Leveraging Avoided Emissions: Financial Institution Case Studies

December 2023

This case study summarizes how financial institutions leverage avoided emissions and its significance based on real-life examples, aiming to serve as a reference for financial institutions considering leveraging avoided emissions in the future. The definition of avoided emissions follows the "Basic Guidelines for Disclosure and Evaluation of Climate-Related Opportunities" established by the Working Group on Disclosure and Evaluation of Climate-related Opportunities in FY 2022. This case study is positioned as supplementary material to the basic guidelines, and it should be referenced for definitions and principles of avoided emissions.

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Foreword from WBCSD

Dominic Waughray
Executive Vice President,
World Business Council for Sustainable Development (WBCSD)

WBCSD published its first Guidance on Avoided Emissions in March 2023. We worked on the guidance with over 60 leading companies and expert organizations to provide business with the methodology, terminology, eligibility, and calculation of avoided emissions claims of their products and services.

We were delighted with the welcome in their final communiqué that the G7 Climate, Energy and Environment Ministers gave the WBCSD Avoided Emissions Guidance at their Sapporo Meeting in April 2023.

The focus of the Avoided Emissions guidance was to provide guardrails and methodological precision that real economy companies would need to adhere to, in order to claim Avoided Emissions (such as no Scope 1-3 compensation; and that a net-zero transition plan needs to be in place).

The guidance also generated much interest from leaders in the financial sector.

This is because provision of additional capital and reallocation of existing capital flows to help companies spur innovation and rethink their business models, goods and services offerings are key components in the effort to scale industrial decarbonization efforts.

Yet, investors lack the clear intervention accounting guidance to better understand and support leading business' decarbonization and climate action transition plans. If such guidance existed, it would help the financial sector steer their support to the most impactful solutions. For such guidance to be practical and widely used, consistency in environmental impact identification, measurement, and disclosure is required.

In short, a reliable and credible intervention-based (Avoided Emissions) accounting mechanism is required - and asked for - by leaders in the financial sector, to help them both support businesses with low-carbon funding decisions, and to strategically build-out their own green investment portfolios.

WBCSD is therefore delighted to welcome this report from the Japan GX League which helps to explain how financial institutions can leverage the WBCSD Avoided Emissions Guidance to build such an intervention-based carbon accounting mechanism. Its practical application comes through the presentation of various financial use cases.

WBCSD is a proud partner of the GX League and The Japanese Government's Ministry of Economy, Trade and Industry (METI) in the effort to develop an Avoided Emissions mechanism for the financial sector, to help strengthen the link for business between sustainable innovation and transition finance.

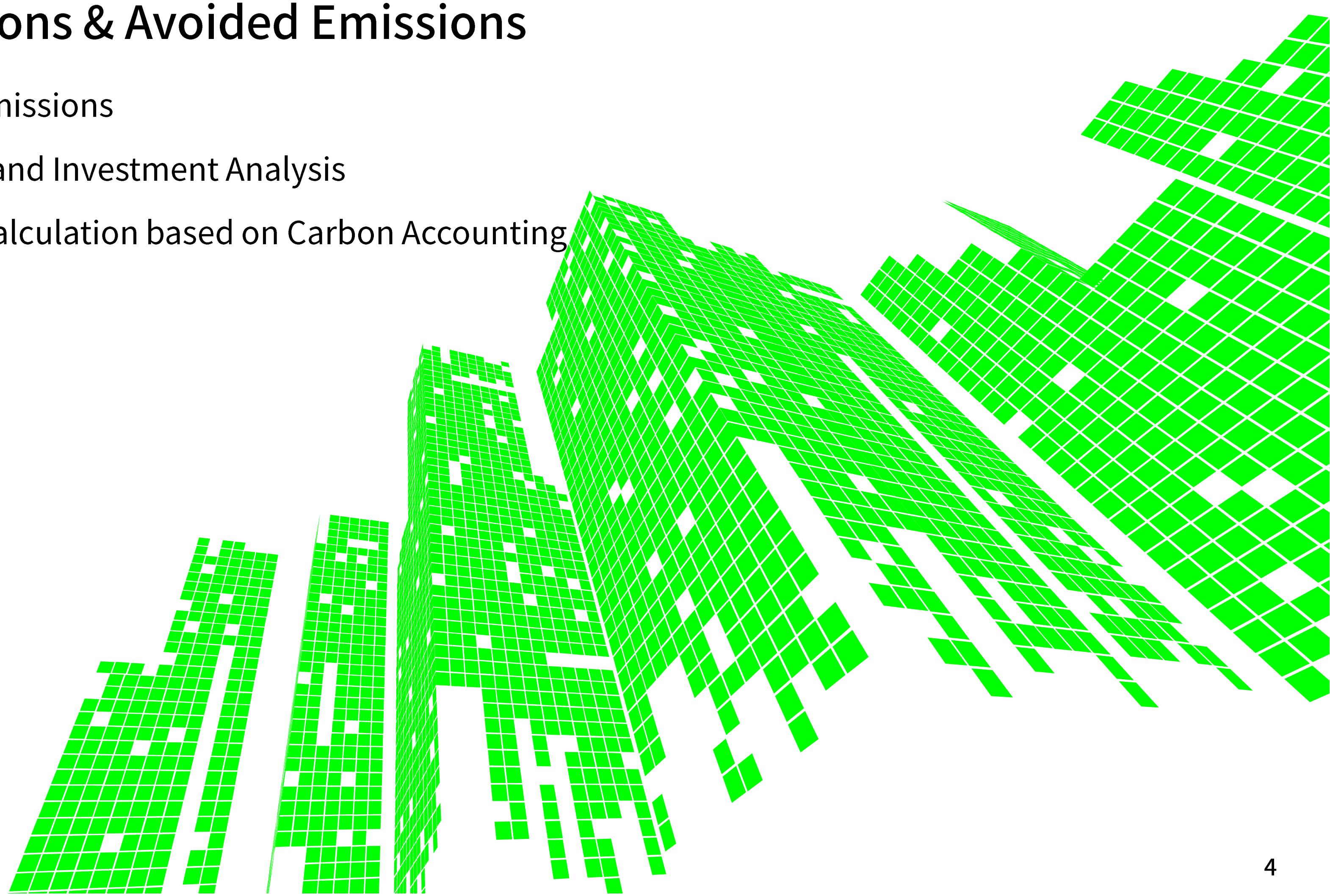
This document takes an important step by providing examples of financial institutions leveraging the avoided emissions concept in corporate evaluation and portfolio and impact analysis, and I commend it for wider reading.

01

Leveraging
Avoided Emissions
in Financial Institutions

Financial Institutions & Avoided Emissions

- Leveraging Avoided Emissions
- Corporate Evaluation and Investment Analysis
- Impact Analysis and Calculation based on Carbon Accounting



Leveraging Avoided Emissions

Avoided emissions refers to the quantified contribution on climate change mitigation across society through the provision of products and services. It complements the traditional greenhouse gas (GHG) inventory by capturing the perspective of "Intervention" that was not covered before and financial institution has been leveraging avoided emissions in various ways. Therefore, as a general principle, avoided emissions and Scope 1-3 inventory should be clearly separated in reporting, disclosure, and net zero claims. This collection of case studies focuses on applications such as evaluating a company's growth potential and portfolio assessment.

The utilization methods are outlined below. The methods vary depending on the nature and intent of financial institutions. This case study categorizes real-life examples of how each financial institution leverages avoided emissions to provide insights and to be widely referenced by financial institutions of different natures. The use cases are classified into the following four categories, and examples are organized accordingly. Before deep-diving into each cases, this case study provides the significance of leveraging avoided emissions in corporate evaluations, investment and portfolio analysis (explained on page 6-7), as well as the significance of calculating avoided emissions based on the assessment of investment impacts and carbon accounting (explained on page 8). It should be noted that the definition of avoided emissions and the optimal methods are not yet firmly established, and therefore, new methods may emerge in the future. This case study is a provision of current cases and is not intended to limit the ways in which avoided emissions can be leveraged by financial institutions.

		Asset Owners	Asset Managers	Banks
Corporate Evaluation ESG integration in investment decisions involves using ESG scores and incorporating them into company evaluations as KPIs for monitoring. This method is employed to seize climate-related opportunities, identify growing companies, and contribute to the overall growth of these businesses.	**Nomura Asset Management** **Sumitomo Mitsui Trust Bank**		√	√
Investment & Portfolio Analysis As one of the criteria for investment decisions, visualizing the impact of the invested companies involves utilizing avoided emissions as one of the impacts created by the companies. This is used to identify winners in the transition to a decarbonized society and for portfolio analysis.	**Schroders** **Government Pension Investment Fund**	√	√	
Portfolio Impact Analysis As the role of financial institutions in the real-economy decarbonization is valued this method utilizes avoided emissions in the evaluation of the portfolio.	**Impax Asset Management** **Mirova**		√	
Avoided Emissions based on Carbon Accounting This method specifically employs the methodology proposed by Partnership for Carbon Accounting Financials (PCAF), which calculates the impact of renewable energy projects as avoided emissions. The clear identification of use of proceeds and impact contributes to a relatively high reliability.	**The Dai-ichi Life Insurance** **Mizuho Bank**	√		√

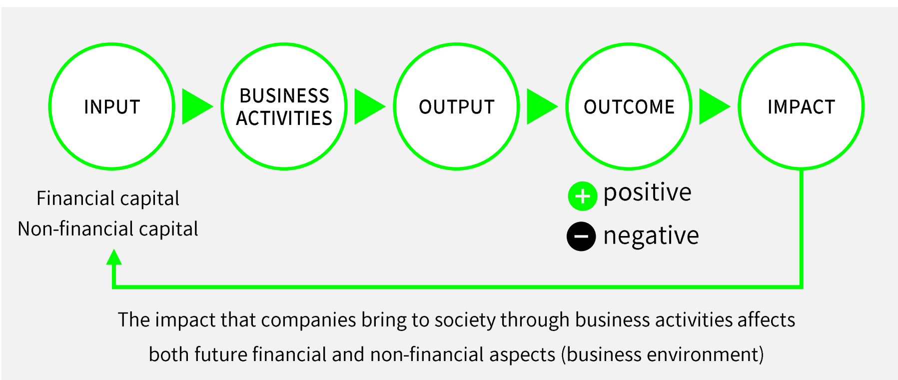
Corporate Evaluation and Investment Analysis

When evaluating the growth potential of companies for investments, such as equity investments, it becomes crucial to appropriately assess climate-related opportunities of these companies. Therefore, some asset managers and banks leverage avoided emissions in corporate evaluations and investment analyses.

Corporate valuation and the importance of non-financial information

In the corporate evaluation and investment analysis of financial institutions, there exists a recognition that a company's social impact can exert a substantial influence on its business landscape over the medium to long term. This recognition has led to an increased emphasis on considering non-financial information.

Companies, propelled by the input of human capital, resources, and money, undertake business activities that yield outputs and outcomes with discernible impacts on both the environment and the economy. These impacts effects the company's business landscape over the medium to long term.

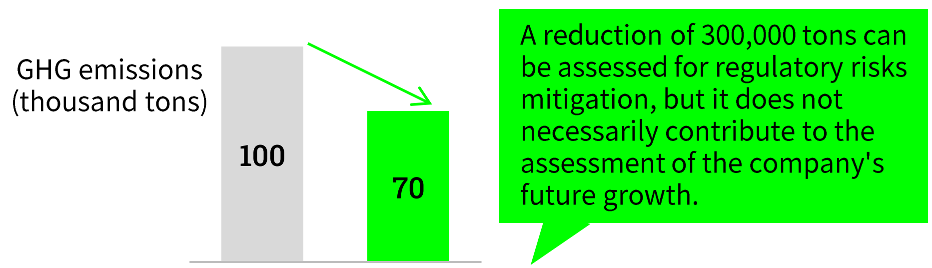


Therefore, for financial institutions to assess the long-term profitability and sustainability of companies, it is crucial to leverage non-financial information in addition to traditional financial information. In the context of climate change, disclosure frameworks such as TCFD have evolved, and fundraising policies have incorporated the disclosure of non-financial information. Through these initiatives, the utilization of climate-related risks, focusing on a company's greenhouse gas (GHG) emissions, has advanced in investment decisions.

Identifying growth companies through climate-related opportunities

GHG emissions are commonly used as non-financial information in the context of climate change. However, GHG emissions primarily assess a company's climate-related risks and may not be suitable for identifying opportunities related to a company's growth potential.

While assessing the reduction of Scope 1–3 emissions allows for the evaluation of mitigating risks, a reduction in emissions does not necessarily indicate the company's mid-to-long-term growth. For instance, if a company reduces emissions by 300,000 tons, it may be perceived as a response to regulatory risks such as carbon taxes. However, if the reduction is due to a decrease in product sales, it may not be directly linked to the company's growth. To achieve a decarbonized society, it is crucial to consider factors beyond inventory emissions when assessing a company's growth potential, with the emissions reduction of scope 1-3 as a fundamental premise.

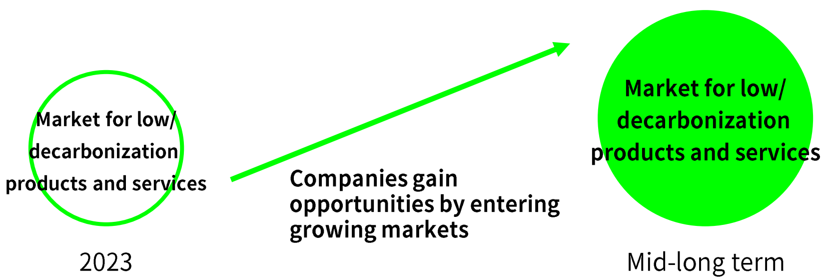


Corporate Evaluation and Investment Analysis

Investment and corporate growth

Economic and social transformation due to climate change not only poses financial risks for companies but also presents new business opportunities. For instance, markets for low-carbon or decarbonized products and services are expected to establish or grow during the transition to decarbonized society. Entering or participating in these markets can result in significant business opportunities.

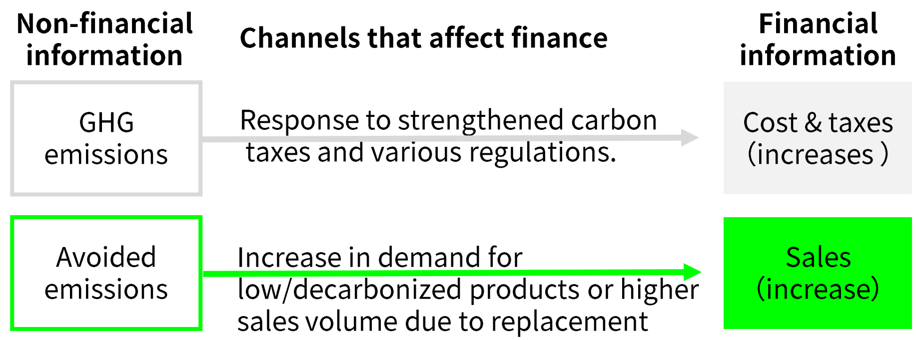
By assessing climate-related opportunities for companies, it becomes possible to identify those poised for medium to long-term growth in line with the transition to a decarbonized society. Financial institutions looking to invest in companies' growth, find such evaluations focusing on these opportunities crucial.



Avoided emissions and financial impact

Avoided emissions is a metric visualizing the positive impact of company's activities on climate. As demand for low-carbon and decarbonized products expands in the transition to a decarbonized society, the absolute emissions of companies manufacturing such products may increase.

On the other hand, for companies, selling excellent low-carbon and decarbonized products leads to acquiring new demand and replacement demand from other companies, resulting in a positive impact on the company's finances. Additionally, the substitution of existing products with low-emission alternatives contributes to the overall decarbonization of society.



Avoided emissions and corporate growth

Analyses suggest that companies with higher avoided emissions tend to experience increased revenue. Evaluating the impact of companies addressing climate-related opportunities through avoided emissions is expected to lead to the identification of long-term "winners" amid market changes associated with the transition to a decarbonized society. Against this backdrop, there is a growing trend among asset managers to use avoided emissions in investment analysis and ESG scores. Additionally, banks are utilizing avoided emissions as a KPI in monitoring, supporting companies in their continuous efforts over the long term. The widespread use of avoided emissions has benefits not only for companies in terms of risk mitigation but also in having their growth potential in core business areas recognized.

Impact Analysis and Calculation based on Carbon Accounting

Amid the demand for initiatives and accountability from financial institutions towards achieving a decarbonized society, there are instances where the impacts associated with financing are disclosed to visualize the social impact of financial institutions through their investments.

Visualizing Decarbonization Effort of Financial Institution

Amid the increasing demand for companies to engage in and disclose decarbonization efforts, financial institutions are also expected to disclose their efforts towards decarbonization through their investment and financing.

The Glasgow Financial Alliance Net-Zero (GFANZ) established the framework for financial institution net-zero transition plans and provided three categories for metrics and targets of net-zero transition plan: real economy transition, plan execution and portfolio emissions. Avoided emissions is positioned as one of the indicators representing the real economy transition.

Real-economy transition	●**Avoided emissions** ●number and total value of financing and investments linked to transition strategy ●the amount, absolute or proportion, of portfolio companies or clients that have a net-zero transition plan
Plan execution	●amount, number, or proportion, of clients or portfolio companies included in climate-related engagement activities ●amount, number, or proportion of products and services that are aligned to the net-zero transition plan
Portfolio emissions	●Absolute or intensity based financed emissions

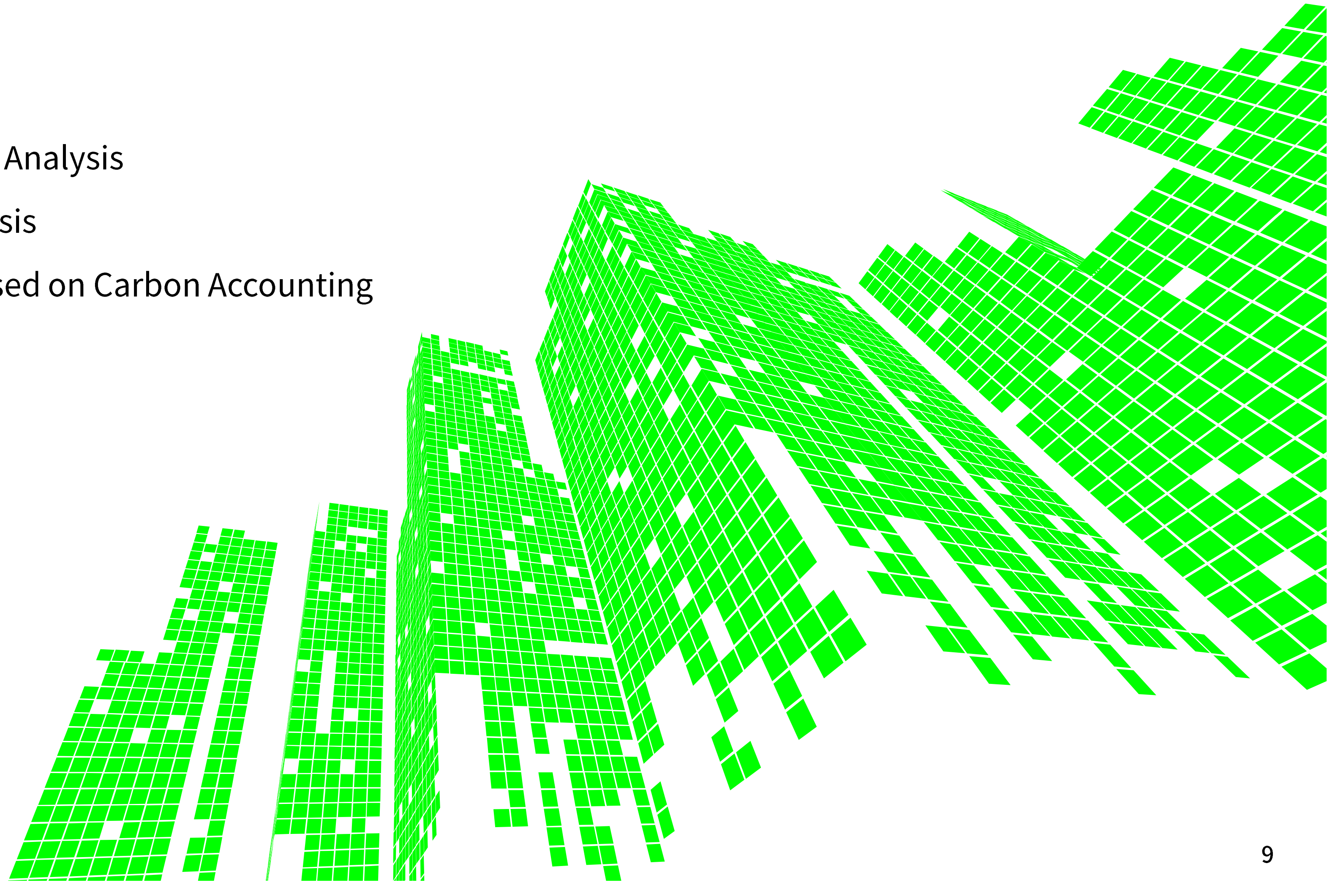
Disclosure

Some financial institutions disclose the expected avoided emissions through specific investments aimed at reducing GHG emissions (e.g. Green Bonds or Green Loans), showcasing the impact through the supported companies or funded projects. Various methods exist for disclosing avoided emissions by financial institutions, and these methods are expected to differ based on the type of the financial institution. The significance of using avoided emissions may also vary. For instance, when an asset manager calculates and discloses the avoided emissions of companies invested in by their funds, it becomes an indicator of how much the companies, as recipients of financial support, contribute to society through their overall business activities. On the other hand, if a bank discloses the impact generated by specific funding purposes through financing (such as project finance or Green Bonds) as avoided emissions, it becomes an indicator of how much the bank's activities contribute to emission reduction.

Moreover, how financial institutions allocate the avoided emissions created by companies and what they include as calculation targets may vary among institutions. Therefore, when disclosing avoided emissions, it is desirable for financial institutions to clearly specify the calculation methods and targets. As one of the calculation methods, the PCAF, which explores measuring GHG emissions through a financial institution's portfolio, has proposed a method for calculating avoided emissions limited to investments in renewable energy projects.

Case Study

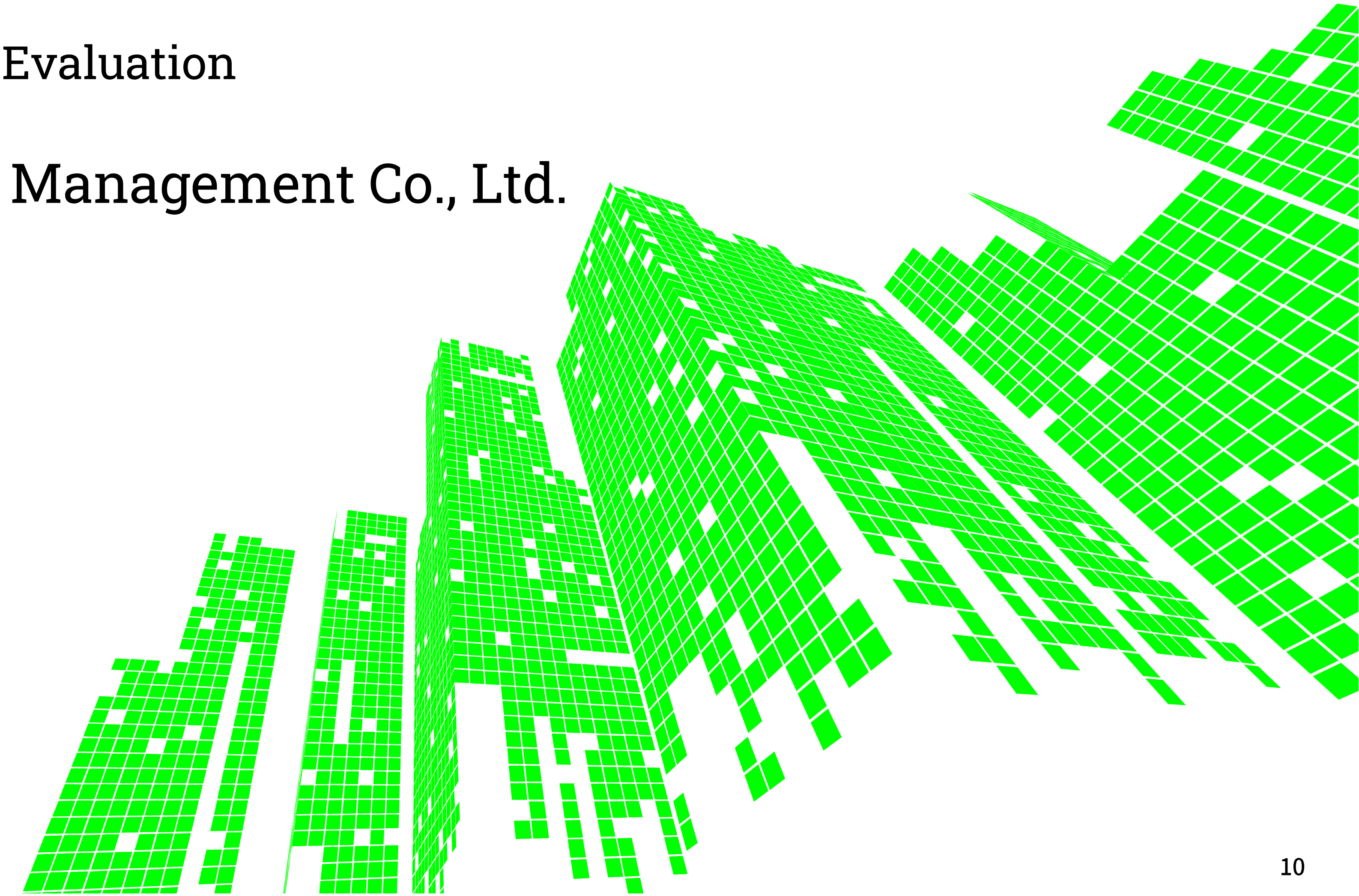
- Corporate Evaluation
- Investment & Portfolio Analysis
- Portfolio Impact Analysis
- Avoided Emissions based on Carbon Accounting



02 Case Study

Case 1 Corporate Evaluation

Nomura Asset Management Co., Ltd.



Conversation with **Nomura Asset Management**

In equity investment, assessing a company's growth potential is at the heart of every investor's strategy. Traditionally, evaluations were rooted in emission-based methodologies. However, Nomura Asset Management Co., Ltd. (NAM) has taken a pioneering leap, embracing the concept of avoided emissions in their evaluation framework for Japanese equities. We sat down with the experts at NAM to understand the rationale behind this shift and its implications for the future of investment evaluation.

The Significance of Avoided Emissions: A Positive Correlation with Revenue

What were the reasons for NAM to incorporate avoided emissions into ESG scores for Japanese equities?

We (NAM) are an asset manager with a high proportion of equity investments, and it is very important that we evaluate the growth potential of investee companies. Our use of avoided emissions and departure from conventional assessment methods were driven by a recognition of the inherent limitations of evaluating companies solely based on greenhouse gas emissions. Despite advancements in emission data disclosure, the direct correlation between emission reduction and a company's growth is far from straightforward. Instead, as emissions can transform into costs due to carbon taxation, they can be viewed as risk indicator. To investors, this is similar to evaluating COGS (cost of goods sold) or SG&A (selling, general and administrative expenses). We saw the need to explore new metrics that align with investors' ability to assess corporate growth comprehensively with other metrics.

What made avoided emissions be the first-choice metric over alternatives?

Our choice to incorporate avoided emissions into the evaluations was grounded in its direct correlation with a company's revenue and growth evaluation. For instance, the increase in avoided emissions resulting from the sale of energy-efficient products signifies a boost in sales due to rising demands and replacement products. This shift infocus from mere emissions to avoided emissions opens up a new avenue for investors to gauge a company's potential for growth.

Navigating Skepticism: Embracing the Evolution of Avoided Emissions

In light of growing international recognition, exemplified by discussions at the G7 Sapporo Climate, Energy, and Environment Ministers‘ Meeting, there remains some skepticism regarding the concept of avoided emissions. How does NAM view these contrasting perspectives?

While efforts to refine the calculation methodology of avoided emissions and enhance data reliability are still ongoing, we do not believe these are reasons to forego utilizing avoided emissions. It is true that the use of avoided emissions as a metric is still evolving. While challenges should be addressed and improvements made in the future, rather than waiting for these refinements, it's essential to simultaneously focus on developing rational, explanatory methodologies that are grounded in the existing data. This proactive approach, considering both the ongoing refinement of calculations and the enhancement of data reliability, is crucial.

What has been the general reaction in response to the innovative initiative of incorporating avoided emissions into corporate evaluations?

There has been no external criticism. Instead, this utilization has facilitated the establishment of trust with investee companies. Additionally, we have received positive feedback from companies, expressing their delight in initiating disclosure of avoided emissions due to our efforts.

In our initial introduction of utilizing avoided emissions 2022, we grappled with the extent of how to effectively incorporate this metric into our evaluations, and we ultimately decided to use it as an element for risk assessment. To our surprise, the responses were overwhelmingly positive. Consequently, starting from 2023, we began using avoided emissions as a standalone metric in opportunity evaluations.

While we are embracing this approach, we are careful to align with global standards to prevent greenwashing. We ensure that we are aligned with international standards, such as not allowing emissions inventory or financed emissions offsets and we clearly define the purpose of utilizing avoided emissions.

Toward a Fundamental Evaluation Beyond Emission Assessments

While there are numerous indicators available for assessing a company's efforts related to climate-related risks and opportunities, it is crucial, as financial institutions and investors, to engage in discussions and considerations grounded in the essence of our roles in ESG-investment decisions. Looking ahead, we intend to thoroughly evaluate a company's opportunities and growth potential using climate-related metrics, starting with avoided emissions.

Ultimately, we aim to conduct an analysis of financial returns and the correlation between these returns and the chosen metrics. To achieve this goal, it is imperative for companies to enhance their disclosure practices following the guidance of organizations such as WBCSD and The Working Group on Disclosure and Evaluation of Climate-related Opportunities. Simultaneously, there is a need to shift the mindset within financial institutions, encouraging them to move beyond evaluations solely based on emissions inventories. By fostering such change, we endeavor to create a collective effort within society to realize net-zero and a decarbonized society.

Teppei Yamaga
Nomura Asset Management Co., Ltd.
Managing Director
Head of Net Zero Strategy Department

Company Overview

Nomura Asset Management

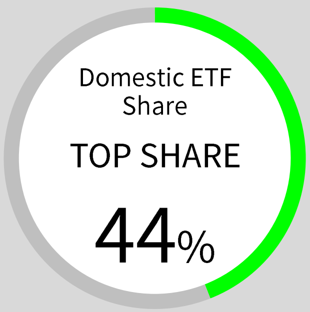
NAM was established as the core company in Nomura Group's Investment Management Division and is the largest asset manager in Japan. NAM is the first in Japan to establish a department dedicated to responsible investment and holds the largest ETF share domestically. NAM has continued to expand its presence in more than 10 regions and countries.

Established : 1959

Employees : 1,488

AUM

78.3tn yen



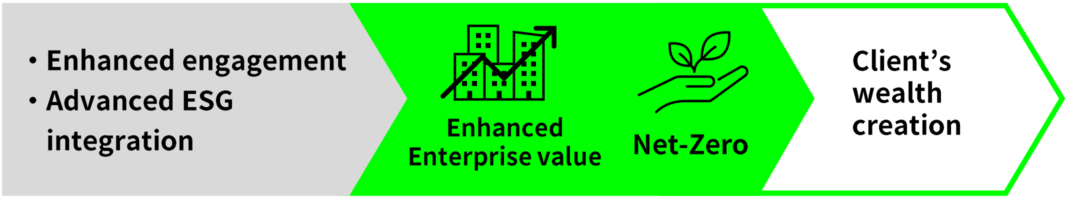
* Number of employees and domestic ETF shares are as of the end of December 2022, AUM as of the end of September 2023

Advancing ESG integration and enhancing engagement for enterprise value creation and net-zero

As a responsible institutional investor, NAM aspires to achieve sustainable economic growth and a prosperous society through the investment chain (virtuous cycle of investment), ultimately contributing to the wealth creation of its clients. Within NAM's materiality, "achieving a decarbonized society" is aligned with the broader objective of "realizing a healthy global environment". "Climate change" is also highlighted in NAM's ESG statement as a material ESG issue. In October 2021, NAM established its 2050 Net Zero Goal and 2030 Interim Target for GHG emissions of its AUM. To bolster these ambitions, the establishment of the Net Zero Strategy Department in December 2022 was aimed at strategic resource utilization both internally and externally. This department is dedicated to developing a highly effective plan of action for achieving NAM's 2050 Net Zero Goal and 2030 Interim Target by strategically deploying internal and external management resources in gathering key information and consolidating expertise on the topic of net zero.

In the context of climate-related disclosures, NAM incorporates metrics and evaluation methodologies that go beyond emissions inventories in relation to issues related to traditional GHG emissions and financed emissions. Unlike conventional assessments that concentrate solely on emission reduction, NAM's evaluation methods incorporate avoided emissions as a crucial metric in climate-related opportunity and risk assessments in corporate evaluations in addition to impact investments.

NAM actively pursues the advancement of ESG integration and engagement, not only to achieve net-zero objectives but also to harmonize these efforts with enhancing enterprise value. Through an integrated approach across the investment chain, NAM is committed to supporting sustainable economic growth, societal prosperity, and ultimately, the wealth creation of its clients.



Case Details

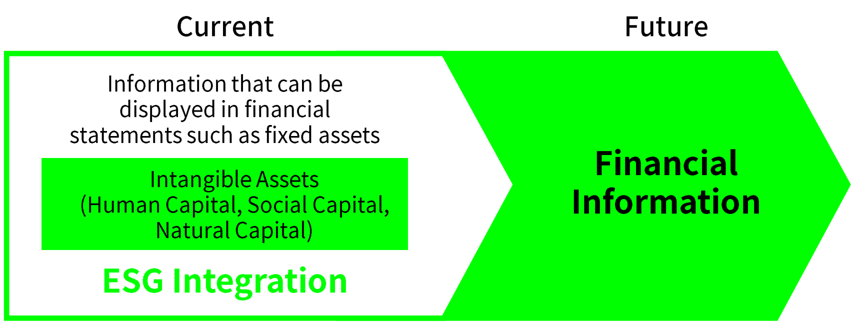
Avoided Emissions Overview
Coverage ：Japanese equity investees
Referenced data ：avoided emissions disclosed by companies

ESG integration for equities

In the domain of equities, the integration of ESG factors has become a pivotal strategy. Recognizing the intricate connection between financial and ESG performance, NAM has proactively incorporated ESG elements into their investment processes for ESG integration enhancement. This integration involves the inclusion of non-financial ESG evaluations within the analysis of enterprise value, a metric representing the present discounted value of future free cash flows.

Enterprise value, a fundamental indicator, encompasses the present discounted value derived from business assets, including non-financial elements such as human capital and natural resources. Consequently, integrating ESG as non-financial data has become imperative, acknowledging the critical role played by these factors in shaping enterprise value.

Particularly NAM conducts ESG evaluations for Japanese equities, considering both the "growth evaluation" as climate-related opportunities and the "business risk evaluation" as climate-related risks.



Equities ESG Evaluation = Climate-Related Opportunities “Growth Evaluation” + Climate-Related Risks “Business Risk Evaluation”

ESG integration for equities **ESG score**

In NAM’s practical investment and research, ESG integration in Japanese equity investment decisions is achieved by assessing companies based on NAM’s unique ESG scores as determined by analysts’ and ESG specialist research. These scores are derived from an array of individual criteria, encompassing over 100 specific factors, categorized into four major themes: Environment, Social, Governance, and SDGs. This diverse range of criteria allows for a comprehensive consideration of various ESG elements.

Within the ESG framework, climate change is positioned as one of the key elements under the Environment category. Traditionally GHG emissions have been utilized as a specific criterion for assessment within this category.

*from 2022, net GHG emissions, a measurement that considers avoided emissions etc. were used

MAIN CATEGORY	SUB-CATEGORY	SUB-ITEMS
Environment 25% of total	・Environmental Strategy, Senior Management’s Initiatives ・Climate Change ・Natural Capital, Other Environmental Issues	Evaluate subitems in line with the theme of the larger grouping. More than 100 evaluation items are set in 4 areas.
Social 25% of total	・Social strategy, Senior Management’s Initiatives ・Working Environment, Human Capital, Human Rights etc.	
Governance 25% of total	・Top Management (Management Evaluation) ・Board of Directors Evaluation, etc.	
SDGs 25% of total		

Climate Change
Item that evaluate changes in GHG emissions over time
Item that analyze transition risks using NAM’s internal carbon price

Case Details

Revision of ESG scores in 2023

Utilizing avoided emissions for quantitative assessment

In the year 2023, NAM made a revision to the ESG scores, marking a significant step towards a more comprehensive evaluation framework. One of the challenges associated with traditional assessments based solely on GHG emissions was the inability to fully capture a company's contribution to decarbonization within society.

To address this limitation, a new criterion was introduced in 2023, focusing on avoided emissions, aimed at capturing the climate-related opportunities. Specifically, NAM introduced a mechanism, where the internal carbon price (set by NAM) is multiplied by avoided emissions disclosed by investee companies to calculate the economic value of avoided emissions. Further quantitative assessment was achieved by calculating the ratio of the economic value divided by the operating profit- This addition of avoided emissions as an evaluation metric not only enriches the assessment process but also aligns with NAM's commitment to a more nuanced and precise understanding of companies' contributions to climate-related opportunities.

Items related to climate change revised in 2023

GHG Emissions	Avoided Emissions
Traditionally used as climate-related risk assessment items	• Sole use since 2023 as a metric for climate-related opportunity • Climate-related opportunity assessment items account for approx. 10% of the Environment score

$$\text{Quantification of avoided emissions} = \frac{\text{Amount of Avoided Emissions/Removals} \times \text{Internal Carbon Price}}{\text{Company's Operating Profit}}$$

Positive correlation between revenue and avoided emissions

In the 2023 revision of ESG scores, NAM recognized the positive correlation between avoided emissions and a company's revenue. This correlation stems from the methodology used to calculate avoided emissions, which involves multiplying avoided emissions per product by sales quantities, among other factors.

$$\text{Avoided emissions} = \text{Avoided emissions per products} \times \text{Product sales}$$

⊕ Increase in avoided emissions

⊕ Sales increase

Corporate disclosure and avoided emissions

Currently, NAM references the disclosed figures in corporate disclosures as the basis for the avoided emissions utilized in its evaluations. Encouraging companies to disclose accurate avoided emissions becomes instrumental in enhancing enterprise value in the context of climate change. Such initiatives should be encouraged and facilitated in alignment with the sectoral guidance, as they can contribute significantly to the improvement of a corporate assessment.

02 Case Study

Case 2 Corporate Evaluation

Sumitomo Mitsui Trust Bank, Ltd.

Conversation with **Sumitomo Mitsui Trust Bank**

We sat with Sumitomo Mitsui Trust Bank (SMTB), a gold prize winning bank of 2020 ESG Finance Awards Japan (by the Ministry of the Environment), for their Positive Impact Finance (PIF) initiative which began in March of 2019 as their first step towards incorporating non-financial information into credit ratings in the mid-to-long run.

PIF, a Comprehensive Evaluation of Corporate Activities

We understand PIF as an initiative to evaluate corporate activities comprehensively including non-financial information, but how does these information including impact metrics play an important role?

Current non-financial value will be the source of future financial value. We believe assessing non-financial values like impact reflects the reality of the companies more accurately than conventional evaluation methods. Since we, as a trust bank, deal with numerous globally operating companies, it is to focus on the broad environmental and social impacts to comprehensively evaluate corporate activities.

How does supporting companies in creating impact translate for a trust bank like you?

Our role extends far beyond merely enhancing a company's value. We see numerous business prospects within the process of creating impact across E/S/G areas. Our relationship with companies is ongoing; it doesn't conclude with loans. We maintain continuous communication, ensuring the achievement of KPIs during the loan period. These ongoing relationship provide a gateway for deeper engagement, allowing us to swiftly comprehend a company's sustainability strategies. Moreover, companies can enhance their public image by disclosing initiatives related to these KPIs.

Avoided Emissions Linked to Economic Value

How do you choose avoided emissions as a KPI and why is it significant in PIF?

The selection of KPIs, including avoided emissions, stems from thorough dialogues with companies, considering their materiality. Avoided emissions are commonly used specifically in manufacturing sectors (e.g. materials and intermediate parts. We evaluate avoided emissions as a positive impact, alongside other KPIs like Scope 1-3 emissions. Both companies and banks may propose utilizing avoided emissions as a KPI. However, the current landscape primarily involves responses from companies that have made strides in this area, considering the challenges in disclosure and calculation.

What does avoided emissions represent as a metric?

Avoided emissions are a crucial non-financial metric, deeply intertwined with economic value. When evaluating companies, it is vital to integrate social outcomes into the value creation process. Avoided emissions serve as a robust indicator in this regard, illustrating a strong connection between social impact and financial value within the corporate evaluation landscape.

Ensuring Transparency and the Role of Financial Institutions

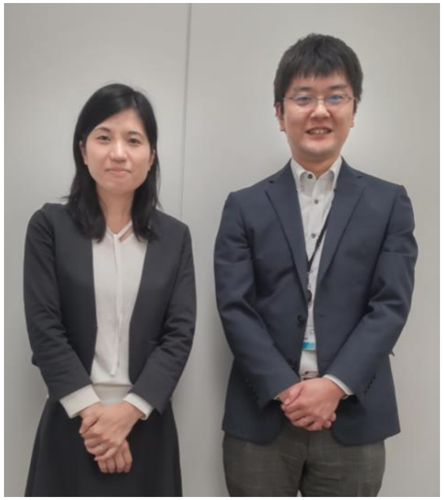
Looking ahead, challenges related to establishing calculation standards, ensuring transparency, and enhanced disclosure have been mentioned concerning avoided emissions. How is SMTB addressing these challenges?

Establishing calculation methods remains an ongoing challenge. To address this, we gather information from our borrowing companies and utilize our Technology Based Finance (TBF) team, led by Ph.D. holders in specialized fields, for evaluations. We combine their assessments with third-party evaluations to enhance transparency and reliability. Additionally, by encouraging corporate disclosures related to indicators such as avoided emissions, we hope to contribute to creating an enabling environment for other banks to use avoided emissions.

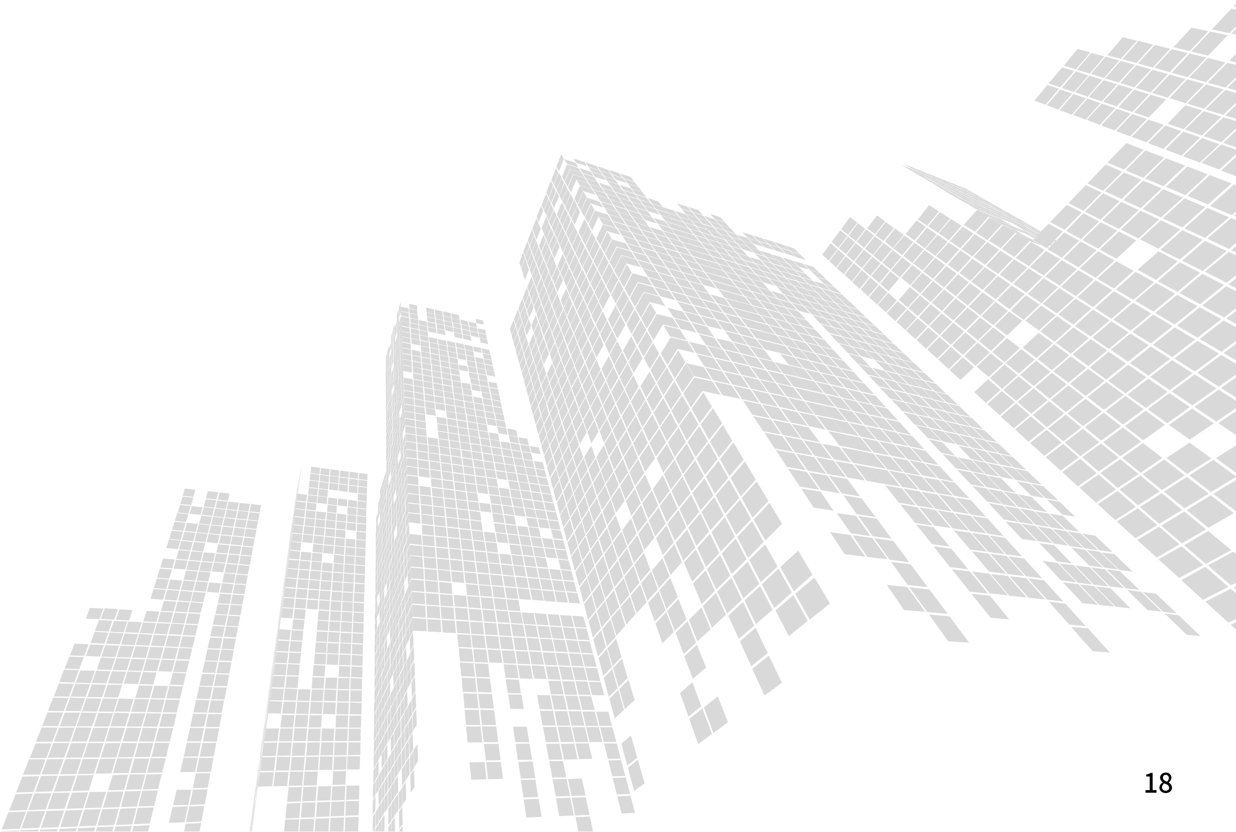
Corporate Evaluation

Conversation with **Sumitomo Mitsui Trust Bank**

Though the journey is long, we are strengthening collaboration between relevant departments within the bank to swiftly propose optimal solutions to the challenges faced by companies. This collaboration not only facilitates the promotion of avoided emissions disclosure and Positive Impact Finance (PIF) but also supports comprehensive discussions and proposals, fulfilling the crucial role financial institutions are expected to play in their relationships with companies, encompassing sustainability and beyond.



Atsuro Ikeda
Yumiko Yoda
Sumitomo Mitsui Trust Bank, Ltd.
Finance Product Solution Departmet



Company Overview

Sumitomo Mitsui Trust Bank

Sumitomo Mitsui Trust Bank (SMTB), a core company within the SuMi TRUST Group , has outlined a fundamental strategy in its mid-term management plan to address societal challenges through the creation of Positive Impact. Emphasizing this approach, the bank aims to strengthen it as a core business. Concrete initiatives include project finance in renewable energy and environmental loans assessed based on natural capital valuation.

Established ：1925

Employees ：13,757

Corporate Loans 60%　Mortgages Loans 40%

Types of loans by industry (Top 3)

1. Real Estate 22.9%
2. Manufacturing 17.9%
3. Finance & Insurance 9.1%

Group wide initiatives: Creating virtuous circulation of funds, assets, and capitals

SuMi TRUST Group leverages the diverse connections with economic entities to undertake social issue-solving business as a financial intermediary.

Investor
(Demand for asset formation & social contribution)

Social issue-solving Financial intermediary

Companies
(financing demand)

- Increasing demand for ESG investment
- Measures for market uncertainty
- Asset formation of 100-year life

Creating virtuous circulation of funds, assets, and capitals through intermediary

- Investment for decarbonization 150 tn yen
- Investment for Society5.0 844 tn yen

Domestic and overseas initiatives

In March of 2019, as a pioneering initiative, Sumitomo Mitsui Trust Bank began offering Positive Impact Finance (PIF) loan agreement and has achieved a total of 345 billion yen in arrangements from FY 2021 to 2022. Not limited to domestic efforts, SMTB was the first domestic financial institution to join Breakthrough Energy Catalyst* in the pursuit of realizing a decarbonized society and generating impactful initiatives. Additionally, they collaborated with the highly successful U.S.-based Apollo Global Management in managing alternative assets, conducting investments totaling 1.5 billion dollars.

Sustainable Finance Target (FY2021~2030)

15tn yen

PIF Achievements (FY2021~2022)

354.5bn yen

* A novel platform established in 2021 to fund and invest in project companies utilizing emerging climate technologies that reduce emissions, which was build under Breakthrough Energy established in 2015 by Bill Gates.

Case Details

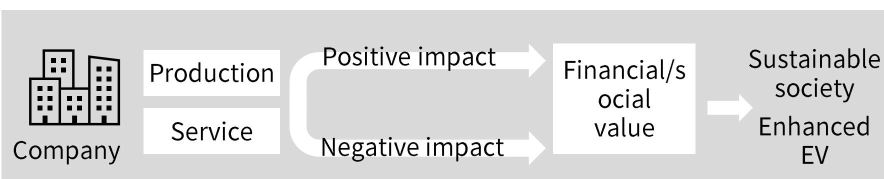
Avoided Emissions Overview
Coverage : companies under the scheme of Positive Impact Finance
Referenced data : avoided emissions disclosed by companies

Enhancement of enterprise value(EV) through the creation of positive finance

SMTB actively promotes impact finance, striving for both economic and social returns. In 2019, they developed the Positive Impact Finance Scheme. This initiative is specifically based on the United Nations Environment Programme Finance Initiative (UNEP FI) “Principles for Positive Impact Finance”. By focusing on the impact of corporate activities on the environment and society, they aim to mitigate negative impacts and support the expansion of positive impacts through financial initiatives.

Through this scheme, SMTB analyzes, evaluates, and monitors the impact of corporate activities. The goal is to make the value creation process more efficient and effective, intending to support the cyclical improvement of business operations and results.

By visualizing the intentions and commitments of impact through PIF, it is expected to contribute to the maintenance and enhancement of the value and competitiveness of both financial institutions and their lending or investment partners.



SMTB

- Impact (company’s effect on society)identification
- Impact evaluation & KPIs setting
- Third party evaluation
- Impact monitoring based on KPIs

The PIF framework is tailored for individual companies, differentiating itself from conventional models. This distinctive approach enables steadfast support for long-term impact creation, unbound by the confines of specific lending periods. Notably, the framework has been made publicly accessible to foster its utilization by other financial institutions, anticipating that its widespread adoption will streamline impact management processes, thereby enhancing overall operational efficiency.

The PIF journey, spanning from comprehensive framework assessments to funding, unfolds in three discerning phases: initial framework evaluation, subsequent third-party assessment, and, ultimately, targeted financial support. During the financial support phrase, financial institutions are poised to employ the framework for diligent KPI monitoring and strategic engagement, contributing significantly to the impact objectives of their collaborative ventures.

STEP 01

Initial evaluation by SMTB
SMTB identifies impact and conducts framework assessment through engagement

STEP 02

Third party evaluation
Third-party assessment of the evaluation rationale of SMTB

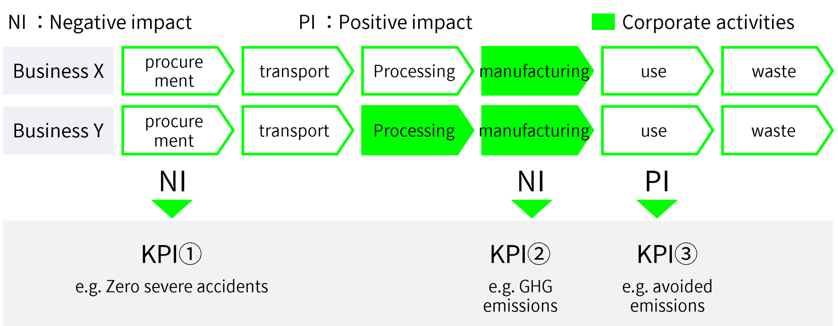
STEP 03

Funding/financial support
SMTB and other financial institutions to utilize the framework evaluation

Case Details

Details of framework evaluation

In Positive Impact Finance, the initial step involves a pre-assessment where the impact management policies and initiatives of the target company are examined through publicly available information. Subsequently, to identify impacts, a comprehensive understanding and quantification of impacts in sectors, regions, and supply chains are conducted. The crucial impact areas that require attention are then identified, KPIs are established. These evaluations are carried out by a group of environmental and energy sector experts. Finally, the disclosed KPIs are monitored and made public on the official website.



PIF evaluation methodology

In the application of this framework, avoided emissions are sometimes used as a KPI to assess the impact of the company. In fact, 5 out of 45 cases (from 2019 to 2023) had avoided emissions as their KPI.

Real Estate **Electronics** **Chemicals** **Containers** **Mining**

Examples

PIF framework assessment for real estate company

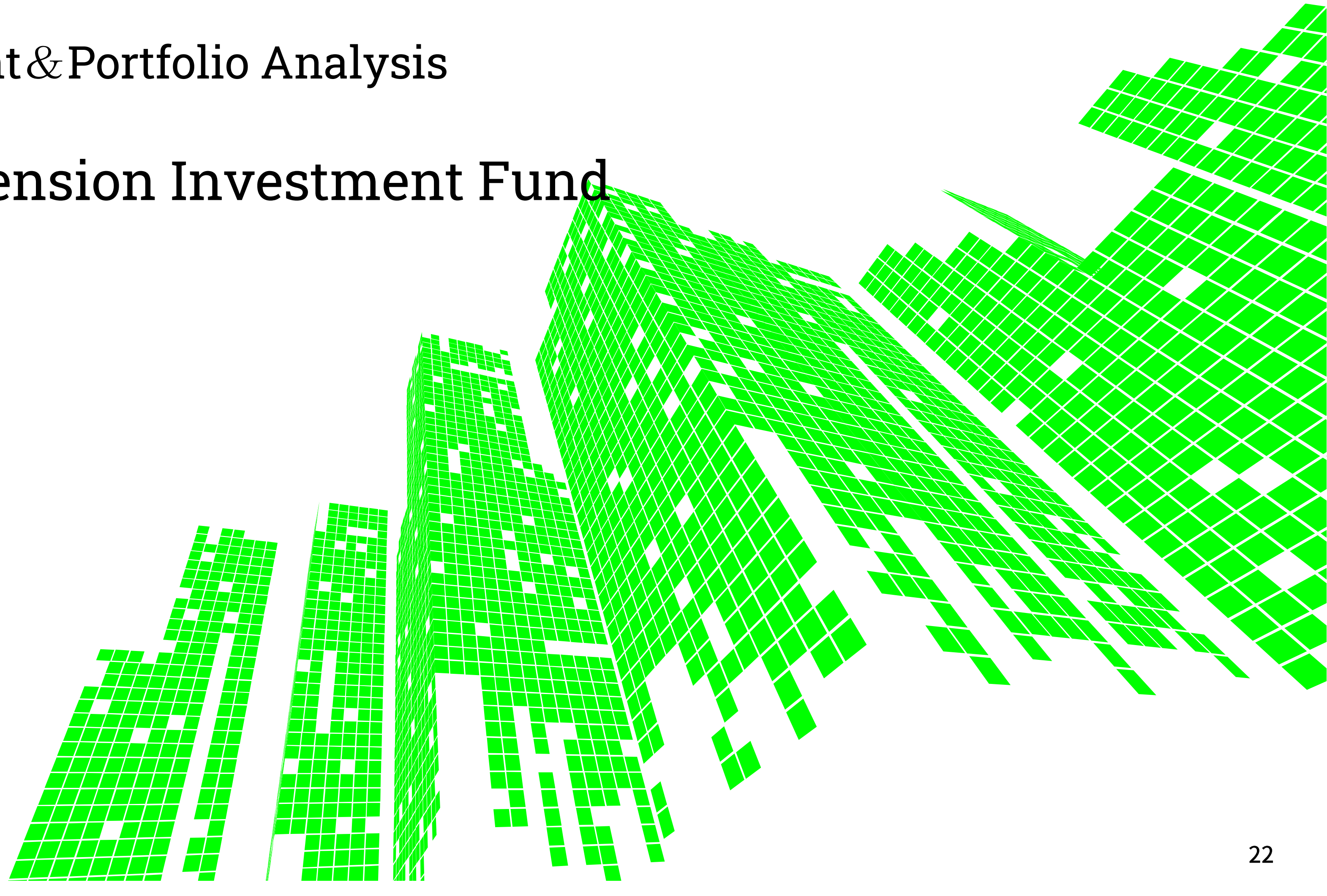
SMTB has set 13 impact KPIs for a real estate company based on the PIF scheme. Selection of the KPIs have received third party evaluation by Japan Credit Rating Agency and is made publicly on the website of SMTB.

Theme	Target and KPIs	SDGs
Improvement of quality of life and formation of mutual aid communities	At least 10 cases of community revitalization measures from FY2021 onwards and at least 100 cases in FY2030 **●KPI：Number of community revitalization measures implemented**	• SDG 3 • SDG 8 • SDG 9 • SDG 11 • SDG 17
Urban resilience	Contribute to the safety and security of local communities/cities **●KPI：statues of efforts on strengthening safety/securities of the building**	• SDG 3 • SDG 11 • SDG17
Environmental conservation	CO2 emission of Scope 1&2 to be below “CO2 avoided emissions” (renewable energy generation by equity share and forest conservation credits)by FY2025 **●KPI：CO2 avoided emissions**	• SDG 6 • SDG 7 • SDG 12 • SDG 13 • SDG 15
	2050 net-zero FY2030 CO2 emissions 46.2% reduction **●KPI：CO2 emissions**	
	Reduce water consumption every year until FY2030 **●KPI：Water consumption per floor area at operational sites and in the owned property portfolio**	

02 Case Study

Case 3 Investment&Portfolio Analysis

Government Pension Investment Fund



Conversation with **Government Pension Investment Fund**

As part of the analysis of climate-related risks and opportunities within their portfolio, the Government Pension Investment Fund (GPIF) conducts an analysis using avoided emissions, focusing on specific sectors. We discussed the background and significance of utilizing avoided emissions as a metric in this context.

Avoided emissions, a metric to identify growth companies through a comprehensive view of supply chain

GPIF has actively utilized avoided emissions in its analysis since the fiscal year 2020. Why is avoided emissions such a key metric for GPIF?

It is none other than avoided emissions being a crucial indicator. Companies with technologies contributing to emission reduction possess high competitiveness. Thus, it is a valuable metric in identifying promising investment opportunities with anticipated revenue expansion in the future.

What makes avoided emissions an excellent indicator?

Achieving net-zero emissions requires not only individual companies reducing their greenhouse gas emissions but also contributing to emissions reduction throughout the entire supply chain. Avoided emissions effectively capture and measure this broader impact.

Taking electric vehicles (EVs) for example, EVs are not the only factor in generating avoided emissions, but upstream components in the supply chain, such as batteries also indirectly contributes to the societal emissions reduction.

Calculating the avoided emissions from the upstream components poses challenges, such as preventing double counting. However, we believe that evaluating upstream companies can lead to investments in the necessary technologies for decarbonization, which stimulates emission reduction by fostering a commitment to carbon neutrality, thus creating a positive.

Disclosure of Avoided Emissions is Key for Revenue Expansion and Fundraising

What motivates business companies to disclose avoided emissions?

Disclosing avoided emissions is considered useful for business companies to showcase their strengths and be evaluated positively in the capital market. Additionally, leveraging avoided emissions in product appeals and potentially influencing consumer behavior could lead to further revenue expansion through market growth.

In the current business landscape, where climate change is increasingly emphasized, quantifying contributions to emission reduction and communicating them externally seems crucial for companies. Failure to disclose avoided emissions could be viewed as a missed opportunity for businesses. While some advanced companies both domestically and internationally have already started disclosing this information, it is anticipated that more companies will naturally adopt this practice in the future. Moreover, more financial institutions may use avoided emissions as a metric to identify growth companies. In such scenario, avoided emissions become a crucial indicator for business companies, motivating them to accelerate both revenue expansion and fundraising. Therefore, there is significant motivation for business companies to disclose avoided emissions.

Conversation with **Government Pension Investment Fund**

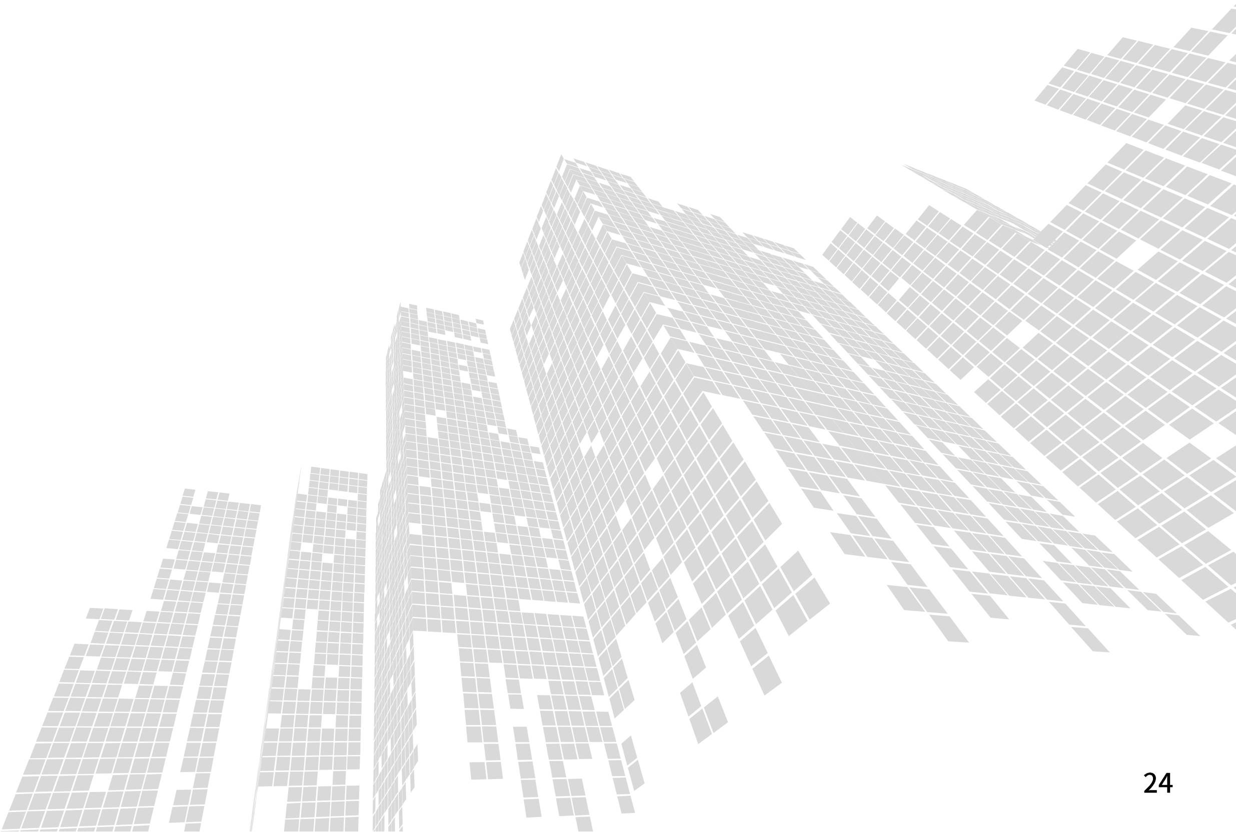
Moving the Discussions Forward

Currently, there are issues such as standardization of calculation methodologies. How does GPIF tackle these issues?

Indeed, there are no clear calculation standards in place, and this becomes a significant hurdle in the disclosure and utilization of avoided emissions.

However, we view the importance of avoided emissions as an indicator and the challenges in calculation as separate issues. If we were to give up on efforts simply because some issues exist, no progress would be made. In that sense, we see our analysis of avoided emissions as one of the potential catalyst to advance discussions and initiatives in this domain.

Kenji Shiomura
Government Pension Investment Fund
Managing Director of ESG & Stewardship Department



Company Overview

Government Pension Investment Fund

The Government Pension Investment Fund (GPIF) is one of the world's largest institutional investors with total assets under management of 200.1 trillion yen. It considers ESG across all assets to secure the long-term economic interests of beneficiaries. As a universal owner, it prioritizes mitigating negative externalities to ensure investment returns.

Employees：approx. 160

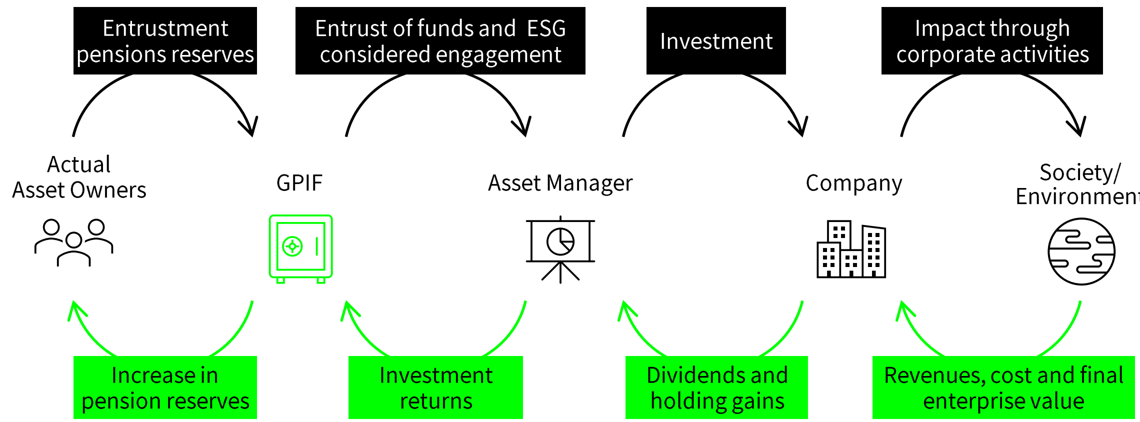
Domestic Equities	24.5%
Foreign Equities	24.3%
Domestic Bonds	26.8%
Foreign Bonds	24.4%

Rate of Return
FY2001~2022
3.59%

Cumulative Returns
FY2001~2022
108.4 tn yen

ESG investment to improve investment returns

GPIF conducts investments solely with the aim of contributing to the stability of the pension system. In doing so, it employs ESG investment and performs portfolio analysis based on the idea that the business activities of investee companies create impacts on the environment and society, and these impacts affect earnings, costs, and enterprise value. For asset managers entrusted with fund management, GPIF encourages the incorporation of ESG factors in constructive dialogues (engagement) with investee companies.



Efforts

Since 2017, GPIF has been utilizing ESG indices as benchmarks and engages with index providers and ESG rating agencies, who greatly impacts the success of investment to improving index methodologies and index construction.

In addition to passive management based on ESG indices, GPIF includes ESG evaluations in the assessment of asset managers to promote ESG integration. GPIF also invests in ESG bonds, with a total amount of approximately 1.9 trillion yen as of the end of March 2023.

Case Details

Avoided Emissions Overview
Coverage : zero-emission vehicles and renewable energy related business of investee companies
Referenced data : estimated by financial institutions (using data from corporate disclosure and estimates by IEA etc.)

Analysis of climate-related risks and opportunities

Avoided emissions analysis to identify competitive advantage

GPIF promotes initiatives related to ESG, emphasizing the idea that the impacts created by companies affect costs, earnings, and corporate value. Among these initiatives, investments and activities focused on climate change are positioned as a crucial theme in overall ESG activities. Therefore, GPIF has expressed its support for the TCFD and has conducted various analyses on climate-related risks and opportunities. For example, analyses on the impact of transition risks on corporate value using Climate Value at Risk (CVaR) have been conducted for government bonds and real estate. As part of these efforts, GPIF initiated analyses using avoided emissions since FY2020.

In a world moving towards GHG reduction, companies with high avoided emissions in their products and services is expected to have significant competitive advantages. GPIF have conducted avoided emissions for different technologies in FY 2020, the FY 2022 analysis shifted its focus to individual companies' competitive advantages. To achieve this, GPIF commissioned Intercontinental Exchange (ICE) to conduct a bottom-up approach analysis, in which the specific technology and production plans of individual companies were utilized.

Methodology Bottom-up approach

ICE's analysis adopts a bottom-up approach, leveraging company-level proprietary information for modeling. This approach enables a detailed analysis of avoided emissions based on each company's sales and production plans.

STEP 01

Data analysis for individual companies
reviewing available public document including the Integrated Reports to understand company-specific preliminary data (sales figures etc.)

STEP 02

Modelling
company level bottom-up models and sector specific inputs are used, including concepts such as Life Cycle Assessment (LCA) modelling.

STEP 03

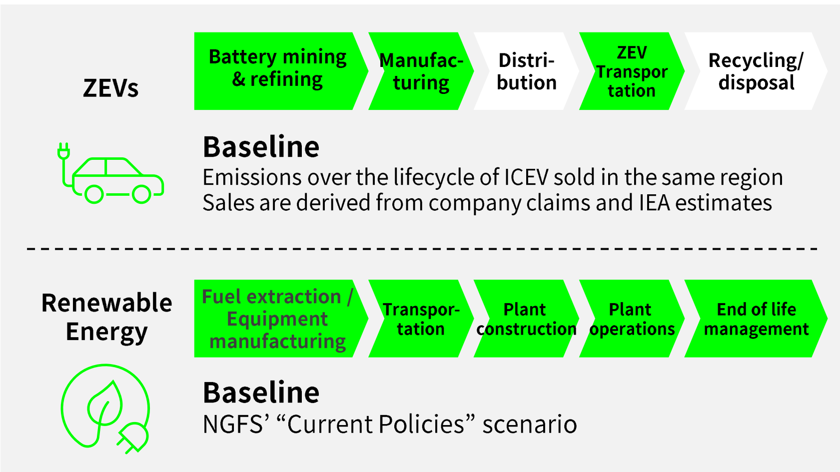
Scenario analysis
various climate scenarios (including NGFS - Network for Greening the Financial System) are used to better understand how the results depend on the various input variables under different scenarios.

Case Details

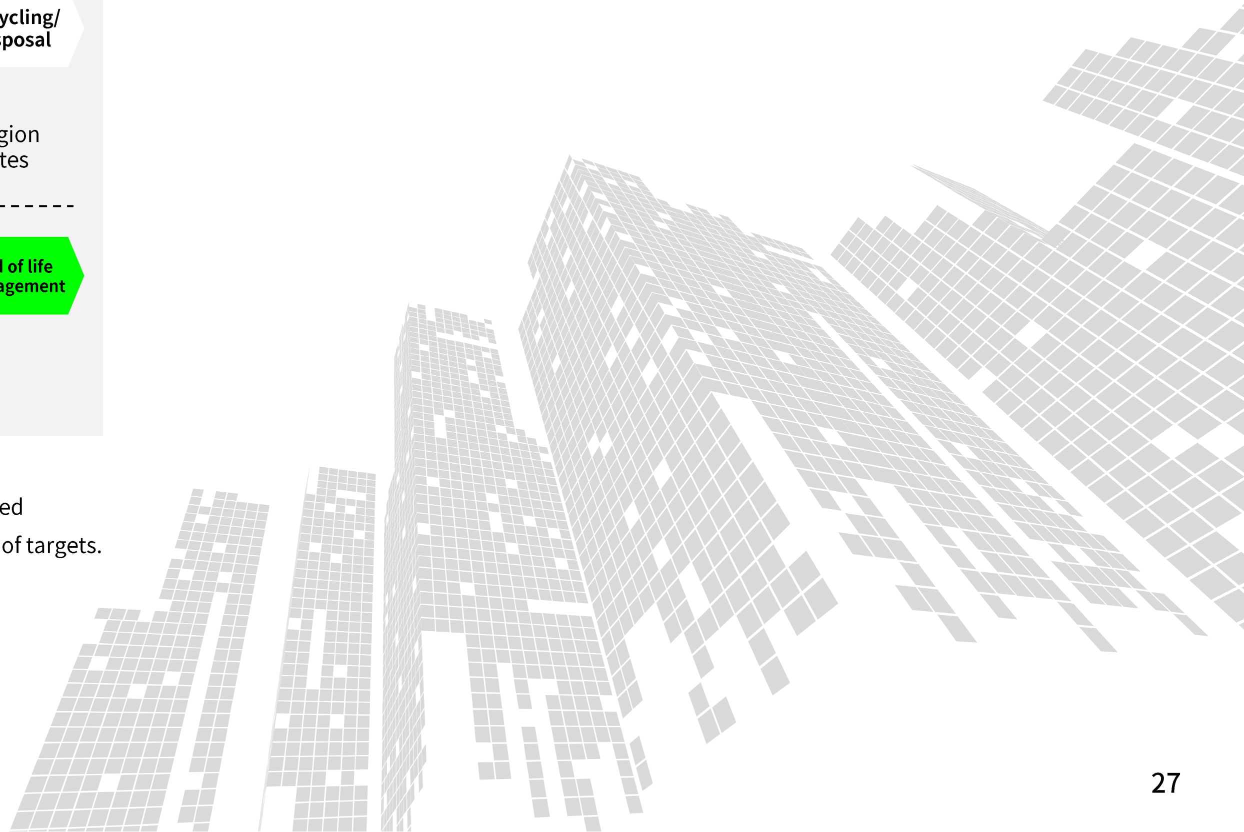
Sector

Zero emission vehicles(ZEVs) and Renewable Energy

ICE's analysis adopts a bottom-up approach, leveraging company-level proprietary information for modeling. This approach enables a detailed analysis of avoided emissions based on each company's sales and production plans.



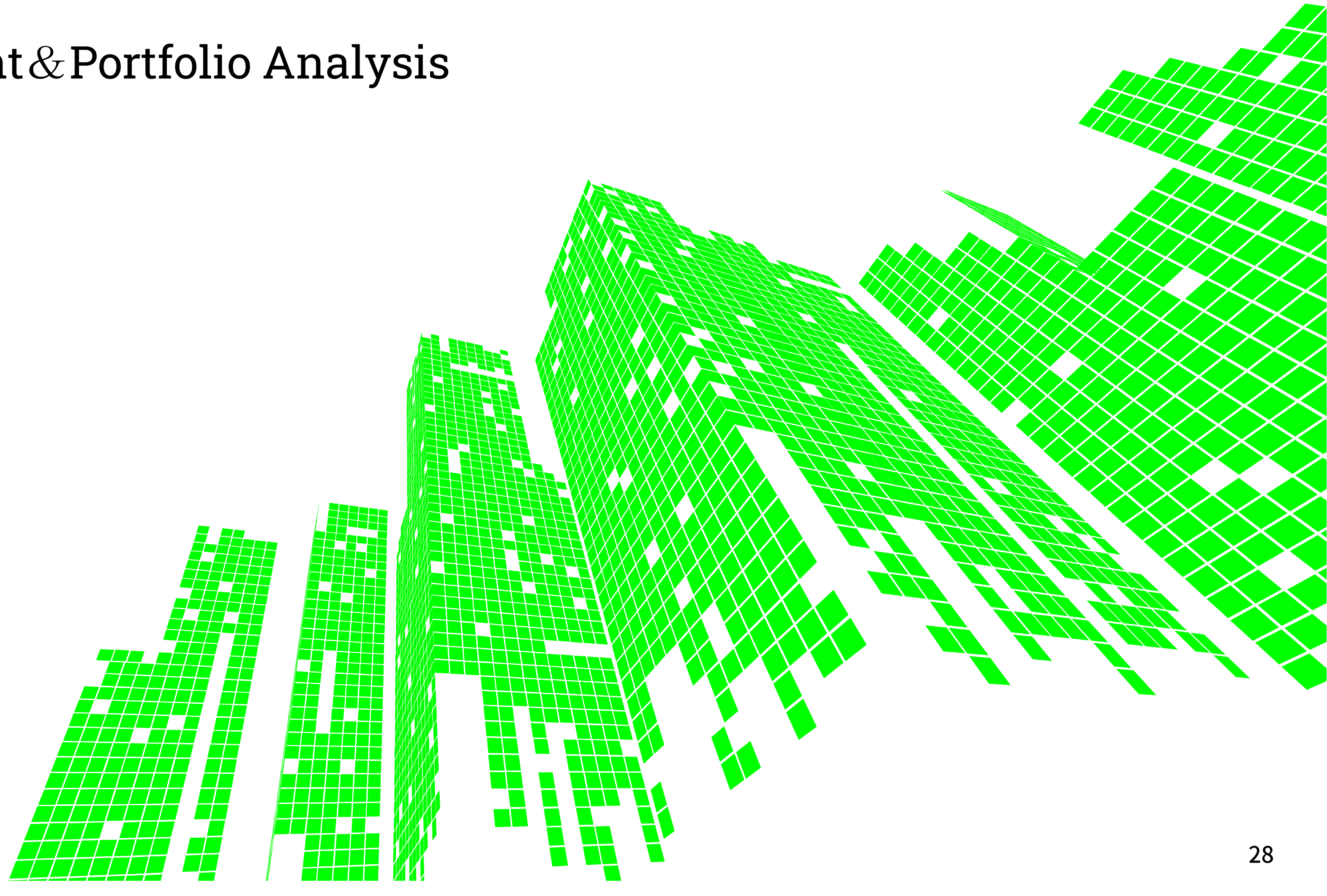
GPIF compiles the analysis results, including total and per-product avoided emissions by region, along with calculation methods, baselines, and scope of targets. These results are disclosed in ESG Report and other publications.



02 Case Study

Case 4 Investment&Portfolio Analysis

Schroders plc.



Conversation with **Schroders**

In 2021, Schroders publicly disclosed its analysis framework for avoided emissions and emphasized the significance of identifying “the leaders in the decarbonization race". We spoke with Schroders to understand the importance of avoided emissions and the process behind constructing this framework for a successful transition.

Mervyn Tang
Head of Sustainability Strategy, APAC
Schroders plc.

Avoided Emissons Input to Broader Analytical Framework

What were the key reasons of incorporating avoided emissions and what is so unique about it?

We developed the avoided emission framework to better capture opportunities from climate solutions, that are otherwise not captured by conventional emission measures. Many climate solutions, such as building insulation or wind turbines, can be carbon intensive to manufacture but are essential to drive a low carbon transition. Avoided emissions provide additional insights beyond metrics like green revenue, by helping us understand their contribution to system-wide decarbonization.

How is avoided emissions related to Schroders’ strategy?

Schroders see climate change as a material issue driving structural changes to the way businesses and economies operate, and important for investors to understand to be able to assess the risk and return profile of investments. Companies with high levels of avoided emissions may seen greater demand for their products and services should the low carbon transition accelerates. That is not to say investing in climate solutions automatically improves returns, but avoided emissions help us to assess the potential increase in demand alongside other factors like valuation and economic conditions.

How is avoided emissions related to Schroders’ strategy?

Data challenges are found in many areas of ESG, but that does not mean we cannot generate actionable insights from using avoided emissions data. We use avoided emissions as a way to assess the potential opportunities companies we invest in may have from the low carbon transition. Whether the number for a single company is completely accurate is not important, as long as the framework allows us to make broad comparisons of thousands of companies to understand differences between firms, sectors and trends over time. We can further complement this with qualitative analysis to support further investment decisions.

Climate as Core Business, Journey of Schroders to Develop a Framework

How did the process of incorporating avoided emissions start?

The model evolved from an idea in emails and spreadsheets into a more systematic framework that can be applied to a wide range of investments, a process that we worked with GIC in Singapore to develop.

However, unlike developing framework, implementation process doesn’t really have an end. We are constantly looking to refine the model, incorporating new emission reducing activities, regional nuances or more accurate data sources.

What do you think was the key factor that allowed Schroders to be one of the pioneer in this area?

We have invested in developing frameworks like avoided emissions because we consider sustainability as a core part of business. We believe doing so will help us better manage assets for our clients. This differs from considering sustainability as a compliance exercise, which could steer some entities looking at what they can do to meet minimum requirements rather than thinking about how they can improve their analysis. We have dedicated professionals focused on research as well as data and models, who are able to develop tools to meet constantly evolving sustainability needs.

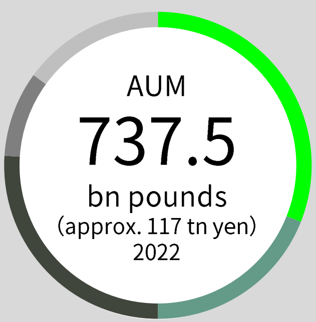
Company Overview

Schroders

Schroders is an active asset manager based in the United Kingdom. They have been committed to sustainability for over 20 years since appointing their first dedicated ESG specialist in 1998. Utilizing proprietary ESG tools, they conduct analysis and operations based on data and evidence, and actively disclose information.

Established ：1804

Employees ：6,434



Equities	31%
Bonds	19%
Multi-Asset	26%
Private Asset	9%
Wealth management	15%

Positive change on society and environment and active management for long-term enterprise value enhancement

Schroders acknowledges the crucial role that asset management companies play in fostering positive changes in the environment and society, including the transition to a decarbonized society. They engage in active asset management with consideration for ESG factors, aiming to influence corporate activities through their investment actions.

In 2021, Schroders publicly disclosed its strategy, the "Climate Change Action Plan“, to achieve net-zero emissions. This plan outlines the roadmap for transitioning to net-zero emissions across their own operations and the entire value chain.

INSIGHTS
To measure exposure and manage clients’ investment portfolio

INFLUENCE
To track and hold investee companies to account, calling on companies to demonstrate near-term delivery of goals through engagement

INNOVATE
Development of investment products

Align portfolio to
2.2°C pathway by 2030
1.5°C pathway by 2040

INSPIRE
To reduce own operational emissions and engage with the supply chain to do the same.

Reduce Scope 1&2 emissions by 46% by 2030 etc.

Schroders’ GHG reduction targets were certified by the Science-Based Targets initiative (SBTi) in February 2022. At that time, Schroders stood as the largest asset management company to receive certification from SBTi.

Case Details

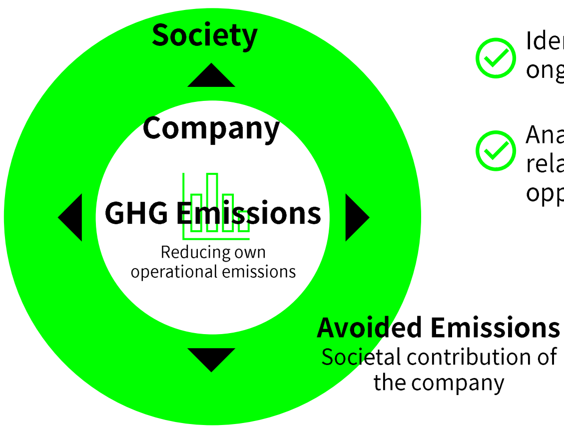
Avoided Emissions Overview
Coverage : 19 business activities identifies by Schroders
Referenced data : estimated by financial institutions (using academic and industry literature)

Identifying the “Winners” and assessing both risk and opportunities

Amid strengthened policies addressing climate change and heightened consumer awareness, climate change has become a central theme in investments. In this context, capturing investment opportunities associated with the transition to a decarbonized society is crucial.

However, existing frameworks face challenges in systematically evaluating investment opportunities and impacts related to the transition. Initiatives that contribute to advanced decarbonization efforts cannot be adequately assessed based solely on the emissions of the respective companies, necessitating a reassessment of evaluation systems

To address this, Schroders has collaborated with GIC to develop an analysis framework of avoided emissions. In anticipation of the market expansion of products and services contributing to the realization of a decarbonized society, the utilization of reduction contribution allows for the identification of companies providing such solutions to society. The aim is to understand the overall exposure of the portfolio and the impact it has on climate change.



- Identifying winners in the ongoing carbon transition
- Analysis of both climate-related Risk and investment opportunities

Overview of avoided emissions analysis

Schroders has identified 19 business activities with high expected avoided emissions based on academic research. These identified business activities are allocated to all industries on the value chain based on their contribution level. Subsequently, the “avoided emissions intensity (tCO2e/$m)" is quantified for each industry. Finally, considering the revenue structure of the target companies, Schroders calculates the reduction contribution at the company level.

STEP 01

Identify carbon-avoiding activities

Identify activities that are carbon-intensive but are expected to result in high avoided emissions, have a market expected to grow in the next ten years, and meet other relevant conditions. This resulted in identifying 19 carbon-avoiding activities . (e.g. renewable energy, alternative meats, building installation)

STEP 02

Estimate avoided emissions

Set a baseline based on academic and industry literature and estimate avoided emissions.

STEP 03

Attribute avoided emissions to industries across the value chain

Attribute the estimated amount across the value chain based on their value by 50%, 20~30% and 10%.

STEP 04

Quantify avoided emissions intensity for each industry

Normalize the avoided emission based on the price of typical goods and services to allow cross comparison between industries.

STEP 05

Derive avoided emissions intensity at company level

Calculate the avoided emissions intensity for individual companies based on their revenue exposure profile across industries identified in Step 4

Case Details

Incorporating avoided emissions to SustainEx

Schroders has developed SustainEx as a tool to measure the impact that investment companies have on society and the environment, given the increasing cases where companies are expected to take responsibility for costs that society has borne. SustainEx incorporates the concept of avoided emissions.

SustainEx enables quantitative analysis by quantifying the costs when negative externalities, such as carbon taxes, are priced and when the benefits of companies are economically recognized for corporate growth. Schroders actively utilizes SustainEx in its investment analysis.

Specifically, it investigates about 40 types of externalities based on academic research. In the analysis conducted in 2021, carbon-related externalities, including Scope 1-3 and avoided emissions, accounted for 45% of the total.

Proportion of externalities effected by carbon (Out of approx. 40 externalities)

45%

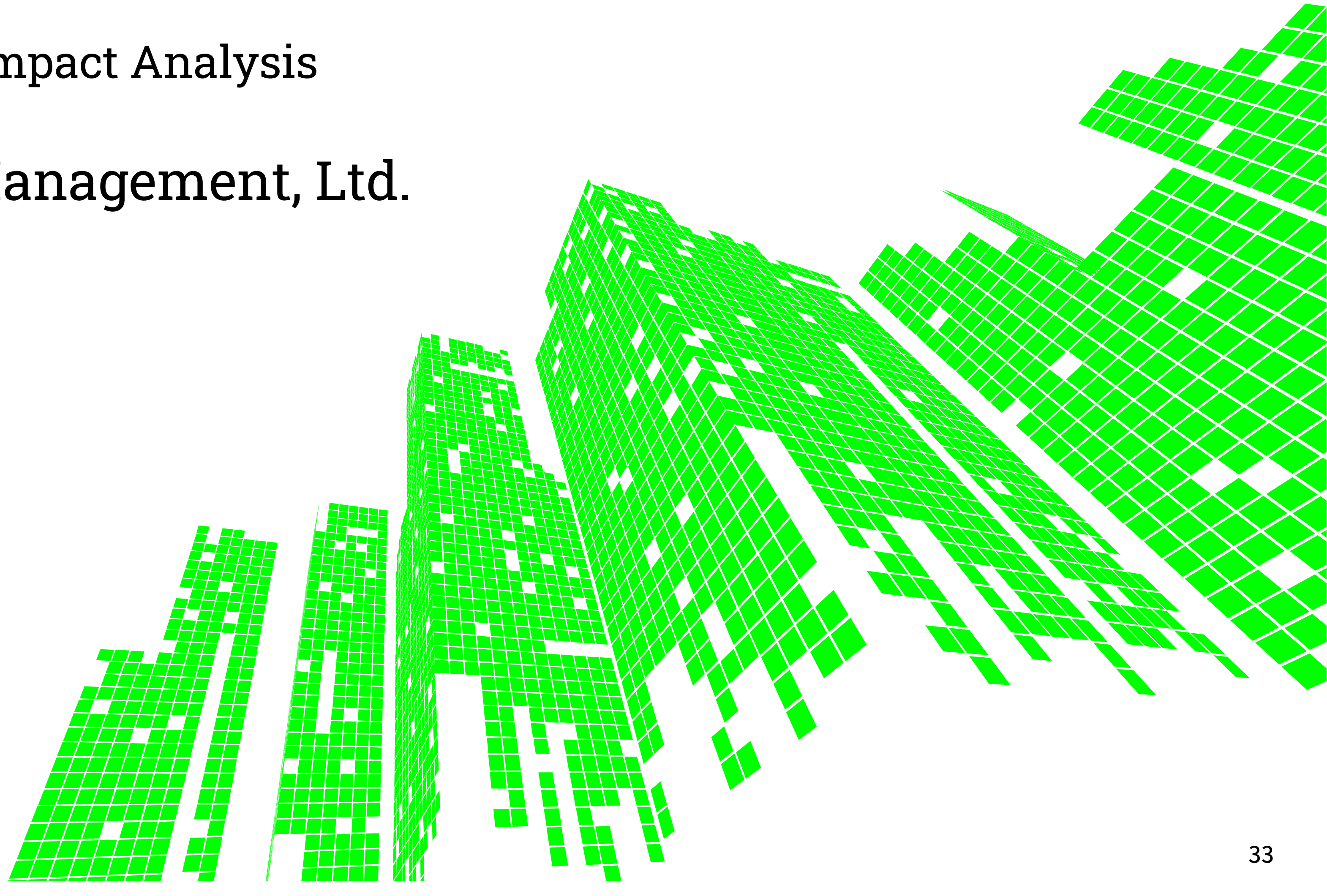
＝Scope 1~3 and avoided emissions

> **“(Integrating avoided emissions into SustainEx) s is an important extension of our investment analysis toolkit, and positions us ahead in identifying and capitalising on the winners from the shift to a low carbon economy whilst avoiding the losers, benefitting our clients’ portfolios in the long term.**
>
> **Past analysis has substantiates that companies with positive avoided emissions exposure saw revenues grow by an annualised rate of 7% over the past three years, which are 20% faster than the MSCI ACWI IMI stock universe as a whole.”**

* SustainEx calculates the costs or benefits related to the social and environmental aspects of the portfolio and compares them to benchmarks. This calculation is based on data from third-party agencies and Schroders' proprietary estimates, which may result in different outcomes compared to others.

Case 5 Portfolio Impact Analysis

Impax Asset Management, Ltd.



Company Overview

Impax Asset Management

Impax is an asset management company specializing in ESG (Environmental, Social, and Governance) investments. Since its establishment in 1998, the company has been at the forefront of ESG investment and impact assessment. With a focus on transitioning to a sustainable society, Impax highlights themes such as climate change, environmental degradation, natural capital, human capital, diversity, and fairness.

In 2023, Impax secured an investment mandate from the Government Pension Investment Fund (GPIF) and expanded its presence into Japan.

Established ：1959

Employees ：1,488

Equities	95.4%
Bonds	3.3%
Private Assets	1.4%

Revenue Increase
(2021 to 2022)

22%

Climate-related Opportunities and Risks integrated investment

Impax has set a policy for sustainable investment aligned with the transition to a sustainable society, with climate change being one of its key themes. Recognizing the significant impact that climate-related risks and opportunities can have on future investment performance, the company adopts a strategy as an asset manager to actively engage in climate solutions while considering climate-related risks. As a specific investment target, Impax aims to align 100% of its Assets Under Management (AUM) with transition alignment or be transition aligned by 2030.

BASELINE

Transition aligning	45%
Transition aligned	47%
Not-aligned	8%

▶

2030 Target

Transition aligning or aligned 100%

To achieve this goal, Impax conducts investments targeting companies engaged in activities that contribute to climate change mitigation and adaptation through its Impax Climate Investment Strategy. Additionally, engagement with governments and investee companies is recognized as a crucial role for the asset manager.

Transition risk (proportion of AUM affected by carbon pricing)	Physical risk (proportion of AUM affected by physical risk)	Encourage transition (proportion of AUM related to climate solution)
9%	15%	59%

Case Details

Avoided Emissions Overview
Coverage ：all listed assets
Referenced data ：avoided emissions disclosed by companies, estimated by financial institutions where no disclosure available (using academic researches)

Assessment and disclosure of impact on the real-economy through asset management

Impax believes addressing the drivers of climate change and mitigating risks are essential for the prosperity of the international community. Based on this belief they disclose the impact of their portfolio. Recognizing the importance of focusing not only on the emissions of investee companies but also on the avoided emissions for a more accurate understanding of the overall impact on the real-economy, Impax emphasizes both CO2 emissions and avoided emissions. In measuring GHG impact, Imax recognizes the global trends and discloses CO2 emissions and avoided emissions separately in accordance with the WBCSD guidance on avoided emissions.

CO2 emissions of companies (Scope 1, 2 & 3)	●Scope 1~2 and Scope 3 of investee companies are separately disclosed ●the emissions data are mainly sourced from corporate disclosure such as CDP
Avoided emissions of companies	● impacts arising from investee companies' products and services ● the emissions data are mainly sourced from corporate disclosure which Impax evaluates the methodologies , if data is not available the impact will be measured in a conservative manner

Targets and Impact Assessment Methods

Impax has consistently disclosed the impact of its portfolio since 2015. Starting in 2022, the disclosure scope has expanded to include bonds, and currently disclosed for all three types: equities, private markets, and bonds. For impact assessment, Impax primarily relies on company disclosure information, where avoided emissions In cases where data is unavailable, inquiries are made directly to the companies. In instances where data cannot be obtained, CO2 emissions are assessed using Bloomberg's methodology. For Avoided emissions, Impax evaluate investee companies' use of baseline scenarios, life cycle emissions approaches and value chain attribution method, and when such data is unavailable, the measures will be based on academic researches. If reliable academic studies specific to certain industries are lacking, avoided emissions is assumed to be zero to ensure a conservative reporting of positive impacts.

Impact is calculated in intensity term with 10 million USD as the denominator. TO reflect the different characteristics of the asset classes, Imax use different methodologies for each of them.

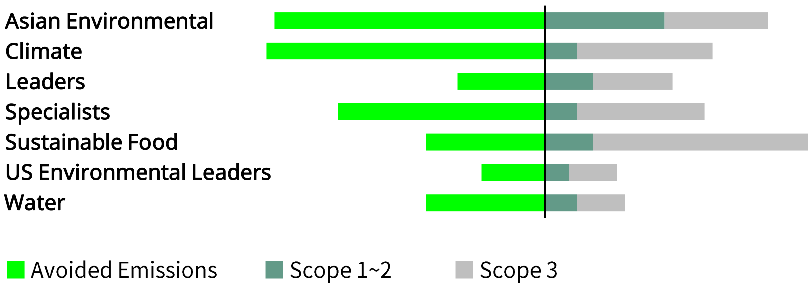
Listed Companies	Avoided emissions of investee company $\times \dfrac{\textit{equity owned}}{\textit{equity value}}$
Private Market (infrastructure investment)	●attribute the percentage of each project owned by Impax ●realized exited assets, annual carbon avoided is calculated using the P50 annual electricity production values based on Impax's most recent yield studies
Fixed Incomes	Avoided emissions of the issuer $\times \dfrac{\textit{value of the bond owned}}{\textit{enterprise value}}$

Case Details

Disclosure

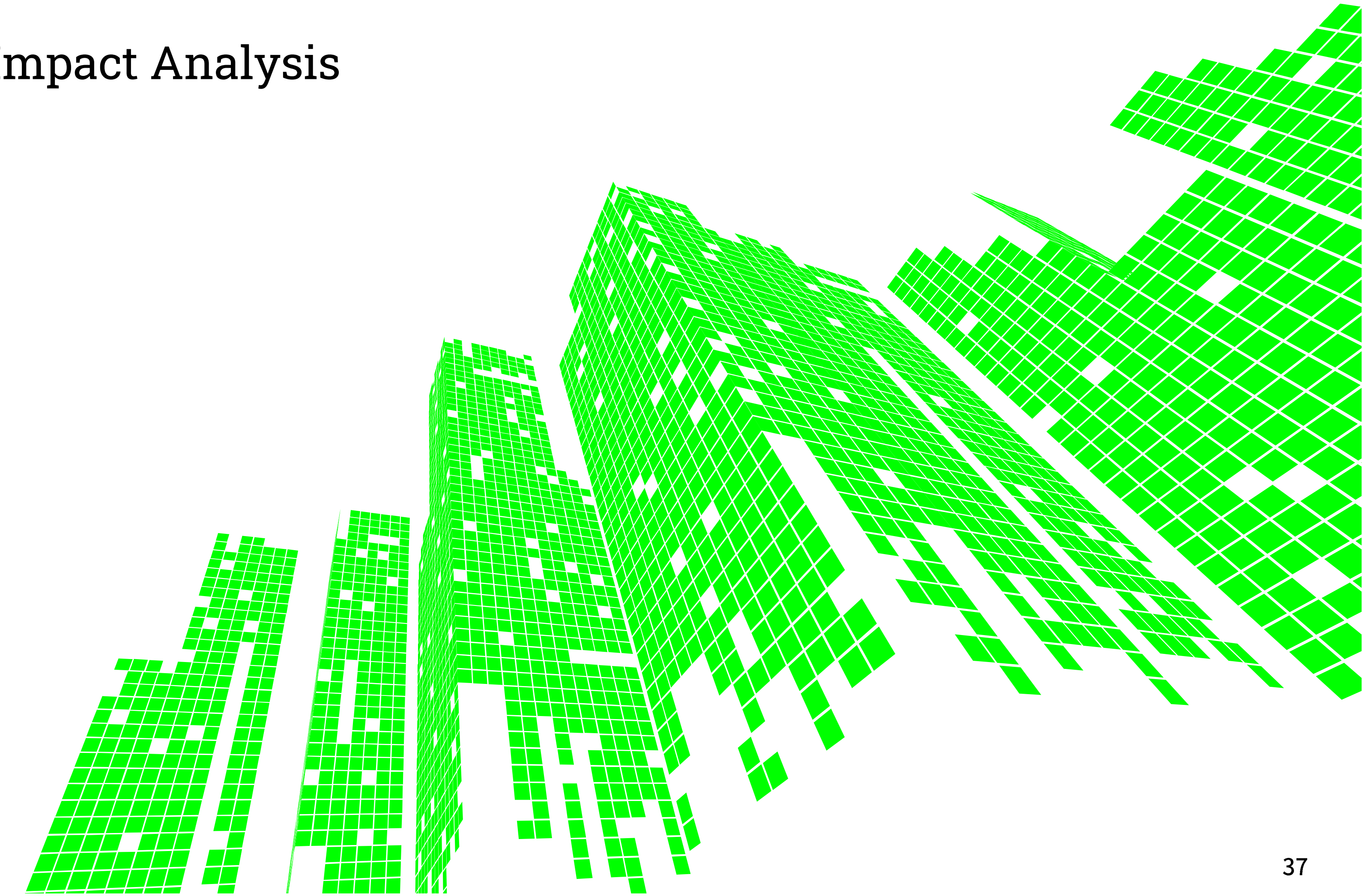
The impact of Impax's asset management is disclosed every year in the company's "impact report“. This report discloses both CO2 emissions and avoided emissions of the investee companies separately, along with impact calculation method and third-party evaluation results. (Disclosure image is shown below)

Calculation methodology Result of third-party evaluation



Case 6 Portfolio Impact Analysis

Mirova



Conversation with **Mirova**

We had a conversation with Mirova, who utilizes avoided emissions to visualize portfolio impact and analyze both climate-related risks and opportunities. We asked about their financial initiatives focusing on promoting the widespread adoption of avoided emissions.

Finding the Company with Growth Potential in Energy Transition

What were the reasons for using avoided emissions for portfolio impact analysis?

The decision to incorporate avoided emissions in our portfolio impact analysis was strategic. Traditional assessments focused solely on GHG emissions evaluates negative impacts and you are missing almost half of the climate impact analysis, the positive impact. For example, when only evaluating negative impact, investment will be divested from industries heavily dependent on fossil fuels and will be directed to companies with low emissions. However, these industries does not necessarily mean they will participate in the energy transition. For instance, the mining industry, despite being emission-intensive and resource-intensive, is vital due to its involvement in producing resources for semiconductors, making it essential from an energy transition perspective. It's not merely about divesting from high-emitting sectors; it's about understanding the nuances of each industry's contribution to the larger goal of decarbonization.

As a financial institution, we need to support the realization of a decarbonized society while also generating profits through investment activities. Enablers like mining play a crucial role. Their significance is not only tied to their contribution to decarbonization but also to the anticipated expansion of the market. Identifying and investing in such Enabler industries are paramount steps toward a sustainable and profitable future.

Comprehensive and Quantitative Assessment aross the Value Chain

Incorporating avoided emissions in our assessment methodology represents a groundbreaking approach. It allows us to not only recognize but also quantitatively evaluate the positive impacts of industries involved in energy transition. Take the mining industry as an example; its importance was acknowledged, but by including avoided emissions alongside GHG emissions in our portfolio analysis, we could truly grasp its value in quantitative terms. This innovative method aligns perfectly with our strategy, ensuring that the investments we make in listed companies align with WB2 degrees.

Fostering the Understanding of Avoided Emissions

What were the reasons for using avoided emissions for portfolio impact analysis?

Criticism around avoided emissions, we understand it and we agree with the reasons behind criticism, but this does not mean that the metrics itself does not make sense. these critiques are aimed at the use of avoided emissions as offsets and the lack of transparency, not at dismissing avoided emissions as a metric. It is crucial to patiently engage in dialogue to help others understand the concept of avoided emissions, both internally and externally. I found it helpful to providing examples from industries deeply involved with avoided emissions, such as mining and wind power generation, proved effective in this regard.

Overcoming the Challenges of Avoided Emissions: Collaborating with Various Stakeholders

We believe that our methodology is one of the best in the market, but it is also lacking a certain level of transparency, that is why few actors are using this. There is no standardized calculation method, and data is lacking. Therefore, we believe that establishing standardized calculation methods to enhance transparency and reliability is the role of financial institutions.

Currently we are pushing for more transparency and have partnered with several financial institutions including Robeco and Impax, to publish a call for the creation of global database, which integrates reference scenario and assumption on the life span of solutions, attribution in the value chain. Initially, disclosure may vary from database figures due to the absence of established calculation methods. However, we believe that increased disclosure will lead to more refined calculation methods and eventually, the standardization of these methods.

Conversation with **Mirova**

One of the interesting things we saw in working with others were the positive feedback loop happening with the engagement with non-listed companies, Mirova and consulting firms performing avoided emissions calculations. These dialogues have deepened understanding of the concept and calculation of avoided emissions for all parties involved, furthering the standardization of calculation methods.

Manuel Coeslier
Head of Carbon Strategies
Mirova

Company Overview

Mirova

Mirova is a France-based asset management company specializing in responsible investment. A subsidiary of Natixis Investment Managers, also headquartered in France, Mirova aims to transform the economy sustainable by providing innovative investment solutions to institutional investors, its clientele, through asset management.

Established ：2012

Employees ：216

AUM (2022) **15** tn yen

Sustainable related investment **100**%

Climate-related risk and opportunity in asset management

Mirova has already aligned 100% of its AUM with net-zero targets as of 2022. To further accelerate the journey towards net-zero, Mirova focuses on identifying external and internal environmental changes, reevaluating indicators to assess investment patterns and initiatives related to investments and engaging with stakeholders.

In terms of risk-based efforts, Mirova undertakes measures such as discontinuing investments in coal mining and coal-related power generation projects, aligning with scenarios analyzed by the International Energy Agency (IEA) to achieve net-zero goals. Additionally, Mirova recognizes the importance of investments that focus on climate-related opportunities, such as investing in solution providers. Therefore, integrating positive impact and financial performance has become an essential element of Mirova's investments.

> **"we believe that companies providing solutions to climate change issues are driven by a fundamental trend that feeds their growth and valuations, and therefore the financial performance of our investments."**

Comprehensive Assessment Towards Net Zero

Mirova strives for a comprehensive evaluation of its carbon footprint towards net-zero objectives. This evaluation includes Life Cycle Assessment (LCA), measurement of positive impacts, and forward-looking analyses. The initiatives towards net-zero are broadly categorized into three aspects, emphasizing not only the reduction of its own emissions but also contributions to emissions reduction of others and carbon removal as a positive impact. Mirova has emphasized the growing importance of forward-looking analyses in its Net Zero Roadmap. These analyses enable the evaluation of a company's transitional efforts at specific points in time, reflecting the evolving nature of assessing progress towards net-zero goals.

Decrease in emissions		Carbon removals
Own emissions reduction	Emissions reduction of others	Remove from the atmosphere
Emissions reductions	Avoided emissions	Negative emissions

Case Details

Avoided Emissions Overview
Coverage : all listed assets
Referenced data : estimated by financial institutions (using data from corporate disclosure)

Visualizing the investment impact: Temperature Alignment

In response to strengthened regulations and decarbonization efforts, there is a growing demand for visualizing investment impacts, prompting Mirova to conduct Temperature Alignment analyses for all its listed assets. Collaborating with the French consulting firm Carbon4Finance, Mirova developed the Carbon Impact Analysis (CIA) methodology to assess the impact of investments on climate change in a so-called bottom-up approach for sectors with higher climate challenges. This approach makes it possible to calculate the emissions induced and avoided based on real physical data of companies.

Carbon Impact Analysis (CIA)

CIA evaluates the social impact of investee companies on a 15-point scale, incorporating both quantitative and qualitative indicators. Reflecting Mirova's investment approach considering climate-related risks and opportunities, CIA assesses a company's emission reductions and its contributions to other companies' reductions (avoided emissions) as evaluation criteria.

Quantitative indicator + Qualitative indicator = 15-point scale

Quantitative indicator	Qualitative indicator
● Emissions	● Efforts for decarbonization
● Avoided emissions	● Related to R&D investment

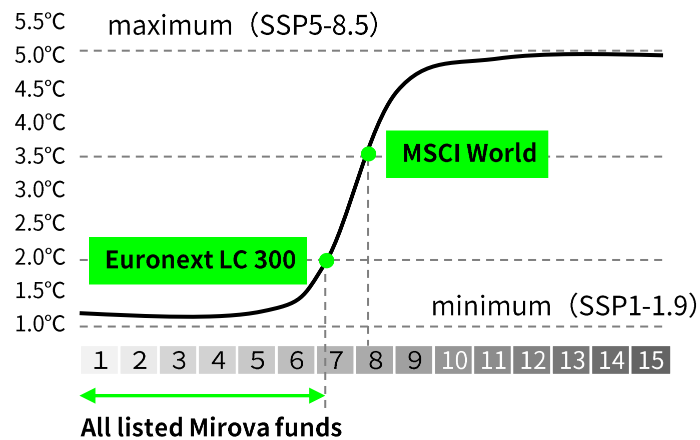
While the common practice in calculating avoided emissions involves using sector averages for estimation, CIA stands out by adopting a unique approach. It classifies he entire economy into three categories built around the carbon issue, enabling a bottom-up evaluation of avoided emissions for individual companies. This method utilizes real data from companies, such as sales figures broken down by vehicle models or regional sales, enhancing the accuracy of the analysis.

The bottom-up approach calculates avoided emissions on a company level, which are then divided by the company's market value to obtain the economic value per unit. This value is multiplied by the portfolio's exposure to determine the impact at the portfolio level.

CIA and temperature alignment

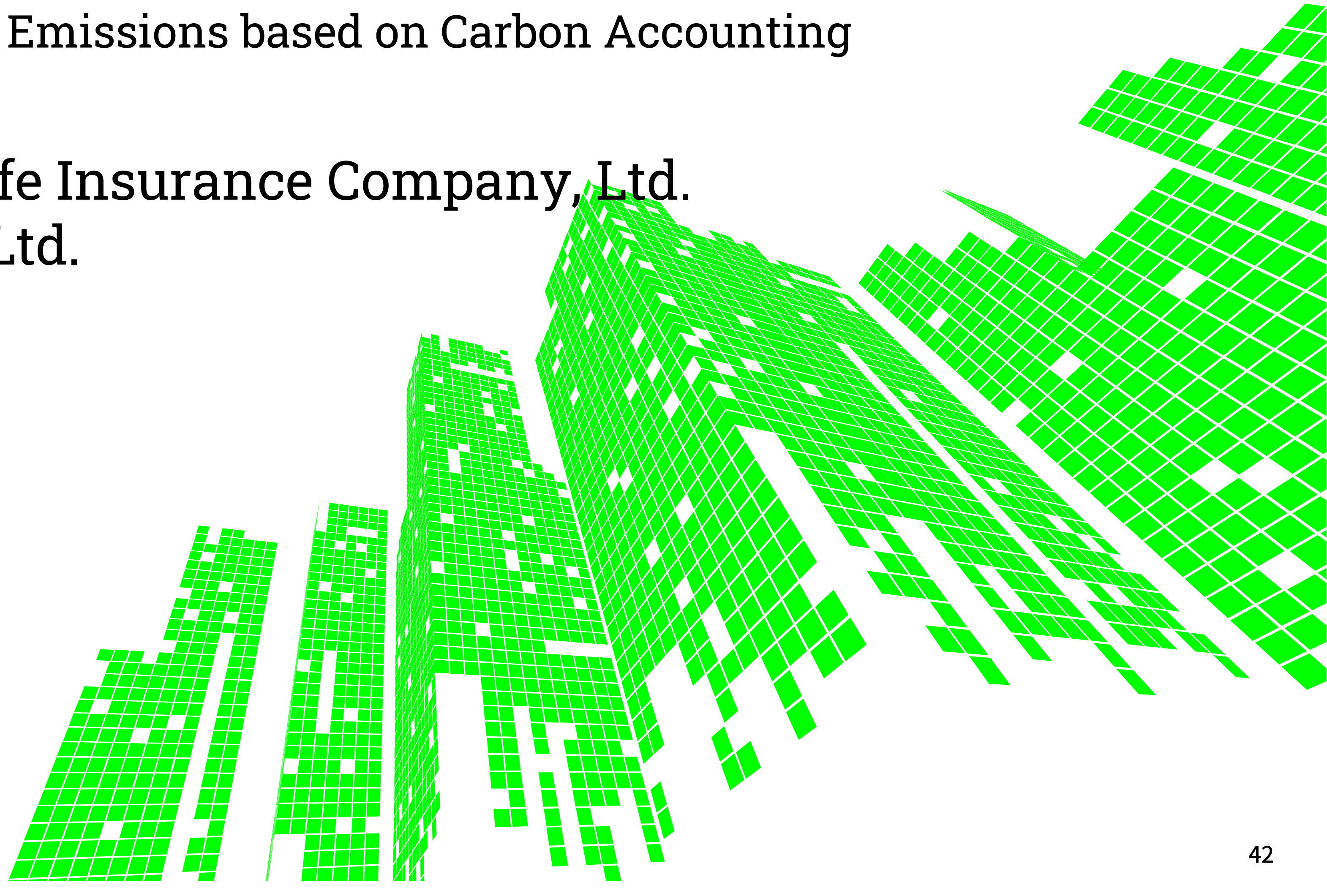
In the final step, the CIA evaluation is converted to Temperature Alignment using S-Curve and benchmarking. The assumptions include::

1. Mirova operates under the constraints of climate scenarios, which require a minimum warming of 1.5°C and a maximum warming of 5°C
2. The IPCC SSP3-7.0 scenario, known as business-as-usual, will result in an average temperature rise of 3.5°C
3. The second calibration point of the formula is set at 2°C, in line with the objectives of the Paris Agreement. The Euronext Low Carbon 300 index was chosen to represent an economy aligned with a 2°C scenario.
4. An S curve as shown below makes it possible to respect the two calibration points described above and to tend towards extreme scenarios



Case 7/8 Avoided Emissions based on Carbon Accounting

The Dai-ichi Life Insurance Company, Ltd.
Mizuho Bank, Ltd.



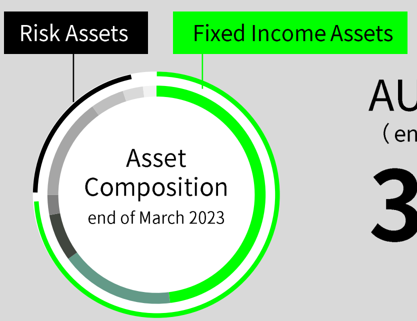
Company Overview

The Dai-ichi Life Insurance

The Dai-ichi Life Insurance (Dai-ichi Life) was established as the first mutual life insurance company in Japan. Along with their insurance business, as an institutional investor, they also actively participates in initiatives such as joining the Net-Zero Owner Alliance (NZAOA), being the member of the Principal Group of GFANZ and leading the GFANZ Japan Chapter as a chair.

Established ：1902

Employees ：49,112



AUM
（end of March 2023）

33 tn yen

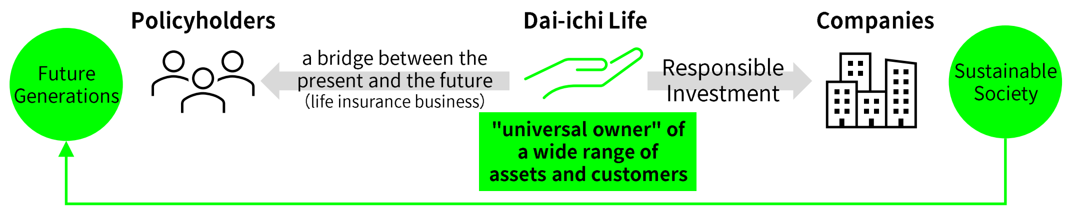
Government and Corporate Loans	55%	Stocks	17%
Foreign-currency Bonds (hedged)	7%	Foreign-currency Bonds	3%
Loans	8%	Real Estate	4%
Cash, Deposits etc.	4%	Others	2%

Efforts as a business company and institutional investor to achieve social sustainability

As a sustainable society in the future is essential for the group's (Dai-ichi Life Holdings) pursuit of "well-being of all including future generations", they consider a sustainable society to be the foundation of their business. Climate change, in particular, is identified as a material issue, requiring proactive efforts as a business entity and institutional investor.

The establishment of a sustainable society as a life insurance company is a significant challenge, and the group is advancing initiatives to identify risks based on scenario analysis. Risks, such as increased insurance claims due to health hazards caused by climate change, are highlighted. As a business entity, they have set a target of achieving net-zero emissions for its Scope 1&2 by 2040 and Scope 3 by 2050.

Furthermore, as an institutional investor, the group became the first in Japan to join the NZAOA in 2021 and has committed to transitioning to a carbon neutral portfolio by 2050. Subsequently, aligning with NZAOA's protocol, the company has been promoting initiatives toward achieving carbon neutrality by setting interim reduction targets for 2025 and 2030.



As an institutional Investor **Approach to Responsible Investment**

As an institutional investor, the group is committed to creating positive impact on society through ESG Investment and enhancing ESG integration. Simultaneously, they engage in stewardship activities centered around engagement with the companies thy invest in.

Cumulative Amount of ESG-Themed Investment and Loans	Of which, climate solution investment
1.6 tn yen	**710 bn yen**

* End of March 2023

Company Overview

Mizuho Bank

Mizuho Bank is part of the Mizuho Financial Group (MHFG), one of the largest Japanese financial institutions. MHFG supports its clients in transitioning to a decarbonized society by developing and providing solutions leveraging financial and non-financial services and promoting real-economy transition.

Established : 2013

Employees : 25,897

Loans
(end of FY2022)

90.9 tn yen

environment and climate-related finance
(FY2019~2022)

8.1 tn yen

*sum of Mizuho Bank and Mizuho Trust and Banking.
** The outlined numbers for environment and climate-related finance, as well as other environment-related targets, are those of MHFG.

Creating and scaling the foundations to achieve decarbonized society

MHFG identifies addressing climate change as one of the key management issues and promotes an integrated climate change based on transition plan formulated from the perspectives of facilitating transitions in the real-economy, capturing business opportunities, and risk management. In the new medium-term business plan (FY2023 through FY2025), MHFG selects "sustainability and innovation" as a one of the five areas of focus. To capture opportunities associated with the transition to a decarbonized society, MHFG aims to co-create industrial and business structural transformations and applications of technologies with clients and expand the scope of decarbonization through international partnership and domestic expansions.

Creating foundations to support decarbonized society

Scaling decarbonization

MHFG

- Deepening initiatives in each area, such as the structural transformation of industry
- Establishment of a framework to provide transition finance
- Government-academia networks and express opinions/

Capturing business opportunities for a decarbonized society

In pursuit of capturing business opportunities, MHFG works to develop and provide financial and non-financial solution with in-depth understanding of demands and issues obtained through engagement. To create further money flow, which is a key to achieve a decarbonized society, they have set the sustainable finance target of 100 trillion yen in which 50 trillion yen is earmarked for environment and climate-related finance and proactively provides green and transition financing and risk money for practical application of technologies to clients who are taking on the challenge of decarbonization.

environment and climate-related finance target
(FY2019~2022)

50 tn yen

Case Details

Avoided Emissions Overview
Coverage : projects related to renewable energy (Dai-ichi Life), Bank's loans for renewable energy projects (Mizuho Bank)
Referenced data : estimated by financial institutions (Dai-ichi Life, Mizuho Bank)

The Dai-ichi Life Insurance

Promoting investments to create positive impact

Dai-ichi Life has positioned addressing climate change as a top priority theme for responsible investment. In contributing to the reduction of GHG emissions and the realization of a decarbonized society, they actively promotes financing that contributes to solving climate change issues.

They have set specific targets, outlined in the "Medium-term Responsible Investment Policy (Until FY2024)“. The aim is to achieve a cumulative total of 1 trillion yen in climate change solution investments by FY2024. Additionally, they have set a target of 1.5 million tCO2e of "Avoided GHG Emissions" through financing, to create positive impacts.

Target for climate Solution investments	1 tn yen by end of FY2024 (cumulative)
Target for "Avoided GHG Emissions"	●covers renewable energy generating business for which reduction effects have been disclosed ● FY2024 approx. 1.5 million CO2e/year

Dai-ichi Life also discloses progress on "avoided GHG emissions" towards its goals. The most recent annual "Avoided GHG Emissions" were 1.23 million tons of CO2e (Responsible Investment Activities Report 2023). This figure pertains to the estimation from investment projects that are related to resolving climate change with disclosed impact, including projects such as renewable energy generation, green bonds. The "avoided GHG emissions" of renewable power generation businesses is calculated using the PCAF concept. 1.23 million tons of CO2e is equivalent to 27% of emissions from our portfolios in FY2022 (listed equities, corporate bonds, and real estate).

Mizuho Bank

Expanding carbon accounting

As GHG emissions produced via finance (financed emissions) constitute a significant portion of financial institution's total emissions, its measurement, monitoring and reduction have become a crucial challenge. MHFG has been consistently calculating and disclosing financed emissions for loan assets since FY2021.

These efforts contribute to effective climate-risk management. In FY2022 MHFG calculated and disclosed financed emissions for 19 sectors based on TCFD, and in FY2023 they expanded the scope including additional asset classes and sectors. MHFG also participates in the Partnership for Carbon Accounting Financials (PCAF), a global partnership to develop and implement methodologies to measure financed emissions and leads the Japan coalition of PCAF initiated in November 2021 as a chair.

Not only the finance emissions, but also calculates "CO2 emission reductions" for Mizuho Bank's loans for renewable energy projects. The attribution factor is set in accordance with the PCAF Guidance and attributes the avoided emissions of the renewable energy projects.

Financed emissions are disclosed in the TCFD report in detail whilst "CO2 emission reductions" are outlined on the website.

Carbon Accounting for Project Finance (results using PCAF)

	unit	FY2020	FY2021
Financed Emissions of Power Sector Portfolio	kton CO2	8,901	8,627
Contribution to CO2 Avoided Emissions of Power Sector Portfolio	kton CO2	4,349	4,688

*kton（10^3 ton）