate, and promote development of sustainable investment knowledge and practices across asset class departments and sustainability themes.

a. Sustainability Committee

In recognition of the growing importance of sustainability issues for financial performance, GIC Management established a Sustainability Committee in 2016[154] to review and implement GIC's Sustainability Policy. This committee decides on matters relating to GIC's stance on sustainability issues; drives the integration of sustainability into investment and corporate processes; coordinates GIC's partnership with global sustainability organizations and initiatives; monitors and responds to emerging sustainability issues, and regularly reviews portfolio metrics such as the weighted average carbon intensity (WACI).[155] The Sustainability Committee also reports on GIC's sustainability profile and activities to the Group Executive Committee.[156]

b. Sustainability Office

A dedicated Sustainability Office has been set up to support the Committee in deepening research into sustainability issues, and in driving their integration into the investment process and across the enterprise.[157] The research and integration efforts of the investment committees and heads of GIC's asset departments are coordinated through the Sustainability Office, structuring how insights are shared, scaled, and translated into investment actions.

c. Climate Change Research Team and Climate Scenarios

GIC has a dedicated team driving climate change research, particularly around near-term climate risks and long-term climate scenarios. The scenarios developed by this team cover global warming outcomes between 1.5 ℃ to 4 ℃ (by 2100), are applied to the time horizons of 2030 and 2050, and are in line with the scenarios recommended by the Network of Central Banks and Supervisors for Greening the Financial System (NGFS).[158]

1.2.2. Managing the Carbon Footprint of the Portfolios

a. Corporate Disclosures

Like many other investors, GIC notes that the ESG data landscape is difficult to navigate owing to the proliferation of metrics, non-standardized (and therefore non-comparable) disclosures, and the challenge of identifying which factors among many are financially material. GIC therefore supports efforts to standardize corporate sustainability disclosures, including through its partners the Task Force on Climate-related Financial Disclosures (TCFD) and CDP.[159] GIC has noted that this vision cannot be achieved in isolation, but rather depends on coordination between regulators, companies, investors, and independent standard setters such as the Sustainability Accounting Standards Board (SASB), the International Sustainability Standards Board (ISSB), and the Global Reporting Initiative (GRI).

These and other of GIC's views can be found in documents such as the *Comment Letter to the International Sustainability Standards Board (ISSB) on Two Proposed Sustainability Disclosure Standards*[160] and its research article entitled *Materiality – A Practical Approach to Integrating ESG.*[161] For example, GIC has found that SASB metrics can be usefully applied in due diligence and corporate engagement, particularly owing to SASB's use of a materiality framework which identifies a small number of financially material factors per sub-sector. GIC has similarly voiced support for ISSB's work to standardize sustainability disclosures according to a principle of materiality. (SASB is a key constituent of the ISSB, and the SASB framework serves as the foundation for the ongoing development of the ISSB Standards.) GIC also commends the integration in the draft ISSB Standards of the TCFD Recommendations, as this contributes to the broader goal of practical, widely-adopted, and comparable reporting standards. GIC also finds ISSB's principles-based framework appropriate, as it allows applications across developed and emerging markets, and by companies with different starting points in their sustainability and climate transition pathways.

Yet GIC also finds shortcomings in these frameworks[162]:

- New material issues can rapidly emerge, especially in quickly-evolving sectors, which might be difficult to reflect in SASB's materiality framework, leading to inadequate disclosure, even among those companies who disclose according to SASB Standards.
- Conversely, not all SASB metrics may be material, according to GIC's empirical analysis.
- Because not all companies disclose according to SASB Standards, it is difficult to integrate them in investment processes. This does indicate the potential created by these Standards' adoption within mandatory (regulatory) disclosure frameworks.

- Relative to the draft ISSB Standards, more could be done to guide company disclosure of information on how they are capturing opportunities in the low-carbon transition.
- ISSB standards should be adapted to facilitate use by private companies.
- A comprehensive sustainability reporting framework should include sustainability factors which may not be financially material but demonstrate significant social/environmental impact materiality. On this basis, GIC supports the joint work project with GRI.[163]

b. Portfolio and Investment Metrics and Tools

GIC uses a number of metrics to assess sustainability risks and opportunities in its portfolios and investments. These are used to assess and manage risk, to identify and measure exposure to opportunities, and to benchmark the performance of its own portfolio against the Policy Portfolio. Some examples are listed below:

- **Climate Value-at-Risk Dashboard**[164] showing how companies and portfolios would be affected by climate-related drivers such as carbon costs and physical risks under different scenarios
- **Carbon Dashboard** showing carbon intensity at the company level, allowing comparison with the company's peer group and estimation of carbon pricing's impacts on profit margins
- **Weighted-Average Carbon Intensity** of the public equity portfolios and Policy Portfolio
- **Physical risk assessment tools** found in the Asia Investor Group on Climate Change's compendium of related resources[165]
- **Green revenues of portfolio companies** to identify opportunities and monitor exposures to the emerging low-carbon economy
- **Avoided Emissions Analysis**[166] to identify 'extended winners' in the climate transition, whose potential to drive economy-wide emissions reductions may not be reflected in their Scope 1, 2, and 3 emissions, and simultaneously allows for comparison of Scope 1, 2, and 3 emissions under a common unit of measurement

1.2.3. Participating Actively in International Processes and Initiatives

GIC values partnerships with other organizations and initiatives as an opportunity to learn in an evolving field. GIC collaborates with fellow asset owners through platforms such as the Asia Investor Group on Climate Change (AIGCC), CDP, Climate Action 100+, and the Task Force on Climate-related Financial Disclosures (TCFD). GIC also engages in dialogues with organizations such as the International Forum of Sovereign Wealth Funds, the Milken Institute, and others. Additionally, GIC generally values external investment managers as key partners, as well as a number of public-sector actors, a perspective which also translates to new sustainability initiatives and investments.[167]

1.2.4. Accounting for ESG Factors when Screening and Evaluating Asset Management Firms

As mentioned above, approximately 20% of assets are managed externally[168], which is relatively small. GIC has not disclosed any information regarding how they integrate ESG into selecting or evaluation external asset managers.

1.2.5. Exercising Stewardship (active ownership)

GIC also uses corporate engagement and active ownership as tools for capturing opportunities related to sustainability. Regular dialogue with portfolio companies serves as a tool for GIC to identify and assess sustainability risks and opportunities, monitor companies' progress in sustainability risk mitigation, assess and elevate corporate governance standards, and contribute to corporate strategy based on GIC's sustainability views and global networks. In some cases, this engagement prompts additional investment actions, such as financing new capital investments related to the climate transition.[169] As an example of this engagement, GIC used engagement to encourage one portfolio company to improve board independence and diversity, focus on increasing green revenues, and disclose its ESG performance and goals.

GIC's sustainability approach also informs the exercise of its shareholder rights, including proxy voting. For example, GIC has voted in favor of corporate restructurings to remove coal-fired power businesses and increase renewable energy projects.

Additionally, GIC engages with external fund managers and general partners on their sustainability policies and practices to ensure its investments are managed in a manner consistent with its sustainability approach.[170]

1.2.6. Using ESG Integration & Negative Screening

GIC's strategic asset allocation process determines the Policy Portfolio—the baseline allocation before the addition of skills-based alpha opportunities (the Active Portfolio). This 'top-down' process, which relies on long-term risk and return estimates for various asset classes, is a central determinant of long-term investment performance. Consistent with its investment principle to prepare for, but not to predict, future possible scenarios, GIC integrates climate scenario analysis and climate change drivers into this process, including to inform the long-term risk and return estimates for various asset classes on which it relies.[171]

GIC integrates sustainability considerations in the bottom-up risk analysis of individual investments and active investment decisions. Sustainability risk management practices include:

- Integrating sustainability across the investment cycle, including in opportunity sourcing, due diligence, risk assessments, and post-investment monitoring, focusing on issues material to long-term prospects[172]

- Stress-testing the portfolio and significant holdings against a range of climate scenarios and carbon price projections to estimate value at risk from physical and transition risks, and using these results to inform actions at the portfolio, asset class, and investment levels. As examples:

- **Listed (public) equity** teams use proprietary tools to examine the carbon intensity of companies relative to peer group; consider the impact of different carbon prices on the profit margins of companies, to inform forward-looking cash flow analysis; and conduct additional due diligence for companies and assets exposed to greater sustainability risks, including physical climate risks, and adjust valuation and risk models accordingly[173]
- **Infrastructure** teams adopt a tailored approach to assessing physical risks in large-scale infrastructure developments
- **Real Estate** teams conduct sustainability assessments of individual assets and map physical risks at the regional level; they may also implement preemptive measures to mitigate physical risks (e.g., installing flood protection gates)
- **Portfolio-level** strategies are designed and implemented by the Sustainability Committee and asset class departments[174]

As a general rule, GIC does not systematically divest from defined sectors, regions, or markets. This is based on its belief that although divestment may improve, for example, the emissions profile of the portfolio, it does not necessarily have an impact in the real economy. According to Liew Tzu Mi, Chair of the Sustainability Committee, "GIC does not adopt a top-down blunt divestment approach. Instead we believe it is much more constructive to focus on specific companies, understand their markets and business practices, and support them in their transition plans."[175] As a last resort, where blatant negligence towards sustainability risks has led to negative consequences for the company or its stakeholders, or where there is no willingness or viable pathway for the entity to transition, GIC has passed on the investment or divested its positions.[176]

1.2.7. Making Sustainability Themed Investments

The Sustainable Investment Fund established in 2020 leads GIC's thematic investments across asset classes, simultaneously catalyzing additional department-led sustainability initiatives. Examples of thematic investments include[177]:

- Companies developing solutions that help to decarbonize the economy, including batteries, hydrogen, carbon capture and storage, and nuclear fusion
- Listed equity investments in sub-industries with high growth potential, identified through a mapping of emerging themes accelerating the adoption of sustainable technologies
- Regional initiatives such as an Asian sustainable equity portfolio with significant holdings in the energy transition, electric vehicles, renewable energy, and sustainable materials.

- Sovereign and corporate green bonds, sustainability-linked securities, and asset-backed securities of solar, agricultural, and affordable housing loans
- Electron Innoport, a dedicated portfolio within the Private Equity team that provides exposure to early-stage energy transition opportunities, focusing on innovations that accelerate the transition to sustainable energy, covering themes such as electrification, energy and resource efficiency, and decarbonization
- Climate-focused and impact private equity funds with proven performance track records and established frameworks to measure and monitor their impact on the real economy
- Emerging energy transition infrastructure opportunities, including both InfraTech and sustainable infrastructure, focused on evolving trends that have yet to become mainstream
- Technologies that can reduce the carbon emissions or improve the energy efficiency of buildings
- A sustainability-linked deposit with Standard Chartered, referenced against the bank's sustainable loans and projects

Additionally, GIC seeks to provide transition finance to high-emissions portfolio companies to fund the investments in decarbonization and climate-resilient business models.[178] These opportunities are largely identified through GIC's corporate engagement activities.

1.3 Lessons and Recommendations

GIC's experience in sustainable investment can offer lessons and insights for other investors, as well as for policy makers.

1.3.1. Lessons and Recommendations for Investors

a. Clarity and Stability in Institutional Mandate

The unambiguous articulation of GIC's overarching mandate and its stability over time represent a valuable asset for GIC. Coupled with transparency and accountability in the relationship with its client, the government of Singapore, the clarity and stability of GIC's objectives generate a solid foundation for the development of investment beliefs pertaining to sustainability, and by extension its sustainable investment practices. The landscape of knowledge and information regarding climate change and other sustainability themes will continue to evolve quickly in coming years, as will the various manners of addressing them, including through technology. An ability to respond to these evolutions is meaningfully aided by a clear understanding of the institution's objectives and constraints. In contrast, vacillations in the priorities, beliefs, or politics surrounding sustainable investment strategies can be, and has been, incapacitating for some investors. Not only do these changes redirect energies from the process of building a coherent strategy, but they also send mixed messages to stakeholders, including public authorities, investees, other investors, etc., complicating execution of sustainable strategies.

b. Recognition of Institutional Circumstances and Strengths

Building on a clear and consistent mandate, GIC also benefits from a thoughtful recognition of its own circumstances and strengths, integrating these into its sustainable investment approach. GIC leverages its particular experiences—for example in technology investment—to go beyond the role of mere capital provider. It connects invested companies with its global networks, shares its perspective and insights, and communicates expectations about best practices. This creates an entire dimension of additional opportunities for GIC: investments that are successful not simply because they are already on the right track, but because *GIC specifically* chooses to invest in them.

Similarly, GIC recognizes the transformative potential of its long-term investment horizon, which few other investors enjoy. Accommodating greater levels of near-term risk and illiquidity not only facilitates a more ambitious investment strategy for GIC, but also better responds to the real needs of the climate transition, much of which takes place at the technology frontier. The early years for emerging industries and companies can be a bumpy road, so achieving full potential requires patient capital and flexible investors.

c. A Holistic Approach enabled by Organizational Innovations

Climate change is widely acknowledged as a challenge which cuts across regions, sectors, and asset classes. Furthermore, both its causes and its effects intersect substantially with many other dimensions of sustainability, as well as of investment performance. That includes political and economic stability, social inclusion, and other environmental considerations such as water and biodiversity. This presents many challenges for investors, an important one being the creation of organizational arrangements that can effectively and efficiently address the cross-cutting nature of climate change and other sustainability issues in the context of investment strategy. It requires coordinating relevant areas of expertise, sharing knowledge and best practices across functions, establishing frameworks to support implementation, forming external partnerships, and allowing all of the above to evolve as the institution acquires experience over time. Critically, it also needs a leader empowered to take risks—and for the lessons those risks generate to be understood and broadly shared. GIC's recent organizational evolutions, including the establishment of a Sustainability Office and Sustainability Committee—but particularly the Sustainable Investment Fund—exemplify the type of organizational innovations which can lead to innovations in other domains, including research themes and investment practices. This opens a pathway for pioneering development of sustainable investment in a way which is simultaneously courageous and measured, while ensuring coherent execution and effective learning across the organization and over time.

1.3.2. Lessons and Recommendations for Policymakers

The case of GIC offers important lessons for policymakers worldwide who seek to promote sustainable investment. In particular, the *financial basis* for all of GIC investment activity is commonly shared among many institutional investors, independent of type, size, or geography, including many with developed sustainable investment practices. This exclusively financial orientation is often formalized through legal, regulatory, and institutional arrangements. This includes, for example, relationships of fiduciary duty that require maximizing risk-adjusted investment returns for beneficiaries or clients. Even institutions with more flexibility regarding their objectives, such as multilateral development banks whose mandates often include non-financial objectives, have been observed to 'drift' toward a prioritization of financial performance at the cost of other objectives, owing to intrinsic and extrinsic institutional factors.

An effective policy approach therefore depends on acknowledging these institutional and systemic tendencies among institutional investors. In practice, this leaves policymakers with three options: intervening in the real economy to change the sustainability-financial calculus for investors, facilitating the development and implementation of sustainable investment by contributing to its 'infrastructure', and intervening in financial practices.

a. Interventions in the Real Economy

Based on our research, perhaps the most important way to promote sustainable investment among institutional investors is to intervene in the real economy in a way that strengthens the relationship between sustainability performance and financial performance. This can entail a wide range of policy tools designed either to increase investors' financial risk in companies, industries, or activities that are harmful to environmental or social sustainability, and/or that improve return prospects for companies, industries, or activities that contribute to social and environmental goals. This could include, for example, public investment in clean energy infrastructure and technologies, the introduction of a carbon tax, subsidies for green R&D or production, procurement policies that favor sustainable enterprises or production, the promotion of green skills among the labor force, or the design of and support for sustainable development strategies that send clear policy signals to investors about the direction of strategic development. These real-economy interventions directly impact on the financial risk and return of related investments, thereby leveraging investors' financial orientation to steer greater capital flows toward desired development and sustainability objectives.

b. Contributing to Sustainable Investment 'Infrastructure' and Capacities

In addition to direct interventions in the real economy to alter the sustainability-financial calculus, policymakers can also contribute to the data infrastructure that facilitates sustainable investment implementation. In many cases, the financial calculus for sustainable investment is favorable, but investors do not have access to the data and tools to substantiate and act on this belief. In some cases, investors may develop tools in-house to improve their measurement and management of sustainability risks and opportunities, but even this often depends on a broader system of effective sustainability disclosures, including GHG emissions, for example. Therefore, we believe policymakers could improve the general infrastructure for sustainable investment through robust mandatory disclosure frameworks, but also through the development of data tools, product standards, and other technical capacities and standards relevant to sustainable investment.

c. Explicit Interventions in Financial Practices

Based on our observations, in rare cases, policymakers may choose to intervene explicitly in financial practices. Most notably, they can mandate divestment from certain industries (e.g. fossil fuels), countries/regions, or practices (e.g., child labor). Beyond this, they may also impose due diligence requirements on investors with respect to sustainability issues such as Scope 3 emissions. There is an ongoing debate regarding the effectiveness and appropriateness of due diligence-based regulation, particularly in contrast to a policy approach which intervenes directly in sustainability issues in the real economy—for example, by directly promoting or mandating emissions reductions. However, in cases where policymakers do not have jurisdiction over certain aspects—for example, in foreign countries—they may pursue a due diligence-based approach to promote sustainability goals.

Case Study 2: California Public Employees' Retirement System

Established in 1932, the California Public Employees' Retirement System (CalPERS) provides defined-benefit pensions, defined-contribution pensions, health benefits, and other worker benefits for California's public employees. CalPERS manages the Public Employee Retirement Fund (PERF), in addition to the California Employers' Retiree Benefit Trust Fund, the CalPERS Deferred Compensation Plan (defined-contribution), and several other benefit funds.[179]

As of June 30, 2022, CalPERS has an estimated liabilities of US$588.0bn, backed by invested assets valued at US$477.3bn (81.2% of liabilities).[180] The CalPERS Board of Administration[181] has investment authority and sole fiduciary responsibility for the management of CalPERS assets. The investment portfolio includes stocks, bonds, real estate, private equity, inflation-linked assets, and other public and private investment vehicles. Annualized investment returns were 6.7% in the last five years and 6.9% in the last 20 years.[182]

CalPERS's investment policies and strategies are designed to achieve balance between risk, return, and liquidity,[183] in a manner appropriate to the institution's overarching mandate of paying employee benefits. It invests its US$477.3bn portfolio across a mix of public and private markets, using both in-house investment teams and external investment managers, and benchmarks performance against a portfolio of public, passively-managed assets.

2.1 Drivers behind CalPERS's Sustainable Investment Approach

2.1.1. Overview

CalPERS's sustainable investment approach is driven and shaped by a number of external and internal factors, many of which are common to other investors, too, in one form or another.

The cornerstone of the legal, regulatory, and institutional framework governing CalPERS's investment approach, including its sustainable investment approach, is the fiduciary duties owed to beneficiaries. These duties require both investment prudence (proxied by risk-adjusted returns) on the part of the CalPERS Board, as well as a primary focus on beneficiaries' financial interests in investment decision-making. It is largely in this context of its fiduciary duties that the System's sustainable investment strategies prioritize long-term value creation and effective management of sustainability risks. Sustainable investment is approached not as an exercise in philanthropy for external stakeholders, but as a framework for ensuring the long-term sustainability of asset values for the benefit of current and future beneficiaries. This depends on robust economic performance in future decades, which is itself based on effective management of financial, environmental, and human capital.

Beyond fiduciary law, national policies and regulation, including those around active ownership practices and antitrust law, also shape CalPERS's sustainability approach. However, to date, these policies are perhaps better understood as limitations rather than motivations. State-level legislative interventions (including divestment mandates, subject to fiduciary duties) also play a role in CalPERS's approach. However, these are generally 'blunt instruments', and examples are very few.

An important though often overlooked policy tool for motivating sustainable investment flows are policy interventions in the real economy, in the vein of industrial policy measures. These center on publicly-led sustainable development strategies, and coordinate a range of policy tools, in which the public investment is critical.

In addition to the policy context, institutional investors may also be influenced by stakeholder views on investments or investment strategies. In some cases, this can be formalized—for example, insofar as the legislative interventions mentioned above represent an enactment of voters' views. However, reflecting these views in investment decisions is subject to fulfillment of fiduciary duties, even in the case of legislative mandates. A conflict can arise when stakeholders' proposed reforms to investment strategy are expected to detract from risk-adjusted returns.

Lastly, acting within the broad policy context, institutional investors such as CalPERS develop investment beliefs and principles to motivate and guide sustainable investment strategies and practices. The motivation for incorporating sustainability considerations in investment center on:

- Mitigation of industry- and company-level risks, including in relation to anticipated policy developments
- Mitigation of long-term and/or systemic economic and financial risks, related to environmental or social sustainability, which affect the whole portfolio
- Opportunities created by the low-carbon transition and other sustainability-related trends, including anticipated policy developments and publicly-led sustainable development strategies

2.1.2. Policy Context

a. Fiduciary duties

The foundational legal obligation shaping CalPERS's investment approach, including its sustainable investment approach, is the fiduciary duties of loyalty and care owed to CalPERS's beneficiaries, or members. CalPERS's fiduciary obligations are imposed by both federal- and state-level laws, and are an explicit centerpiece of CalPERS's investment policies, strategies, beliefs, and communications.

According to the California Constitution,[184] which also describes the nature of the state's retirement funds' fiduciary duties, the duty of care requires trustees (e.g. the CalPERS Board) to manage fund assets with appropriate care, skill, prudence, and diligence. This is proxied by a 'prudent expert' rule, translating to duties around investment diversification and risk management, accounting practices, monitoring, delegation, confidentiality, and System governance.[185] The fiduciary duty of care is often interpreted through a risk-return lens: put simply, 'reasonable care, skill, and caution' should translate to satisfactory risk-adjusted returns. In the often-heated debate regarding the relationship between ESG investing and fiduciary duty, proponents of ESG investment refer to the duty of care to justify their position, on the grounds that ESG practices can reduce financial risk and/or add to investment returns.

In contrast, the fiduciary duty of loyalty requires that trustees manage entrusted assets for either the 'sole' or 'best' interest of beneficiaries. 'Sole' and 'best' interest are two differing fiduciary standards, with the former standard restricting *any* consideration of collateral benefits (enjoyed by stakeholders other than the beneficiary) and the latter standard restricting consideration of collateral benefits as a *primary* factor in investment decisions.[186] Thus on the other side of the debate around ESG and fiduciary law, opponents of ESG investment refer to the duty of loyalty to argue that ESG investment represents a violation of fiduciary obligations, on the grounds that ESG investment represents a consideration of, or even prioritization of, collateral benefits.

b. Federal (National) Financial Regulation and Other Policies

U.S. federal policies, including federal financial regulation, also play an important role in CalPERS's investment practices. In many cases this influence is indirect, as federal regulators shape system-wide investment standards even in contexts where they do not have jurisdiction. As an example, the Department of Labor, tasked with implementation of Employee Retirement Income Security Act (ERISA), has recently introduced a number of rules around key investment standards, including ESG investment and active ownership, or stewardship practices.[187] Although CalPERS is not subject to ERISA, which concerns primarily employer-sponsored (corporate and trade union) pension plans, the standards established by the Department of Labor are often adopted as best practice or even legal standard more broadly.

In recent rulemaking,[188] the Department of Labor has effectively adopted a 'best' interest standard regarding the fiduciary duty of loyalty. While stressing that the paramount focus of plan fiduciaries must be the plan's financial returns and providing promised benefits to participants and beneficiaries, it also permits the consideration of 'collateral benefits', 'all else being equal'. This is sometimes referred to as the 'tiebreaker test', under which positive environmental and social benefits are a valid consideration in investment decisions in so far as they are not expected to detract from risk-adjusted returns. It is worth noting that the incorporation of ESG information as a method of managing risk or identifying opportunities with respect to financial returns is entirely consistent with fiduciary obligations. As noted above, although CalPERS is not strictly subject to these rules, we believe it's quite possible that many institutional investors such as CalPERS, as well as other public authorities, will likely adopt similar or identical standards.

c. California State Legislation

Legislative interventions at the state level also play a role in CalPERS's sustainable investment practices. Though legislative bodies, owing to institutional constraints, do not play an extensive role in governing the strategies and practices of large investors—instead focusing on issues of institutional governance—they do have a number of 'blunt instruments'. Most notably, California has passed legislation requiring that CalPERS divest thermal coal companies. There is also a bill currently under consideration that would require divestment from fossil fuel companies.[189] Notably, all of these divestment requirements are subject to CalPERS's fiduciary duties to members, meaning that such divestment is not permitted when it could potentially harm risk-adjusted returns.

The State Legislature has also introduced legislation requiring large companies doing business in California, including some private companies, to disclose climate-related information, including Scope 1, 2, and 3 GHG emissions. This does not represent an intervention directly in CalPERS investment activities, but would support the integration of climate considerations in its investments.[190]

d. Public Investment

Public investment and other government interventions in the real economy can have tremendous impact on sustainable investment practices, though this is arguably underappreciated in the sustainable investment discourse. Development planning, fiscal policies including subsidies and tax breaks, R&D grants, workforce investments, procurement policies, and many more forms of real-economy intervention affect the risk-return expectations of investments in related industries, companies, or activities. These interventions can be designed to simultaneously promote sustainability objectives and improve financial flows in related areas, in a manner consistent with investors' fiduciary duties and investment objectives.

Public investments such as those in the Inflation Reduction Act and California's own investments in clean energy infrastructure and technology, for example, directly improve the financial calculus for related investments. The Inflation Reduction Act was specifically addressed in CalPERS's presentation of its Response to the Taskforce on Climate-Related Financial Disclosure (TCFD) and Senate Bill 964,[191] demonstrating the importance of such policies to investors.

2.1.3. Investment Beliefs

In 2013 CalPERS adopted 10 Investment Beliefs[192] to provide a basis for strategic management of the investment portfolio and to inform organizational priorities:

- *Liabilities must influence the asset structure*
- *A long time investment horizon is a responsibility and an advantage*

- *CalPERS investment decisions may reflect wider stakeholder views, provided they are consistent with its fiduciary duty to members and beneficiaries*
- *Long-term value creation requires effective management of three forms of capital: financial, physical and human*
- *CalPERS must articulate its investment goals and performance measures and ensure clear accountability for their execution*
- *Strategic asset allocation is the dominant determinant of portfolio risk and return*
- *CalPERS will take risk only where it a strong belief it will be rewarded for taken the risk*
- *Costs matter and need to be effectively managed*
- *Risk to CalPERS is multi-faceted and not fully captured through measures such as volatility or tracking error*
- *Strong processes and teamwork and deep resources are needed to achieve CalPERS goals and objectives*

These investment beliefs form the basis of CalPERS's approach to sustainable investment, particularly in relation to risk, long-term value creation, a long-term investment horizon, and the balance between stakeholder interests and fiduciary duties. For example, CalPERS's long-term investment horizon creates a preference for investment strategies that create long-term, sustainable value and recognize the critical importance of a strong and durable economy in the attainment of funding objectives. This long-term value creation thus depends on invested companies' efforts to minimize negative impacts on the broader economy and future generations, as well as effective management of their environmental and human capital, both of which depend on strong corporate governance. It also depends on public policies that promote fair, orderly, and effectively regulated capital markets. Factors contributing to long-term value creation are mirrored in the question of risk, for both companies and the total investment portfolio. Climate risk and natural resource availability are explicitly named as risks which may emerge slowly over long time periods, but which could have a material impact.

2.2 CalPERS's Sustainable Investment Approach

2.2.1. Incorporating low-carbon transition into strategic goals

Sustainable investment at CalPERS is a cross-cutting activity, touching on research, investment analysis / ESG integration, corporate and manager engagement, policy advocacy, and more. To improve coordination across these activities and across asset classes, CalPERS established the Sustainable Investment Program as a 'total fund resource'.[193] The Program serves as the central hub for research and communication of sustainable investment insights and methodologies across the organization, including by conducting research in sustainability issues that affect investments;[194] supporting integration of ESG risks and opportunities across asset classes; leading advocacy with government bodies and standard setters on topics which affect investment returns; and conducting engagement with companies, managers, and stakeholders to understand, mitigate, and/or manage ESG risks and opportunities. Additionally, the Program developed the Sustainable Investment Research Initiative Library,[195] a database of 1,900 academic articles related to sustainability.

The total fund investment policy[196] defines the fund's strategic objective, requires the adoption of Investment Beliefs, sets target asset allocation and parameters, and provides guidance for many dimensions of implementation, including with respect to the selection and investment guidelines of external managers. The Policy requires that all publicly-traded company proxies and voting instructions are executed in alignment with the Governance and Sustainability Principles, and outlines the application of the Principles in other aspects of investment, including ESG integration.

2.2.2. Managing the Carbon Footprint of Portfolios

CalPERS's measurement and reporting practices fall into two categories. First are its own measurement practices and the disclosures it makes to external stakeholders. Second are the measurement and disclosure practices it requires or encourages among companies and external fund managers.

a. CalPERS's Reporting

CalPERS's reporting on the sustainability dimensions of its own practices, processes, and investments takes several forms, including annual reports,[197] sustainability-specific disclosures, and research reports,[198] as well as a broad range of publicly-available Board and Investment Committee strategic and policy documents.[199]

California Senate Bill 964, signed into law in 2018, requires California's largest pension funds to disclose climate-related risks, categorized by physical risks, litigation risks, stranded asset risks, and transition risks.[200] CalPERS's climate risk disclosure in 2022 integrated the Senate Bill 964's requirements with the TCFD Recommendations.[201] The PRI's sixth principle represents a commitment to reporting on activities and progress, serving as the basis for CalPERS's Responsible Investment Transparency Report.[202]

b. Corporate and External Investment Manager Disclosures

In addition to using third-party data sources such as MSCI, CalPERS relies on disclosed data from companies and managers to inform investment decisions.[203] It promotes transparent corporate and manager disclosure through direct engagement, through advocacy activities with regulatory bodies and standard setters, and through participation in the development of related disclosure standards.

CalPERS's Governance and Sustainability Principles[204] identify corporate disclosure frameworks useful to investors, including those from the Task Force on Climate-related Financial Disclosures (TCFD), the Sustainability Accounting Standards Board (SASB), the Global Reporting Initiative (GRI), CDP[205] (formerly Carbon Disclosure Project), and the International Integrated Reporting Council (IIRC). Illustrating its involvement in the space, CalPERS staff have served on the IFRS Advisory Council, the SASB Investor

Advisory Group, the Investor Leadership Network under the TCFD; they have also sent letters to independent standards setters and regulators on sustainability topics and testified before the U.S. Congress.[206]

Most corporate sustainability reporting frameworks are designed to be used by large and/or publicly-listed companies. The materiality of ESG in private equity investments is now recognized, though ESG data in private equity is ‘a mess’.[207] To increase efficiency and effectiveness of ESG data practices for investors, fund managers, and portfolio companies alike, CalPERS launched a partnership called the ESG Data Convergence Initiative (formerly ‘Project’) to standardize private equity ESG disclosures.[208] The Initiative used metrics related to GHG emissions, renewable energy, diversity, work-related accidents, net new hires, and employee engagement. As of July, 2023, the Initiative has garnered the participation of over 325 private equity limited and general partners, representing over US$27trn in total assets, and has generated data on over 4,000 portfolio companies.

2.2.3. Participating Actively in International Processes and Initiatives

CalPERS engages regulatory bodies and partners with other investors and organizations to promote sustainable investment, particularly around corporate disclosures and corporate engagement. It is a co-founder and board member of the International Corporate Governance Network, the Council of Institutional Investors, the Institutional Limited Partners Association, and GRESB. It also was a co-founder of Climate Action 100+. It also plays leadership or active roles with PRI, CDP, SASB, the Net Zero Asset Owner Alliance, and Ceres. It is also a member of the Investors Initiative for Sustainable Forests and the Investor Working Group on Sustainable Palm Oil. Many of these partnerships form a basis for corporate engagement, public policy engagement, or both.

2.2.4. Accounting for ESG factors when Screening and Evaluating Asset Management Firms

As part of the manager screening, selection, and contracting process, CalPERS staff:

- Request information on ESG from managers, which may include information on ESG policies, ESG integration methodologies, ESG risk management methodologies, ESG track record, ESG engagement activities, etc.
- Aim to agree to investment management contracts that include terms requiring managers to have or develop a method for ESG integration in the investment process and ESG reporting
- Include discussion of managers’ ESG practices and/or ESG concerns uncovered during the due diligence process when making manager recommendations to the asset class investment committee
- Apply an ESG Consideration Matrix for new real asset investments

ESG monitoring and management can apply to individual securities (particularly in internally-managed portfolios of publicly-traded securities), to investment managers and funds, to portfolio companies, and/or to direct investments. Broadly speaking, this means initial and ongoing assessment of material ESG factors, ESG-related methodologies and processes, litigation issues, ESG reports, and compliance with legislative mandates.

2.2.5. Exercising Stewardship (Active Ownership)

Contrasting with asset allocation practices—particularly divestment—institutional investors in many cases prefer to use shareholder influence to shape key corporate governance and sustainability issues, including through corporate engagement, proxy voting, and resolutions. CalPERS's corporate engagements can be ad-hoc, routine, or in coordination with a broader initiative, according to a four-stage strategy: identify priority companies and issues; analyze the company and the issue; engage the company to gather facts, express concerns, share the CalPERS Principles, seek the company's perspective, and seek a resolution; and review progress toward a resolution.[209] Some of CalPERS's engagement activity is conducted in coordination with other investors. For example, investor sign-on letters are used to communicate sector-specific expectations of companies.[210]

2.2.6. Using ESG Integration & Negative Screening Strategies

a. ESG Integration

ESG integration represents a methodology to account for ESG risks and opportunities without the need for broad prohibitions. For example, ESG screening can be used to inform investment and valuation analysis, which can also impact the asset allocation, albeit more incrementally.

With respect to ESG integration, the CalPERS Sustainable Investment Program works with asset class units and investment office leadership to assess and manage priority ESG risks and opportunities; review, pilot, procure, and/or create tools to facilitate ESG integration; and identify opportunities which generate both strong financial returns and positive social and environmental impact.[211]

ESG factors material to investment performance vary widely depending on asset type, geography, and investment strategy, among many other considerations. This is reflected in the varying approaches across the four core asset classes' Sustainable Investment Practice Guidelines. CalPERS employs a wide range of data sources and tools, including the UN PRI Private Credit-Private Equity ESG Factor Map and MSCI's Intangible Value Assessment. Under the "E" pillar, real assets portfolio ESG factors include climate risk, resilience of surrounding infrastructure, energy efficiency, emissions, resource use and biodiversity. [212]

b. Negative Screening (Divestment)

Despite publishing a principled argument against divestment practices on the basis that it conflicts with the Board's fiduciary duties,[213] CalPERS implements a number of divestment policies. Some sustainability-focused divestment policies—including divestment from manufacturers of tobacco products and assault-style firearms—are directed by the CalPERS Board. Other divestment mandates—including from businesses from thermal coal companies (mines)—are directed by California's legislature. In all cases, the divestments are contingent on such practices being consistent with the Board's fiduciary responsibilities. In other words, divestments are only undertaken (or continued) if the Board believes such decisions will not harm the fund's risk-adjusted returns. This assessment is based on an analysis of both the assets' past returns and potential future performance.[214]

In the case of the legislative mandates, divestment was preceded by engagement of applicable companies, which also formed the basis for divestment exemptions. If, through 'constructive' and documented engagement with thermal coal companies, CalPERS established that a thermal coal company was transitioning its business model to adapt to clean energy generation, such as through a decrease in its reliance on thermal coal as a revenue source, such company was exempted from the divestment requirement.[215]

2.2.7. Making Sustainability-Themed Investments

Where consistent with its fiduciary obligations, CalPERS also actively seeks investment opportunities in sustainable products and services. For example, CalPERS invests in new issues of sustainable bonds, including green, social, sustainability (green and social), and sustainability-linked with holdings of approximately US$950mn. These bond purchases have funded, *inter alia*, renewable power, energy efficiency, clean transportation, and green buildings.[216] CalPERS's infrastructure portfolio invests US$4.76bn, more than 51% of the portfolio net asset value, in renewable energy, energy efficiency infrastructure, sustainability certified, and carbon-neutral assets. Over 37% of real estate assets are invested in sustainability-certified buildings. Roughly US$1.2bn of the corporate credit portfolio and US$18.9bn of the public equity portfolio is invested in companies designated as low-carbon solutions.[217]

2.3 Lessons and Recommendations

CalPERS's decades of experience in sustainable investment can offer lessons and insights for other investors, particularly with respect to high-level policies and strategies, organizational structures and capacities, investment practices, and partnerships.

2.3.1. Lessons and Recommendations for Investors

a. Investment Policies and Strategies

An investor's sustainable investment strategy should be underpinned by a set of high-level investment beliefs which are consistent with the institution's mandate and adapted to its portfolio and other individual circumstances. High-level investment beliefs can provide a coherent basis for internal strategy development, external communications and engagement, and institution-level learning. This coherence enables investors to send clear and stable signals to companies, managers, policymakers, and other stakeholders, which is critical to an effective approach. The sustainable investment strategy should be firmly rooted in these investment beliefs and additional relevant policies, as well as the legal and regulatory obligations of the investor.

The Sustainable Investment Program and the broader sustainable investment strategy also benefit from CalPERS's development of Governance and Sustainability Principles. These Principles are similar to the Investment Beliefs in that they can promote coherence across the institution's different activities and vis-à-vis external stakeholders. Yet, as they offer greater detail around key issues of governance and sustainability, they lend themselves to effective application. Moreover, as evident from the multiple revisions of the Principles over the years, these Principles also represent a vehicle for institutional learning: an iconic, evolving document that incorporates CalPERS's perspective and expertise gained through its sustainable investment experience.

The development of multi-year strategic plans is also critical. It is noteworthy that many of CalPERS strategic goals have been years or even decades in the making. This indicates that the high-level strategies of institutional investors depend on far-sighted planning, and on the governance and risk capacities which support consistent pursuit of those plans.

b. Organizational Structure and Capacities

Effective sustainable investment strategies cut across many domains of activities and functions, including research, risk management, ESG integration and other investment practices, corporate and manager engagement, partnerships and policy advocacy, and stakeholder communications and engagement. The application of a sustainable investment strategy across these dimensions necessarily depends substantially on the nature and circumstances of the separate activities and functions. CalPERS manages this complexity through the operation of a dedicated function, the Sustainable Investment Program. This function can improve coherence across the fund with respect to research and data efforts, fund priorities, and investment practices, including across asset classes. Additionally, a dedicated function provides an important liaison between the fund and external stakeholders, as an instrument both of communication and learning.

Additionally, given the complexity of many sustainability issues, an effective sustainable investment approach depends on an able research function and/or service providers, both of which CalPERS has relied on to support its activities. Perhaps most importantly, theoretical and empirical research on the links between sustainability factors and investment risk/performance is critical. Building an understanding of these relationships depends on expertise beyond the scope of conventional investment expertise, including in environmental science, social science, politics and policy, and corporate governance. Effective sustainable investment strategies also require evaluation of short- and long-term trade-offs, and of the interactions between environmental and social issues, between economic sectors, and between local, national, and global economies. The management of systemic risks and systematic risks related to environmental and social sustainability introduces additional research complexity. None of these issues can be approached effectively without a sound knowledge base, strong research capacity, partnerships for implementation, and robust stakeholder management practices.

c. Investment Practices

Leaders in sustainable investment such as CalPERS use a wide range of investment approaches and practices, reflecting both the multifaceted nature of sustainability challenges and the differentiated capacities of asset types to address those challenges. Sustainable investment practices have evolved significantly in recent years. Although divestment remains an important tool in specific cases, it is now accompanied by a range of other sustainable investment practices. That includes integration of ESG considerations and priorities in due diligence, investment analysis, manager selection and contracting, monitoring and reporting, engagement etc. It also includes proactive pursuit of investments identified as solutions to major sustainability challenges, such as in renewable energy and resource efficiency.

d. Broader Activities and Engagement

Sustainability and sustainable investment are both systems-level issues which cannot be understood or addressed without external engagement and partnerships.

Corporate engagement is important for communicating expectations, identifying risks and issues, sharing best practices, monitoring progress, etc. Public policy engagement (with respect both to financial regulation and real-economy policies where possible) also represents an opportunity to strengthen the informational infrastructure on which sustainable investment depends; to share knowledge and best practices with public authorities; to communicate institutional requirements and interests; and to anticipate legal and regulatory developments. Notably, corporate and policy engagement activities also require coordination. Corporate action on sustainability issues depends in large part on what is or may in the future be incentivized by policy. Conversely, policymakers are unlikely to undertake reforms which are excessively challenging for companies and therefore politically infeasible.

Concerted efforts to engage and influence corporate action and public policy are facilitated most clearly in CalPERS's own experience by the various partnerships in which it participates. In addition to coordinating policy and corporate engagement activities across multiple investors, partnerships also serve as a platform for knowledge-sharing; for identification, development, and sharing of best practices; and for the development and communication of investor expectations, including with respect to disclosures.

CalPERS does not necessarily depict its relationships with investment managers as a key feature of its sustainable investment strategy, but, especially as ESG is further integrated into manager selection, monitoring, and engagement, it is clear that these relationships can also be valued as important partnerships for the execution of a sustainable investment strategy. Investment managers can be sources of critical domain-specific expertise, including with respect to the challenges, successes, and opportunities of sustainable investment.

2.3.2. Lessons and Recommendations for Policymakers

The experience of CalPERS illuminates a range of policy considerations relevant for sustainable investment, serving as a basis for recommendations to policymakers seeking to promote sustainable investment in their jurisdictions.

a. Real-economy Interventions

As can be seen in CalPERS's attention to the Inflation Reduction Act, and additionally in the broader US investment environment following the passage of this and other recent legislation, policy interventions in the real economy represent perhaps one of the most important tool to promote sustainable investment among institutional investors. These interventions strengthen the relationship between sustainability performance and financial performance, allowing investors to steer capital toward sustainability objectives in a manner aligned with their financial objectives and obligations.

These policies can be designed either to increase financial risk in companies, industries, and activities that are harmful to environmental or social sustainability, and/or improve return prospects for companies, industries, and activities that contribute to social and environmental goals. This could include, for example, public investment in clean energy infrastructure and technologies, the introduction of a carbon tax, subsidies for green R&D or production, procurement policies which favor sustainable enterprises or production, the promotion of green skills among the labor force, or the design of and support for sustainable development strategies that send clear policy signals to investors about the direction of strategic development.

b. Clear and Stable Policy Signals

It has been evident from the US experience that unclear and unstable policy signals (including in regulatory rules and guidance) put a meaningful damper on sustainable investment—*irrespective* of the content of those signals. The experience with US Department of Labor guidance and rulemaking offers an important example. The unfortunate irony in the Department's rulemaking of recent years regarding ESG investing is that the fundamental principles underlying fiduciary obligations *did not change*, and yet the headlines and partisan context of contradictory rulemaking induced among the investment community a profound sense of 'back-and-forth' confusion. Incorporating any form of information to improve risk-adjusted return, including ESG information, was *always* permitted—throughout these political cycles—and investing other than for the financial benefit of beneficiaries was always restricted. Exactly *how* restricted was the subject of some change (for example, when the Department of Labor clarified the permissibility of the 'tiebreaker rule' in the latest ruling). However, this is in fact a marginal consideration relative to the principles which stayed consistent. Yet the rulemaking process itself caused a quite noticeable, negative impact on sustainable investment practices, including for investors aiming to reduce regulatory and litigation risk in the face of policy confusion. The lesson is that the clarity and stability of policy signals matter as much or more than the content of those policies.

c. Disclosures

Because such a large segment of sustainable investment is constrained by financial obligations and objectives, sustainability data is crucial for developing understanding of and evidence for the relationships between sustainability performance and financial performance. Without this data, not only are investors constrained in the implementation of sustainable investment strategies, they are also constrained in their ability to establish sound rationales for such strategies in the context of their governance structures and fiduciary obligations.

d. Fiduciary Duties and Beneficiary Interest

As discussed above, fiduciary duties represent the cornerstone of the legal, regulatory, and institutional frameworks governing CalPERS's and many other investors' activities. Fiduciary law offers a foundational action point to promote a more conducive environment for sustainable investment: expanding the allowable definition of 'beneficiary interest'. In many contexts, beneficiary interest is defined in exclusively financial terms. Allowing a broader definition of beneficiary interest within relevant law—for example, allowing trustees to consider beneficiaries' interest in a healthy environment, in addition to their financial interests—

creates important possibilities for sustainable investment. Most importantly, sustainability-minded investors would not be restricted to the strategies and investments which are established to improve financial risk-return. Instead they could assess and act on the trade-offs between financial and non-financial benefits for the beneficiaries of their investments.

This reform does create some complications; in particular, as related to 'diverse stakeholder interests'. In other words, some beneficiaries may be more interested in sustainable outcomes than others, posing challenges for trustees acting on behalf of their beneficiaries as a whole. Yet this challenge is not particular to sustainability considerations. Fiduciary law (already) reflects the need for trustees to make decisions for beneficiaries as a whole, in way that may not represent the best interest of every individual beneficiary.

Case Study 3: Government Pension Fund Global (GPFG)

Established in 1990, the Government Petroleum Fund was set up to protect the economy from the ups and downs of Norway's oil revenues.[218] In 2006, the Government Petroleum Fund became the Government Pension Fund Global (GPFG), which later served as a financial reserve and as a long-term savings plan. The main purpose of GPFG is to support government savings to finance future expenditures and underpin long-term considerations. Prior to 2022, GPFG was the largest SWF in the world for more than a decade[219] and it pioneered the promotion and implementation of sustainable investing among institutional investors worldwide

GPFG is governed by three levels of institutions, namely the Storting (the Norwegian Parliament), the Ministry of Finance, and Norges Bank. The Storting has established the legal framework in the *Government Pension Fund Act*[220], which establishes the formal responsibility of the Ministry of Finance for the management of the fund. On behalf of the Ministry of Finance, Norges Bank manages GPFG, in accordance with the Act and the management mandate for the GPFG, issued by the Ministry of Finance. Furthermore, within Norges Bank, the Executive Board has delegated day-to-day management of the GPFG to Norges Bank Investment Management (NBIM).

GPFG had a market value of US$1.2trn at the end of 2022 and reached US$1.4trn in 2023Q1.[221] From 1998 to 2022, the fund's annual return was 5.7%. However, in 2022, due to rising interest rates, high inflation and the Russia-Ukraine conflict, the fund's annual return before management fees was -14.1% in terms of its currency basket. [222]NBIM uses both discretionary and delegated investment models for different types of markets. The majority of the fund is managed under the market exposure strategy, which aims to achieve market exposure mirroring the benchmark index as cost-effectively as possible and to pursue various indexing strategies. Its investments in 2023Q1 were split into 70.1% equities, 27.3% fixed income, 2.4% unlisted real estate and 0.1% unlisted renewable energy infrastructure.[223]

In terms of sustainable investing, at the end of 2022, 6% of GPFG's equity portfolio was invested in companies that generate revenue from climate solutions, as defined by MSCI. It also monitors investments included in the FTSE Environmental Opportunities Index, which tracks companies that generate more than 20%

of their revenue from environmental products and services. At the end of 2022, 13% of the fund's equity and bond investments were in companies included in this index. At the end of 2022, green bonds in the fixed-income portfolio amounted to NOK 61.7bn, based on the definition for the MSCI Bloomberg Green Bond Index.[224]

3.1 Drivers behind NBIM's Sustainable Investment Approach

3.1.1. Overview

NBIM's objective in managing the GPFG is to achieve the highest possible return at an acceptable level of risk, with the mission to preserve and build financial wealth for future generations.[225] The fund's long-term return depends on a sustainable economy, well-functioning markets, and good corporate governance. Through responsible investing, NBIM seeks to improve the long-term economic performance of its investments and reduce the financial risks associated with the environmental and social practices of the companies in its portfolio.[226]

3.1.2. Policy Content

a. The Storting (the Norwegian Parliament)

The Storting is the highest authority in the management of GPFG. The Storting has enacted the *Government Pension Fund Act*[227], which defines the purpose of the fund, and lays the foundation for the legal authenticity of GPFG. According to the Act, GPFG shall support the financing of pension expenditure under the National Insurance Scheme and facilitate the use of government petroleum revenues in a manner that reflects long-term considerations for the benefit of both present and future generations. In addition, key decisions are approved by the Storting, prior to implementation and the Storting entrusts the management of GPFG to the Ministry of Finance.[228]

b. Ministry of Finance

The Ministry of Finance has the formal responsibility for the management of the GPFG and sets the investment framework for GPFG, including requirements for risk management, reporting, and responsible management. The *Management mandate for the Government Pension Fund Global* [229] stipulated by the Ministry of Finance requires responsible investment to be an integral part of the management of the fund, along with requirements for measuring, managing, and reporting on climate risk.[230] In Chapter 4 of the *Management Mandate*, the Ministry of Finance defines the responsible investment activities, principles, contribution to the development of international standards, exclusion and observation decisions as the responsible management requirements for Norges Bank. The Norges Bank shall seek to establish a chain of actions to make portfolio companies compatible with global net zero emissions in accordance with the Paris Agreement.

c. Council on Ethics

The Council on Ethics plays an important role in the governance model of GPFG with regard to sustainable and responsible investment. The Council on Ethics is an independent body appointed by the Ministry of Finance that makes recommendations to Norges Bank to either exclude companies from the GPFG or place them under observation. The recommendations are not legally binding but they are highly credible because the Council's assessments of individual companies are based on the ethical guidelines for the GPFG's investments set by the Norwegian Ministry of Finance.

The guidelines include both product-based exclusion criteria, such as the production of tobacco, coal or certain types of weapons, and conduct-based exclusion criteria, such as serious financial crimes, human rights violations, and severe environmental damage. The threshold for exclusion is deliberately high. The guidelines are also forward-looking and apply to unacceptable conditions that are ongoing or may arise in the future. According to the Ethical Guidelines[231], companies may be excluded from the Fund if they contribute to or are responsible for serious violations of the standards. These violations, based on Guidelines for Observation and Exclusion of companies from the GPFG[232], include actions such as serious environmental damage and actions or omissions that result in unacceptable greenhouse gas emissions on an aggregate company level.

The Council submits its recommendations to Norges Bank, which makes the final decisions. In 2022, the Council made recommendations on a total of 21 companies including 17 for exclusion, one for revocation of exclusion, two for observation and one for termination of observation. NBIM excluded 13 companies out of the 21 companies recommended by the Council on Ethics[233], as nine of the recommendations for exclusion were prompted by the changes in the GPFG's ethical guidelines introduced in 2021 and already reflected in decisions.[234]Before taking a decision on exclusion, Norges Bank shall consider whether measures other than exclusion would be more appropriate to reduce the risk of a continued breach of the standards, or would be more appropriate for other reasons. Finally, Norges Bank's decision and the Council's recommendation to observe or exclude companies are made public. If a company is excluded, the decision is published only after the securities have been sold.

d. Norges Bank Executive Board

In accordance with *Management mandate for the Government Pension Fund Global*[235] issued by the Ministry, NBIM conducts the operational management of the GPFG.

The Executive Board of Norges Bank has delegated the operational management of the fund to NBIM through the application of governing documents such as:

- *Executive Board Principles for Responsible Investment*,[236] illustrating that responsible management is an integral part of the management of the investment portfolio;
- *Investment Mandate GPFG*,[237] governing NBIM's investment activities in accordance with the investment restrictions for unlisted renewable energy infrastructure, and setting internal limits on direct and indirect investments in unlisted renewable energy infrastructure. For example, GPFG could only invest directly in unlisted renewable energy infrastructure in developed markets in Europe and North America, and invest at least 70% of the underlying indirect investments in renewable energy infrastructure in OECD countries;
- *Norges Bank Investment Management CEO job description*[238], stating that responsible investment management and active ownership shall underpin the overall objective. To achieve this goal,

the CEO shall integrate responsible investment considerations into investment management activities and shall exercise ownership rights on behalf of the Fund and portfolios managed by NBIM.

3.1.3. Investment Beliefs

NBIM's sustainable investing beliefs are elaborated as follows:

a. Sustainability

- Material sustainability risks and opportunities a company faces, as well as the quality of its corporate governance, are likely to have an impact on its ability to create long-term value. [239]

- Companies' exposure to and management of sustainability risks and opportunities can affect their value creation. Integrating material information into regular corporate publications and financial statements facilitates timely, coherent and robust disclosure. For sustainability information to support investment decisions, risk management processes, and ownership activities across a diversified portfolio, it must be consistent and comparable across companies and over time.[240]

b. Environment

- NBIM sees opportunities in investing in companies with solutions that enable greener economic activities. These investments can have a positive impact on other companies in the portfolio. These positive externalities can include reduced pollution, lower energy costs, and more efficient use of resources. In turn, companies that produce such technologies can benefit from changes in demand and regulation.[241]

- The environmental risks and opportunities associated with the construction, operation, and disposal of renewable energy infrastructure assets, can be significant. Robust health and safety standards can improve productivity and reduce risk on construction sites, in factories producing building materials, and in operating facilities.[242,243]

- NBIM believes that companies that understand the drivers of net zero emissions and anticipate regulatory developments will be well-positioned to capture the financial opportunities arising from a low-carbon economy. [244]

- Given NBIM's understanding of sustainable economic growth, there are also companies in which the Fund should not invest. By not investing in such companies, NBIM reduces the Fund's exposure to unacceptable risks. [245]

c. ESG

- NBIM believes that ESG considerations enhance return and reduce risk. Furthermore, ESG considerations are integrated into NBIM's investment decision-making processes across all asset classes.[246]

- Engagement with NBIM's investee companies is critical to the integration of ESG into its processes. NBIM strongly believes that this will lead to the best financial results for the fund. [247]

- NBIM believes that good corporate governance is a prerequisite for responsible business practices. Shareholders must be able to influence important decisions made by the board of directors.[248]

3.2 NBIM’s Sustainable Investment Approach

3.2.1. Incorporating Low-Carbon Transition into Strategic Goals

As a long-term and globally diversified financial investor, NBIM’s responsible investment management goal is for the portfolio companies to align their operations with global net zero emissions in line with the Paris Agreement. On this basis, NBIM’s ambition for companies in its portfolio is to achieve net zero emissions by 2050 through credible targets and transition plans for reducing their Scope 1, Scope 2, and material Scope 3 emissions.[249] NBIM’s strategy addresses climate risks and opportunities at the market, portfolio, and company levels.[250]

a. Market Level

NBIM's approach to responsible investment management is based on international standards. NBIM supports standard setters in their efforts to improve climate-related risk management. To ensure an orderly transition to a low-carbon economy, more efficient carbon markets and consistent climate disclosure, including on emissions targets and performance, are needed. Externalities will be reduced, and investors will be able to analyze how companies are responding to the climate transition. The goal is to improve global, science-based standards that level the playing field for businesses. By 2025, NBIM hopes to have contributed to more sustainable and efficient financial markets by advocating for better corporate climate reporting, encouraging the establishment of credible transition pathways, and funding promising academic research.

b. Portfolio Level

NBIM employs quantitative techniques to better understand climate-related risks and opportunities, as well as how the market values them. Through NBIM's processes and data interfaces, climate-related insights are widely disseminated across the companies. Climate risk analysis informs investment decisions and influences divestments. By 2025, NBIM aims to have a complete system in place to measure its exposure to climate risks and opportunities, as well as the projected emissions trajectory of its portfolio.

c. Company Level

NBIM incorporates climate factors into its investment analysis to decrease risks and increase returns. When considering ownership and investment cases, NBIM will examine sector- and company-specific climate information. NBIM intends to analyze increasingly granular climate-related data to inform its investment decisions by 2025. NBIM plans to use its access to companies and analytical expertise to build climate knowledge and use advanced data analytics to assess climate risks and opportunities, integrate companies’ exposure to climate risks and opportunities (including through their value chains) into its investment analysis, and exclude candidates under the climate-related conduct exclusion criterion.[251]

3.2.2. Managing the Carbon Footprint of Portfolios

At the portfolio level, NBIM has calculated the carbon footprint of its equity portfolio since 2014, and it uses scenario analysis to understand how different climate scenarios may impact the future value of the portfolio. Weighted by net asset value, the equity portfolio's carbon intensity (Scope 1-2) at year-end 2020 was 456 tons of CO2-equivalents per million dollars of revenue, compared to 687 tons for the stocks sold to fund the environmental mandate.[252] As Scope 1 and Scope 2 emissions are concentrated in specific sectors, NBIM is adopting sector policies to manage climate risk exposure. NBIM has been actively engaging with companies in its portfolio to encourage them to reduce their GHG emissions, and it has also been divesting from companies that are not making progress in reducing their emissions.

By 2025, NBIM aims to have a comprehensive system in place to measure its exposure to climate risks and opportunities, and the potential emissions trajectories of its portfolio:[253]

- NBIM will develop principles for measuring and managing climate risk, and annually stress test the equity portfolio against a 1.5 ℃ and other climate scenarios.
- NBIM will set a net zero 2050 target for the unlisted real estate portfolio and an interim 2030 target of a 40% reduction in Scope 1 and 2 GHG emissions intensity (compared to 2019). NBIM will integrate these targets into its acquisition and asset management practices.
- NBIM will analyze the emissions of portfolio companies and unlisted real estate investments relative to their sector-specific emissions pathways, and monitor progress toward their emissions reduction targets.
- NBIM will continue to increase investment in renewable energy infrastructure.
- NBIM will systematically monitor climate risks in the portfolio, including in equity benchmarks, and divest from companies with unmitigated climate risks, particularly where engagement has failed or is unlikely to succeed.

3.2.3. Participating Actively in International Processes and Initiatives

NBIM aims to contribute to well-functioning markets and good corporate governance. It recognizes a number of international standards, contributes to their further development, and expects the companies in which NBIM invests to comply with them. NBIM also participates in various international organizations, initiatives, and networks to promote the development of sustainable investment both internally and externally.

Appendix Table 1. NBIM's participation in IOs and Initiatives[254]

Theme	**Organization/Initiative**
Sustainable development	Carbon Disclosure Project (CDP)
	Institutional Investor Group on Climate Change (IIGCC)
	Norwegian Sustainable Investment Forum (Norsif)
	Extractive Industries Transparency Initiative (EITI)
	Task Force on Climate-related Financial Disclosure (TCFD)
	Taskforce on Nature-related Financial Disclosures (TNFD)

	Principles for Responsible Investment (PRI)
	Sustainability Accounting Standards Board (SASB)
	Transition Pathway Initiative
	United Nations Environment Program Finance Initiative (UNEP FI)
	UN Global Compact
	UN Global Compact Action Platform on Sustainable Ocean Business

Source: China Securities Investment Fund Association, *Compilation of Overseas Regulations and Practices on Institutional Investors' Participation in the Governance of Listed Companies[M]. Beijing: China Finance and Economics Press, 2021.11.*

With respect to disclosure standards, NBlM supports the mission of the ISSB to develop a comprehensive global baseline of corporate sustainability disclosures and hopes that its forthcoming standards can be recognized globally as the reference standards for reporting financially-material sustainability information. NBIM has a clear interest in seeing financially material sustainability information reported in a consistent and comparable manner across markets. In its response to the SEC, NBIM believes that it would be helpful to both investors and reporting companies if the Commission were to allow foreign private issuers to use the *IFRS Climate-related Disclosures Standard* to meet their climate-reporting obligations, given the level of consistency between the IFRS standard and the lSSB's exposure draft. The Commission could also consider referring to the *IFRS General Requirements for Disclosure of Sustainability-related Financial Information* for company reporting on material sustainability issues other than climate change.[255]

3.2.4. Accounting for ESG Factors when Screening and Evaluating Asset Management Firms

The fund had NOK569bn, or 4.6% of its capital, under external management at the end of 2022, which is a small share but still a substantial amount of money.[256] There are some common characteristics among NBIM's portfolio managers that NBIM believes increase the likelihood that a manager will deliver high returns in the selection and screening process. As part of their mandates, NBIM portfolio managers are required to consider ESG in their analyses among other factors to have a deep understanding of NBIM's expectations on governance and sustainability issues.

NBIM also requires specific ESG monitoring, especially climate-related expectations for screening and selection[257]. These climate change expectations (and other sustainability expectations) also apply to companies in which the fund invests through external mandates.

- Companies should commit to net-zero by 2050 and align their operations with the goals of the Paris Agreement.
- Companies should identify and incorporate material short-, medium- and long-term climate change risks and incorporate them into a robust and integrated risk management framework.
- Companies should have policies or guidelines for engaging with policymakers and regulators on climate change, and should be transparent about related spending and activities.

3.2.5. Exercising Stewardship (Active Ownership)

GPFG owns small stakes in more than 9,000 companies around the world.[258] NBIM manages its responsibilities and exercises its rights as an owner. The commitment of NBIM's engagement is to promote long-term value creation in companies on which the Fund's future value depends. As such, NBIM wants to support its portfolio companies to create long-term financial value, adapt their business models, and achieve net-zero emissions. Specifically, NBIM's engagement focuses on voting, dialogue, and follow-up with individual portfolio companies. While NBIM votes on all of its holdings, it does not engage in dialogue or follow-up with each of its 9,000 companies.

a. Voting at Companies

Voting is NBIM's primary tool for active ownership. Through voting, NBIM seeks to strengthen corporate governance, improve financial performance, and promote responsible business practices. NBIM holds boards of directors accountable for their decisions and considers who should serve on the board. NBIM's voting guidelines provide a principled basis for voting decisions, but NBIM also considers company-specific factors when voting. NBIM's starting point in deciding how to vote is to support the board, and NBIM participates in the election of the board and entrusts it with the management of the company. If NBIM believes that the board is unable to operate effectively or that its rights as a shareholder are not being adequately protected, NBIM may choose to withhold its support. For example, at Chevron's annual meeting, NBIM supported the shareholder proposal calling on Chevron to reduce emissions from its products, both upstream and downstream, over the objection of the board.[259]

NBIM votes in accordance with its proxy voting principles so that companies can understand why NBIM votes the way it does and can explain its voting decisions. NBIM's proxy voting principles focus on effective board and shareholder protection, including six different topics. In NBIM's public proxy voting guidelines, the fifth topic on reporting includes sustainability as an element, in addition to auditors and financial statements.[260] NBIM aims to pre-disclose the votes on its website five days in advance of company meetings and publishes the rationale associated with its public voting guidelines when it votes against the board's recommendation.

b. Dialogue with Companies

NBIM engages in frequent dialogue with companies, raising governance and sustainability issues that are relevant to its long-term return. NBIM prioritizes its largest investments. NBIM engages in regular dialogue with these nearly 1,000 companies, which make up around two-thirds of the total value of the equity portfolio.[261] In addition, NBIM publishes expectations and positions which are relevant to all of the companies in its portfolio, and NBIM engages with individual companies on their strategic priorities and specific developments. Portfolio managers also discuss these issues directly with companies; in 2022, they participated in 2,178 meetings with companies.

c. Company Follow-up

NBIM works with companies, investors, and other stakeholders to advance standards, increase information available to investors, and promote responsible practices. This is particularly important when many companies in an industry face the same challenges. Currently, NBIM has nine expectation documents covering climate change, water management, ocean sustainability, biodiversity and ecosystems, among others. NBIM expects companies to integrate material risks in these areas into their business strategy, risk management, and reporting. NBIM continues to develop its understanding of these areas and the impact they may have on portfolio companies. NBIM's work has given itself a better basis for assessing companies' strategies and engaging with their boards.

3.2.6. Using ESG Integration and Negative Screening Strategies

NBIM seeks to identify long-term investment opportunities and reduce its exposure to unacceptable risks. NBIM assesses how companies impact the environment and society and sees opportunities in companies that enable greener business practices. There are also companies in which NBIM will not invest for sustainability or ethical reasons.[262]

NBIM monitors its investments and assesses sustainability issues as part of its risk management and investment decisions. Furthermore, within the framework of internationally agreed standards, NBIM sets its own investment priorities based on its mandate and characteristics as a fund, focusing on nine pillars[263] of sustainability issues namely *anti-corruption, biodiversity and ecosystems, children's rights, climate change, human capital management, human rights, ocean sustainability, tax and transparency, and water management*. The expectations outline how NBIM expects companies to integrate these considerations into their strategy, policies, etc. [264]

a. ESG integration

NBIM incorporates ESG data into its investment process. As part of their mandates, portfolio managers entrusted by NBIM are expected to include ESG issues in their analysis, among other criteria, and to have a thorough understanding of NBIM's governance and sustainability standards.

NBIM continues to develop tools to facilitate ESG integration. For instance, NBIM has made more information on company boards available to portfolio managers and developed an internal indicator to quantify the quality of a company's governance. In 2022, NBIM launched a new cross-sector mandate in which the security selection process is underpinned by corporate governance factors. Furthermore, NBIM combined company tax data from public filings, subsidiary and revenue exposures, tax management practices, and controversy data into a dashboard. NBIM also began to more closely monitor legislative and regulatory developments related to climate change that could have a significant impact on portfolio companies.

ESG integration into the investment process is also implemented in NBIM's 'Investment Simulator', a decision-support framework designed to improve the quality of portfolio managers' investment decisions by highlighting strengths and areas for development. Combining internal and external data sets, the simulator models portfolio managers' past decisions, motivation, and behavior, and provides investment insights along multiple dimensions. It also highlights key characteristics of their decisions at the point of order entry, providing portfolio manager attributes and market-wide signals. This includes access to ESG data and insights based on external and internally developed analytics.

b. Divestment & exclusion of companies

Given NBIM's understanding of sustainable economic growth, there are also sectors and companies in which the Fund should not invest. By not investing in such companies, NBIM reduces the Fund's exposure to unacceptable risks.

The divestment & ethical exclusions include two main mechanisms for not investing in a company[265]:

- Risk-based divestment. Incorporating environmental, social, and governance concerns into risk management may result in divestment from companies where NBIM identifies heightened long-term risks. These are companies that operate in ways that NBIM believes are unsustainable or could have negative financial consequences. These consequences can be immediate. For example, if a company is fined or excluded from markets for irresponsible behavior, or if it is outcompeted by rivals that manage sustainability risks more successfully. They can also be indirect, when a company's activities have negative externalities for society and harm long-term economic progress.

- Ethical exclusions. These include product-based exclusions and conduct-based exclusions. For example, there is a product-based coal criterion that applies to two types of companies: mining companies that derive 30% or more of their revenues from thermal coal production, and power companies that derive 30% or more of their revenues from coal-based electricity generation. Under conduct-based exclusions, companies may also be excluded if there is an intolerable risk of conduct that is considered to be a particularly serious breach of ethical standards.

3.2.7. Making sustainability-themed investments

NBIM invests in renewable energy infrastructure, allowing the fund to contribute to the low-carbon transition while further diversifying risk. These investments will generate relatively stable inflation-adjusted cash flows and contribute to the fund's long-term performance.

In 2019, the Norwegian Parliament passed a resolution with a provision authorizing the fund, for the first time, to invest up to US$20bn, or 2% of its total AuM, directly in unlisted renewable energy infrastructure, with priority given to wind and solar power projects in developed markets. Under these circumstances, NBIM's strategy is to build up a portfolio of high-quality wind and solar power generation assets. The fund thus made its first investment in unlisted renewable energy infrastructure in April 2021 with the acquisition of a 50% stake in the Borssele 1 & 2 wind farm off the Dutch coast. Later in 2022, Borssele 1 & 2 was ranked first among its peers by GRESB in the European offshore wind power generators, maintenance, and operations category. Furthermore, the Fund's first, and only investment in renewable energy infrastructure at the end of 2022, returned 7.48% in euro terms.[266]

In 2022, NBIM also considered several potential new investments. In the latest NBIM investment management strategy,[267] NBIM has repositioned itself to invest in renewable energy infrastructure assets:

- NBIM will continue to build a portfolio of high-quality renewable energy infrastructure assets, primarily in the wind and solar sectors.

- NBIM will build a portfolio with stable cash flows and limited risk to the principal investment.

- NBIM will explore new opportunities related to the energy transition and consider investments in renewable energy storage and transmission.

- NBIM will consider investing in renewable energy infrastructure funds to explore new markets and technologies.

3.3 Lessons and recommendations

3.3.1. Lessons and recommendations for investors

a. From sector mandates to a comprehensive approach to climate risk management

Unlike the majority of investors that publish their mandates in general terms, NBIM divides its investment strategies into sector mandates and thematic mandates, including the environmental mandate, which forms the core of its sustainable investment strategy. The portfolio managers of NBIM's environmental mandates invest in companies that are likely to benefit from the transition to lower emissions and a greener economy. It invests primarily in three main types of environmental activities: low-carbon energy and alternative fuels, clean energy and energy efficiency, and natural resource management.

Investing in these types of companies requires in-depth business and technology knowledge to uncover future trends. Also, NBIM began to build environmental mandate management from people, process, and structure.[268] Over the past 20 years, while NBIM has focused on finding people with the right skills and backgrounds to help develop an environmental portfolio, it has also delved into having a good understanding of the environmental exposure of the companies concerned in order to define a universe that meets the criteria set out in the investment mandate and finally culminates into an environmental index.[269]

In 2022, the Ministry of Finance removed the environmental mandate requirement as the Fund moved to a new and more comprehensive approach to climate risk management. The portfolio managers responsible for managing the environment-related investment mandates have now been integrated into various sector teams. As they had built up considerable knowledge of and expertise in environmental activities, they were able to disseminate this knowledge throughout the organization.

b. Responsible Investing with Observation and Exclusion

It is a universal fact for all investors that sustainable investment strategies are multifaceted and involve a range of integration and engagement activities. The effectiveness of the long-term strategies promoted in NBIM's investment beliefs depends on the nature of the fund management, which ensures consistency across the fund in terms of research, data, fund priorities, and investment practices across asset classes. Investors could also choose to establish systematic and reasonable negative screening in responsible investing and sustainable investing. Not only does the observation and exclusion of companies allow timely removal of non-compliant companies from the portfolio, it also places the dynamic tracking of the sustainable development of individual companies and industries inside the management pipelines, thus further optimizing the portfolio structure and risk exposure to enhance the final return. For instance, the GPFG is known for its Guidelines for Observation and Exclusion from the Fund. At the end of 2022, 91 companies had been excluded from GPFG's investments based on the Council's recommendation, while nine companies were under observation. In addition, Norges Bank had, on its own initiative, excluded 72 companies under the coal criterion and placed them under observation.

c. Broader Engagement

Investors have an obligation to engage in corporate governance activities and to vote for stakeholders. For investors, once the shares in companies are purchased, the asset manager manages the fund as an active and responsible investor: seeking to reduce the long-term risks by recognizing the broader potential environmental and social impacts of a company's operations.[270] As an active investor, the Fund uses a variety of approaches to influence companies. It exercises its ownership rights by setting standards, voting on shareholder proposals at annual general meetings, and engaging in dialogue with companies. It also meets with regulators and collaborates with other investors. As illustrated in the sections above, NBIM has published some specific expectation documents that inform companies how GPFG expects them to manage the environmental and social impacts of their company's operations, supply chains, and other activities.

The expectation document on climate change, for instance, requires companies to consider the potential transition and physical risks and opportunities posed by climate change by integrating these elements into their corporate policies, strategy, risk management, and reporting. This approach is consistent with the recommendations of the Task Force on Climate-related Financial Disclosures.[271] In response to the expectation documents, companies are asked to self-report their GHG emissions and the actions they are taking to address climate change.[272]

3.3.2. Lessons and Recommendations for Policymakers

a. Empowering Investors with Incisive Policy Layout

Policymakers should be crystal clear about their directions, positions, and functions in investment governance models, thus building a clear delegation of responsibilities and effective systems for control and oversight.[273] From the government, including the parliament and ministry, to the financial institution including the executive board and senior management, each part within should be connected and consistent, without overlap and separation. From powers to duties, from macro to micro, from outside to inside, building a viable, efficient and transparent governance system lays an important foundation for the fund to set up and achieve sustainable goals.

For policymakers, the division of responsibilities in fund management governance is the cornerstone. It should be explicit, with a clear division of roles and responsibilities. The current governance model for the GPFG is based on a delegation of responsibilities and powers from one level to another. Government policymakers should establish the formal framework for the fund or institutional investors in the law, delegate overall responsibility for the management of the fund, and issue guidelines for its management, without further interference in the strategy at the corporate level. In accordance with the *Government Pension Fund Act, the Management Mandate* and *the Guidelines for the Observation and Exclusion of Companies* in the case of the GPFG, policymakers in Norway participate in this dynamic process of constructing governance. They apply their clear and incisive policy design in parliamentary and ministerial governance, and reap and receive a sustainable and mature governance model that is shared and followed by both private and public segments in investment governance.

b. Adequate and Decisive Power from Council on Ethics

The success of the Council on Ethics in NBIM's management of GPFG shows that the establishment of a council on ethics is effective. The establishment of an independent council on ethics would impose certain constraints on the investable targets in scope from an ethical point of view, , i.e. active supervision and selection by both the regulators and the regulated identities in terms of responsible and sustainable investment within the governance framework.

For policymakers, the establishment of a third-party body such as the Council on Ethics separated from the government's mandate of investment would further improve and optimize the structure of the market regulatory system. Such a separation would help to enhance investors' confidence by significantly improving their access to information about regulated entities or sustainable and responsible investment markets, and ultimately better serve the original intent and governance power that policymakers pursue.

Appendix 2 Regulatory Policies on Sustainable Investing by State-owned Investors Worldwide

Country/Region	Issuer	Year of Publication	Name	Content
EU	European Parliament and European Council	2016	*IORP Directive*	Asset owners are required to incorporate ESG factors into the assessment of investment risks; ESG factors should be integrated into the risk management system of the organization and considered in their own-risk assessment (ORA).
	EIOOPA	2019	*PEPP Regulation*	The PEPP Regulation encourages PEPP providers to disclose the ESG performance of funds and explain how they consider ESG factors.
Norway	Ministry of Finance	Latest revision in 2023	*Management mandate for the Government Pension Fund Global*	The mandate requires a thorough due diligence review of the unlisted real estate and unlisted renewable energy infrastructure portfolios, including the assessment of risks associated with health, safety, environmental, corporate governance, and social factors.
	Ministry of Finance	2014	Guidelines for Observation and Exclusion of Companies from the Government Pension Fund Global	The *Guidelines* require the GPFG to observe or exclude companies that: 1) derive 30% or more of their revenue from thermal coal, 2) base 30% or more of their activities on thermal coal, 3) extract more than 20 million metric tons of thermal coal annually, or 4) operate a power generation capacity of over 10,000 megawatts from thermal coal.
	Ministry of Finance	2019	Meld. St. 20 (2018–2019) Report to the Storting (white paper)	The Report approved the GPFG to engage in unlisted renewable energy investments and lifted the limit for its thematic investments related to the environment from NOK60bn to NOK120bn.
France	National Assembly	2001	Law No. 2001-624 of July 17, 2001, on Various Social, Educational and Cultural Measures	Management committees of pension reserve funds must report on how they handle social, ethical, and environmental factors in their investment policy guidelines.
	National Assembly	2001	*Act on Employee Savings* ('Loi Fabius', Act 2001-152)	Investors are required to disclose the extent to which they consider environmental and social indicators when purchasing, selling, or exercising shareholder rights in their annual reports.
	National Assembly	2010	*Grenelle II*	Article 224 mandates that public funds must mention how they account for ESG objectives in their investment policies through their annual reports and documents. Article 225 stipulates that listed companies, companies with an annual balance sheet total or turnover exceeding EUR100mn, and companies with an average of 500 permanent employees are obligated to disclose certain social and environmental information in their annual management reports.
	National Assembly	2015	*Law on Energy Transition for Green Growth*	Article L533-22-1 specifies that portfolio management companies must disclose their policies regarding the incorporation of ESG quality standards into their investment strategies to beneficiaries and the public, and

				explanations must be provided for any non-disclosure.
UK	Parliament	1999	Local Government Pension Scheme (Management and Investment of Funds) Regulations	Each managing institution is required to prepare, maintain, and publish a written statement of the investment principles for pension funds, which must include social, environmental, or ethical considerations
	Department for Work and Pensions	2005	*Occupational Pension Schemes (Investment and Disclosure) Regulations* and the *Statement of Investment Principles*	The regulations incorporated environmental, social, and ethical considerations.
	Law Commission	2014	*Fiduciary Duties of Investment Intermediaries*	Emphasized the consideration of social, environmental, and ethical factors in pension investments and called for action from TPR, the FCA, and the UK government.
Sweden	Ministry of Finance	2015	*New Rules for AP Funds*	AP 1-4 funds are advised to manage funds based on responsible investment and management principles, promote sustainable development without compromising returns, and develop common guidelines for responsible investing.
Switzerland	SVVK-ASIR	2019	*Engagement and Exclusion Process*	The *Process* outlined how investors should assess companies' violations, choose whether to engage with a company, and set engagement goals, as well as the complete process and decision-making logic leading to exclusion and re-inclusion.
	AMAS	2020	*Sustainable Asset Management: Key Messages and Recommendations*	Advised institutional investors such as pension funds, insurance companies, and sovereign wealth funds to assess climate risks in the decision-making process, actively engage in addressing these risks, and disclose their investment policies.
		2021	*Recommendations on Minimum Requirements and Transparency for Sustainable Investment Approaches and Products*	Defined sustainable investment methods and tools with minimum standards for implementation.
	ASIP	2022	*ESG Guidelines for Swiss Pension Funds*	Defined the fiduciary duties of pension funds and stated that the direct result of ESG risks should be considered or included in climate policies and strategies, and documented in investment regulations.
		2022	*ESG Reporting Standard for Pension Funds*	Advised Swiss pension funds to report on the sustainability of their investments as an independent report or part of their regular annual reports, starting from the 2023 fiscal year.

U.S.	California	2015	*Senate Bill 185*	Prohibited CalPERS and CalSTRS from making new or additional investments in fossil fuel companies and required the funds to divest themselves from all fossil fuel assets.
		2019	*Senate Bill 964*	The *Bill* mandated CalPERS and CalSTRS to disclose financial information related to climate risks in their publicly traded portfolios, alignment with climate objectives, and other relevant information.
	Illinois	2019	*Sustainable Investing Act* (PA 101-473)	All state and local government entities that hold and manage public funds should integrate sustainability factors into their policies, processes, and decision-making. For those agencies making investment decisions on the security or company level, sustainability factors should be incorporated into the overall decision-making process, providing an additional layer of factors to consider when assessing the risk/value proposition of investment decisions.
	Maine	2021	H.P. 65-L.D.	H.P. 65-L.D. prohibits any assets of state pension or retirement funds from being invested in companies or securities within the fossil fuel industry, including the 200 largest publicly traded fossil fuel companies. Divestment from the stock or securities of this nature must be completed by January 1, 2026.
	New Jersey	2020	A.2196	This bill prohibits investing any assets of the State retirement funds in any of the top 200 companies that hold the largest carbon content fossil fuel reserves. Under the bill, divestment from coal companies must be completed within two years, and from all other fossil fuel companies by January 1, 2022.
	Vermont	2022	S.251	S.251 required the divestment of assets from the top 200 publicly traded coal and oil & gas companies within the Vermont State Teachers' Retirement System (VSTRS), Vermont State Employees' Retirement System (VSERS), and Vermont Municipal Employees' Retirement System (VMERS).
	Employee Benefits Security Administration, DOL	2016	IB 2016-01	Investment policy statements are permitted to include policies concerning the use of ESG factors to evaluate investments, or on integrating ESG-related tools, metrics, or analyses to evaluate an investment's risk or return.
		2018	*Field Assistance Bulletin* 2018-01	If ESG factors involving business risks or opportunities are themselves economic considerations when valuing alternative investments, the weight of ESG factors should be commensurate with the risk and return profiles relative to other relevant economic factors.
New Zealand	The Treasury	2021	*Crown Responsible Investment Framework*	According to the framework, portfolio carbon footprints should be disclosed; portfolios must achieve carbon neutrality by 2050; long-term risk and return strategies should be adopted to actively identify investments that generate additional benefits for the transition to a low-carbon economy; a low-carbon transition strategy should be formulated.

Australia	ACT Government	2012	*Responsible Investment Policy*	The *Policy*'s stated principles include: incorporating ESG issues into investment analysis and decision-making processes, as well as ownership policies and practices; seeking appropriate disclosure on ESG issues by the investee entities; promoting acceptance and implementation of the Principles within the investment industry; enhancing the effectiveness in implementing the Principles; reporting on the activities and progress towards implementing the Principles.
	APRA	2013	*Superannuation Prudential Practice Guide – SPG 530*	A superannuation trustee may adopt an investment strategy that has an ESG focus. Licensees are required to consider potential ESG-related risks and returns when formulating investment strategies and disclose ESG factors through financial quantification.
	FSC	2013	*FSC Standard 20: Superannuation Governance Policy*	Licensees with financial services permits are required to develop and implement an ESG risk management policy in relation to each RSE it operates. Relevant licensees have been mandated to disclose risk management details since July 1, 2014.
South Korea	Korea Legislation Research Institute	2015	*National Pension Act*	The NPS must consider ESG issues in the investment decision-making process or provide an explanation if not considered and account for responsible investing factors such as ESG when exercising voting rights.
Japan	FSA	2014	*Principles for Responsible Institutional Investors*	Investors are required to be conscious in engagement with respect to issues on sustainability including ESG factors and support the stewardship activities of corporate pensions.
	Ministry of Health, Labor, and Welfare	2020	*Basic Policy on Reserves*	The *Policy* required the Japanese government pension funds under its supervision to incorporate ESG factors into investment actions.
China	CBA	2009	*Guidelines of China Banking Sector and Financial Institutions Corporate Social Responsibility*	The *Guidelines* explored the social responsibilities of the banking industry.
	Asset Management Association of China	2018	*Green Investment Guidelines (For Trial Implementation)*	The *Guidelines* raised awareness of environmental risks among fund managers, clarified the definition of green investing, and encouraged capable asset managers to engage in ESG investing.
South Africa	National Treasury	2011	*Pension Funds Act*	Pension funds are required to establish investment procedures related to fund conditions and regulations, taking into account factors concerning long-term returns that include ESG considerations.

Sources: UN PRI. Regulation Database. Note: Information collated as of May 2023

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