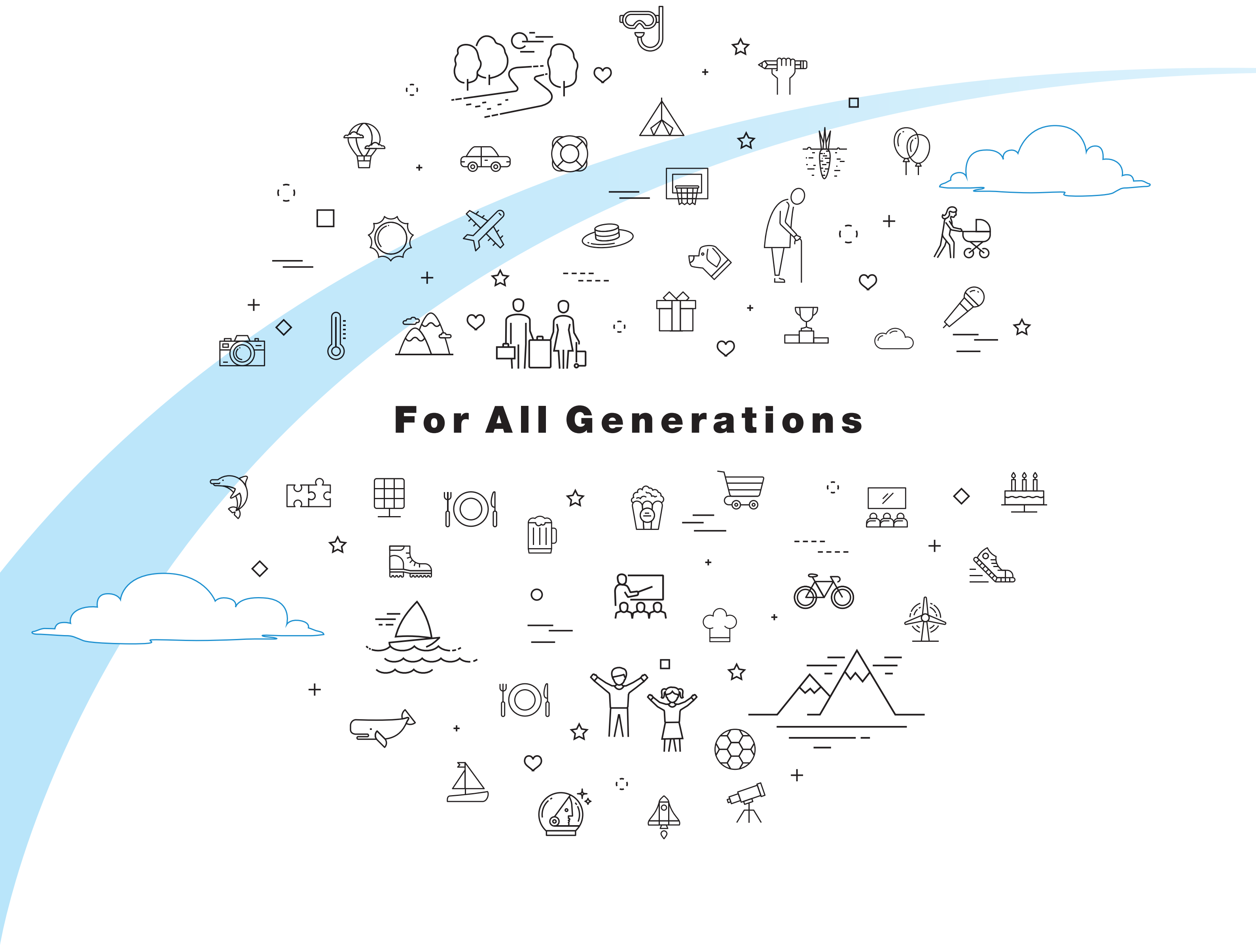


ESG REPORT

2019

Government Pension Investment Fund

For All Generations

GPIF is committed to fulfilling our fiduciary duty to secure adequate retirement funds for both current and future beneficiaries.

We believe that improving the governance of the companies that we invest in while minimizing negative environmental and social externalities – that is, ESG (environment, social and governance) integration – is vital in ensuring the profitability of the portfolio over the long term.

Contents

About GPIF

Government Pension Investment Fund (GPIF) manages and invests Japan's pension reserve fund, which is used to pay Employee Pension Insurance and National Pensions. We contribute to the stability of the pension system by earning returns on our investments and distributing these to the government.

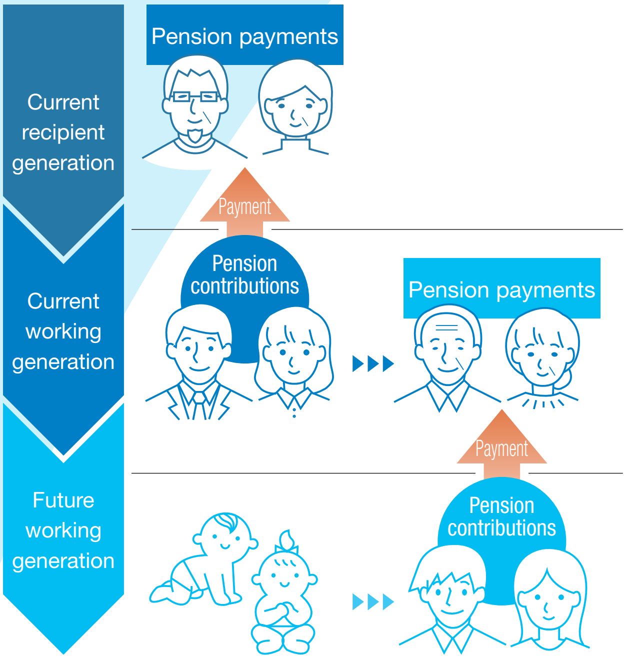
1 Pension System in Japan

Japan adopts a "pay-as-you-go" pension system in which contributions from the current working generation are used to pay the pensions of elder generations. However, as the birth rate declines and the population ages at a rapid pace, in order to avoid an unduly heavy burden from being placed on future generations, pension contributions not immediately applied to the payment of benefits are accumulated as pension reserves and placed under fiscal management so that these payments can continue to be made into the future.

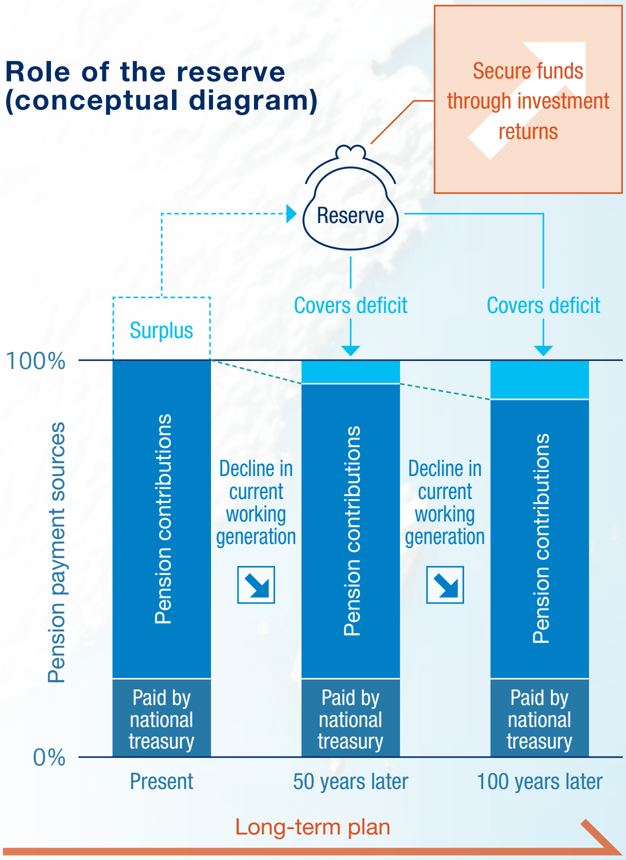
GPIF grows this reserve by investing it in Japanese and overseas capital markets. Both returns on the reserve and the reserve itself will be used to supplement pension payments to future generations as part of the 100 year pension fiscal plan. Reserves account for approximately 10% of the total resources available for pension payouts. Reserves are sufficient enough that, even if a valuation gain or loss occurs in a particular year, pension payments for the following year will not be affected.

Pay-as-you-go system

Japan adopts a system where the current working generation supports the livelihoods of the elderly.



Role of the reserve (conceptual diagram)



Note: The above diagram is for illustrative purposes; please refer to the Ministry of Health, Labour and Welfare website for details on the public pension system.

2 Diversified, International Investment Over the Long-Term

GPIF manages the pension reserve in line with our investment principles, which state "Our primary investment strategy should be diversification by asset class, region, and timeframe. We shall achieve investment returns in a more stable and efficient manner by taking full advantage of our long-term investment horizon."

With assets under management of approximately ¥151 trillion as of March 31, 2020, we invest in a broad, diverse range of assets across fixed income and equities in Japan and overseas, and work to enhance our portfolio by gradually expanding the scope of investments to include alternative assets.

3 Integrating ESG (Environment, Social and Governance) into the Investment Process

GPIF promotes ESG integration throughout all of our investment processes in line with our investment principles, which state that "sustainable growth of investee companies and the capital market as a whole are vital in enhancing long-term investment returns." Of these investments, the assets under management tracking ESG indexes, which can be narrowly defined as ESG investments, is approximately ¥5.7 trillion, and the investment in green, social and sustainability bonds issued by multilateral development banks is approximately ¥440 billion.

GPIF in numbers

Universal owner

Assets under management
¥151 trillion
World's largest pension fund

Number of GPIF-owned issues
5,111 stocks
13,919 bonds

+

Cross-generational investor

Investment time horizon
100 years
Playing a role in pension finance with an investment time horizon of over 100 years

GPIF's ESG activities (investments)

ESG integration (all assets)	Assets under management tracking ESG indexes	Investments in green bonds, etc.	Rating by PRI (strategy and governance)
¥151 trillion	¥5.7 trillion	¥0.4 trillion	A+ PRI Principles for Responsible Investment

Ensuring Pension Stability

Our Mission

Our mission at GPIF is to contribute to the stability of the national pension system by managing and investing the pension reserves entrusted to us by all of its beneficiaries.

We began managing assets as we are today in fiscal 2001. Since then, we’ve recorded a cumulative return rate of +2.58% (annualized) and total returns of ¥57.5 trillion as of the end of fiscal 2019.

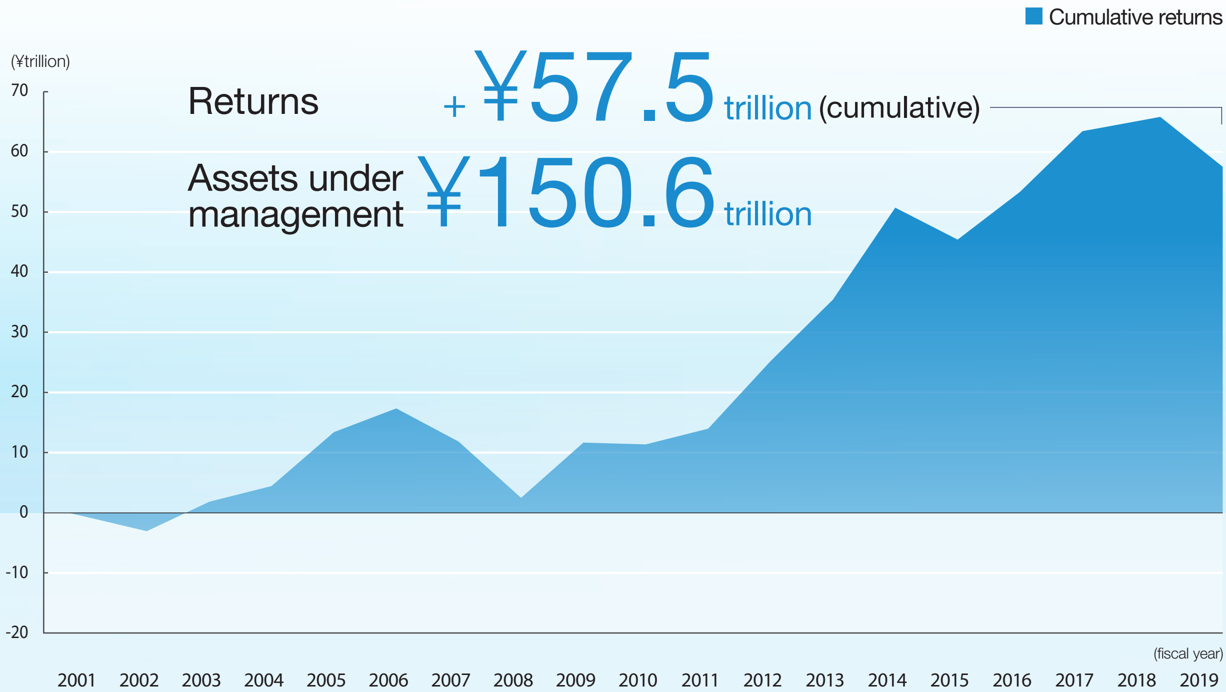
Pension reserves managed by GPIF are used to prevent the burden on future generations from becoming too excessive.

Our Conviction

We firmly believe that enhancing the sustainability of financial markets as a whole through ESG activities will help stabilize the pension system to the ultimate advantage of all beneficiaries.

We are committed to continue promoting ESG in order to reduce the negative impact of environmental and social problems on financial markets, and thus encourage sustainable economic growth and improve long-term returns from all the assets we manage.

Cumulative returns since fiscal 2001



As of the end of March 2020

Column Pension Reserve Basic Policy Revision and ESG

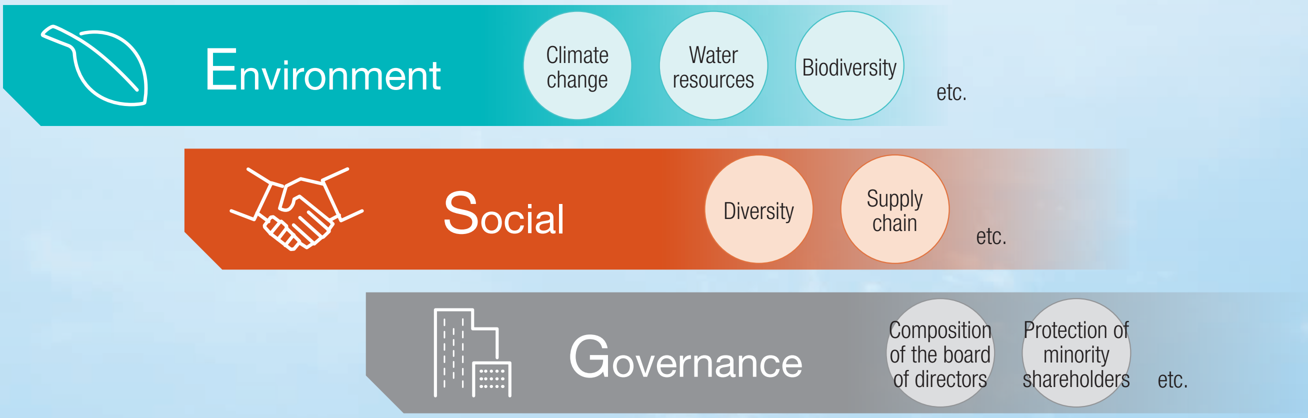
GPIF is obliged to manage pension reserves based on the "Basic Policy for Ensuring the Reserve Fund is Managed and Invested Safely and Efficiently from a Long-Term Perspective" (Pension Reserve Basic Policy). In February 2020, the Pension Reserve Basic Policy was revised to require management and investment entities to take necessary actions to integrate non-financial factors – namely ESG (environmental, social and governance) – into investment activities when managing reserves on a case-by-case basis, in addition to financial factors (effective as of April 2020). The revision was based on the principle that sustainable growth of investee companies and the capital market as a whole are vital in enhancing long-term investment returns, from the perspective of securing long-term returns for the benefit of pension recipients. The revised Pension Reserve Basic Policy defines the scope of ESG investment initiatives as "reserves" as a whole instead of just "stocks". The Pension Reserve Basic Policy affects not only GPIF but all entities that manage public pension funds, and therefore ESG investment is expected to grow further within the framework of pension reserve management.

What is ESG?

ESG is the acronym for Environmental, Social, and Governance. While investors have traditionally used cash flows, profit margins and other quantitative financial data to value a company's equity or other securities, "ESG investment" also takes non-financial ESG factors into consideration. GPIF is committed to promoting ESG investment.

1 What is ESG?

The term "ESG" was first popularized in 2006, when the United Nations proposed the Principles for Responsible Investment (PRI) – a new framework for incorporating ESG into the investment process – to institutional investors around the globe. As the world economy has grown, environmental, social and corporate governance issues such as climate change, supply chain labor problems and corporate misconduct have surfaced, leading to rising concerns about economic and social sustainability. ESG investment is expected to improve risk-adjusted returns over the long term, and there is a growing body of evidence showing that this indeed is the case.



2 Why Does GPIF Focus on ESG?

GPIF, which signed onto the PRI in 2015, can be accurately described as a "universal owner" – a long-term investor with a substantial level of assets under management that invests in securities spanning the entire capital market. Furthermore, the pension reserves managed by GPIF are used to lessen the burden of pension contributions made by future generations. Long-term corporate value creation by each investee company and the sustainable, stable growth of the entire capital market is critical for GPIF – a universal owner and cross-generational investor – to achieve stable income over the long run. Since environmental and social issues will inevitably impact capital markets over the long term, it is essential that we reduce the negative impact of these problems in our pursuit of sustainable returns.

3 About the SDGs

While investors are increasingly speaking the common language of ESG, the same can be said with respect to SDGs (Sustainable Development Goals) among national and local governments, educational institutions, and corporations. The SDGs are international goals for achieving a better, more sustainable world by 2030. They evolved from the Millennium Development Goals formulated by the United Nations in 2001, and were set forth in the "2030 Agenda for Sustainable Development" adopted at the UN Summit in September 2015. Consisting of 17 goals and 169 targets, the SDGs advocate "leaving no one on the planet behind."

The larger the challenge, the greater the need for a solution, and the bigger the business opportunity for companies. According to the United Nations Development Programme (UNDP), five to seven trillion dollars of capital will be required annually worldwide to achieve these goals, but if the SDGs are achieved, it is estimated that new market opportunities on the order of 12 trillion dollars a year could be expected by 2030, taking into consideration positive economic externalities such as labor productivity improvements and reduction of environmental stress.

As the goals and targets of ESG investment and the SDGs are largely the same, the former can go a long way in accomplishing the latter. Achieving the SDGs and realizing a sustainable economy and society would lead to a better return on all assets managed by GPIF over the long term.

How ESG investment can bring new business opportunities to companies

We are committed to fulfilling our fiduciary duty to preserve the funds that future generations of pension beneficiaries need.

Government Pension Investment Fund

President

MIYAZONO Masataka

From fiscal 2019 into fiscal 2020, the novel coronavirus (COVID-19) pandemic raged around the world, and many lost their lives to the disease. Major cities around the world were locked down and people's activities restricted to fight the spread of the virus, causing severe economic and social damage. Turmoil in the financial markets resulted in GPIF recording the largest valuation loss on record for fiscal 2019.

We express our deepest condolences to those who have lost their lives to COVID-19, and our utmost sympathies go out to those still suffering from the infection.

This unprecedented crisis has put the sustainability of society and organizations to the test. A lot has changed at GPIF as well, where we have had little choice but to quickly adopt staggered working hours and work from home. Despite being blindsided by this disaster, we were able to smoothly continue business operations thanks in part to the continuous incremental improvements that we made to our organization and systems before the pandemic struck. This experience will benefit us greatly after the crisis is over, in terms of improving work efficiency and reforming work styles. For Japanese society as well, the adoption of work from home, web-based meetings and the other various steps taken to address the crisis can contribute to overcoming the low labor productivity that has long been a drag on the Japanese economy. Furthermore, adopting flexible work styles that can accommodate people who are caring for children, elderly loved ones or who are undergoing medical treatment contributes to the sustainability of organizations and society as a whole.

GPIF believes that ESG investment is vital to the sustainability of pension reserves, and we have been promoting various ESG-related initiatives ever since becoming a PRI signatory in 2015. In addition to our ongoing passive investment based on ESG and global environmental indexes, in fiscal 2019, we also began promoting ESG integration in fixed income and alternative assets.

This is the third ESG Report since it was first published in fiscal 2017, and the second in which we have disclosed information in line with TCFD recommendations. In this year's report, we have provided an analysis of physical risks and opportunities within our climate change-related disclosures for the first time. Using a new analytical method, we have attempted to consistently reflect the risks and opportunities of climate change on equities and corporate bonds - financial products completely different in nature. This is a first step for us and we still have many issues to solve, but we intend to continuously strive to improve our analysis and disclosure year after year. We hope that our efforts provide an impetus for other asset owners and asset managers to disclose similar information.

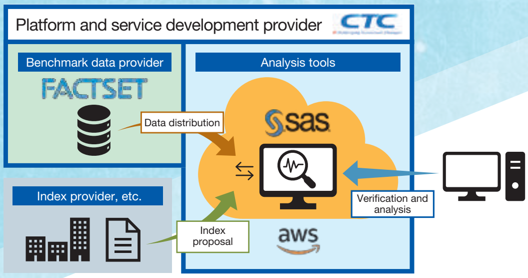
The benefits of ESG investment take a long time to materialize. We will continue to regularly examine the impact of our activities in the ESG Report to confirm that we are headed in the right direction and will ultimately achieve the results we are aiming for.

Fiscal 2019

Activity Highlights

In fiscal 2019, GPIF continued to promote ESG in new areas. Here we present the highlights of our ESG activities during the year.

Introduction of “Index Posting System”



In 2019, GPIF announced the introduction of the “Index Posting System” (IPS) - a new framework for collecting index information on a continuous basis - in order to efficiently gather the latest new index information for the purpose of enhancing our overall fund management. We started by first collecting information on non-Japanese equity ESG indexes, non-Japanese equity diversity indexes, and environmental bond indexes.

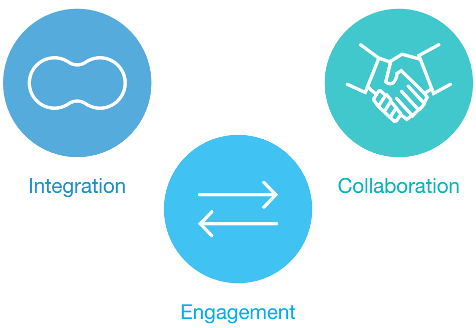
Please refer to page 18 for details.

Collaboration with international organizations in green bonds, etc.

GPIF is working to expand investment opportunities in green, social and sustainability bonds as part of our efforts to integrate ESG into fixed income investment. As of the end of March 2020, we have formed partnerships with ten multilateral development banks and three government finance agencies to work toward achieving this goal.

Please refer to page 20 for details.

ESG in external equity and fixed income management



GPIF manages a majority of its equity and fixed income assets through external asset managers, and we examine ESG when we evaluate their asset management processes. In fiscal 2019, we established evaluation criteria for ESG integration, and began comprehensive evaluations based on the new criteria. In addition to evaluating existing external asset managers, the new ESG integration criteria are also used when selecting new external asset managers.

Please refer to page 19 for details.

ESG in alternative asset management

GPIF also takes ESG factors into consideration when investing in alternative assets. We examine ESG initiatives in the process of selecting asset management companies, and monitor these managers after a mandate is awarded. In fiscal 2019, we joined the "GRESB," an initiative to provide ESG rating criteria in the area of real estate and infrastructure investment, as a real estate investor member.

▶ Please refer to pages 27 and 28 for details.

Asset owners' joint statement

In March 2020, GPIF, US asset owner CalSTRS, and UK asset owner USS Investment Management published the joint statement "Our Partnership for Sustainable Capital Markets." Our message stressed the importance of taking a long-term investment perspective in order to protect the post-retirement livelihoods of multiple generations of pension beneficiaries.

▶ Please refer to page 23 for details.

Initiatives to promote diversity

30% Club
GROWTH THROUGH DIVERSITY

In December 2019, GPIF joined the "30% Club Japan Investor Group" – a group consisting of asset owners and investment management companies that shares information on best practices for promoting gender diversity with the boards of directors of investee companies.

GPIF also launched the "Diversity & Inclusion Promotion Group" in February 2020 in order to promote diversity within the fund itself.

▶ Please refer to pages 29 and 15 for details.

ESG-Related Governance and Organizational Frameworks

The Board of Governors discusses and oversees the promotion of ESG and approaches to ESG investment at GPIF. The Executive Office promotes ESG initiatives through coordination between the Investment Strategy Department, Public Market Investment Department, Private Market Investment Department, and other departments related to asset management, and reports relevant matters to the Board of Governors.

Deliberations by the Board of Governors

The Board of Governors discusses and oversees the promotion of ESG and approaches to ESG investment at GPIF. The Board, established in October 2017, makes decisions concerning important matters such as the formulation of the policy asset mix and medium-term plans by mutual consent, and oversees the execution of operations by the Executive Office.

In fiscal 2019, the Board of Governors met 18 times, and ESG-related issues were discussed at seven of those meetings.

ESG-related items discussed and reported on at Board of Governor meetings

Meeting date		Agenda item	
22nd meeting	April 2019	Reported matter	Basic approach to ESG investment
23rd meeting	May 2019	Reported matter	Basic approach to ESG investment (2)
		Reported matter	Report of the 4th Survey of Listed Companies Regarding Institutional Investors' Stewardship Activities
24th meeting	June 2019	Reported matter	Plan for ESG Report 2019 (editorial framework)
26th meeting	July 2019	Reported matter	ESG Report
36th meeting	January 2020	Reported matter	Membership in the 30% Club Japan Investor Group
37th meeting	February 2020	Reported matter	Revision of Stewardship Principles and Proxy Voting Principles
		Reported matter	Membership in the 30% Club Japan Investor Group
39th meeting	March 2020	Reported matter	Report on stewardship activities in 2019/2020

ESG-related executive structure

The Executive Office implements ESG initiatives through coordination between the Investment Strategy Department, Public Market Investment Department, Private Market Investment Department, and other asset management-related departments. The Investment Committee, chaired by the Chief Investment Officer (CIO), deliberates and makes decisions on ESG-related initiatives and other asset management-related issues, and particularly important matters are reported to the Board of Governors. Preparation of the ESG Report is also deliberated on by the Investment Committee before being reported to the Board of Governors.

Key departments responsible for ESG

Investment Strategy Department
Main Responsibilities
Develop investment strategy, including rebalancing strategy and investment methods, etc.

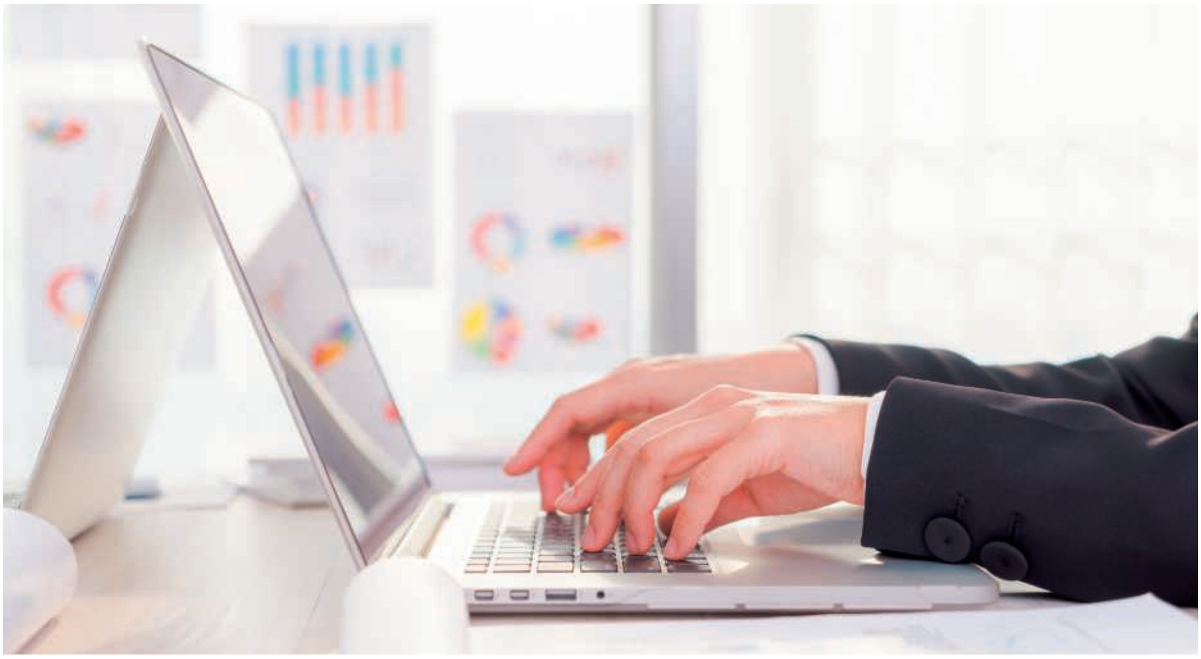
→ This department develops GPIF's ESG investment strategy, such as the selection of ESG indexes, researches ESG investment and other new investment methods, and coordinates cross-asset business operations such as preparation of the ESG Report.

Public Market Investment Department
Main Responsibilities
Selection and evaluation of external asset managers for equity and fixed income, etc.

- Public Market Investment → This section examines ESG integration as part of the external asset manager evaluation process.
- Stewardship & ESG → This section evaluates ESG and other stewardship activities at external asset managers.

Private Market Investment Department
Main Responsibilities
Selection and evaluation of external asset managers for alternative assets, etc.

→ This department integrates ESG into its selection and evaluation of external asset managers for alternative assets.



ESG Initiatives Within GPIF

In January 2020, GPIF established the "SDGs Promotion Group" – a committee reporting directly to the President created to develop initiatives designed to bolster the fund's ESG and SDG-conscious internal values. GPIF further established the "Diversity and Inclusion Promotion Group" under the SDGs Promotion Group, and through these organizations, GPIF promotes ESG and SDGs within the fund itself.

Diversity-Related Initiatives

GPIF's Code of Conduct states, "We are committed to GPIF's mission by promoting communication and teamwork and nurturing a diversity of talents and capabilities," and further, "We shall respect each person's personality, talents and capabilities, perspectives, well-being, and privacy to maintain a good work environment." Building on this foundation, GPIF launched the SDGs Promotion Group and the Diversity and Inclusion Promotion Group ("D&I Group") as a sub-group to the SDGs Promotion Group in January 2020. The SDGs Promotion Group, in which the Executive Managing Directors and other executives participate, reports directly to the President of GPIF, and both groups consist mainly of fund employees who have applied to the groups and have been selected by the President. Both the SDGs Promotion Group and the D&I Group are tasked with developing initiatives designed to bolster the fund's ESG-conscious internal values, and members discuss specific measures for creating a work environment in which everyone can work with a sense of purpose.

The advancement of women in the workplace is a crucial part of diversity promotion. The table below includes GPIF's numbers for the five metrics that companies are required to disclose under the Act on Promotion of Women's Participation and Advancement in the Workplace, which are also quantitative evaluation metrics used in the MSCI Japan Empowering Women Index (WIN). GPIF will continue to implement initiatives for enhancing diversity in the future.

Women in the workplace at GPIF

(i)	% female new hires	23.8%
(ii)	% women in the workforce	30.7%
(iii)	Difference in years men and women are employed by the company *	–47.1%

(iv)	% women in senior management	12.5%
(v)	% women on board**	20.0%

Note : Data for (i) as of fiscal 2019; other data as of the end of March 2020.

* Difference in years men and women are employed by the company = (average years women employed – average years men employed) / average years men employed. This ratio is highly sensitive to changes in hiring and retirement due to the small number of employees and thus fluctuates significantly from year to year.

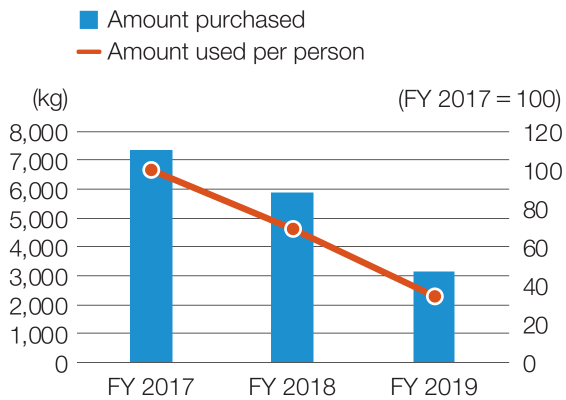
** Percentage of women on the Board of Governors. Governors (including the President) are appointed by the Minister of Health, Labour and Welfare.

Environmental Initiatives

As part of our environmentally-conscious initiatives within the fund, GPIF established our “Basic Policy on Promoting Green Procurement” for fiscal 2019 based on the Act on Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities. Based on this policy, GPIF works to ensure that the paper and stationery, office furniture, office equipment, appliances and other office products we use have a minimal impact on the environment.

To reduce paper consumption, in principle, all meetings – including Board of Governors and Investment Committee meetings – are paperless. We ask asset managers and ESG ratings agencies to provide meeting materials in advance in electronic form, and use tablets, laptops, and other devices to view these presentations. Despite the number of employees increasing by around 9% in fiscal 2019, these initiatives resulted in about 47% less copier paper being purchased and approximately 51% less paper used per employee compared to the previous year.

Amount of Copier Paper Purchased at GPIF



GPIF’s Response to COVID-19

In 2020, the COVID-19 pandemic had a massive impact on society, and GPIF was no exception.

In response to the pandemic, GPIF implemented work from home beginning March 2, 2020, and set up a COVID-19 response headquarters when a state of emergency was declared in the Tokyo metropolitan area in April. The response headquarters, chaired by the President and including the Executive Managing Directors and departmental general managers, was established to address issues such as how to secure the safety of fund employees and ensure business continuity. The response headquarters shares information on various issues within the fund, coordinates different departmental efforts, and monitors the status of each. Since April, we proactively recommended all officers and employees, including part-time and temporary employees, to work from home. We also began holding important meetings, such as meetings of the Board of Governors and Investment Committee, remotely over the Internet while strictly managing information security. As a result, everyday an average of 70 to 80% of officers and employees worked from home during the state of emergency. GPIF will continue to develop a business continuity framework in which we can continue pension reserve management operations even in times of emergency.

ESG Index Selection and ESG Index-Based Asset Management

In order to reduce ESG risks and improve long-term returns, GPIF adopts various ESG-themed indexes as benchmarks for passive investment. In October 2019, GPIF launched the "Index Posting System" (IPS) - a new framework for collecting index information on a continuous basis - in order to efficiently gather a wide range of ESG and other index information for the purpose of enhancing our overall fund management.

Selection of ESG Indexes and Global Environmental Indexes

In addition to efforts such as driving ESG integration and stewardship on the asset management side, GPIF directly incorporates ESG into its portfolio at a high level by selecting a variety of ESG-themed indexes as benchmarks for passive managers. We believe passive investment based on indexes that integrate corporate sustainability will not only improve the risk/return profile of the portfolio over the long run, but also enhance the Japanese equity market through secondary effects such as the improvement of ESG ratings.

With this in mind, GPIF began by requesting proposals for domestic market ESG indexes in 2017. As a result of the evaluation process, we selected three Japanese equity ESG indexes developed by FTSE Russell and MSCI, and began passively investing in funds based on these benchmarks. The FTSE Blossom Japan Index and the MSCI Japan ESG Select Leaders Index are comprehensive indexes that consider all three elements of ESG, while the MSCI Japan Empowering Women Index ("WIN") focuses on the diversity element of the "S" (social) factor.

In fiscal 2018, we selected two indexes for domestic and foreign equities developed by S&P Dow Jones Indexes that focus on the ever worsening issue of climate change by targeting corporate greenhouse gas emissions. The S&P/JPX Carbon Efficient Index (for domestic stocks) and the S&P Global Ex-Japan LargeMidCap Carbon Efficient Index (for foreign stocks) are designed to reward companies with higher greenhouse gas efficiency and more active disclosure of greenhouse gas emissions information with a higher investment weight.

Since adopting these indexes, GPIF has expanded its allocation from an initial ¥1 trillion for the first three indexes and ¥1.2 trillion for the Carbon Efficient Indexes to a combined current allocation of around ¥5.7 trillion resulting from both additional investments and stock price increases. Please refer to "ESG Index Performance" on pages 35 and 36 for information on the performance of each index.

Main characteristics of ESG indexes adopted by GPIF

	FTSE Blossom Japan Index	MSCI Japan ESG Select Leaders Index	MSCI Japan Empowering Women Index ("WIN")	S&P/JPX Carbon Efficient Index	S&P Global Ex-Japan LargeMidCap Carbon Efficient Index
Index concept	• The index uses the ESG assessment scheme used in the FTSE4Good Japan Index Series, which has one of the longest track records globally for ESG indexes. • The index is a broad ESG index that selects stocks with high absolute ESG scores and adjusts industry weights to neutral.	• The MSCI Japan ESG Select Leaders Index is a broad ESG index that integrates various ESG risks into today's portfolio. The index is based on MSCI ESG Research used globally by more than 1,000 clients. • The index is comprised of stocks with relatively high ESG scores in each industry.	• MSCI calculates the gender-diversity scores based on information disclosed under "the Act on Promotion of Women's Participation and Advancement in the Workplace" and selects companies with higher gender diversity scores from each sector. • The first index designed to cover a broad range of factors related to gender diversity.	• Based on carbon data provided by Trucost, one of the pioneers of environmental research companies. S&P Dow Jones Indexes, a leading independent provider, develops the index methodologies. • The indexes are designed to increase index weights of the companies which have low Carbon to Revenue Footprints (annual greenhouse gas (GHG) emissions divided by annual revenues) and actively disclose carbon emission information.	
Subject of investment	Domestic equity	Domestic equity	Domestic equity	Domestic equity	Foreign equity
Constituent universe (Parent index)	FTSE JAPAN INDEX (509 stocks)	MSCI JAPAN IMI TOP 700 (700 stocks)	MSCI JAPAN IMI TOP 700 (700 stocks)	TOPIX (2,164 stocks)	S&P Global ex-Japan LargeMid Index (2,896 stocks)
Number of index constituents	181	248	305	1,725	2,037
Assets under management (¥billion)	931.4	1,306.1	797.8	980.2	1,710.6

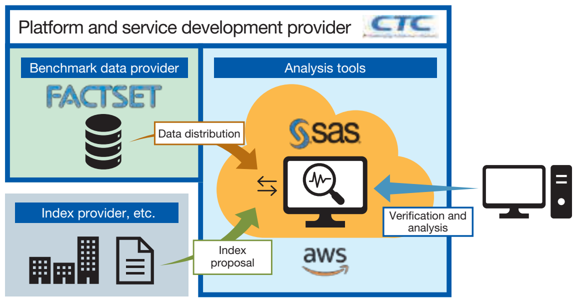
Note: Data as of the end of March 2020. Source: Prepared by GPIF based on data from each index provider.

Introduction of Index Posting System

As passively-managed investments account for the vast majority of GPIF's portfolio, the benchmarks that we select heavily influence our fund performance. Meanwhile, the demand for a wide variety of new types of indexes has increased dramatically in recent years as more and more investors manage money based on smart-beta, ESG, and other diverse themes.

With this in mind, GPIF launched the "Index Posting System" (IPS) - a new framework for collecting index information on a continuous basis - in order to efficiently gather the latest new index information for the purpose of enhancing our overall fund management. The trial version of the IPS was launched in October of 2019 with a specific request for providers to submit information for green bond, global ESG and diversity-themed indexes. When the full version of the IPS was launched in May, 2020, GPIF opened up the range for potential submissions to any type of index.

In tandem with the launch of the IPS, GPIF developed the "Index Data Entry and Analysis System" (IDEAS) in collaboration with technology solutions provider ITOCHU Techno-Solutions Corporation (CTC). IDEAS serves as GPIF's internal technical infrastructure for efficiently aggregating information posted through the IPS and combining this with ESG and other financial and non-financial data to enable deep analysis of new index ideas.



Source: GPIF

ESG in External Equity and Fixed Income Management

GPIF manages a majority of its equity and fixed income assets through external asset managers. and we examine ESG when we evaluate their asset management processes. In fiscal 2019, we established evaluation criteria for ESG integration, and began comprehensive evaluations based on the new criteria.

In addition, we are working to expand investment opportunities in green, social and sustainability bonds as part of our efforts to integrate ESG into fixed income investment, and have formed partnerships with several multilateral development banks and governmental financial institutions to work toward achieving this.

ESG Integration in Asset Manager Evaluations

GPIF invests in a broad range of assets, holding 2,389 domestic stocks and 2,722 foreign stocks in our equity portfolio alone.* Most of these assets are managed externally by asset management companies in Japan and overseas, which are selected and evaluated by the Public Market Investment Department. This department evaluates managers' investment policies, asset management processes, personnel, and other business processes, and examines ESG integration as a part of this comprehensive evaluation.

As a PRI signatory, we defined ESG integration in fiscal 2018 as follows, based on the PRI definition:

The explicit and systematic inclusion of ESG factors into investment analysis and investment decisions

In fiscal 2019, we established evaluation criteria for ESG integration based on this definition, and began comprehensive asset manager evaluations based on the new criteria. In addition to evaluating existing external asset managers, the new ESG integration criteria are also used when selecting new external asset managers. In line with the definition above, we evaluate asset managers from the perspective of whether ESG factors are explicitly and systematically included into investment analysis and investment decisions.

Although an increasing number of asset managers are explicitly and systematically including ESG in their investment analysis, it is not clear in many cases to what degree ESG is reflected in their investment decisions. We hope to see further progress in this and other areas of ESG integration among asset managers in the future.

*As of the end of March 2020.

ESG Integration in Fixed Income Investments

GPIF and the World Bank Group have been working together to promote ESG integration in fixed income investment through efforts such as publishing a joint research paper entitled "Incorporating Environment, Social and Governance (ESG) Factors into Fixed Income Investment" in 2018.

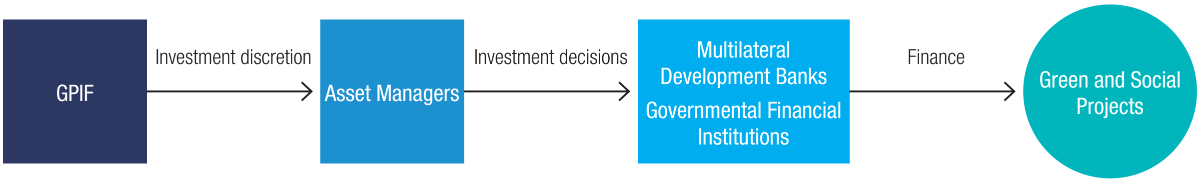
Following up on this research, the International Bank for Reconstruction and Development (IBRD) and the International Finance Corporation (IFC) – both members of the World Bank Group – drew up a new proposal in April 2019 to provide GPIF's external asset managers with an opportunity to invest in Green, Social and Sustainability Bonds.

GPIF provides external asset managers with an opportunity to both integrate ESG into their fixed income investments and gain excess return over government bonds by building platforms in which they can invest in green, social and sustainability bonds and other securities issued by multilateral development banks and government finance agencies.

This initiative, which started with the International Bank for Reconstruction and Development (IBRD) and the International Finance Corporation (IFC), has subsequently expanded to include the European Investment Bank (EIB), Asian Development Bank (ADB), Nordic Investment Bank (NIB), African Development Bank (AfDB), European Bank for Reconstruction and Development (EBRD), Islamic Development Bank (IsDB), Council of Europe Development Bank (CEB), and Inter-American Development Bank (IDB). In addition, we have also signed partnerships with government finance agencies such as Kreditanstalt für Wiederaufbau (KfW) in Germany, Kommuninvest (a local government debt office) in Sweden, and BNG Bank (BNG Bank N.V.) in the Netherlands. As of the end of March 2020, we have established partnerships with ten multilateral development banks and three government finance agencies as issuers. Through these platforms and other channels, GPIF's investments in green, social and sustainability bonds grew to around ¥441.4 billion as of the end of March 2020 (as calculated by GPIF based on Bloomberg data for bonds in compliance with principles, etc. of International Capital Market Association (ICMA).)

GPIF is committed to promoting ESG-based investment, not only in equities but also in fixed income and other assets, in order to limit negative environmental and social externalities and enhance the long-term return of the portfolio across all asset classes.

Investment framework in green bonds, etc.



Multilateral development banks and governmental financial institutions in partnerships with GPIF

Stewardship Activities and ESG Promotion

When GPIF first engaged in activities related to stewardship responsibilities ("stewardship activities"), equity asset managers were the initial focus. After revising our Investment Principles in October 2017 and Stewardship Principles in February 2020, we enhanced our ESG and other stewardship activities by expanding the scope to all assets.

Revision of Stewardship Principles

GPIF commenced stewardship activities in earnest with the adoption of Japan's Stewardship Code in May 2014. Our Stewardship Principles, established in June 2017, originally targeted the external asset managers for equity investments, requiring their active engagement in stewardship activities including ESG.

Stewardship responsibilities and the need to address ESG issues, however, are not limited to stocks. Non-financial risks and opportunities are also inherent in bonds, private equity, real estate and other asset classes. We therefore revised our Stewardship Principles in February 2020 to expand the scope of asset manager stewardship activities from only equities to all asset classes in our portfolio.

Likewise, stewardship and other engagement activities are not limited to investees. All participants in the market, including index providers, regulatory authorities, securities exchanges and others, have an important role to play in the investment chain, and can contribute to enhancing long-term corporate value. For this reason, we included in the revised Stewardship Principles the requirement for our external asset managers to actively engage with these market participants, to promote the sustainable growth of not only individual companies but the entire market.

Engagement-Intensive Passive Managers

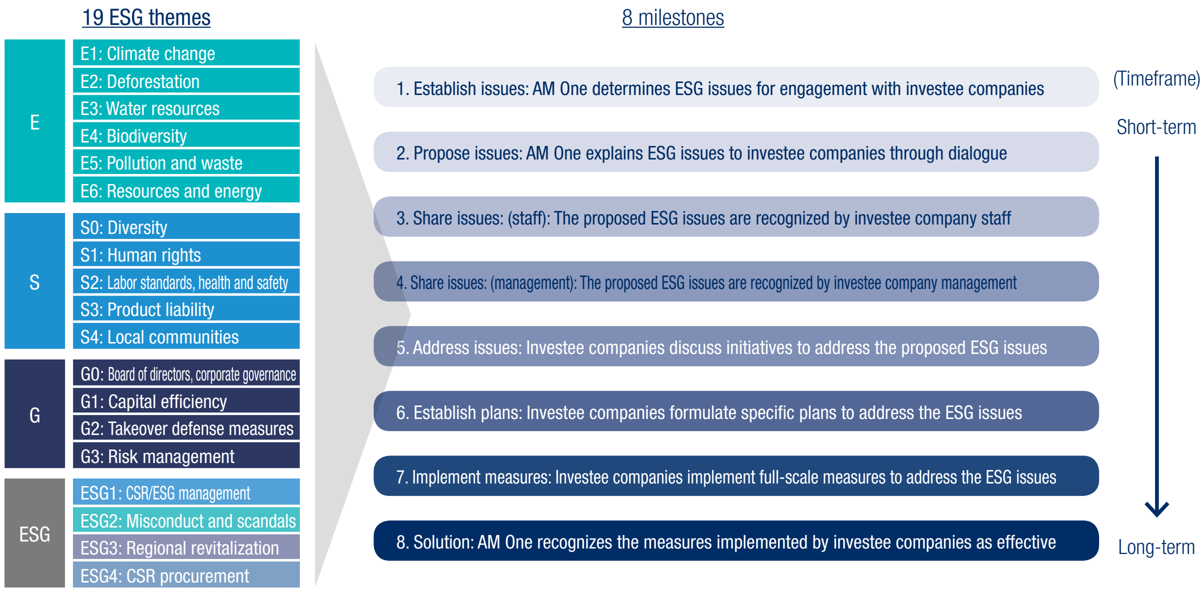
Passive investment accounts for approximately 90% of GPIF's equity portfolio, and we invest in a broad array of listed companies. The long-term growth of the market as a whole is therefore indispensable to increasing returns for pension recipients, and passive investment managers play a vital role in this growth. In the past, the main goal of passive management was to minimize the deviation of returns from the relevant benchmark, but GPIF regards the roles and duties of external passive investment managers in a broader, more profound sense.

For universal owners and cross-generational investors such as GPIF, it is absolutely vital that external passive managers actively and continually engage with investees, and work to minimize long-term negative externalities. Passive managers are long-term or perpetual investors and shareholders as long as the stock is an index constituent. In terms of engagement, they require a different perspective and approach from active managers.

For these reasons, we called for applications for what is known as "engagement-intensive passive managers," with the aim of improving the quality of the entire market through stewardship activities, and diversifying and enhancing our approach to stewardship activities. In the selection process, we focused on evaluating (i) the establishment of appropriate KPIs (i.e. setting medium- to long-term goals for engagement activities and annual plans to achieve these goals), and (ii) systems and methods of engagement. In 2018, we selected two managers: Asset Management One Co., Ltd. and FIL Investments (Japan) Limited.

At Asset Management One, veteran analysts and fund managers from the responsible investing department have established eight milestones to mark progress across a comparatively broad range of 19 ESG themes. We receive regular reports on the progress of their engagement activities, from the establishment of themes to their solution.

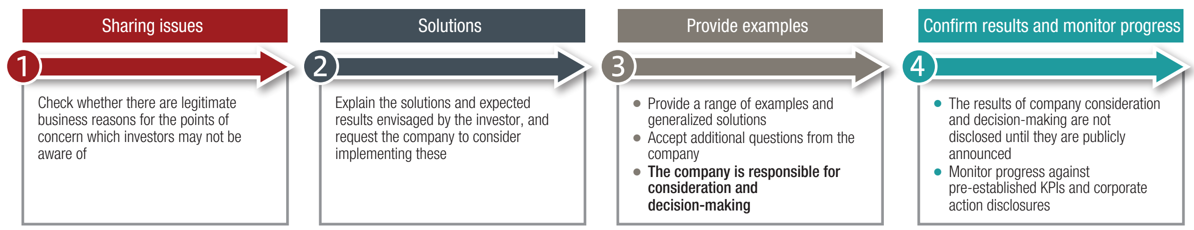
Figure 1. ESG Issues and Milestones Established by Asset Management One



Source: Prepared by Asset Management One Co., Ltd.

Meanwhile, FIL Investments aims to leverage the insights of industry-leading engagement supervisors and active investment analysts to efficiently enhance beta, by promoting change in large corporations with a significant impact on the stock index. Specifically, target companies for engagement are filtered by criteria such as (i) market capitalization of ¥1 trillion or greater, and/or (ii) corporate value with expected improvement of 50% or more, which enables FIL Investments to focus on engagement activities with large corporations that can potentially exert a meaningful impact on total market capitalization. GPIF also values the proactive communication and engagement undertaken by both of these companies through a range of government committees and other bodies.

Figure 2. FIL Investments' Four Steps of Engagement



Source: Prepared by FIL Investments (Japan) Limited

Asset Owners Joint Statement

With many corporate associations, asset managers and others issuing statements on the importance of ESG and sustainability over the past several years, GPIF considered it necessary to once again clarify our long-term perspective and stance on ESG from the position of an asset owner who consigns asset management to external managers. To this end, we released the joint statement "Our Partnership for Sustainable Capital Markets" in collaboration with CalSTRS (U.S.) and USS (U.K.), two members of the Global Asset Owners' Forum who share the same perspective as us.*

This statement expresses our views on how we as asset owners can fulfill our stewardship obligations. As the sustainable growth of the market as a whole is vital for us – both as participants in the investment chain benefiting from the market and as pension funds with a duty to future generations – the statement addresses the issue of how we can contribute to this sustainability.

Since its release in March 2020, the statement has garnered acclaim from around the world and has attracted 14 signatories as of May 31, 2020.

Figure 3. Support for the Asset Owners Joint Statement

Signatories	Countries
ABP	The Netherlands
BC Investment Management Corporation	Canada
Brunel Pension Partnership, Ltd	U.K.
California State Teachers' Retirement System (☆)	U.S.
Environment Agency Pension Fund	U.K.
Fonds de Réserve pour les Retraites	France
Government Pension Investment Fund (☆)	Japan
H.E.S.T. Australia, Ltd (HESTA)	Australia
LGPS Central Ltd.	U.K.
Local Pensions Partnership Investment, Ltd.	U.K.
Nest Corporation	U.K.
RPMI Railpen	U.K.
USS Investment Management Ltd (☆)	U.K.
Victorian Funds Management Corporation	Australia

Note 1: In alphabetical order. ☆ indicates original signatories. As of the end of May 2020.
Note 2: The joint statement is signed by the chief investment officer (CIO) or person of similar rank at each asset owner.

* https://www.gpif.go.jp/en/investment/Our_Partnership_for_Sustainable_Capital_Markets_Signatories.pdf

Survey of Listed Companies

GPIF conducts an annual survey of companies listed on the First Section of the Tokyo Stock Exchange in order to get their feedback on the stewardship activities of our external asset managers and understand the nature and progress of their engagement. We also use the survey to understand these companies' initiatives for ESG disclosure and how they assess the ESG indexes we invest in. In our fifth survey conducted in fiscal 2019, we received responses from 662 companies, representing 66% of total market capitalization.

The survey results for fiscal 2019 indicate that the percentage of companies voluntarily disclosing ESG and other non-financial information (e.g. CSR reports, sustainability reports, integrated reports, etc.) rose from 72.4% last year to 74.8%. GPIF discloses information on climate risks consistent with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), and the survey indicated that the number of companies endorsing TCFD totaled as many as 144, of which 61 companies similarly disclosed information consistent with TCFD.

Of the 80 companies which responded that they had not disclosed information in line with TCFD recommendations, 58 stated that they would begin disclosing by 2021. 81.6% of companies stated that institutional investors demonstrated a "high level of interest overall" or a "high level of interest in some cases" in ESG and other non-financial information during IR meetings, an increase of 3.8 percentage points. We observed that companies are providing more substantial disclosure of non-financial information in response to the growing importance of this information in the investment decision-making process.

"Corporate governance," "climate change" and "diversity" ranked among the most important themes for Japanese companies' ESG activities. A relatively large increase was observed from the previous year in the percentage of companies citing "climate change," "supply chain" and "diversity" as important themes.

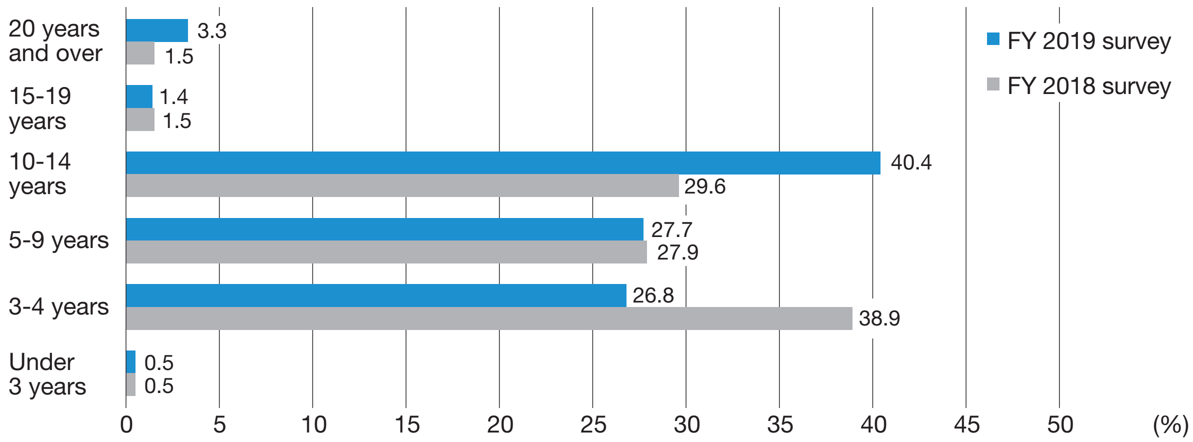
Figure 4. Major Themes in ESG Activities

Rank	Theme	FY 2019	% Change (YoY)
1	Corporate governance	70.8%	-0.4%
2	Climate change	53.9%	8.4%
3	Diversity	44.0%	2.4%
4	Human rights and local communities	34.7%	0.3%
5	Health and safety	32.6%	-0.7%
6	Product service and safety	30.8%	-1.2%
7	Risk management	29.8%	2.3%
8	Information disclosure	23.3%	2.1%
9	Supply chain	20.2%	3.3%
10	Composition and evaluation of the board of directors	16.2%	0.8%

Note: Companies selected up to five themes from a list of 25 provided by GPIF.

In the survey for fiscal 2019, we noticed a particularly conspicuous change in how companies interpret the term "long-term vision." Whereas most companies defined the assumed timeframe for "long-term vision" as "3-4 years" in fiscal 2018, most companies – 40.4% – responded "10-14 years" in fiscal 2019. The percentage of companies responding "20 years and over" also increased. These results clearly indicate that more companies are taking a longer-term approach to their corporate vision. In the past, most companies presented their vision for only the following three to five years, which corresponds with the period for the medium-term management plan. However, a growing number of companies are presenting a "long-term" vision in a true sense, also being influenced by the SDGs which target the year 2030. This is a positive development in terms of facilitating constructive dialogue from a long-term perspective.

Figure 5. Assumed Timeframe for the Long-Term Vision Companies Present to Institutional Investors



Note: The percentages were calculated based on the 430 companies with active disclosure of long-term vision.

Engagement with Index Providers and ESG ratings agencies

As GPIF’s investments are predominantly passive, index providers and ESG ratings agencies play a pivotal role in the success or failure of our fund management. GPIF engages in dialogue with index providers and ESG ratings agencies to improve the sustainability of the market and enhance our long-term investment performance.

Dialogue Between GPIF and Index Providers

Similar to asset managers, index providers and ESG ratings agencies play a vital role in GPIF’s investments. Index-tracking passive investments account for approximately 90% of our equity portfolio. Since the stocks we invest in and the weights of these investments are determined by indexes calculated by index providers, these providers arguably play a critical role in determining the success or failure of our investments.

For ESG indexes in particular, constituent stocks and their weights vary greatly depending on each firm’s ESG rating, so the companies that conduct these evaluations bear a particularly great responsibility. As such, similar to external asset managers, GPIF conducts due diligence of index providers and ESG ratings agencies when selecting ESG indexes. We assess the governance structures of these companies to ensure the transparency and neutrality of the ESG rating and index constituent selection process.

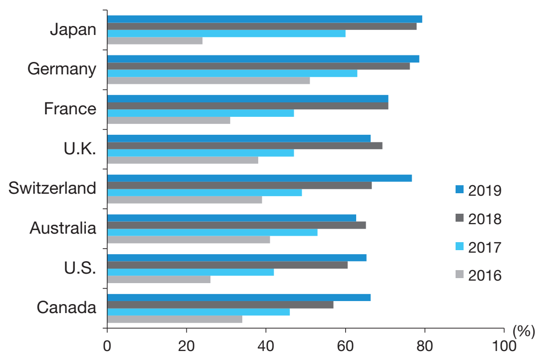
GPIF engages in continuous, proactive dialogue with index providers and ESG ratings agencies even after the index selection process, and also actively participates in consultations these companies conduct when they consider making changes to their ESG rating methods and/or index construction rules. While Japanese index providers have somewhat lagged their overseas counterparts in index governance, we observe very positive changes ongoing at these firms with respect to strengthening governance structures and actively undertaking consultations, etc.

Dialogue with ESG Ratings Agencies and Companies

As in the previous fiscal year, GPIF conducted feedback meetings with ESG ratings agencies in fiscal 2019 to discuss inquiries and opinions received from the companies that they rate. More and more firms are consulting with ESG ratings agencies over the course of the rating process. According to MSCI, the percentage of Japanese firms that consult with them during the ESG rating process is one of the highest among the world's major economies. (Figure 1). The percentage of companies that consult with FTSE during the ESG rating process is also rising. FTSE also reported that companies with mid-tier ESG ratings in particular – i.e. those who may potentially be candidates for the FTSE Blossom Japan Index in the future –have continued to increase. Furthermore, the data compiled by FTSE indicates that companies engaging more actively in dialogue with ESG ratings agencies are seeing greater improvements in their ESG ratings (Figure 2). The same trend can be observed in the analysis conducted by MSCI (Figure 3).

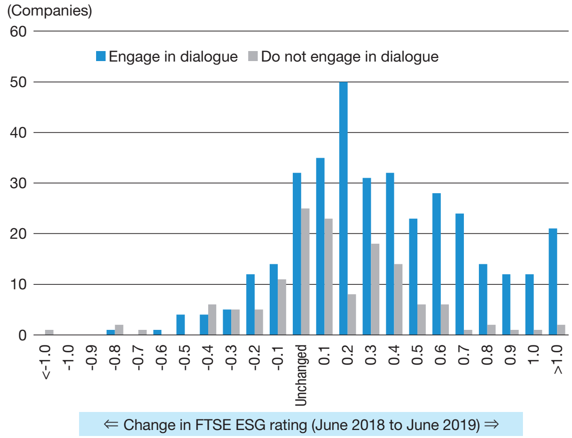
These data alone do not indicate anything other than that the more that a company is interested in ESG ratings, the more actively they engage in dialogue, and that these companies' ratings have improved. It is possible, however, that increased dialogue with ESG ratings agencies has some type of positive impact on companies' disclosure of ESG-related information and other areas. At the very least, it seems clear that increasing the number of companies with an interest in ESG ratings is a necessary condition for improving Japanese companies' ESG ratings and elevating the market as a whole through these companies' ESG-related initiatives.

Figure 1. Percentage of Companies Consulting with MSCI During the ESG Rating Process



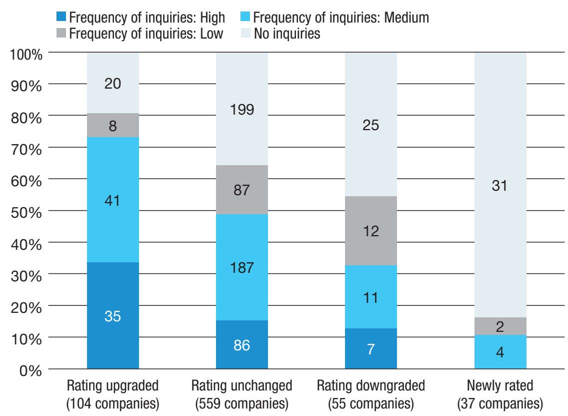
Note: Only includes constituents of MSCI ACWI. The graph above only includes data for countries with 40 or more MSCI ACWI constituents.
Source: Reproduced by permission of MSCI ESG Research LLC ©2020.

Figure 2. Change in ESG Rating for Companies Who Engage/Do Not Engage in Dialogue with FTSE



Note: "Engage in dialogue" refers to companies that sent a direct email enquiry to FTSE, or accessed the FTSE website. Only includes constituents of FTSE large and medium cap stock index .
Source: Prepared by GPIF based on data from FTSE Russell

Figure 3: Frequency of Dialogue with MSCI and Change in ESG Rating



Note: "Frequency of inquiries" represents the aggregate number of inquiries over the past two years (2018-2019), classified into high (10 or more), medium (3-9) and low (1-2).
"Change in ESG rating" represents the change over the one year period ending March 2020.
Source: Reproduced by permission of MSCI ESG Research LLC ©2020

ESG in Alternative Asset Management

The holding period for alternative assets (infrastructure, real estate, and private equity) is generally quite long, and in some cases, the asset manager itself is involved in the corporate management and business operations of the investee. As a result, more asset managers are integrating ESG factors in their investment process in order to identify and understand the risks encountered during the holding period and, conversely, find opportunities for sustainable asset value growth and improvement of corporate value. This trend is particularly prominent among overseas asset managers. GPIF is implementing initiatives to ensure appropriate integration of ESG in the selection of asset managers and the subsequent monitoring.

ESG in Alternative Assets

We use the general phrase "alternative asset management," but in fact, material ESG factors differ depending on the individual characteristics of the asset and/or business in question, and the asset manager's individual investment strategies also make a difference in the ESG initiatives they engage in. With an understanding of these differences, GPIF as an asset owner assesses asset managers' approach to ESG and monitors the status of their investment.

(1) ESG Ratings When Selecting Asset Managers

Since selection process for alternative asset managers that adopt a multi-manager strategy in April 2017, GPIF has added an examination of prospective asset managers' ESG initiatives to our screening criteria. Screenings are conducted from many different aspects, including through due diligence questionnaires, interviews with ESG staff, and evaluations by third-party consultants. We look at the manager's company-wide ESG policies, ESG integration in the investment process, their oversight systems and how they report to investors after an investment is made, among other things.

(2) Post-Investment Monitoring

GPIF monitors asset managers if there is any change in their organization in charge of ESG, whether the funds in which they invest to establish a diversified portfolio are signatories to the Principles for Responsible Investment (PRI), and how these funds implement each element of ESG. In addition to requesting that each asset manager provide a report detailing the status of their ESG initiatives, we make certain to actively engage and keep up to date on these issues through regular dialogue with them.

Integrating ESG Factors into Real Estate Investments

In addition to environmental risk assessments and the promotion of energy efficiency measures, the real estate industry is increasingly focusing on initiatives to promote the health and wellness of tenants. Properties that incorporate these ESG elements are not only attractive to tenants, but are also recognized as investments with high risk-resilience.

<Investment Example>
This logistics facility held by a European real estate fund in which GPIF invests has received WELL Certified™ Gold certification for its measures to ensure the health and wellness of the people that work there.

Integrating ESG Factors into Infrastructure Investments

The infrastructure market is witnessing a surge of investment in renewable energy projects such as wind and solar power. The amount of investment in renewable energy assets within GPIF's infrastructure investment portfolio is also increasing in major regions.

<Investment Example>
Shown above is the wind farm held by a North American infrastructure fund in which GPIF invests. The facility has an overall power generation capacity of 803MW. Stable revenue is ensured through long-term power purchase agreements.

Participation in Global Initiatives for the Real Estate Market

GPIF has joined GRESB as a Real Estate Investor Member.

GRESB is a mission-driven and investor-led ESG benchmark for real assets. GRESB works in collaboration with the industry to provide standardized and validated ESG data to the capital markets. The 2019 real estate benchmark covered more than 1,000 property companies, real estate investment trusts (REITs), funds, and developers. GPIF engages in dialogue with managers to encourage them to actively use GRESB Assessment in their real estate investment and management processes to enhance the disclosure of ESG information and constructive dialogue across the market.

G R E S B

Carbon Risk Real Estate Monitor (CRREM) Phase2

The real estate sector is exposed to significant climate-related transition risk as governments are likely to impose increasingly stringent regulations on energy use and emissions from buildings to meet their own climate goals.

GPIF supports the expansion of CRREM to include major real estate markets outside the EU. CRREM provides the industry with science-based decarbonization pathways for 44 countries in Europe, North America and Asia-Pacific for the different asset classes such as office and residential sector. The pathways published on the CRREM Phase2 website identify annual energy- and carbon-intensity trajectories until 2050 across real estate markets and sectors that are consistent with keeping global warming below 2 degrees Celsius.

CRREM

Collaboration with Overseas Public Pension Funds and Other Institutions

GPIF collaborates with a wide range of domestic and foreign institutions. In fiscal 2019, we joined the 30% Club Japan Investor Group, in addition to the International Corporate Governance Network (ICGN) and the Council of Institutional Investors (CII).

September 2015
Signed the Principles for Responsible Investment

GPIF has been stepping up its ESG activities since we signed the PRI in September 2015. Every year, we report our ESG activities to the PRI and receive a full assessment on how we're doing. We also participate in committees including the Asset Owner Advisory Committee, SDGs Advisory Committee, and Japan Network Advisory Committee. We received an A+ rating on strategy and governance in our 2019 assessment.

Signatory of:

PRI Principles for Responsible Investment

2015

November 2016
Joined the Thirty Percent Coalition and the 30% Club

Both the Thirty Percent Coalition in the U.S. and the 30% Club in the U.K. are initiatives that seek diversity in listed company boards by increasing the proportion of female board members to 30%. GPIF has participated in the Thirty Percent Coalition in the U.S. and the Investor Group of the 30% Club in the U.K. as an observer since November 2016. Since December 2019, we have also participated in the 30% Club Japan Investor Group.

30% Club GROWTH THROUGH DIVERSITY

THIRTY PERCENT COALITION

2016

2017

April 2018
Published a Joint Research Paper With the World Bank Group

In 2018, GPIF and the World Bank Group published a joint research paper entitled "Incorporating Environment, Social and Governance (ESG) Factors into Fixed Income Investment." Following up on this research, in April 2019, the International Bank for Reconstruction and Development (IBRD) and the International Finance Corporation (IFC) – both members of the World Bank Group – drew up a new proposal to provide GPIF's external asset managers with an opportunity to invest in green bonds. This initiative has led to partnerships with other international financial institutions and governmental financial institutions in various countries.

WORLD BANK GROUP
THE WORLD BANK IBRD • IDA
IFC International Finance Corporation

December 2018
Declared Support for the TCFD

GPIF declared our support for the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) in December 2018. We commenced information disclosure in accordance with the TCFD recommendations in our ESG Report 2018, published in August 2019.

2018

October 2018
Joined Climate Action 100+

Climate Action 100+ is an investor-led climate change initiative launched in September 2017. Members of this initiative hold constructive dialogues with companies that have a significant impact on the resolution of climate change issues. Participants discuss improving climate change-related governance, making efforts to reduce greenhouse gas emissions, and enhancing information disclosure. Currently, over 450 investors participate in the initiative*, including pension funds and other asset owners as well as asset managers. GPIF has participated in Climate Action 100+ as a supporter since October 2018, and also participates as an asset owner in the Asia Advisory Group (AAG), which advises the Steering Committee on circumstances and conditions in the Asia region.

* As of July 2020

2019

August 2019
Joined ICGN

The International Corporate Governance Network (ICGN) is an international network of institutional investors and other organizations. It promotes better corporate governance and stewardship activities with the aim of advancing efficient markets and sustainable economies. GPIF joined ICGN in August 2019.

August 2019
Joined CII

The Council of Institutional Investors (CII) is a network of institutional investors established by U.S. public pension funds, with the aim of advocating and collaborating in the areas of shareholder rights and corporate governance in the U.S. GPIF joined CII in August 2019.

Asset Owners Joint Statement

In March 2020, GPIF published “Our Partnership for Sustainable Capital Markets” in collaboration with U.S. pension fund CalSTRS and U.K. pension fund USS Investment Management (USS). For GPIF and other pension funds, a long-term perspective from and sustainable growth of investee companies and the market as a whole are indispensable in enhancing long-term investment returns. We released this joint statement because we considered it necessary to clarify our stance as asset owners on the issues of long-term oriented investment and ESG.

Support for TCFD and Climate-Related Financial Disclosures

GPIF declared our support for the TCFD, an initiative established to promote the disclosure of climate change-related financial information, in December 2018. We began disclosing information in accordance with TFCD recommendations last year. In this report, we have expanded the range of methods we use to measure aspects such as our carbon footprint, and enhanced our evaluation and disclosure of risks (transition risks and physical risks) and opportunities.

Climate-Related Financial Disclosure Consistent with TCFD Recommendations

The Financial Stability Board (FSB) established the Task Force on Climate-related Financial Disclosures (TCFD) in December 2015, and in June 2017, the TCFD released their recommendations on how companies and others can better disclose information related to climate change risks and opportunities. The recommendations published by the TCFD outline a series of information disclosure practices for companies and other organizations in (1) governance, (2) strategy, (3) risk management, and (4) metrics and targets, in relation to climate change.

GPIF declared support for the TCFD in December 2018, and we began disclosing information in accordance with the TCFD recommendations in our ESG Report 2018 published last year. In that year's report, of the risks (transition and physical) and opportunities for which analysis is required under (2) strategy, we only analyzed and disclosed information on transition-related risks. In this report, we have attempted to provide not only an individual analysis of both transition and physical risks and opportunities, but also present an integrated assessment of these risks and opportunities.

Although the potential impact may vary in size, climate change risks occur simultaneously across all companies and asset classes, and these risks cannot be completely eliminated simply through diversification. At the very least climate-change risks are highly likely to manifest over the long-term, and we therefore believe that asset owners should take the lead in addressing them. At GPIF, we've taken actions such as linking a portion of our passive equity portfolio to environmental stock indexes and investing in green bonds, in addition to announcing our support for the TCFD and Climate Action 100+.

It is difficult to separate climate change-focused investment and activities from ESG activities as a whole, and GPIF regards climate change as one of the most important themes for ESG activities in general. Accordingly, the "disclosures recommended by the TCFD" (on the following page) include not only initiatives that focus on climate change, but the content of all ESG activities. GPIF will work to enhance the sustainability of the entire market by improving disclosure of information on ESG in general, including climate-related financial information, while also promoting such disclosure across the market.

Disclosures recommended by the TCFD and GPIF's response

Disclosures recommended by the TCFD		GPIF's disclosure information and page number
Governance	Disclose the organization's governance around climate-related risks and opportunities.	● GPIF proactively integrates ESG in investments according to relevant principles, including our investment principles and Stewardship Principles (page 66). ● The Board of Governors, which oversees the Executive Office, receives reports on ESG from the Executive Office as necessary (page 13). ● The Executive Office, which consists of officers and employees under the President, convenes Investment Committee meetings to make decisions on climate change and other ESG-related initiatives. The Office also develops an organizational framework for implementing these initiatives (pages 14).
Strategy	Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material.	● As a universal owner, GPIF stresses sustainable enhancement of the corporate value of each investee company, which is realized through minimizing the impact of environmental and social issues and fostering the long-term sustainability of society as a whole (page 7). ● GPIF proactively integrates ESG over all asset classes. In equity investment, we incorporate external asset managers' ESG activities into their evaluations (page 19), and in fixed income investment, we propose investment opportunities in Green, Social and Sustainability Bonds to our external asset managers (page 20). We also promote ESG integration in our alternative investments (pages 27-28). ● In relation to environment (E) in particular, we use indexes for equity investment that focus on each company's carbon efficiency (pages 17-18) and invest in green bonds through fixed-income investment (page 20). ● In addition to adopting various methods for measuring the carbon footprint of GPIF's portfolio, we also carry out an integrated evaluation of the impact of physical risks, transition risks and opportunities on investment return (pages 47-62).
Risk management	Disclose how the organization identifies, assesses, and manages climate-related risks.	● GPIF is developing an organizational framework for monitoring the GHG emissions (carbon footprint and carbon intensity) of its entire portfolio as well as for each fund for which management has been outsourced. ● GPIF confirms each external asset manager's support for the TCFD and their policies for the future. More than 70% of our external asset managers endorse the TCFD. In addition to promoting ESG integration in our evaluations of external asset managers, we conduct surveys of external asset managers to confirm their responses to climate change.
Metrics and targets	Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.	● GPIF aims to control portfolio risk and gain opportunities for investment return by contributing to the effort to curb greenhouse gas (GHG) emissions across the entire economy, through engagement with external asset managers and measures such as the adoption of ESG indexes (pages 17-18 and 25-26). ● We conduct scenario analysis on the impact that climate change-related and other policy changes have on GPIF's portfolio, and consider how to deal with this impact (page 61).

Review of ESG Activities and Future Outlook

In fiscal 2019, we continued to observe companies around the world making positive changes to improve their future ESG ratings. Over the course of the new medium-term plan, which began in April 2020, we will continue working to secure long-term investment returns by stepping up our ESG initiatives in cooperation with a number of different partners. We believe that ESG will prove increasingly important both during the global pandemic and the post-COVID-19 age to come.

In fiscal 2019, we focused on laying the foundation for enhancing the quality and scale of our ESG investments, such as introducing the "Index Posting System" and collaborating with several international organizations to expand the green bond market. We also began comprehensively evaluating and selecting equity and fixed income asset managers based on new criteria designed to systematically assess their ESG integration initiatives.

As corporate ESG ratings improve worldwide, Japanese companies in particular are becoming increasingly proactive in their dialogue with ESG ratings agencies. This is an extremely positive development that will likely lead to an improvement in Japanese companies' ESG ratings in the future, as data indicate a strong tendency for companies that proactively engage in dialogue to experience a marked improvement in their ESG ratings.

With the exception of a portion of domestic bonds as required by law, GPIF invests the majority of its portfolio through external asset managers. For this reason, we carry out many of our ESG activities through external asset managers, index providers and ESG ratings agencies. It is therefore vital to ensure that these partners fully comprehend the importance of ESG activities and undertake efficient and effective engagement in order to secure GPIF's long-term investment returns.

Over the course of the new medium-term plan, which began in April 2020, we will continue working to secure long-term investment returns by stepping up the ESG initiatives we promoted the previous fiscal year in cooperation with the different partners involved. The highest priority for all society at present is to overcome the COVID-19 pandemic, which represents a threat to humanity. At the same time however, we face a multitude of medium and long-term challenges, including climate change, and we believe that ESG will prove increasingly important both during the global pandemic and in the post-COVID-19 age to come.

Executive Managing Director
(Responsible for Asset Management) and
Chief Investment Officer (CIO)

UEDA Eiji

Can Dialogue with ESG Ratings Agencies Contribute to Market Improvement?

Dialogue between ESG ratings agencies and companies not only leads to better ratings from the ESG ratings agency concerned, but also contributes to improved ratings from other agencies as well. In this sense, such dialogue can be expected to create "positive externalities." Dialogue between ESG ratings agencies and companies, and between asset managers and companies, is indispensable for improving the sustainability of capital markets, and we expect dialogue to further increase in the future.

At present, an increasing recognition of the importance of ESG is driving a heightened interest in ESG ratings among Japanese companies. Inquiries to ESG ratings agencies from Japanese companies are increasing significantly, as shown in Figure 1 on page 26, and data indicate that companies making more inquiries also have improving ESG ratings.

Based on this data alone, however, it would also be possible to infer that "ESG ratings agencies raise the scores of companies that engage in dialogue (or raise objections) with them." Some may also adopt the view that "ESG ratings agencies provide companies with guidance on how to improve their score if they engage in dialogue with them," despite the fact that neither MSCI nor FTSE offer any consulting services.

In view of these issues, we analyzed data on inquiries and ESG rating changes for both MSCI and FTSE to determine whether or not companies that engaged in dialogue with MSCI received improved ratings from FTSE, and vice versa. We were able to confirm that companies that engaged in dialogue with FTSE received better ratings than companies that did not, not only from FTSE, but also from MSCI. Likewise, companies that engaged in dialogue with MSCI received better ratings than companies that did not, not only from MSCI but also from FTSE. These comparisons produced statistically significant results (in the table below).

If dialogue results in a company becoming aware of the need for better disclosure, this would likely result in a relatively quick response, which would also be reflected in their ESG ratings sooner. On the other hand, if the issues a company becomes aware of are something more fundamental to the business, such as the need to change the composition of the board of directors, strengthen environmental sustainability efforts, or improve labor circumstances, a significant amount of time may be necessary to fully address the issue, and these improvements will take longer to be reflected in the company's ESG rating. Dialogue with ESG ratings agencies not only leads to better evaluations from the ESG ratings agency concerned, but also contributes to enhanced ratings from other agencies. In this sense, such dialogue can be expected to create "positive externalities." We look forward to conducting a deeper analysis once we have accumulated more data.

Change in ESG Rating from Dialogue, etc. with ESG Ratings Agencies

	Change in ESG rating from dialogue, etc. with MSCI				Change in ESG rating from dialogue, etc. with FTSE			
	Change in MSCI ESG rating		Change in FTSE ESG rating		Change in FTSE ESG rating		Change in MSCI ESG rating	
	Engaged in dialogue, etc. with MSCI	Did not engage in dialogue, etc. with MSCI	Engaged in dialogue, etc. with MSCI	Did not engage in dialogue, etc. with MSCI	Engaged in dialogue, etc. with FTSE	Did not engage in dialogue, etc. with FTSE	Engaged in dialogue, etc. with FTSE	Did not engage in dialogue, etc. with FTSE
Average	0.266	0.099	0.109	0.022	0.129	-0.027	0.267	0.072
Variance	0.840	0.635	0.197	0.144	0.197	0.132	0.849	0.578
Number of observations	349	139	349	139	348	140	365	123
t-value	1.883	—	2.181	—	4.008	—	2.324	—
P(T≤t) one-tail	0.030	—	0.015	—	0.000	—	0.010	—

Note: Dialogue, etc. includes inquiries via telephone, email etc., as well as access to portal sites.
Source: Prepared by GPIF based on data from FTSE and MSCI. FTSE Russell. Reproduced by permission of MSCI ESG Research LLC ©2020.

ESG Index Performance

The ESG indexes selected by GPIF outperformed market averages over the past three years. We believe ESG investment can effectively improve long-term risk-adjusted return, and that a true assessment of ESG index performance can only be made over the long term.

Attribution Analysis of ESG Index Performance

All five ESG indices selected by GPIF outperformed their parent indices and market averages (TOPIX for Japanese equities and MSCI ACWI (excluding Japan) for foreign equities) both during the three years from April 2017 to March 2020 and during the past year from April 2019 to March 2020 **A**. These are only short-term results, however. Since higher risk-adjusted returns materialize from ESG investments more as the investment horizon grows, we believe that these types of investments can only be accurately assessed over the long term.

B shows the performance of ESG indices (for Japanese equities) from April 2017 to March 2020. The relative prices of four ESG indices, (1) MSCI Japan ESG Select Leaders Index, (2) MSCI Japan Empowering Women Index, (3) FTSE Blossom Japan Index, and (4) S&P/JPX Carbon Efficient Index, are compared to the market average (TOPIX) by dividing the price of each index by the price of the TOPIX. Between April 2017 and March 2018, the prices of (1), (2) and (3) relative to the TOPIX fell below one, but from 2018 on they trended upwards to around one. This upward trend has continued, and since March 2019 (the period outlined in red), (1), (2), (3) and (4) have all generally outperformed the TOPIX.

A Returns of Five ESG indices Selected by GPIF

	April 2019 to March 2020					April 2017 to March 2020 (annualized)				
	Index Return			Excess Return		Index Return			Excess Return	
	(a)	(b)	(c)	(a-b)	(a-c)	(x)	(y)	(z)	(x-y)	(x-z)
	ESG Index	Parent Index	TOPIX	Parent Index	TOPIX	ESG Index	Parent Index	TOPIX	Parent Index	TOPIX
(1) MSCI Japan ESG Select Leaders Index	-3.39%	-9.28%	-9.50%	5.89%	6.11%	2.24%	0.09%	-0.14%	2.15%	2.38%
(2) MSCI Japan Empowering Women Index	-4.78%	-9.09%	-9.50%	4.32%	4.73%	1.99%	0.17%	-0.14%	1.82%	2.13%
(3) FTSE Blossom Japan Index	-6.96%	-9.18%	-9.50%	2.22%	2.55%	0.15%	0.08%	-0.14%	0.07%	0.29%
(4) S&P/JPX Carbon Efficient Index	-9.20%	-9.50%	-9.50%	0.30%	0.30%	0.10%	-0.14%	-0.14%	0.24%	0.24%
	ESG Index	Parent Index	MSCI ACWI ex Japan	Parent Index	MSCI ACWI ex Japan	ESG Index	Parent Index	MSCI ACWI ex Japan	Parent Index	MSCI ACWI ex Japan
(5) S&P Global Ex-Japan LargeMidCap Carbon Efficient Index	-12.81%	-13.11%	-13.40%	0.30%	0.59%	1.28%	1.13%	0.92%	0.15%	0.36%

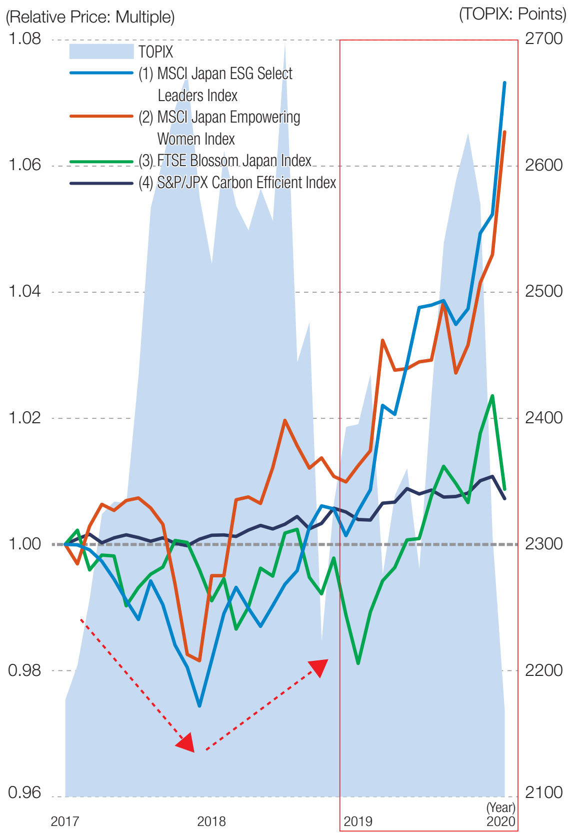
(Note 1) Index returns include dividends. The periods used to calculate index return rates differ from the terms of GPIF actual investments.
(Note 2) The parent index (constituent universe) for (1) is composed of the top 700 companies by market capitalization included in the MSCI Japan IMI Index (increased from the top 500 companies in December 2018).
The parent index (constituent universe) for (2) is composed of the top 500 companies by market capitalization included in the MSCI Japan IMI Index.
The parent index (constituent universe) for (3) is the FTSE JAPAN INDEX.
The parent index (constituent universe) for (4) is the TOPIX.
The parent index (constituent universe) for (5) is the S&P Ex-Japan LargeMid Index.
(Source) Prepared by GPIF based on data from Bloomberg and FactSet.

The main factors contributing to the relative price outperformance by indexes (1) to (4) as compared to the TOPIX are presented in C. This chart compares the relative price performance of three style indices (growth, value and quality) and a combination ESG index formed from an equally-weighted combination of the ESG indices (1) to (4) against the TOPIX. During the period shown, the quality and growth indices outperformed the TOPIX while the value index underperformed, indicating a relative rise in the price of high-profit margin, high-growth stocks, and a relative decline in the price of cheaper stocks. In this market environment, the combination ESG index displayed moderate, stable relative growth.

The outperformance of the ESG indices (1) to (4) is thought to be due to the generally higher composition and relative weight of high-quality, high-growth stocks in these indices. These stocks outperformed during this period, causing the ESG indices to rise relative to the TOPIX. The ESG indices contain a lower concentration of high-quality, high-growth stocks than the respective style indices however, which is the reason behind their relatively moderate and stable performance.

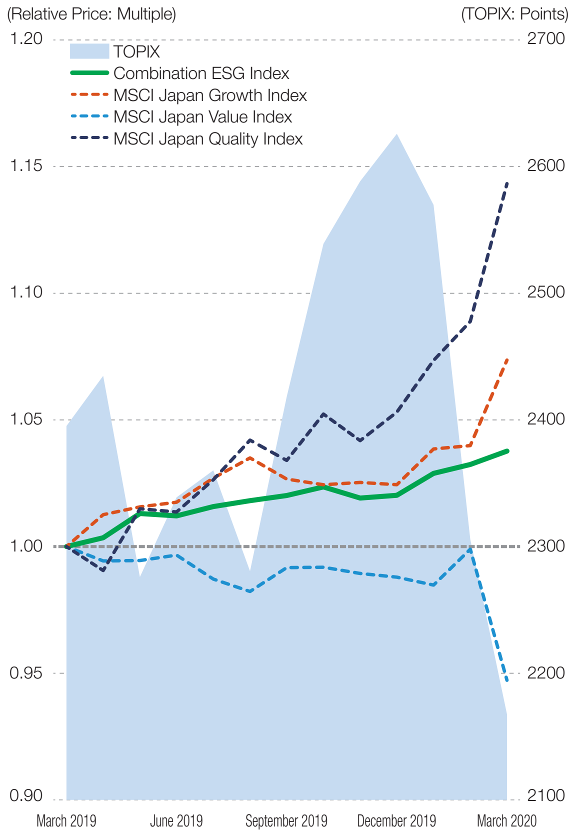
The performance of ESG indices can be affected by factors unrelated to ESG, such as the style and large cap bias described above. In order to decrease the impact of specific style factors on performance, we look forward to better corporate ESG initiatives and information disclosure in the future, which will enable ESG ratings to be designated for a broader range of stocks, including small caps.

B Relative Prices of ESG Indices (1) to (4) and the TOPIX



(Note) Relative prices are normalized to one as of March 31, 2017.
(Source) Prepared by GPIF based on data from Bloomberg and FactSet.

C Relative Prices of a Combination ESG Index and Style (Growth, Value and Quality) Indexes



(Note 1) Relative prices are normalized to one as of March 31, 2019.
(Note 2) The combination ESG index is an equally-weighted combination of ESG indices (1) to (4).
(Source) Prepared by GPIF based on data from Bloomberg and FactSet.

Portfolio ESG Rating

GPIF invests in a broad range of equity and fixed-income assets in Japan and overseas through external asset management companies. We once again calculated the ESG ratings for our equity portfolios for this year's report, and found that both domestic and foreign equities continued to improve.

Analysis of Portfolio ESG Rating

GPIF invests in a broad range of equity and fixed-income assets in Japan and overseas through external asset management companies, with about 2,400 companies in our domestic equity portfolio and 2,700 companies in our foreign equity portfolio. Similar to last year, in this year's report we once again measured the ESG rating of our equity portfolios as below.

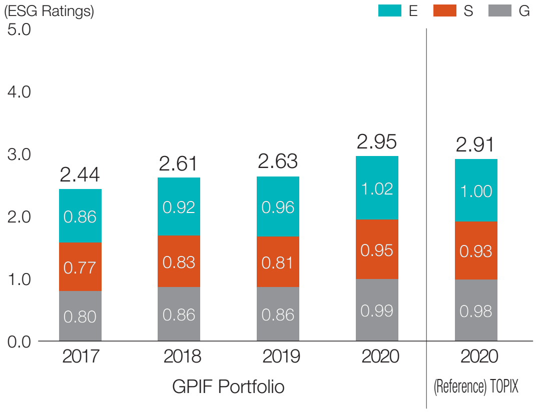
Using ratings by FTSE and MSCI, we calculated the weighted average ESG rating based on the market capitalization of each stock in GPIF's portfolio (excluding stocks for which an ESG rating was not available). This year, we calculated not only the overall ESG ratings, but also individual ratings for each of the three pillars: environmental (E), social (S) and governance (G). The overall ESG rating, weighted by market capitalization, represents the sum of the E, S and G ratings. (MSCI ratings include an industry adjustment factor.)

A to D show the trend in each ESG rating for GPIF's equity portfolios every year from March 31, 2017 to March 31, 2020, as well as the ESG rating for market representative indices as of March 31, 2020. Results showed that the portfolio ESG rating for both FTSE and MSCI continued to improve for both domestic and foreign equities. As of March 31, 2020, there is little difference in the proportion of the ESG rating attributable to each of the E, S and G ratings in the case of FTSE, whereas the S rating comprises a larger proportion than the E and G ratings in the case of MSCI, which highlights the difference between ratings agencies.

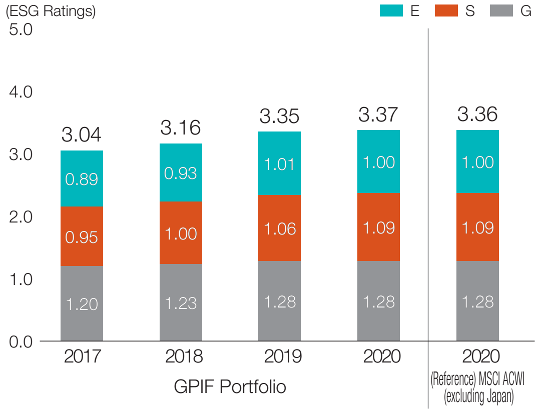
Figures E and F have been included to illustrate the factors contributing to the improvement in ESG ratings by showing trends over time in each of the E, S and G ratings for GPIF's equity portfolios. Whereas in the FTSE evaluation, the E, S and G ratings are all increasing E, in the MSCI evaluation only S and G are increasing, while the E rating declines F. This is thought to be attributable partly to advances in environmental technology rendering existing technologies obsolescent, as well as to expanded data sources making more precise evaluations possible.

We compared the ESG ratings for GPIF's equity portfolios to ratings for the whole market by using the same methodology to calculate the ESG ratings for market representative indices, using TOPIX in the case of domestic equities and the MSCI ACWI (excluding Japan) in the case of foreign equities. Results showed that, similar to last year, there was little difference between the ESG ratings of the index portfolios and those of GPIF's equity portfolio for both domestic and foreign equities in the case of both FTSE and MSCI A to D. These results were mainly due to the fact that GPIF's assets are largely allocated to passive investment funds.

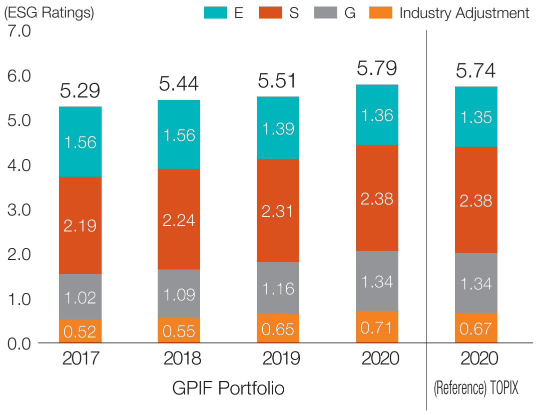
A FTSE ESG Ratings (Domestic Equities)



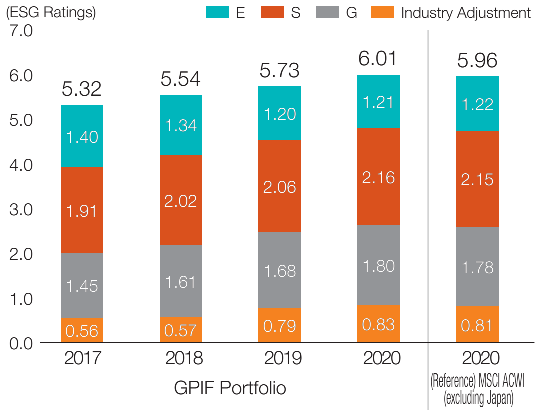
B FTSE ESG Ratings (Foreign Equities)



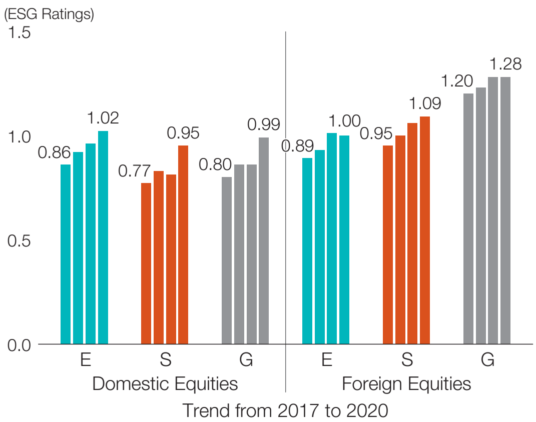
C MSCI ESG Ratings (Domestic Equities)



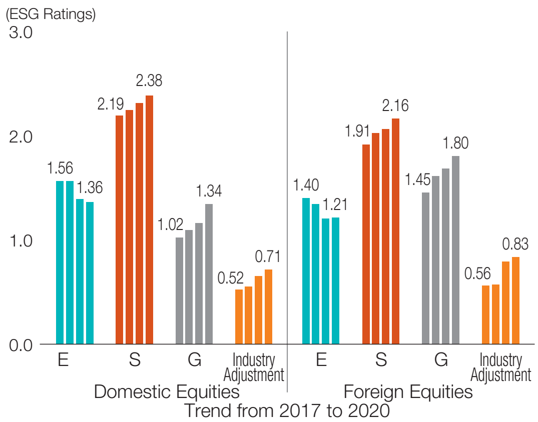
D MSCI ESG Ratings (Foreign Equities)



E FTSE ESG Ratings for Each Item



F MSCI ESG Ratings for Each Item



A B E (Note) GPIF holdings: Among the stocks held by GPIF, we analyzed those with ESG ratings by FTSE.
(Source) Prepared by GPIF based on data from FTSE. FTSE Russell.

C D F (Note 1) GPIF holdings: Among the stocks held by GPIF, we analyzed those with ESG ratings by MSCI.
(Note 2) Industry adjustment: Difference between the final rating and the weighted average of each company's rating for environmental (E), social (S) and governance (G), arising due to the normalization of ratings by industry.
(Source) Prepared by GPIF based on data from MSCI. Reproduced by permission of MSCI ESG Research LLC ©2020.

ESG Rating Ranking by Country

GPIF keeps track of the average ESG rating and rate of improvement for major index component companies from each country in order to gauge the level of and changes in ESG ratings for Japanese companies. The ESG ratings of Japanese firms are improving, and the rate of this improvement has outpaced that of other countries during the past year.

ESG Rating ranking by country

GPIF calculated the simple average ESG rating of surveyed companies for each of the nine leading countries/regions included in the major FTSE and MSCI indices as of March 31 for each year from 2017 to 2020. We then created a ranking of ESG ratings by country/region.

Analysis results are shown in A . Companies in western countries such as France, the U.K., and Canada are ranked highly by both FTSE and MSCI.

Rate of Improvement in ESG Ratings by Country

Next, GPIF examined the rate of improvement in ESG ratings by country for the companies covered in the analysis above for the past year and over the past three years. The results, shown in B and C , reveal that the pace of improvement at Japanese companies was around average over the past three years, but exceeded that of other countries over the past year for both FTSE and MSCI ESG ratings.

Some disparity has become apparent between the ratings agencies, with companies from Asian countries such as India, Hong Kong and South Korea improving the most in the FTSE ratings, and western companies from the U.S., U.K. and Canada improving the most in the MSCI ratings. This is an intriguing result, and may be due to differences in the corporate aspects reviewed by each ratings agency.

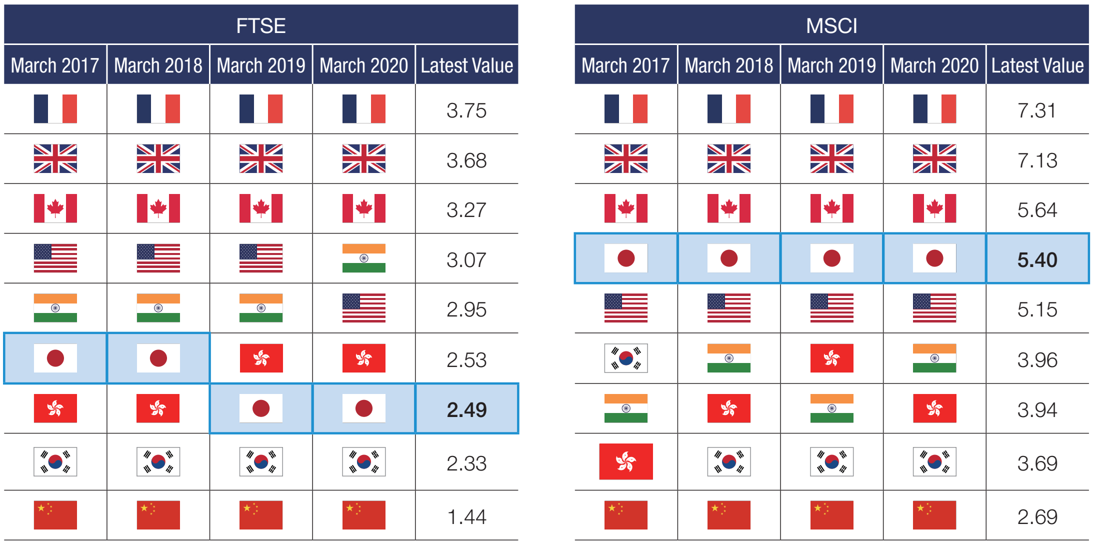
ESG Rating Distribution for Japanese Companies

Although we calculated the country-level average ESG rating for all surveyed companies, ESG ratings actually vary widely among companies within the same country. Below, we compared the distribution of ESG ratings for Japanese companies included in the above analysis as of March 31, 2017 and March 31, 2020.

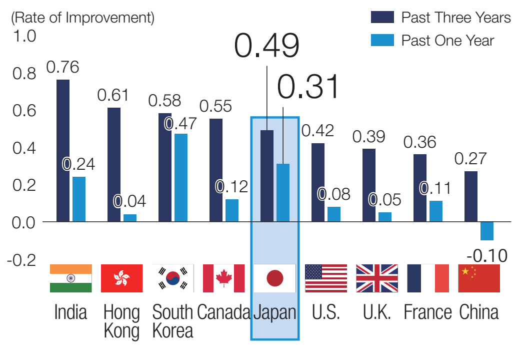
The results of this analysis are shown in D and E . We observe that for both FTSE and MSCI, the distribution of ESG ratings are shifting to the right (i.e. they are improving).

Japanese companies rank near the top among major countries in terms of the percentage of companies contacting index providers over the course of their ESG rating process (pages 25-26), which illustrates a continued interest among these companies with respect to ESG ratings. They are expected to further improve their handling of ESG issues and information disclosure going forward, which will help elevate their ESG ratings even higher.

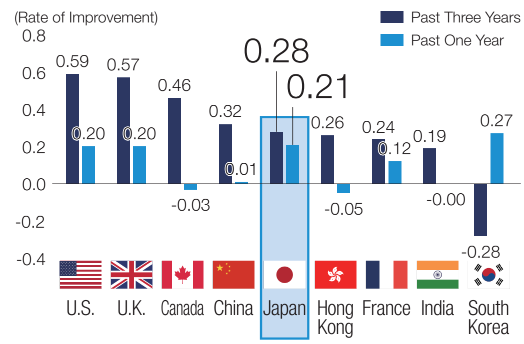
A ESG Rating Ranking by Country



B Rate of Improvement in FTSE ESG Ratings by Country

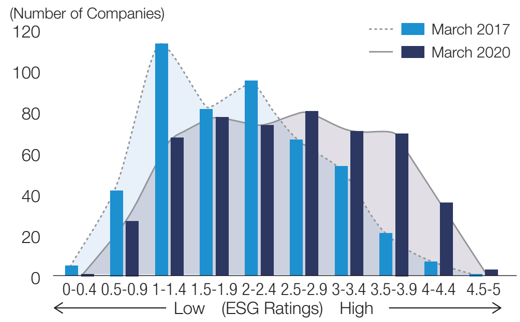


C Rate of Improvement in MSCI ESG Ratings by Country

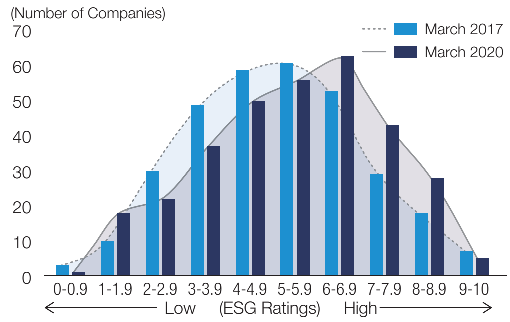


(Note) This figure shows the change over the three years from the end of March 2017, to the end of March 2020, and over the most recent year.

D FTSE ESG Rating Distribution for Japanese Companies



E MSCI ESG Rating Distribution for Japanese Companies



(Note) Among the companies included in FTSE's "FTSE Developed Index" and "FTSE Emerging Index" and MSCI's "MSCI All Country World Index," the analysis focused on those that had an ESG rating.

(Source) Prepared by GPIF based on data from FTSE and MSCI. FTSE Russell. Reproduced by permission of MSCI ESG Research LLC ©2020.

ESG Rating Correlation

Unlike financial analysis, no standard methodology has been established for the analysis of non-financial information within the ESG rating process. This means that ratings vary widely from ratings agency to ratings agency.

This year, the correlation of ESG ratings was higher for foreign companies than the previous year but remained flat for Japanese companies.

Analysis of ESG Rating Correlation

Unlike financial analysis, the ESG rating process involves an assessment of a diverse range of non-financial information for which there is currently no standard rating methodology. In our 2017 press release announcing the selection of Japanese equity ESG indices, we pointed out that ESG ratings vary widely among ratings agencies. We estimate that the large discrepancy may be attributable to the fact that: (i) ESG rating methods are still evolving and (ii) there is still room for improvement in corporate ESG disclosure. Accordingly, we began to examine changes in ESG rating correlations among ratings agencies in our 2017 ESG Report, and observe these correlations at different points in time.

In this year's report, GPIF selected Japanese companies that had been rated by both FTSE and MSCI as of the end of March 2020, and analyzed the correlation between the two ESG ratings agencies' overall ESG scores as well as individual scores for environmental (E), social (S) and governance (G) for identical companies A – D.

The next page provides a series of scatter charts showing the two ratings agencies' ESG scores A, E scores B, S scores C, and G scores D for identical companies. FTSE scores are plotted on the vertical axis and MSCI scores are plotted on the horizontal axis. We then examined the correlation between the two sets of scores.

The results show some positive correlation in the case of ESG scores and E scores, but no clear correlation in the case of S scores or G scores.

GPIF also selected Japanese and foreign companies that had been rated by both FTSE and MSCI as of the end of March each year from 2017 to 2020, and analyzed the correlation between the two ESG ratings agencies' four scores for identical companies E F.

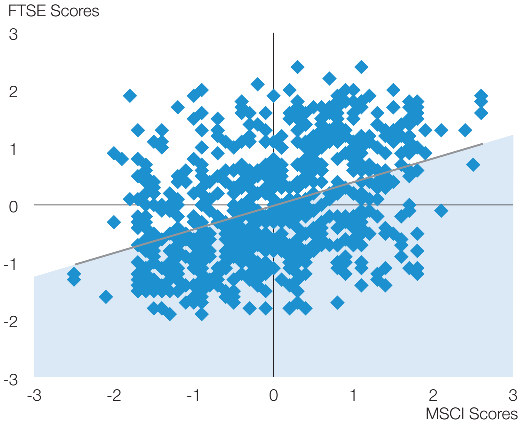
The results show that the correlation between the two ratings agencies' ESG scores for foreign companies continued to get stronger from 2017 to 2020. The correlations for E scores, S scores and G scores also increased compared to 2017 F.

For Japanese companies however, the correlation for ESG scores remained at around the same level, while the S and G scores in particular continued to show no correlation at all E. There is a common awareness of the difficulty of assessing social (S) aspects among ESG analysts and investors. In the case of governance (G) however, there seem to be only a limited number of items that make up the score, and many observers may be somewhat surprised by the wide divergence in scores between the two evaluators.

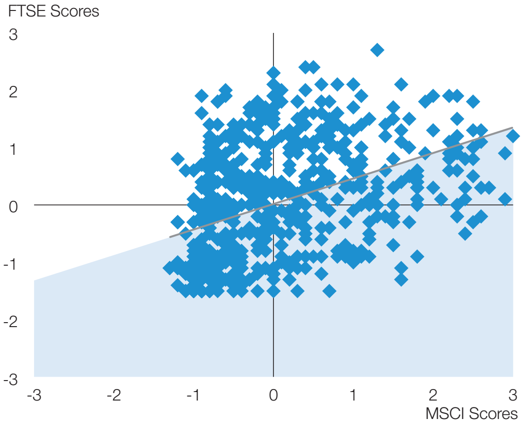
Although ESG score convergence for Japanese companies appears to have stalled compared to foreign companies, dialogue between GPIF and ESG ratings agencies, and between ESG ratings agencies and companies, is increasing, and we hope that this leads to more convergence in the future.

FTSE and MSCI ESG Score Correlation Charts
Domestic Equities (End of March 2020)

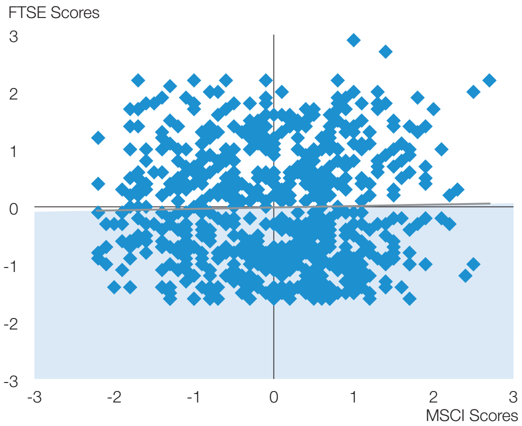
A ESG Score



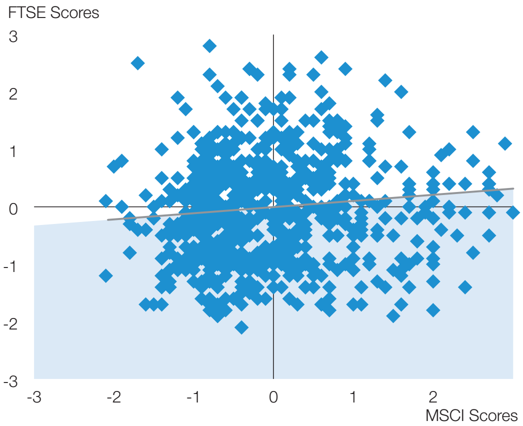
B Environmental (E) Score



C Social (S) Score



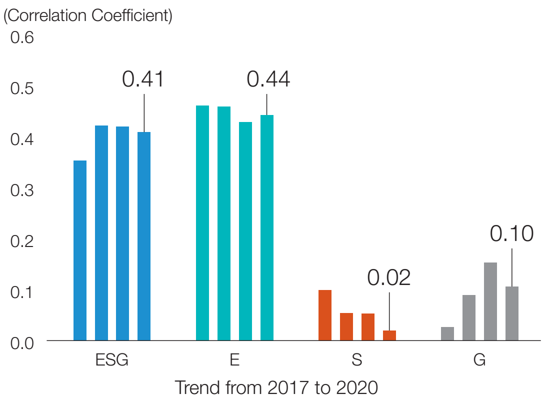
D Governance (G) Score



(Note) The correlation coefficient was calculated using ESG score data from FTSE and MSCI after normalization (conversion to a data set with mean 0 and variance 1).
(Source) Prepared by GPIF based on data from FTSE and MSCI. FTSE Russell. Reproduced by permission of MSCI ESG Research LLC ©2020.

Japanese and Foreign Equities (End of March Each Year from 2017 to 2020)

E Correlation Coefficient Trend (Domestic Equities)



F Correlation Coefficient Trend (Foreign Equities)

(Source) Prepared by GPIF based on data from FTSE and MSCI. FTSE Russell. Reproduced by permission of MSCI ESG Research LLC ©2020.

Evaluation of the Advancement of Women at Japanese Companies

Here we provide an overview of Japanese companies' initiatives for the advancement of women in the workplace, which generally falls under the scope of social (S) issues within the framework of ESG. We also compare the status of Japanese companies with that of foreign companies.

Advancement of Women at Japanese Companies

In 2017, GPIF adopted the MSCI Japan Empowering Women Index (WIN) as a passive equity benchmark focusing on the social (S) theme within the ESG framework. In addition, we also joined the Investor Group of the 30% Club Japan, a group that actively promotes increased female representation among the executive class at Japanese companies, in December 2019. The employment and advancement of women is a key factor in human resource diversity and a central element of "S". Similar to last year, we observe data utilized in the WIN index scoring methodology to gauge the progress made in the employment and advancement of women at Japanese companies below.

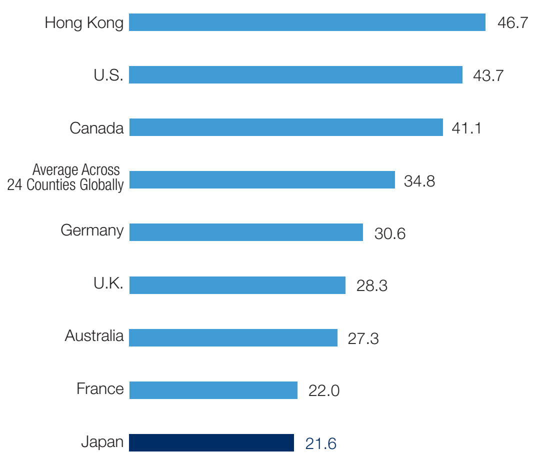
The WIN index covers, among other things, five items ((i) to (v) in A) for which disclosure by companies is required under the Act on Promotion of Women's Participation and Advancement in the Workplace. This year's data shows that scores and information disclosure for these five items are improving. The number of major companies evaluated in the WIN index was expanded from 500 to 700 in November 2019, but to preserve data continuity, we only looked at the original 500 companies. Within this universe, an average of 4.0 items were disclosed by each company in 2020 A.

A Actual Values for WIN Index Quantitative Score Items (Median)

	2017	2018	2019	2020	
				500 Company Basis	700 Company Basis
(i) % Female New Hires	25.0%	27.9%	28.0%	28.1%	28.9%
(ii)% Women in the Workforce	17.0%	18.6%	18.8%	19.6%	20.2%
(iii)Difference in Years Employed by Company: Men vs. Women	-16.6%	-16.5%	-16.5%	-16.7%	-17.5%
(iv)% Women in Senior Management	3.5%	4.5%	4.6%	5.2%	5.1%
(v)% Women on Board*	10.0%	10.0%	10.0%	11.1%	11.1%
Average Number of WIN Index Quantitative Score Items Disclosed	3.7	3.6	3.9	4.0	3.8
Reference: % Companies with Female Directors	40%	42%	52%	64%	61%

(Note) Includes companies evaluated in the WIN index (500 major companies up to 2019, and 700 major companies from 2020).
(Source) Prepared by GPIF based on data from MSCI. Reproduced by permission of MSCI ESG Research LLC ©2020.

B International Comparison of Average Gender Score (End of March 2020)



(Note) The above includes only those countries with 100 or more companies evaluated in the WIN index. The scores have been weighted.
(Source) Prepared by GPIF based on materials from Equileap.

C Standardized Scores for Japanese Companies for Each Item

Area	Criterion	Standardized Score
A GENDER BALANCE IN LEADERSHIP & WORKFORCE (40%)	1 Board of Directors	31.2
	2 Executives	31.0
	3 Senior Management	34.6
	4 Workforce	42.0
	5 Promotion & Career Development Opportunities	39.2
B EQUAL COMPENSATION & WORK LIFE BALANCE (30%)	6 Living Wage	46.4
	7 Gender Pay Gap	43.9
	8 Parental Leave	64.4
	9 Flexible Work Options	55.5
C POLICIES PROMOTING GENDER EQUALITY (20%)	10 Training and Career Development	52.4
	11 Recruitment Strategy	19.2
	12 Freedom from Violence, Abuse and Sexual Harassment	49.1
	13 Safety at Work	42.3
	14 Human Rights	55.3
	15 Social Supply Chain	46.0
	16 Supplier Diversity	28.6
	17 Employee Protection	34.9
D COMMITMENT, TRANSPARENCY & ACCOUNTABILITY	18 Commitment to Women's Empowerment	52.9
	19 Audit	46.5

(Note 1) Standardized scores have been calculated based on the mean score for each criterion among companies evaluated in each of the 24 countries.
(Note 2) The percentages in parentheses indicate the weight of each area. Standardized scores of 40 or lower are shown in red.
(Source) Prepared by GPIF based on data from Equileap.

Comparison of Japanese and Foreign Companies

Although we observe some improvement in the initiatives enacted by Japanese companies to eliminate the gender gap year after year, the Global Gender Gap Index published annually by the World Economic Forum (WEF) ranked Japan 121st out of 153 countries in 2019 – a further drop from its rank of 110 in 2018 and the country's lowest rank ever. However, the WEF's Gender Gap Index evaluates countries based on indicators across the four dimensions of Economic Participation and Opportunity, Educational Attainment, Health and Survival and Political Empowerment, and does not represent an assessment of the current status or initiatives of Japanese companies.

In this context, we carried out an international comparison using March 31, 2020 data produced by the Dutch NGO Equileap in order to compare and evaluate gender diversity initiatives at companies in each country. We found that Japan scored lowest out of the 24 countries included in the survey B . Whether taken in isolation or together with the WEF Gender Gap Index data, this review indicates a low evaluation of the status of women at Japanese companies.

"Employment and Advancement of Women as Directors, Corporate Officers, Etc." and "Commitment" Remain a Challenge

We calculated standardized scores for Japanese companies for each of the 19 criteria included in Equileap's scoring methodology as presented in the table above C . Japanese companies score highly for parental leave, and also exceed the global average in terms of flexible work options and workers' human rights. At the same time however, they significantly lag behind the global standard in terms of the proportion of female executives, women on the board of directors, and women in senior management – criteria which are particularly emphasized in the scoring system. Overseas, some countries have introduced quota systems (allotment systems) requiring a certain number or proportion of female directors and corporate officers, which creates a significant disparity with Japan. As a result, the employment and advancement of female directors and corporate officers has also become an important topic of engagement with institutional investors.

Japanese companies have also received low scores on criteria concerning corporate policies and commitment. This problem is not limited to the employment and advancement of women however; the disclosure of policies and commitment are areas where Japanese companies struggle in other ESG items such as environment as well.

Governance Aspects of Japanese Companies

Since the establishment of Japan's Stewardship Code in 2014 and the introduction of Japan's Corporate Governance Code in 2015, corporate governance reform at Japanese companies has garnered significant attention from within Japan and overseas. Below, we examine the issues that exist at Japanese companies from the perspective of their compliance with the Corporate Governance Code.

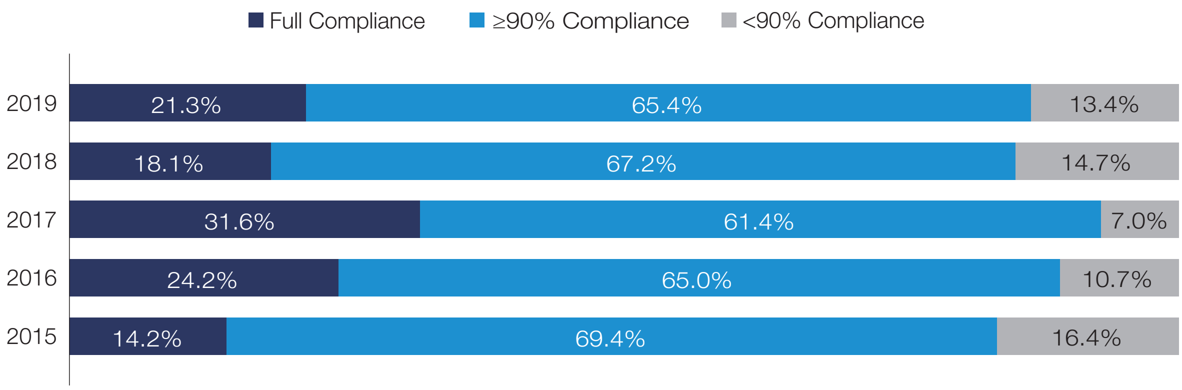
Status of Japanese Companies' Compliance with the Corporate Governance Code.

Japan's Corporate Governance Code (hereinafter the "CG Code") was compiled by a council of experts assembled by the Financial Services Agency, and was incorporated into the listing rules of the Tokyo Stock Exchange in 2015. The CG Code contains 73 principles covering a wide range of themes, such as securing shareholder rights, information disclosure and transparency and shareholder dialogue. The CG Code was revised in 2018 to emphasize issues such as board diversity, reduction of cross-shareholdings, and active stewardship by corporate pension funds, with five new principles being added.

Companies listed on the TSE First and Second sections are required to either comply with all 78 principles or provide and explanation for why they do not comply. As can be seen in the compliance trends in A, while there was a slight decrease after the 2018 revision, the vast majority and a growing proportion of companies comply with over 90% of all principles.

Given that the size and business circumstances of companies on the TSE 1st and 2nd section can vary drastically, compliance with a given principle may not make sense for certain firms, and thus choosing to explain rather than comply is not necessarily viewed negatively. On the other hand, looking at the principles for which many companies choose to explain rather than comply may give some insight into where many Japanese companies have room for further improvement.

A Corporate Governance Code Compliance Trends

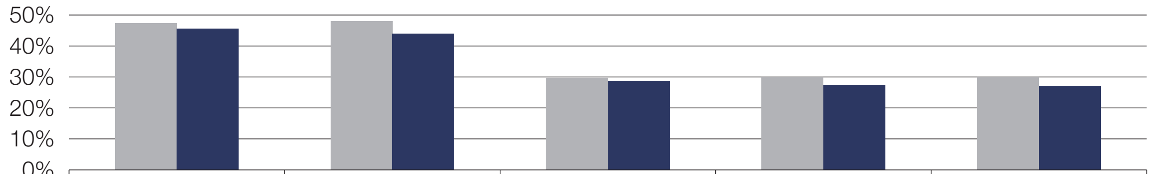


(Source) Tokyo Stock Exchange "How Listed Companies Have Addressed Japan's Corporate Governance Code" for each year.

Corporate Governance Issues at Japanese Companies

B shows the five principles for which the most companies chose to explain rather than comply. In 2019, the principle with the lowest level of compliance was for implementing an electronic proxy voting platform and sending out English proxy statements (1.2.4), followed by having independent director input on nomination and remuneration issues (4.10.1), implementation of a CEO succession plan created by the board (4.1.3), appropriate board size and diversity (4.11), and executive remuneration that promotes sustainable growth (4.2.1). The rates of explanation for each of these principles is on a downward trend, which may indicate that many companies intend to comply but simply need more time than others to implement these changes.

B Corporate Governance Code Principle Non-Compliance (Explain) Trends

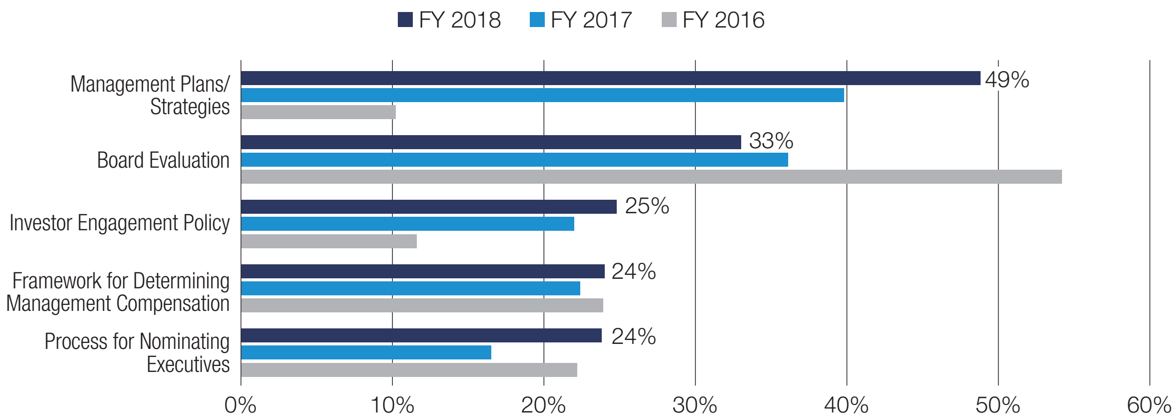


	(1.2.4) Electronic Voting/English Proxy Statements	(4.10.1) Independent Director Input on Nomination/ Remuneration	(4.1.3) CEO Succession Plans	(4.11) Board Diversity/ Appropriate Size	(4.2.1) Mid-Long Term Growth Remuneration
2018	47%	48%	30%	30%	30%
2019	46%	44%	29%	27%	27%

(Source) Tokyo Stock Exchange "How Listed Companies Have Addressed Japan's Corporate Governance Code" for each year.

As for the corporate governance-related issues that companies seek to improve and/or view as a barrier to enhancing long-term value creation, a survey conducted by the Life Insurance Association of Japan to which 533 listed companies responded **C** illustrates that a large and growing proportion of firms (49%) view management plans and corporate strategy as most important to sustainable growth. A declining but still significant proportion of firms (33%) see board evaluations as most important, followed by the investor engagement policy the company implements (25%).

C Corporate Governance Issues Perceived as a Challenge in Terms of Enhancing Long-Term Corporate Value, or in Which Improvement is Desirable



(Source) The Life Insurance Association of Japan survey "Approaches toward Enhancing Equity Value (FY2018)"

Disclosure and Analysis of Climate-Related Financial Information: Composition and Key Points

This year, we expanded the scope of our analysis to disclose more information by using several analytical techniques that assess climate change from a variety of different perspectives. We worked to enhance the level of sophistication of our analysis by utilizing a new methodology that assesses the impact of climate change on corporate value to estimate the effect of this risk on GPIF's portfolio.

Analysis Used in the Disclosure of Climate-Related Financial Information

In disclosing climate-related financial information in line with the TCFD recommendations, this year's report includes analyses performed by MSCI and FTSE in addition to an analysis by Trucost similar to the one conducted last year. Referring to the TCFD, we classified disclosures into (1) a measurement of carbon footprint, etc. (2) an analysis of risks and opportunities, and (3) a SDGs-related analysis. This year, we present a multi-faceted disclosure that draws from the particular strengths of each evaluator's analysis methodology **A**.

One important discovery made from the results of this year's analysis was the possibility that Japanese companies may actually increase in value as a result of international initiatives to reduce greenhouse gas (GHG) emissions to meet goals such as the 2˚C target **B**. While it is generally understood that companies incur additional costs in reducing GHG emissions to meet this target, a more holistic analysis incorporating the environmental technological "opportunities" inherent in achieving the target reveals that in some cases, the boost to corporate value resulting from such technologies actually exceeds the cost of reducing GHG emissions. This tendency is particularly noticeable among domestic equities, for which the boost from opportunities related to environmental technologies was stronger than for foreign equities. These results are based on MSCI's Climate Value-at-Risk (CVaR) methodology, which can be used to analyze the impact of both risks and opportunities on corporate value as measured by the value of both equities and corporate bonds. Unlike in the case of equities, upside opportunities for corporate bonds are small for both domestic and foreign companies, and the total CVaR for this asset class is negative. This seems to be due to the fact that, in the case of Japanese companies, the proportion invested in each company and sector is different for GPIF's equity and bond portfolios.

The following analyses are presented in this report. First, under "Portfolio Climate-Related Risk" (page 49), we present an outline of GPIF's overall portfolio, including an explanation of the composition and sector biases important in understanding the results of the various analyses. Next, under "Portfolio Greenhouse Gas ("GHG") Emission Analysis" (page 51), we measure GHG emissions for GPIF's equity and corporate bond portfolios using data from Trucost, as in the previous year. We also carry out new analyses, including an analysis of the factors causing change in carbon intensity. "Climate-Related Analysis of Government Bond Portfolio" (page 53) mainly uses an analysis conducted by FTSE. This year, in addition to measuring the carbon intensity of our government bond portfolio as last year, we also analyzed transition risks, physical risks, and opportunities for this portfolio. Finally, under "Analysis of Risks and Opportunities Using Climate Value-at-Risk" (page 57), we conducted an analysis of GPIF's equity and corporate bond portfolios using the CVaR methodology developed by MSCI. This methodology enables us to measure risks (transition and physical) and opportunities for equities and corporate bonds on the same scale. It also makes it possible to conduct various scenario analyses to assess how changing assumptions impact asset prices.

We also examined income opportunities arising from the process of resolving the social issues indicated in the United Nations Sustainable Development Goals (SDGs). These analyses constitute the range of perspectives from which we evaluated our portfolio.

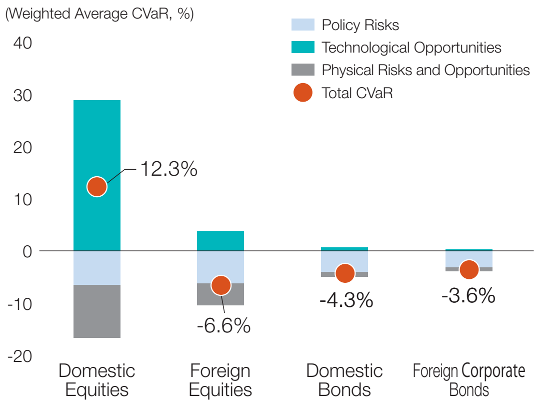
The disclosure and analysis of climate-related financial information is complicated by the wide breadth of issues requiring disclosure, as well as the need to account for the unique characteristics of each asset class. Last year, we conducted a separate scenario analysis wherever possible for each disclosure item and asset class, but this year we have adopted the CVaR methodology, which enables a uniform analysis across all disclosure items and asset classes. We also increased the level of sophistication in each analysis area, including a deeper carbon footprint measurement analysis and an assessment of risks and opportunities for our government bond portfolio.

A Main Areas of Analysis and Combination of Evaluators

Type of Issuer	Companies		Countries
Asset Class	Equities	Corporate Bonds	Government Bonds
(1)Measurement of Carbon Footprint, etc.	Trucost Measurement of carbon footprint and carbon intensity Analysis of factors causing changes in carbon intensity (equities and corporate bonds only)		FTSE
(2) Analysis of Risks and Opportunities	MSCI Measurement of Climate Value-at-Risk (CVaR)		FTSE ○Transition risks Gap between greenhouse gas (GHG) emissions and 2˚C target, etc. ○Physical risks Exposure to the risk of rising sea levels, etc. MSCI ○Opportunities Measurement of patent scores for CVaR
(3)SDGs-Related Analysis	MSCI Analysis of exposure to corporate profits	—	—

(Source) GPIF

B GPIF's Portfolio Climate Value-at-Risk (CVaR)



(Note) Calculated on the assumption of a 2oC scenario.
(Source) Reproduced by permission of MSCI ESG Research LLC ©2020.

Main Points

- ✓ Weighted average CVaR is greater for domestic equities (+12.3%) than foreign equities (-6.6%). This means that the present value of Japanese stocks is estimated to increase by 12.3% under the 2˚C scenario.
- ✓ Environmental technologies provide an overall boost for domestic equities overall, despite the negative impact of physical risks.
- ✓ Although foreign equities have a smaller exposure to physical risks, the overall negative pressure from risks is greater than the technological opportunities they present.
- ✓ Corporate bonds show a different trend than equities, with few technological opportunities in either the domestic or foreign bond portfolio, due to factors such as sector bias.

Portfolio Climate-Related Risk

An accurate assessment of portfolio climate-related risk requires an understanding of portfolio asset classes and sector weightings.

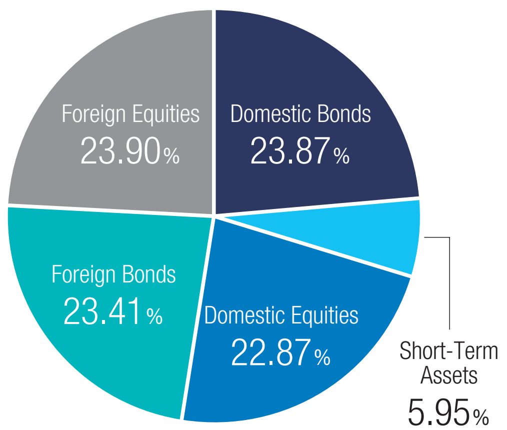
Features of GPIF's Portfolio

Fiscal 2019 is the second year for which GPIF has analyzed portfolio climate-related risk in line with the TCFD recommendations. Since last year, we have endeavored to expand our analysis toolbox and undertake a comprehensive evaluation of transition risks, physical risks and opportunities. To do this, we utilized data not only from Trucost as we did in the previous year, but also assessments from FTSE and MSCI.

The analysis looked at four asset classes in GPIF's portfolio: domestic and foreign bonds and domestic and foreign equities. Alternative assets and short-term assets were not included in the analysis. In the sections that follow, we analyze greenhouse gas emission volume (carbon footprint), transition risks, physical risks and opportunities relating to all four asset classes using data as of March 31, 2020. Because analysis results are heavily influenced by the investment amount and sector weighting of each asset class, it is important to understand the characteristics of our portfolio prior to interpreting these results.

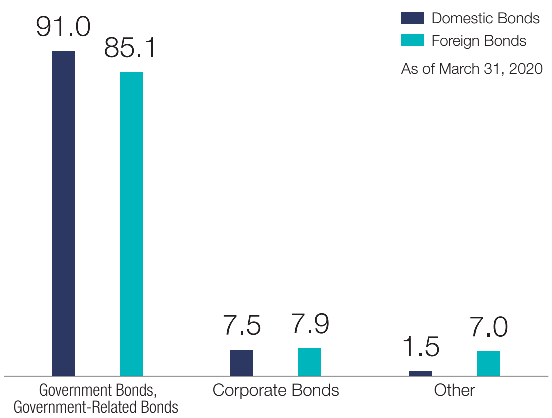
The GPIF portfolio is composed of roughly half bonds and half equities by overall market value A. On the fixed income side, domestic bonds accounted for 23.87% of all holdings while foreign bonds accounted for 23.41%. For equities, domestic issues comprise 22.87% of the total portfolio and overseas issues 23.90%. The majority of bond holdings, both Japanese and foreign, consist of government bonds B.

A Breakdown of Portfolio Asset Types (Total for GPIF's Pension Reserves)



(Note) As of March 31, 2020.
(Source) GPIF

B Breakdown by Category in GPIF Bond Portfolio (%)



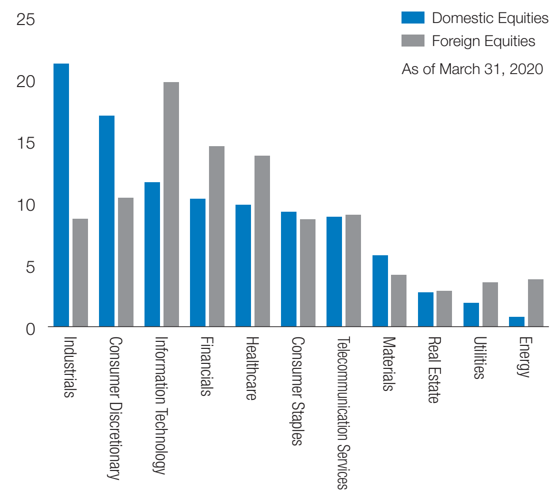
(Note) "Other" includes securitized products.
(Source) GPIF

We observe a difference between domestic and foreign equities when we classify GPIF's equity portfolio by sector **C**. The domestic equity portfolio has a higher proportion of market capitalization invested in industrials and consumer discretionary companies, which have a high level of greenhouse gas emission volumes, while the foreign equity portfolio has a high proportion in information technology companies, financials and healthcare companies, which are sectors with relatively low emissions.

When we categorize the corporate bond portfolio by sector based on total market value, the largest sector for both domestic and foreign bonds is financials **D**. Among domestic corporate bonds, the proportion of industrials and utilities is higher than that for foreign corporate bonds. Since utilities includes electric power companies, this sector has relatively higher greenhouse gas emissions when compared with other sectors. Among foreign corporate bonds, the proportion of energy companies, which have relatively high greenhouse gas emission volumes, is greater than that for domestic corporate bonds. On the other hand, the proportion of corporate bonds issued by telecommunication services, healthcare and information technology companies, which have low emission volumes, is also high. Overall, the environmental impact of foreign corporate bond issuers is lower than that for domestic corporate bond issuers.

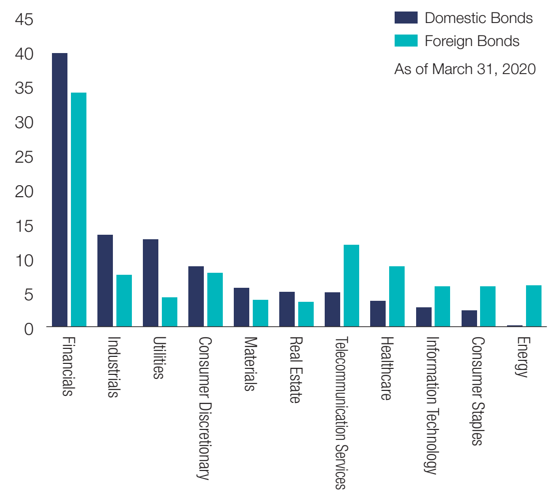
It is necessary to bear this sector bias in GHG emissions in mind when examining the results of the analysis presented in the following sections. Around 90% of stock investments and 70% of bond investments by GPIF are passive investments, which means our investment is virtually identical to the sector ratios of each benchmark.

C Breakdown of GPIF Equity Portfolio by Sector (%)



Source: GPIF, S&P Trucost Limited © Trucost 2020

D Breakdown of GPIF Bond Portfolio by Sector (%)



(Note) Only corporate issues are analyzed.
Source: GPIF, S&P Trucost Limited © Trucost 2020

E Greenhouse Gas Emissions Per Million Yen of Sales (CO_2 Equivalent Tons)

	Telecommunication Services	Consumer Discretionary	Consumer Staples	Energy	Financials	Healthcare	Industrials	Information Technology	Materials	Real Estate	Utilities
Domestic Equities	0.37	0.82	2.02	**3.76**	0.08	0.46	1.54	1.06	**6.73**	0.58	**14.13**
Foreign Equities	0.41	0.87	1.92	**5.62**	0.26	0.34	1.63	0.68	**9.95**	1.47	**19.98**
Domestic Bonds	0.40	0.84	1.42	**3.49**	0.08	0.42	1.99	1.04	**10.81**	0.82	**16.90**
Foreign Bonds	0.35	0.73	4.25	**6.44**	0.12	0.38	1.74	0.47	**8.47**	0.82	**30.37**

(Note) In each asset class, the top three sectors by volume of greenhouse gases emitted are shaded. Among domestic and foreign bonds, only corporate issues are analyzed. Data are as of March 31, 2020.
(Source) GPIF, S&P Trucost Limited © Trucost 2020

Portfolio Greenhouse Gas ("GHG") Emission Analysis

This analysis measures the GHG emissions of the companies held within GPIF's portfolio. Results indicate that GHG emissions for each asset class depend significantly on the size and sector bias present within each class.

Carbon Footprint (GHG Emissions)

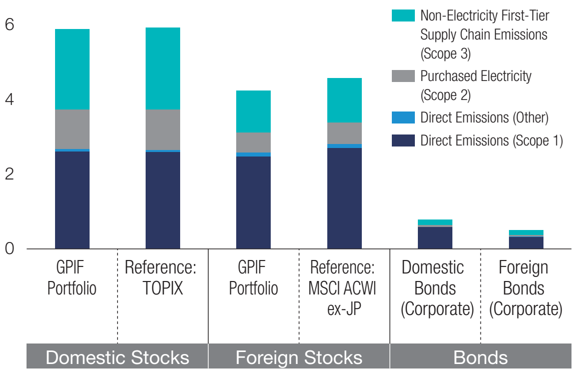
The scope of GHG emissions calculated includes each company's direct carbon dioxide and other GHG emissions (Scope 1) in addition to CO_2 emissions generated by purchased electricity and the 1st tier of the supply chain (Scope 2 and 3).

Looking at total emissions by asset class, domestic equities were found to have the highest level of emissions, followed by foreign equities, domestic corporate bonds, and foreign corporate bonds A . This does not necessarily mean that domestic companies are less carbon efficient than foreign companies, but rather reflects the relative size and sector holding of each asset class within GPIF's portfolio.

Looking at the breakdown of emission by scope, in the case of domestic equities, indirect emissions, comprising Scope 2 and 3 emissions, exceed direct Scope 1 emissions, illustrating how important it is for companies to consider their supply chains when formulating their GHG reduction strategies

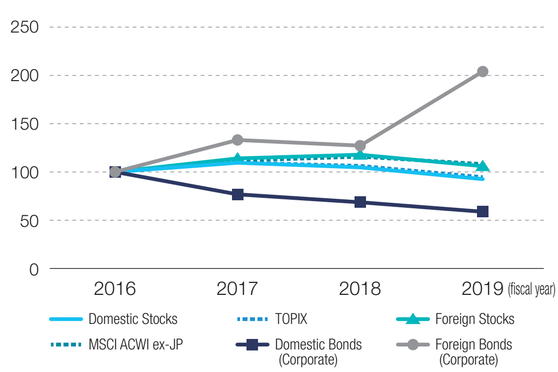
The trend in GHG emissions since fiscal 2016 B shows that emissions for both domestic and foreign equities remained mostly flat through fiscal 2018, but began to decline in fiscal 2019. For bonds, while emissions for domestic issues have declined for three consecutive years, emissions for foreign issues grew significantly to fiscal 2019. This is thought to be due to a decrease in the weight of domestic bonds in the portfolio, and a commensurate increase in the weight of foreign bonds in fiscal 2019. (GPIF will transition to a new policy asset mix from fiscal 2020, with reduced weighting of domestic bonds, and an increased weighting of foreign bonds.) In this way, the GHG emission trends for each asset class are affected not only by the carbon efficiency of investee companies, but are also highly dependent on the amount invested in that asset class.

A Greenhouse Gas Emissions by Scope



(Source) S&P Trucost Limited © Trucost 2020

B Greenhouse Gas Emission Trends



(Source) S&P Trucost Limited © Trucost 2020

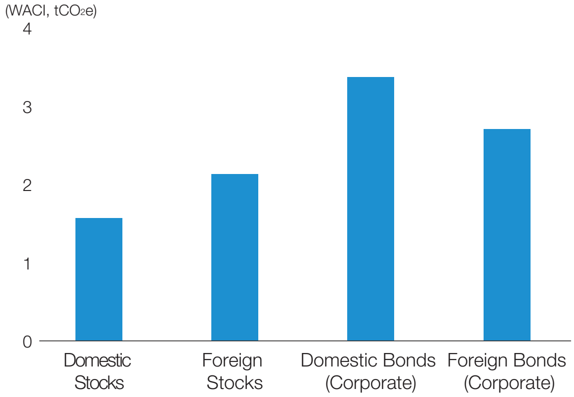
Carbon Intensity

Carbon intensity is calculated by dividing GHG emissions by value added per unit or some other metric. While carbon intensity can be calculated a variety of ways, we measured carbon intensity for equities and bonds based on the weighted average carbon intensity ("WACI") approach, in line with TCFD recommendations. WACI is calculated by multiplying each company's carbon emissions to revenue (C/R) by the weight of that company in the portfolio, then taking the sum of those products to get the weighted average of carbon intensity.

Out of GPIF's equity and corporate bond portfolios, WACI was found to be highest for domestic corporate bonds C. As previously explained in the "Portfolio Climate-Related Risk" section (pages 49 to 50), we infer that sector biases are the main drivers of these differences. Compared to foreign corporate bonds, the domestic corporate bond portfolio includes issuances by many high GHG-emitting electric companies and other utilities, and since the ratio of utilities is relatively high even for an investor such as GPIF which holds assets across nearly the entire market, WACI for the domestic corporate bond portfolio can be expected to be higher than that for the foreign corporate bond portfolio. When reviewing the equity portfolio, we found that, as in the previous fiscal year, carbon footprints and carbon intensities did not necessarily trend in the same direction. Domestic equities had higher total GHG emissions, but also turned out to be more carbon efficient in terms of WACI when compared with foreign equities. One main reason why domestic equities had higher total GHG emissions is because the portfolio is heavily weighted towards the manufacturing sector.

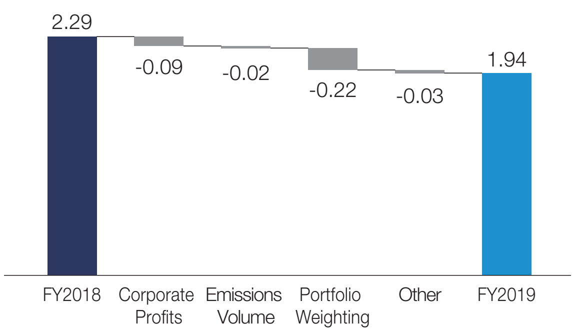
Finally, we analyzed the factors contributing to carbon intensity across the equity and corporate bond portfolio as a whole D. In this analysis, we decomposed the change in carbon intensity from fiscal 2018 to fiscal 2019 into changes in (1) corporate profits, (2) corporate emissions volumes, (3) weight of each company in the portfolio, and (4) other causes. The carbon intensity (CO2 equivalent tons per million yen of sales) of GPIF's equity and corporate bond portfolio decreased by 15.3%, from 2.29 tons to 1.94 tons, in the space of a year. The largest contribution was from the change in (3) weight of each company in the portfolio. From 2018, GPIF began investing part of its equities portfolio in the S&P/JPX Carbon Efficient Index (domestic equities) and S&P Global Ex-Japan LargeMidCap Carbon Efficient Index (foreign equities), which are designed to overweight highly carbon-efficient companies, and it is thought that this is partly responsible for the decrease in carbon intensity (page 17). In addition, there was an overall decrease in (2) corporate emissions volumes, while (1) corporate profits also contributed to lower carbon intensity thanks to favorable economic conditions in fiscal 2019.

C Weighted Average Carbon Intensity (WACI) for Stocks and Corporate Bonds



(Source) S&P Trucost Limited © Trucost 2020

D Analysis of Factors Contributing to Carbon Intensity



(Note) "Other" represents the cross term of "Corporate Profits," "Emissions Volume" and "Portfolio Weighting."
(Source) S&P Trucost Limited © Trucost 2020

Climate-Related Analysis of Government Bond Portfolio

While it is unclear how the many risks presented by climate change will affect government bonds, the risks associated with climate change may affect GPIF's government bond portfolio when the impact of responding to the transition risks and physical risks due to climate change on the fiscal balance are taken into account.

Features of GPIF's Government Bond Portfolio

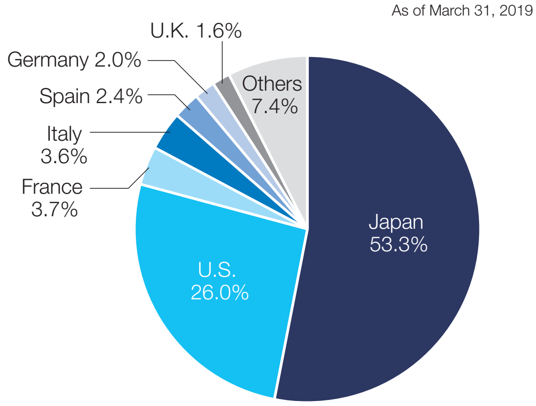
Up to this point, we analyzed the stocks and corporate bonds issued by companies in which GPIF invests. Below, we analyze sovereign bonds issued by national governments.

At present, the relationship between the value of government bonds and risks associated with climate change remains unclear. However, more non-financial information is being disclosed and the way we think about finance is continuing to evolve. When the financial burden of responding to the transition and physical risks of climate change and the possible impact on tax revenue from lower corporate profits are taken into account, a negative climate change-related impact on GPIF government bond portfolio occurring in the future is certainly within the realm of possibility. There are basically two ways of analyzing the climate change risk of sovereign bonds: one is to consider only greenhouse gas emissions produced by the government sector of the nation issuing the bond, and another takes into account the entire sphere of influence of the nation as a whole, including greenhouse gas emissions generated by the activities of that country's corporations and individuals. The analysis conducted for this report adopts the latter viewpoint.

In the analysis of government bonds, just as when analyzing stocks and corporate bonds, it is important to understand that results are significantly influenced by factors such as which specific sovereign bonds make up the portfolio. The overall GPIF portfolio of foreign and domestic government bonds (hereinafter, "GPIF's overall government bond portfolio") is made up of about half foreign and half domestic government bonds A. In addition, when we examine the difference between the country weights of GPIF's overall government bond portfolio versus a weighted average benchmark of foreign and Japanese government bonds derived from the ratios in the policy asset mix, the overall government bond portfolio in GPIF was shown to have lower holdings in Japanese and U.K. bonds, but higher holdings in countries such as the U.S., Italy, and others B.

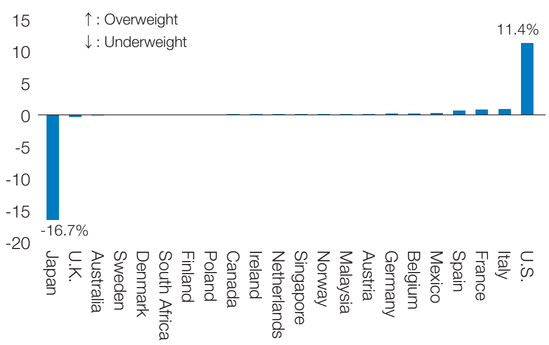
A Weight by Country in the GPIF Government Bond Portfolio

As of March 31, 2019



(Source) GPIF, FTSE Russell, Beyond Ratings

B Differences in Weights by Country Versus the Portfolio Benchmark (%)



(Source) GPIF, FTSE Russell, Beyond Ratings

Climate-Related Risk Analysis of the GPIF Government Bond Portfolio

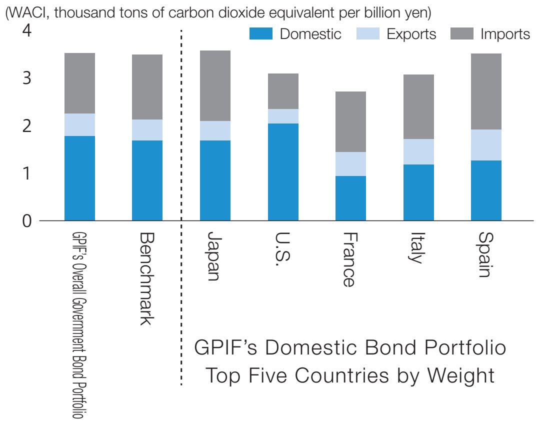
In the climate change risk analysis of the government bond portfolio, greenhouse gas emissions are categorized as "Domestic" or "Imports" for demand inside a region, and as "Exports" for emissions associated with production to meet overseas demand. We used the WACI concept based on these assumptions to measure carbon intensity. Regarding greenhouse gas emissions per billion yen of gross domestic product (GDP) for countries in the government bond portfolio, we analyzed (1) GPIF's overall government bond portfolio, (2) a benchmark that combines the benchmarks for foreign government bonds and Japanese government bonds using the ratio found in the policy asset mix (hereinafter, simply "the benchmark"), and (3) the top five countries in GPIF's government bond portfolio in terms of amount of investment C . In this analysis, WACI for GPIF's overall government bond portfolio was found to be slightly higher than the benchmark. This was due to the fact that, while WACI was lower than the benchmark for many of the top five countries by investment weight, the portfolio is overweight countries where greenhouse gas emissions are relatively higher such as Japan, Indonesia, and South Africa.

Next, D lists the results of the analysis of the transition risks and physical risks for the overall government bond portfolio and for Japanese government bonds only. In this table, a positive (negative) number denotes a smaller (larger) risk compared to the benchmark. For Japan, we compared the benchmark against a portfolio that assumes GPIF holds 100% Japanese government bonds. This allows us to observe the climate change risk in domestic bonds compared to the benchmark, which includes foreign bonds.

We found transition risks were higher for the overall portfolio compared to the benchmark for all three categories examined: (1) The difference between current greenhouse gas emissions and 2050 emissions consistent with the 2˚C target(*); (2) The difference between current actual greenhouse gas emission trends and the trends assumed in emission targets set by each country itself; and (3) The temperature increase resulting from greenhouse gas emission reduction targets set by national governments to contribute to achievement of the 2˚C target (NDCs). Japan exceeds the benchmark except for item (1). In addition, in terms of the physical risks, the risk to agriculture and the risk of natural disaster associated with climate change is higher than the benchmark for the overall government bond portfolio. Meanwhile, the magnitude of the risk of sea level rise is remarkably high for Japan.

*Targets for keeping the increase in temperature after the industrial revolution to below 2˚C by the end of the century. This target was set forth in the Paris Agreement.

C The Carbon Intensity of the Government Bond Portfolio



(Source) FTSE Russell, Beyond Ratings

D Transition Risks and Physical Risks of Government Bonds (Compared to Benchmark)

	Overall Government Bond Portfolio	Japan
Transition Risks		
① Difference between current greenhouse gas emissions and 2050 emissions consistent with 2˚C target	-0.2%	-1.2%
② Difference between current actual greenhouse gas emission trends and emission targets set by each country	-6.2%	3.6%
③ Temperature increase from nationally determined greenhouse gas emission reduction targets (NDCs) as contributions to achieving 2˚C target	-5.0%	4.6%
Physical Risks		
Exposure to Sea Level Rise	15.2%	-23.8%
Exposure to Agriculture	-62.1%	47.3%
Exposure to Climate Change-Related Disasters	-12.4%	40.5%

(Note) The benchmark is the weighted average of foreign sovereign bonds and Japanese government bonds based on the ratio in the policy asset mix.
(Source) FTSE Russell, Beyond Ratings

Transition Risks: Most Countries Far from Achieving the 2°C Target

The risk of increased fiscal spending associated with the reduction of greenhouse gas emissions to achieve the 2°C target could have an impact on government bond prices in the future. Therefore, the transition risk analysis focuses primarily on current greenhouse gas emissions and indicators related to greenhouse gas emission reductions consistent with the 2°C target **E**. Here, we analyze greenhouse gas emissions in terms of the categories “Domestic” and “Exports”.

The vertical axis in the graph represents “Annual reduction in greenhouse gas emissions required to achieve the 2°C target” (1). The smaller the dot, the less greenhouse gas emissions need to be reduced to achieve greenhouse gas emissions consistent with the 2°C target by 2050. The horizontal axis represents “Difference between greenhouse gas emissions consistent with the 2°C target and historical trend” (2). Positive values indicate that current trends will result in greenhouse gas emissions being reduced by more than the target set for that country.

The nations needing to reduce greenhouse gas emissions the least to achieve the 2°C target are Malaysia, Mexico, Indonesia and the U.K., in that order. However, if we look at the current trend in greenhouse gas emission reductions on the horizontal axis, the U.K. is the only country on track to reduce emissions more than required to meet their target.

GPIF’s government bond portfolio has a more negative value for (2) than the benchmark. For Japan, while the value for (1) is about the same as the benchmark and GPIF’s government bond portfolio, we were able to confirm that the country was able to successfully reduce actual greenhouse gas emissions as shown by the values for (2).

Physical Risks: Physical Risks Can be a Financial Burden on Countries

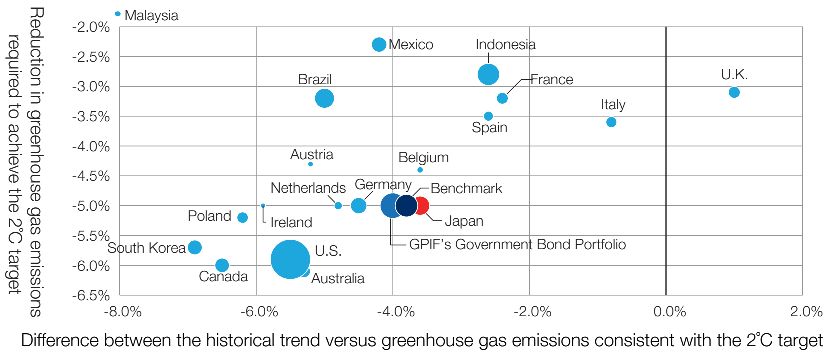
Among the currently measurable indicators, the physical risks considered to have the largest impact on a country’s fiscal spending and the value of its government bonds are exposure to sea level rise and exposure to climate change-related natural disasters, such as droughts, floods and heat waves. These indicators are analyzed below.

The Netherlands has the largest exposure to the risk of sea level rise (58.5%). Our analysis showed that next in line are Japan, Belgium, Indonesia, Italy and the United Kingdom **F**. The countries with the greatest exposure to the risk of natural disasters associated with climate change are Belgium (68.0 deaths per 100,000 people), France (38.4 deaths per 100,000 people), the Netherlands (36.2 deaths per 100,000 people), and Poland (7.5 deaths per 100,000 people), in that order. Against this backdrop, the share of Japanese holdings in GPIF’s portfolio are small compared to the benchmark, so the risk of sea level rise is slightly less than the benchmark. On the other hand, the risk of natural disasters related to climate change was slightly higher than the benchmark.

Note that we think there is room for improvement in the physical risk analysis used in this study. The data used in this analysis for exposure to risk of sea level rise is based on the percentage of the total population living at or below 5 meters above sea level, and does not take into account various measures intended to deal with sea level rise, such as the construction of breakwaters and seawalls. Of course, some measures have already been taken in countries such as the Netherlands and Japan, which face potential risks. Furthermore, the data regarding exposure to the risk of natural disasters associated with climate change is based on the number of fatalities in the past from that type of disaster. However, results can be affected by the exact conditions surrounding relatively recent disasters.

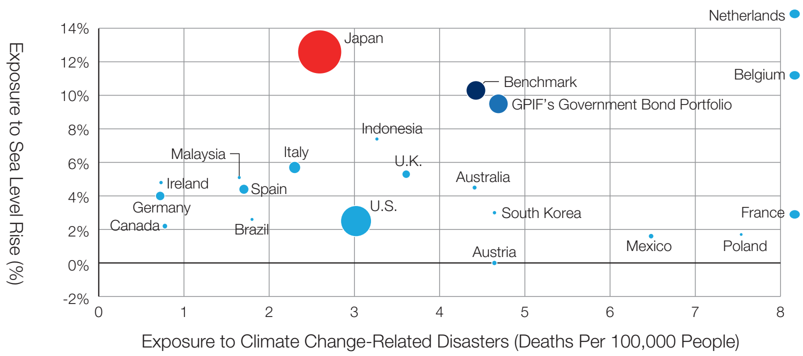
GPIF believes that it is important to include factors such as measures being taken against risks in future analyses in order to fully understand the status of physical risks.

E 2˚C Target and Greenhouse Gas (GHG) Emissions



Note: GPIF's government bond portfolio and benchmark are the weighted averages of the value of holdings (VOH). Circle size represents the magnitude of greenhouse gas emissions in 2019. The benchmark is the weighted average based on the ratio in the policy asset mix.
(Source) FTSE Russell, Beyond Ratings

F Country Exposure to Sea Level Rise Risk and Climate Change-Related Natural Disaster Risk



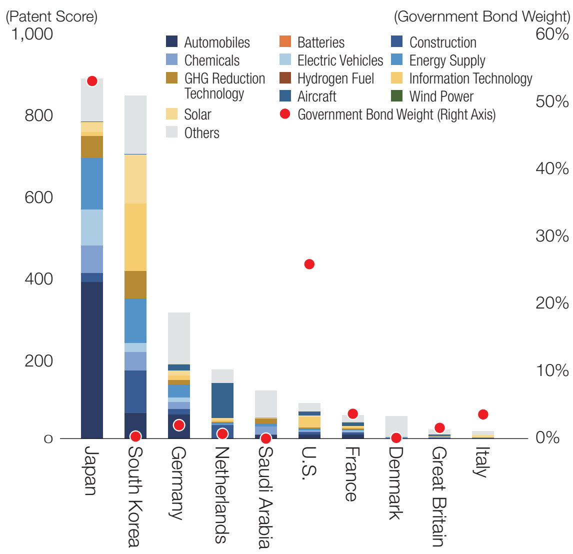
Note: GPIF's government bond portfolio and benchmark are the weighted averages of the value of holdings (VOH). Circle size represents the magnitude of the weight in the portfolio. The benchmark is the weighted average based on the ratio in the policy asset mix.
(Source) FTSE Russell, Beyond Ratings

Opportunities: Climate Change-Related Patents

While there are many different ways to view opportunities in the government bond portfolio, this analysis examines total corporate patent scores for each country. A patent score is a numerical representation of the importance of a patented technology used in products, services and other patents. This analysis considers corporate patents related to technologies that are expected to be in high demand as the world responds to climate change (e.g., patents related to storage batteries, electric vehicles, hydrogen fuel, etc.). Although patent scores are not used to directly evaluate countries or their government bonds, they represent one aspect of a country's competitiveness, and may also affect tax revenues and thus the creditworthiness of government bonds.

When aggregating all patent scores by country, we found that Japan had the highest overall score, followed by South Korea, Germany, and the Netherlands G. Breaking this down further into total patent score by technology for each country, the concentration of automobile patents is high in Japan, followed by energy supply and electric vehicle patents. On the other hand, South Korea has a large proportion of information technology and solar power patents, while Germany has patents for a wide range of environmental technologies including those related to automobiles.

G Patent Score and Ownership Weight by Country



(Note) The analysis includes mainly countries in the GPIF stock portfolio with high total patent scores by company.
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Analysis of Risks and Opportunities Using Climate Value-at-Risk

Climate Value-at-Risk (CVaR) is a method of measuring the impact on corporate value of changes in policies related to, and disasters caused by, climate change, expressed in terms of the value of the securities issued by that company. We can use CVaR to integrate climate change into an analysis of corporate value not only in terms of risks due to climate change, but in terms of opportunities as well.

CVaR-Based Analysis

In the previous sections, we examined the overall carbon footprint of GPIF's portfolio and provided an analysis of the fund's government bond portfolio. In the following sections, we analyze the risks (transition and physical) and opportunities related to climate change in GPIF's equity and corporate bond portfolio based on TCFD recommendations.

We use the Climate Value-at-Risk (hereinafter, "CVaR") method to analyze stocks and corporate bonds. This approach allows us to calculate the present value of the costs and benefits arising from climate change based on an assumed climate change scenario. The CVaR of a company can show how much a company's value will change in the future due to climate change and allows climate change to be viewed as a sort of financial shock that impacts corporate value. For example, if the CVaR of Company A is -10% (or +10%), it means that Company A will lose (or gain) 10% of its corporate value under the climate change scenario being assumed. CVaR enables integrated disclosure of the transition risks, physical risks, and opportunities recommended by TCFD, because it allows (1) policy risks, (2) technological opportunities, and (3) physical risks and opportunities to be analyzed using the same yardstick—that is, their impact on corporate value.

The aggregate scope of greenhouse gas emissions used in the CVaR method includes emissions related to purchased electricity (Scope 2) and direct emissions by the company (Scope 1). To calculate policy risk (1), we calculated each company's cost of reducing greenhouse gas emissions in order to meet goals such as the 2˚C target. Specifically, the future cost to each company of reducing greenhouse gas emissions can be estimated by calculating the amount emissions need to be reduced annually and multiplying this by the cost of achieving that reduction. On the other hand, technological opportunities (2) focuses on the business opportunities arising from climate change. For this element, we analyze the patents for environmental technologies owned by each company. Using a mathematical model in which the environmental patent share of each company in each sector is multiplied by that sector's level of green revenue (i.e. revenue from business lines that contribute to a low-carbon society) and profit margin allows us to reflect the potential business opportunities arising from climate change in terms of corporate revenue. (1) Policy risks and (2) technological opportunities correspond to the transition risks that must be disclosed according to TCFD recommendations. The CVaR framework measures "transition risk" in terms of risks and opportunities through these two analyses. In addition, in our analysis of physical risks and opportunities (3), physical risks are expressed as an estimate of the losses a company may incur due to damage to facilities and property they own that is attributable to climate change. In some cases, climate change may lead to increased productivity and an increase in earnings. In contrast to physical risks, such cases can be considered business opportunities.

Policy Risks: Policy Risks Show Similar Trends at Home and Abroad

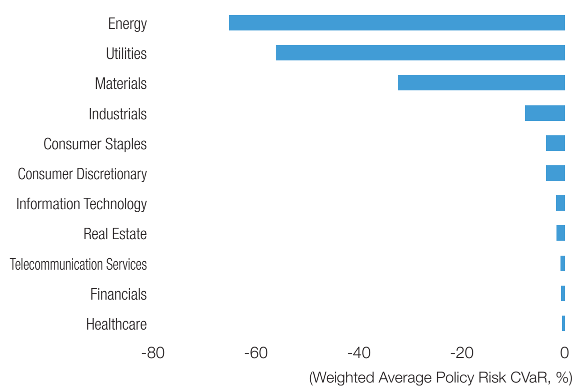
In the policy risk analysis for GPIF's equity and corporate bond portfolios, we examined Japanese stocks and corporate bonds by industry sector, while for foreign stocks and corporate bonds, we broke down the assessment by country as well as by industry sector A to D.

The results showed that the biggest risk among domestic stocks is in the energy sector, which includes companies such as fossil fuel miners, followed by the utilities sector, which includes electric power and other companies. In addition, compared to other industries, the risk is extremely high in industries such as the materials industry, which includes petrochemicals, and in industries that emit relatively large amounts of greenhouse gases over the course of their operations. Conversely, industries such as healthcare and finance were found to have lower risk. The same tendencies can be seen with foreign stocks, but the ranking differs slightly for industries with less policy risk. Furthermore, although the risk is greater in the U.S., where the investment ratio in each industry is high, the rest of the risk is generally spread out across a number of other countries, such as the U.K. and France.

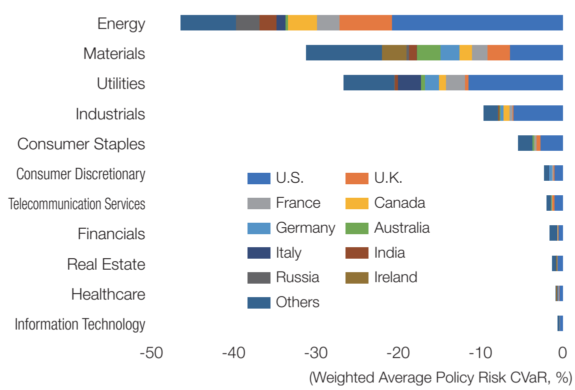
In the corporate bond analysis, while the ranking of the industries with the highest policy risk is somewhat different than for stocks, the three industries with the highest risk remain the energy, utilities, and materials industries, both domestically and overseas. Looking at foreign corporate bonds by country, the risk is extremely high in the U.S. This is likely due to the fact that the investment ratio by country is different than that for stocks.

Assessing investee companies in terms of policy risk this way suggests that the costs associated with reducing greenhouse gas emissions pose a significant risk of depressing the corporate value of energy-intensive industries unless specific countermeasures are taken.

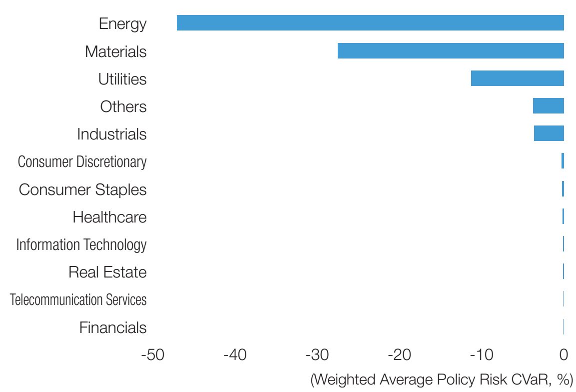
A Policy Risk: Domestic Stock Portfolio



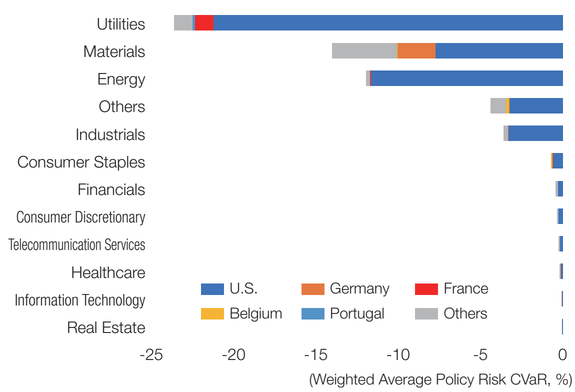
B Policy Risk: Foreign Stock Portfolio



C Policy Risk: Domestic Corporate Bond Portfolio



D Policy Risk: Foreign Corporate Bond Portfolio



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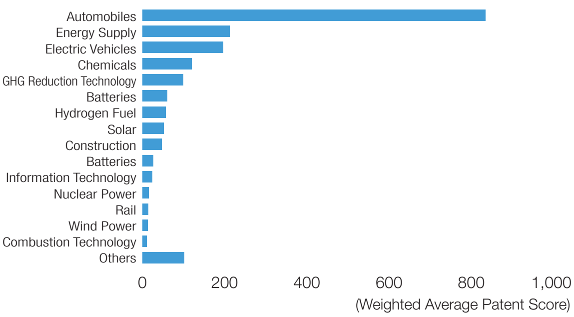
Technological Opportunities: Remarkably High Scores for Domestic Companies

Here, we analyze technological opportunities by focusing on corporate patent scores. In these terms, domestic companies generally have higher scores than foreign companies, indicating the high degree of adaptability of domestic companies to the risks associated with climate change E to H. Furthermore, in the “Climate-Related Analysis of Government Bond Portfolio” section, we analyzed the patent scores of each country by patent classification. The results by country also showed that Japanese companies had the highest score compared to other countries (page 56, G).

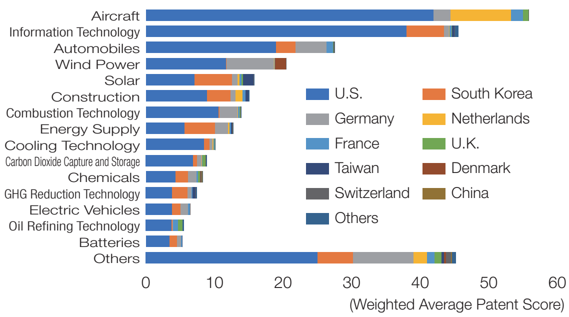
Looking at the breakdown by patent category, domestic stocks scored exceptionally high in the automotive industry, with a large gap between this and the next highest-rated industries – energy supply, electric vehicles, and chemicals E. Not only do domestic automobile manufacturers possess a high degree of environmental technology and know-how, but the large size of the automotive sector in the domestic market and the subsequent high investment ratio of automobile manufacturers in GPIF’s portfolio also play a role in these results. In this analysis, the automotive category includes patents related to improving the efficiency of internal combustion engines, and the electric vehicles category includes technologies related to batteries, hybrid technology and fuel cells. Meanwhile, in the case of foreign stocks, the scores for the aircraft and information technology categories are higher than for the automotive category F.

In the case of domestic corporate bonds, as with domestic stocks, the automotive category has the highest score, while the scores for the energy supply and solar categories are relatively higher G. This is also influenced by the fact that electric power companies account for a larger proportion of the corporate bond portfolio overall than in the equity portfolio. The patent score was highest in the aircraft category in the case of foreign corporate bonds, as with foreign stocks. Not only did the order differ for other patent classifications, but the share of patent classifications by country was also different H. This is likely due to the fact that the stock portfolio and corporate bond portfolio have different industry and country weightings.

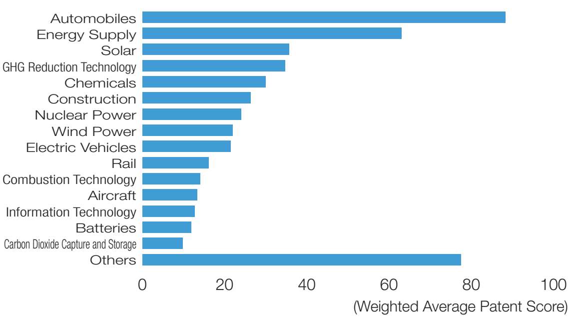
E Technological Opportunities: Domestic Stock Portfolio



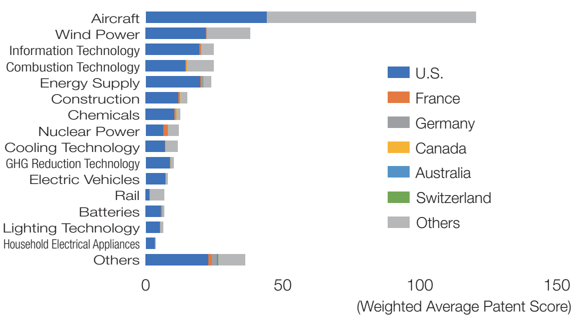
F Technological Opportunities: Foreign Stock Portfolio



G Technological Opportunities: Domestic Government Bond Portfolio



H Technological Opportunities: Foreign Government Bond Portfolio



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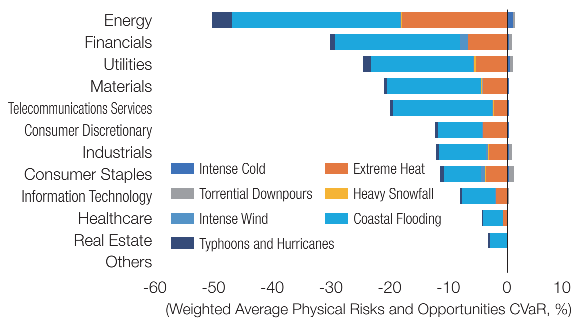
Physical Risks and Opportunities: Different Trends than Policy Risks and Technological Opportunities

Next, we analyze physical risks and opportunities. The opportunities in this analysis differ from the technological opportunities calculated based on patent scores. As contrasted against physical risks, here, opportunities indicate the potential for increased corporate profits due to environmental changes caused by climate change. Examples include things like expanded energy extraction in the Arctic Ocean and reductions in heating and other costs made possible by higher temperatures. In addition, as global temperatures rise, the number of extremely hot days is expected to decrease in very localized areas such as northern India, with some productivity gains expected to be made in that country's oil refining business.

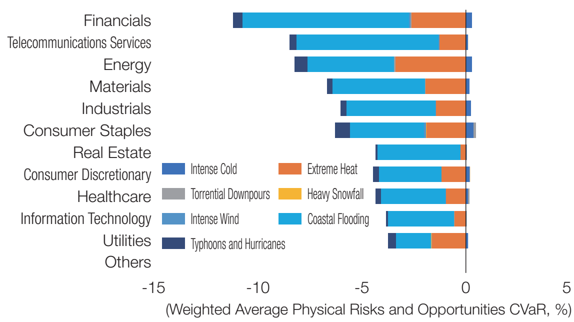
Physical risks and opportunities by sector and country tend to differ from policy risks and technological opportunities I J . First, in the domestic equity portfolio, the energy and utilities sectors were shown to have significant physical risk in addition to policy risk, and even the financial sector, which had less policy risk, was shown to have notable physical risk. Among foreign stocks, we found there to be meaningful risk in the telecommunications services and financial sectors. Both domestically and overseas, coastal flooding and extreme heat account for the vast majority of this risk. The fact that many offices in the financial sector and equipment in the telecommunications services sector is located in densely populated areas at low elevations likely contributes to this higher physical risk. However, we may be overestimating physical risks for the financial sector, as the importance of brick-and-mortar offices is declining as more and more financial transactions are conducted online. Another interesting outcome of the analysis was that physical risks were relatively limited in some sectors with significant policy risk, such as the industrials sector in the case of domestic stocks and in the utilities sector in the case of foreign stocks.

For domestic corporate bonds, physical risks were found to be highest in the materials sector, followed by the telecommunications services and consumer staples sectors, while for foreign corporate bonds, the information technology, consumer discretionary, and real estate sectors had the highest risk K L .

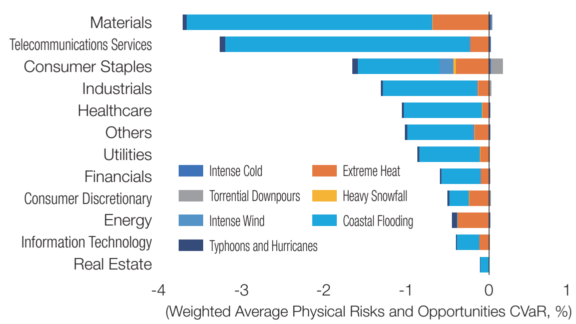
I Physical Risks and Opportunities: Domestic Stock Portfolio



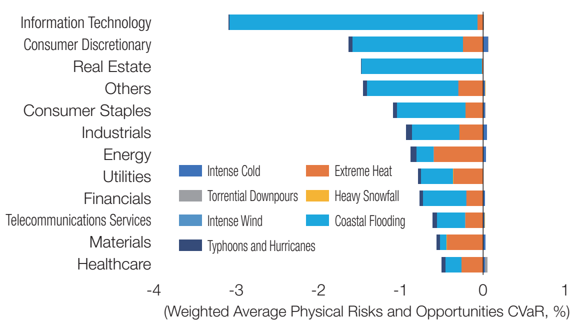
J Physical Risks and Opportunities: Foreign Stock Portfolio



K Physical Risks and Opportunities: Domestic Corporate Bond Portfolio



L Physical Risks and Opportunities: Foreign Corporate Bond Portfolio



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CVaR by Temperature Increase Scenario

In our analysis so far, we have calculated CVaR based on a scenario in which the global temperature rise from the pre-industrial period to the end of this century does not surpass 2˚C (the 2˚C scenario), but CVaR results vary depending on the temperature increase scenario being assumed. We therefore tried calculating CVaR for GPIF's equity and corporate bond portfolios assuming temperature increases of 1.5˚C, 2˚C, and 3˚C M . To understand the overall trend represented by each of the scenarios, we first focus on aggregate CVaR for the total portfolio. Here we find that the portfolio is negatively impacted the most in the 3˚C scenario, while the positive impact increases more as we move toward the 2˚C and 1.5˚C scenarios. The fact that more technological opportunities open up as rules and regulations for curbing rising temperatures grow tighter plays a big role in these results, particularly in the case of stocks. This can be considered a new insight gained from incorporating technological opportunities into the analysis. Furthermore, compared to bonds, the impact on equities varies dramatically depending on the specific scenario assumed, and it thus seems likely that investors will have to pay close attention to climate change policy trends going forward as these will play a pivotal role in investment decisions.

In our assumptions for the analysis of physical risks and opportunities, we referred to Representative Concentration Pathway 8.5 as compiled by the Intergovernmental Panel on Climate Change. The analysis is therefore not based on the same 1.5˚C, 2˚C, and 3˚C scenarios being assumed to evaluate policy risks and opportunities, but rather under assumptions that correspond to a 4 to 6˚C warming scenario. Because physical risks likely grow in severity at higher magnitudes of temperature increase, the negative results for the 3˚C scenario as compared to the 1.5˚C and 2˚C scenarios may actually be understated. In particular, if temperatures reach a certain tipping point, sharp rises in sea levels caused by the thawing of permafrost, large scale mass migration, reduced food production capacity, and other such worldwide social disruption has the potential to profoundly affect the value of portfolio assets in a negative way.

M CVaR by Temperature Increase Scenario

CVaR for the 3˚C Scenario	Equities	Corporate Bonds	Total Portfolio
(1) Transition Risks and Opportunities	0.79	-0.37	0.72
Policy Risks	-1.66	-0.48	-1.58
Technological Opportunities	2.45	0.12	2.31
(2) Physical Risks and Opportunities	-6.75	-0.82	-6.37
(3) Aggregate	**-5.95**	**-1.18**	**-5.65**
CVaR for the 2˚C Scenario	Equities	Corporate Bonds	Total Portfolio
(1) Transition Risks and Opportunities	9.82	-3.09	9.00
Policy risks	-6.37	-3.55	-6.19
Technological Opportunities	16.18	0.46	15.19
(2) Physical Risks and Opportunities	-6.75	-0.82	-6.37
(3) Aggregate	**3.07**	**-3.91**	**2.63**
CVaR for the 1.5˚C scenario	Equities	Corporate Bonds	Total Portfolio
(1) Transition Risks and Opportunities	26.00	-6.56	23.94
Policy Risks	-10.21	-7.29	-10.02
Technological Opportunities	36.21	0.72	33.96
(2) Physical Risks and Opportunities	-6.75	-0.82	-6.37
(3) Aggregate	**19.25**	**-7.38**	**17.57**

(Note) Physical risks and opportunities are analyzed under assumptions corresponding to a 4 to 6˚C scenario.
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SDG-Related Corporate Earnings

In the previous sections, we used patent data within the CVaR framework to analyze opportunities for portfolio companies in the context of climate change, but in this section, we expand the discussion beyond climate change by assessing the opportunities that arise as a result of solving the social challenges identified by the United Nations Sustainable Development Goals (SDGs).

In this analysis, corporate profits related to the 17 SDG goals are grouped into two categories: social impact, which are related to SDG solutions to social issues, and environmental impact, for those related to the environment. Revenue exposure is measured for sub-categories under each of these main categories.

Although the analysis covers only stocks, it includes a wide range of companies from small and mid-cap stocks to large-cap stocks in Japan, the U.S., and Europe N. Looking at the results, we found that the SDG-related share of corporate profits in Japan was 10.2% overall, which was higher than in the US (6.6%) or Europe (6.6%). Revenue related to environmental impact (4.7%) account for about half of the total. This was also shown to be higher than that in the U.S. (3.0%) or Europe (3.3%). These results seem to be consistent with the analysis given in "Technological Opportunities: Remarkably High Scores for Domestic Companies" (page 59). Breaking down environmental impact further, we find that exposure to energy efficiency (2.8%) and green buildings (1.1%) play a large part. Energy efficiency also represents a large share in the U.S. (2.1%) and Europe (1.2%), but alternative energy (1.0%) is also large in Europe, indicating that overseas companies and Japanese companies are skilled at different technologies. In terms of social impact, all three regions showed significant exposure to the "Disease" sub-category. This was followed by "Hygiene Control" in the U.S. A high proportion of social impact-related profit came from the "Nutrition" sub-category in both Japan and Europe.

Naturally, the framework used for the SDG-based analysis differs from the TCFD, but by analyzing the portfolio from various perspectives, we can deepen our understanding of the ESG risks and opportunities inherent in the portfolio without limiting our analysis to climate change.

N Corporate Profit Exposure to SDGs by Region

	World	U.S.	Europe	Japan	(Reference) TOPIX
Social Impact	3.5%	3.6%	3.3%	5.4%	5.4%
Nutrition	0.5%	0.3%	0.6%	1.2%	1.3%
Housing	0.1%	0.1%	0.4%	0.0%	0.0%
Disease	2.0%	2.3%	1.7%	3.0%	2.8%
Hygiene Control	0.7%	0.9%	0.4%	0.9%	0.8%
Finance	0.2%	0.0%	0.1%	0.3%	0.3%
Education	0.0%	0.0%	0.1%	0.0%	0.0%
Environmental Impact	3.0%	3.0%	3.3%	4.7%	3.9%
Alternative Energy	0.4%	0.3%	1.0%	0.3%	0.2%
Energy Efficiency	1.8%	2.1%	1.2%	2.8%	2.9%
Green Buildings	0.5%	0.3%	0.5%	1.1%	0.2%
Sustainable Water Resource Management	0.1%	0.1%	0.2%	0.2%	0.2%
Pollution Prevention	0.1%	0.1%	0.3%	0.3%	0.3%
Total	**6.6%**	**6.6%**	**6.6%**	**10.2%**	**9.3%**

(Note) The total does not add up to 100% due to rounding. The values of the MSCI ACWI IMI index were used in the analysis for "World," the MSCI USA IMI index for the "U.S.," the MSCI Europe IMI index for "Europe," and the MSCI Japan IMI index for "Japan."
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Editor’s Note

Impressions Gained In Creating the ESG Report

This year we have taken on the challenge of evaluating risks and opportunities across assets. Many insights were gained, such as the fact that tackling climate change can serve as a tailwind for Japanese stocks, and that the impact of climate change risks and opportunities on asset prices is quite different for each asset class.

COVID-19 and ESG Investment

Even in areas not directly related to the writing and editing of the ESG Report, we have had many opportunities to receive various comments and questions from both inside and outside GPIF about the role of ESG investment within the context of the current COVID-19 pandemic. Typical examples include: “will S become relatively more important among the elements of ESG because of COVID-19?” and “will overcoming COVID-19 overshadow ESG as the most pressing issue?” We have decided that it is too early to write a comprehensive report on the impact of COVID-19, and are thus not dedicating any space specifically to this topic in this year’s ESG Report.

However, the relative resilience of ESG indices and ESG funds during the historic market plunge near the end of fiscal 2019 has been confirmed in various investment manager and brokerage reports. The performance of the ESG indices adopted by GPIF have also remained relatively robust during this period.

Even if you closely examine the areas evaluated in the ESG ratings process, there seems to be hardly any assessment of measures taken against pandemics in general, let alone against COVID-19 specifically. Companies that are skilled at employee safety and supply chain management, which are generally emphasized from an ESG perspective, may have been relatively better able to contain the damage caused by the pandemic than other companies. In addition, for companies with a lot of organizational diversity and that have traditionally respected diverse ways of working, the transition to work from home and other alternative ways of working may have gone more smoothly, with little negative impact on operational performance. If ESG ratings essentially assess a company’s sustainability and resilience, it seems natural that companies with high ESG ratings will show relative strength under a variety of challenging scenarios. The COVID-19 crisis may thus reinforce the importance of ESG; it is unlikely that it will make ESG less important. How the COVID-19 crisis has affected ESG investments, and investments in general, will be a topic covered in future ESG Reports.

The Risks and Opportunities of Climate Change

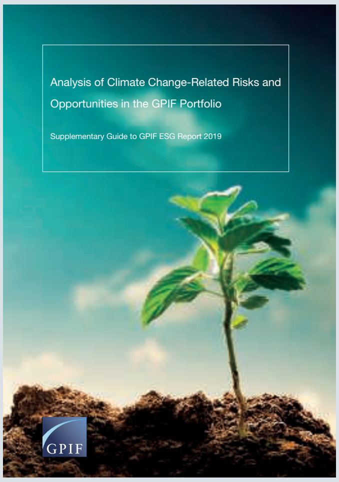
The highlight of this ESG Report was undoubtedly our attempt to assess climate change risks and opportunities across asset classes for our TCFD disclosures. Although a growing number of foreign public pension funds and investment management companies analyze climate change risk – mainly transition (policy) risk – an analysis that integrates risks and opportunities in terms of their impact on asset prices is still quite advanced.

Although the analysis in our previous ESG Reports focused on transition risks purely in terms of the negative impacts of climate change, we cannot overlook the fact that for companies that develop technologies and products that help address the issue, the greater the challenge, the greater the revenue opportunity. In a survey of 500 of the world's largest companies conducted by CDP (CDP Climate Change Report 2019), an international non-governmental organization working on climate change and other environmental issues, the 225 companies that responded reported potential climate change-related revenue opportunities on the order of US$2.1 trillion. The results of the analysis in this report support that claim. As discussed on page 48 and elsewhere, the magnitude of the upside potential for Japanese stocks due to climate change gives us hope for the future.

Our analysis also showed that the impact of the risks and opportunities from climate change on asset prices is quite different for each asset class. In the case of bonds, although the probability of default may be affected by climate change, the downside risk is limited because these instruments can generally be redeemed at par. On the other hand, par also acts as a ceiling that limits the upside arising from climate change-related opportunities. Conversely, for equity values, which are expressed in terms of the present discounted value of future dividends, climate change will have a significant impact on both the upside and downside, as longer-term risks and opportunities are reflected in asset prices.

This analysis, however, is far from perfect. We have taken the approach of evaluating corporate value by considering the future financial impact of climate change on current corporate value, but this impact could be overestimated if corporate value already reflects climate change risk. Furthermore, with regard to technological opportunities, issues such as the fact that technologies without patents are excluded from the assessment present challenges for us in further refining our analysis in the future.

For a more detailed report of the results of the analysis conducted for TCFD disclosure, please see the "Analysis of Climate Change-Related Risks and Opportunities in the GPIF Portfolio," scheduled for publication around the fall of 2020. (*The photo below is an image of the cover.)



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Investment Principles

1. Our overarching goal should be to achieve the investment returns required for the public pension system with minimal risks, solely for the benefit of pension recipients from a long-term perspective, thereby contributing to the stability of the system.

2. Our primary investment strategy should be diversification by asset class, region, and timeframe. While acknowledging fluctuations of market prices in the short term, we shall achieve investment returns in a more stable and efficient manner by taking full advantage of our long-term investment horizon. At the same time, we shall secure sufficient liquidity to pay pension benefits.

3. We formulate the policy asset mix and manage and control risks at the levels of the overall asset portfolio, each asset class, and each investment manager. We employ both passive and active investments to attain benchmark returns (i.e., average market returns), while seeking untapped profitable investment opportunities.

4. Based on the idea that sustained growth of companies being invested in and the market as a whole is required for long-term investment returns on assets under management, we promote investments that take into account the non-financial elements of environmental, social and governance (ESG), in addition to financial elements, with a view to ensuring long-term returns for the benefit of pension recipients.

5. We promote a variety of activities (including ESG-conscious initiatives) that fulfill our stewardship responsibility of promoting long-term aims and sustainable growth of our investments and the market as a whole with a view to increasing long-term investment returns.

Inquiries:

Planning and Communication Division, Planning and Communication Department
Government Pension Investment Fund
Toranomon Hills Mori Tower 7th Floor, 1-23-1 Toranomon, Minato-ku, Tokyo 105-6377, Japan
TEL: +81-3-3502-2486 (direct dial)
FAX: +81-3-3503-7398
Website: https://www.gpif.go.jp/en/

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