

7th Government-Private Forum on CEFIA

GHG Avoided Emissions Visualization and Mobilization of Private Finance

Mizuho Financial Group

Teppei Yamaga
Managing Director, Sustainability Planning Department

13 February 2025



Innovating today. Transforming tomorrow.

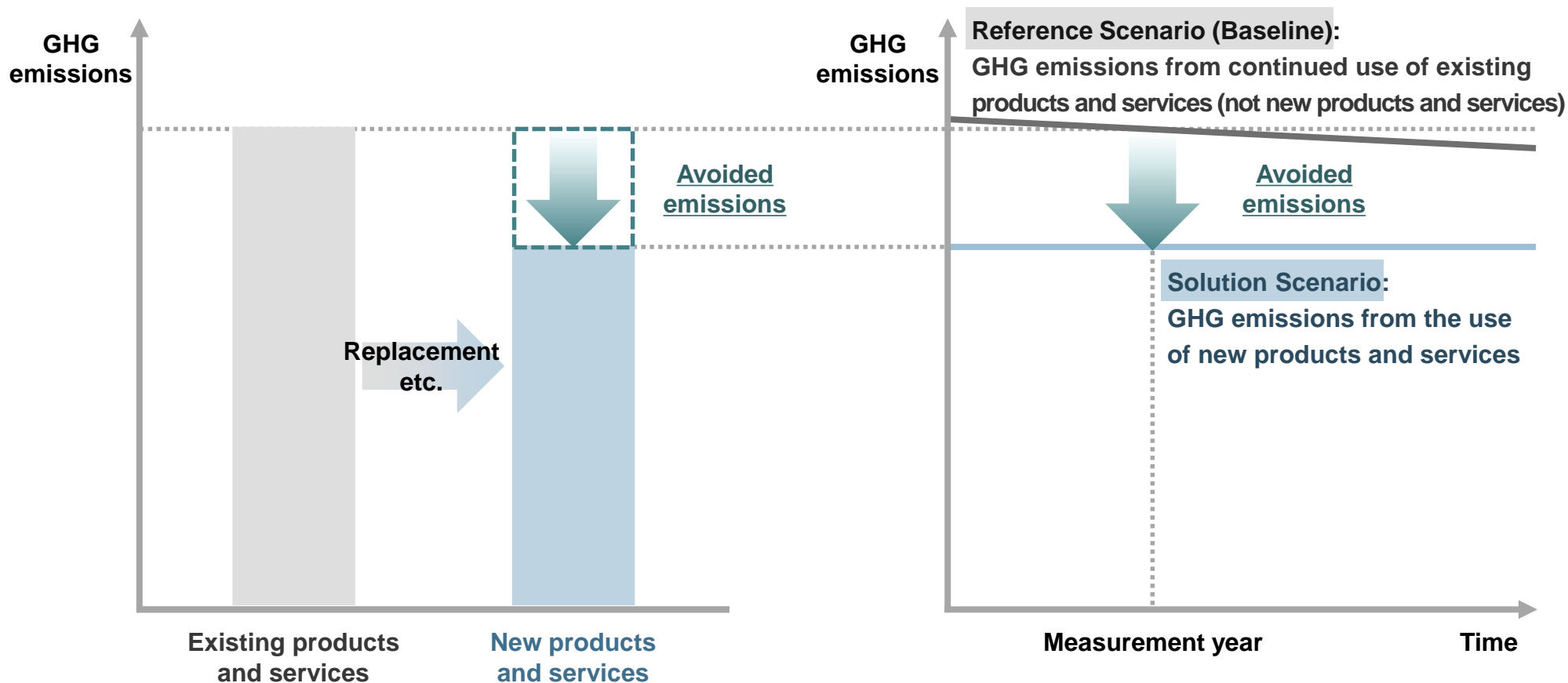


1. Overview of Avoided Emissions

What is “Avoided Emissions”?

- “Avoided Emissions” (AE) is a quantitative measure of how much a company contributes to reducing GHG emissions on the user side through the use of its new products and services, compared with the existing one.

Outline Drawing of Avoided Emissions - GHG Emissions by Users in the Measurement Year

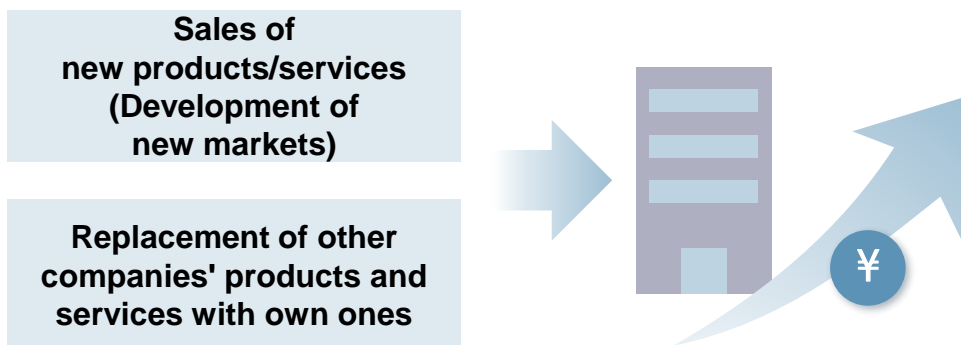


- Avoided emissions are emissions that are **avoided** when a new product or service is used as a substitute for another existing product or service.
- Avoided emissions are the difference in GHG emissions between each scenario, where avoided emissions = reference scenario - solution scenario.

GHG Emissions Challenges

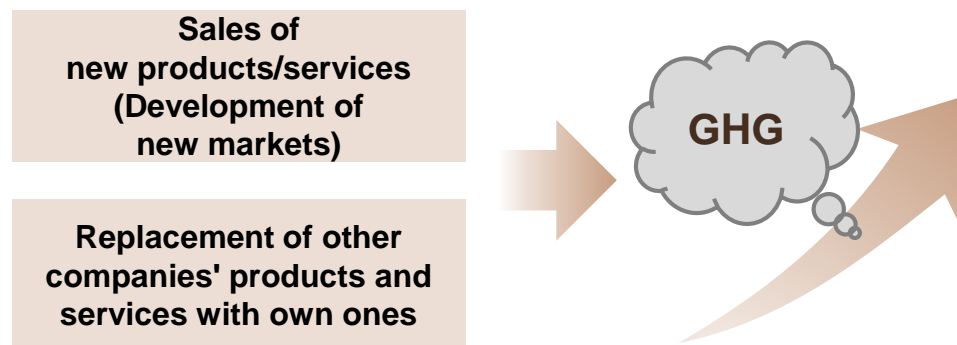
- GHG emissions are a metric that often increases when corporate production and sales volumes increase.
- GHG emissions are a good metric for assessing climate-related risks, but there are challenges in evaluating opportunities.

Changes in **Financial Accounting** due to Increased Sales of Products/Services



If sales of the company's products and services increase, the company's sales, profits, cash flow, corporate value, etc. can be expected to increase.

Changes in **Carbon Accounting** due to Increased Sales of Products/Services



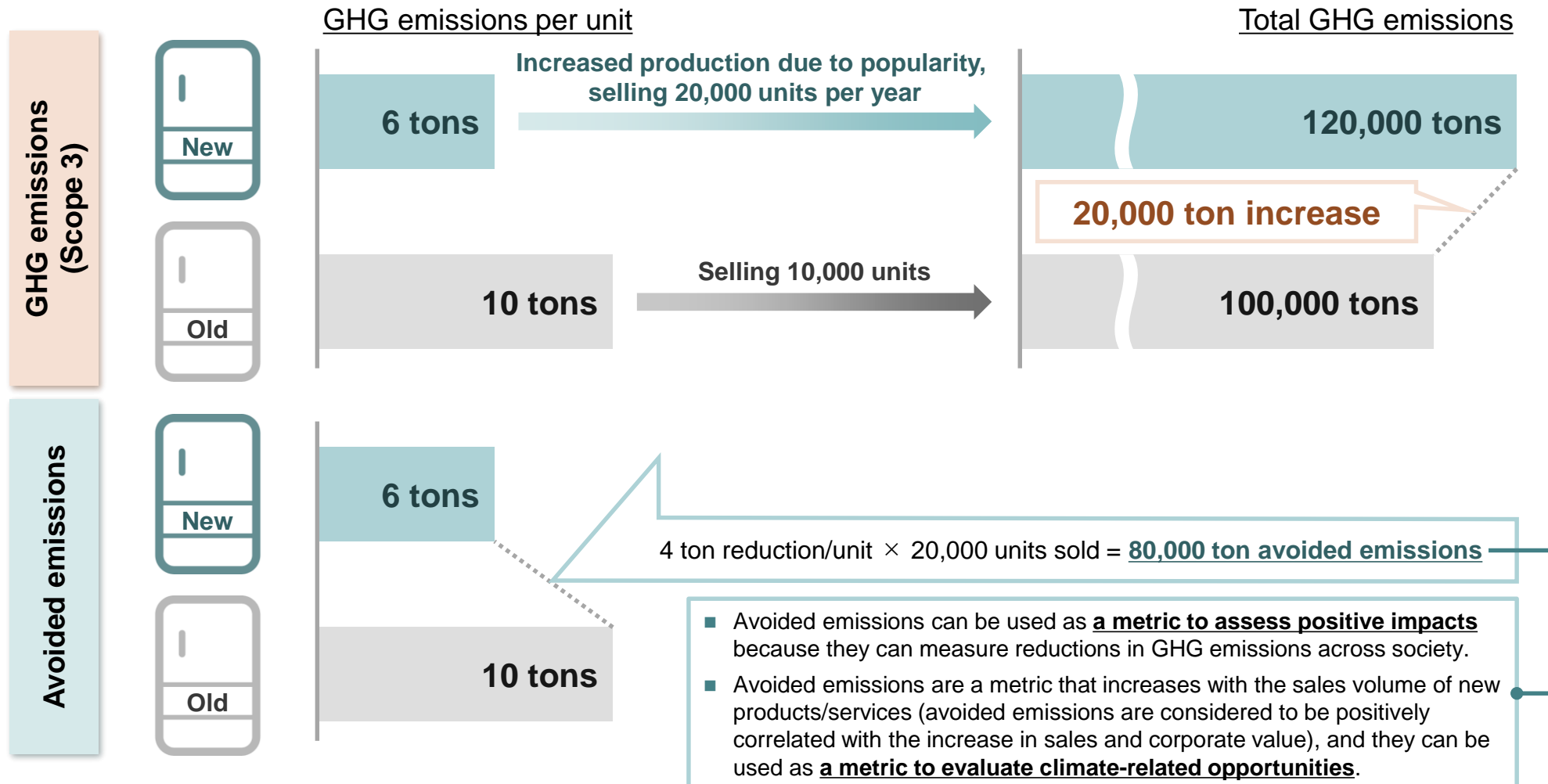
If sales of the company's products and services increase, its own GHG emissions often increase.

- An increase in sales of a company's products and services or an increase in its market share would normally enhance a corporate value. Therefore, analyzing responses to climate change only in terms of GHG emissions may not lead to an appropriate corporate assessment for financial institutions.
- While GHG emissions are an appropriate metric for assessing climate-related risks such as the introduction of carbon taxes and emissions trading, there are challenges in assessing climate-related opportunities (enhancement of corporate value).

Avoided Emissions that can be Used as Metrics of Positive Impacts/Climate-related Opportunities

- AE is a different concept from GHG emissions (Scope 1, 2, 3) and cannot be deducted from them.
- Contribution of companies to reductions through increased sales of new products/services can be evaluated by AE.

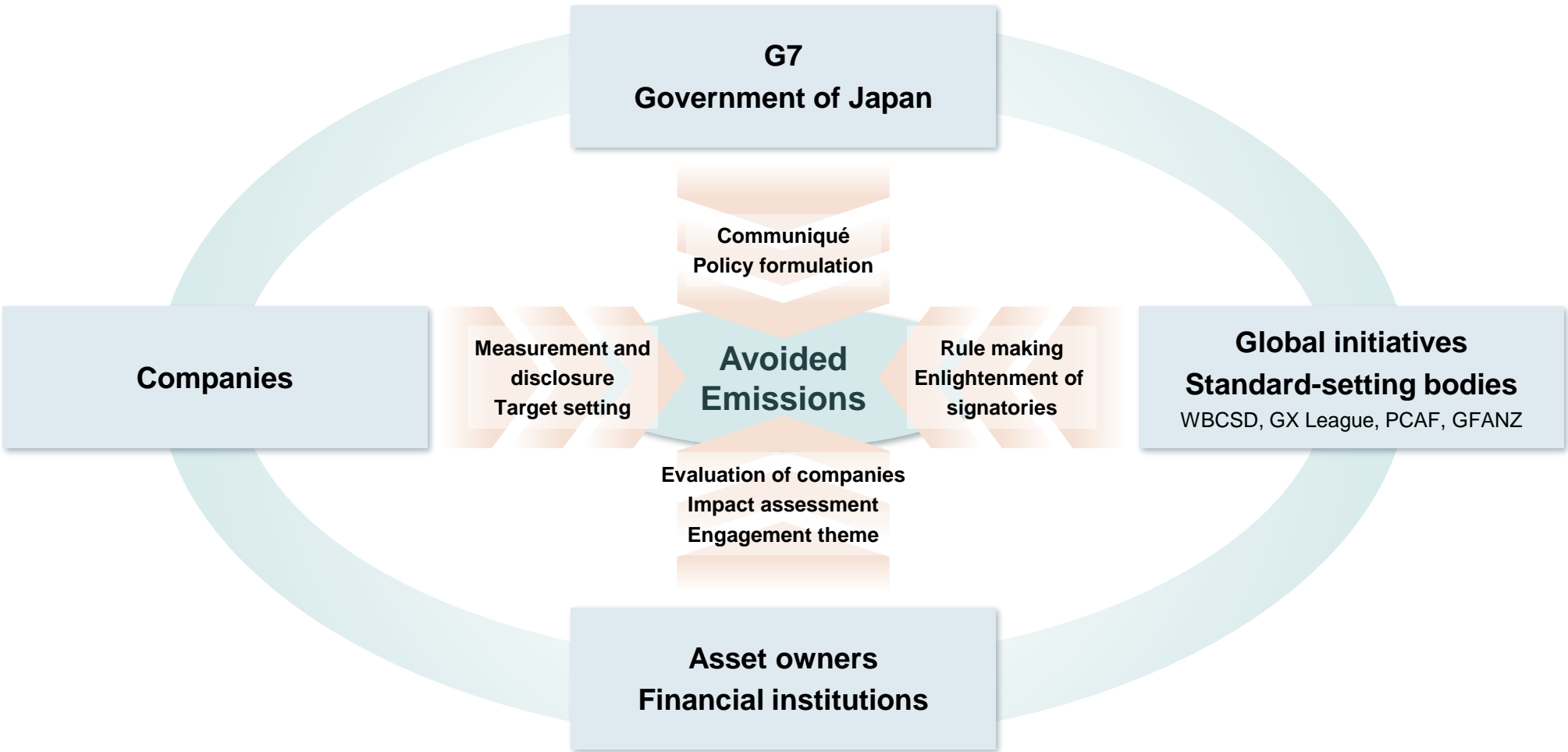
Comparison of GHG Emissions (Scope 3) and Avoided Emissions



Avoided Emissions Becoming Focus of Global Attention

- Various stakeholders around the world shown in the figure below are raising their interest in AE.
- Expected that further strengthening of cooperation among stakeholders will accelerate the spread and expansion of AE.

Stakeholders Focusing on Avoided Emissions



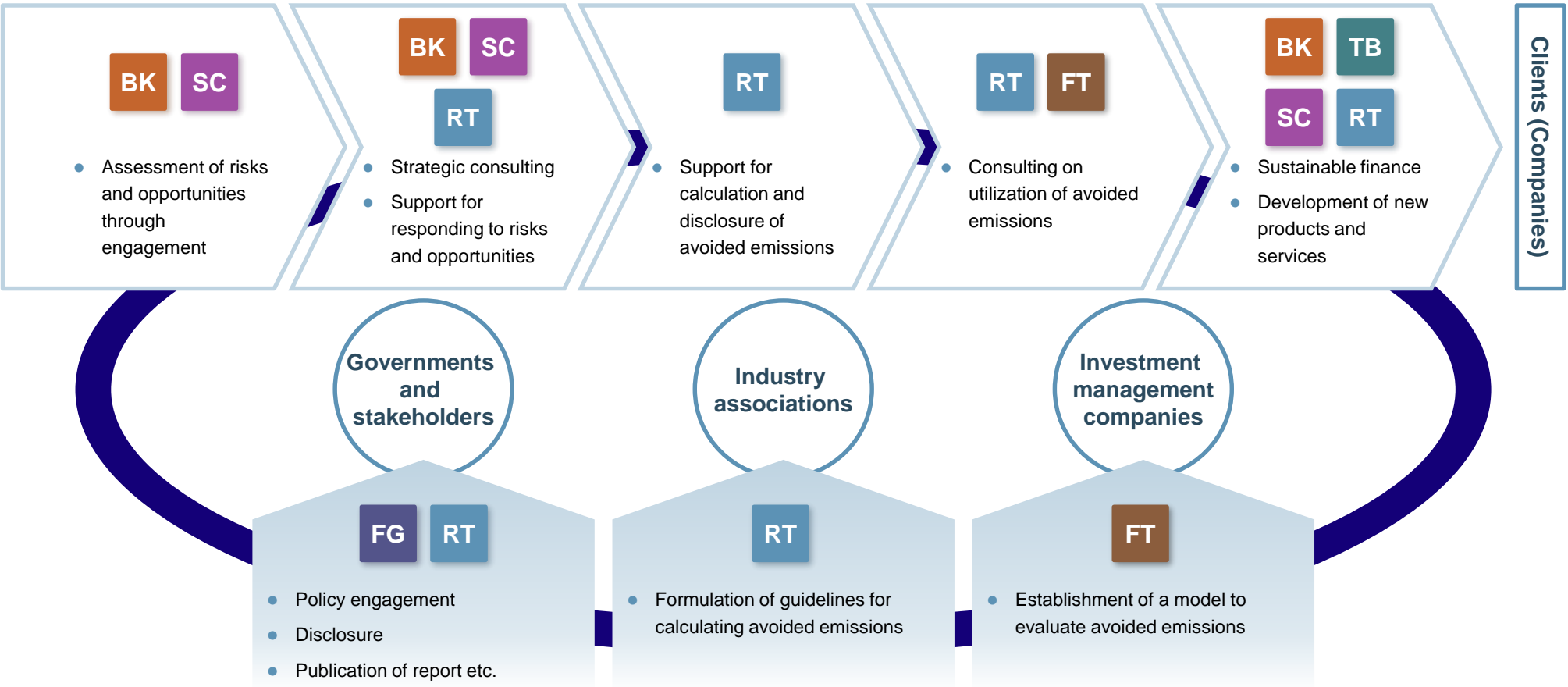


2. Mobilization of Private Finance through Avoided Emissions

Mizuho's Value Chain for Avoided Emissions

- Mizuho has built a value chain for AE, and contributes to establishment of its rules and evaluation models.
- We also provide full support to our clients for AE pre-assessment, measurement/disclosure support, and financing.

Mizuho's Value Chain for Avoided Emissions *1

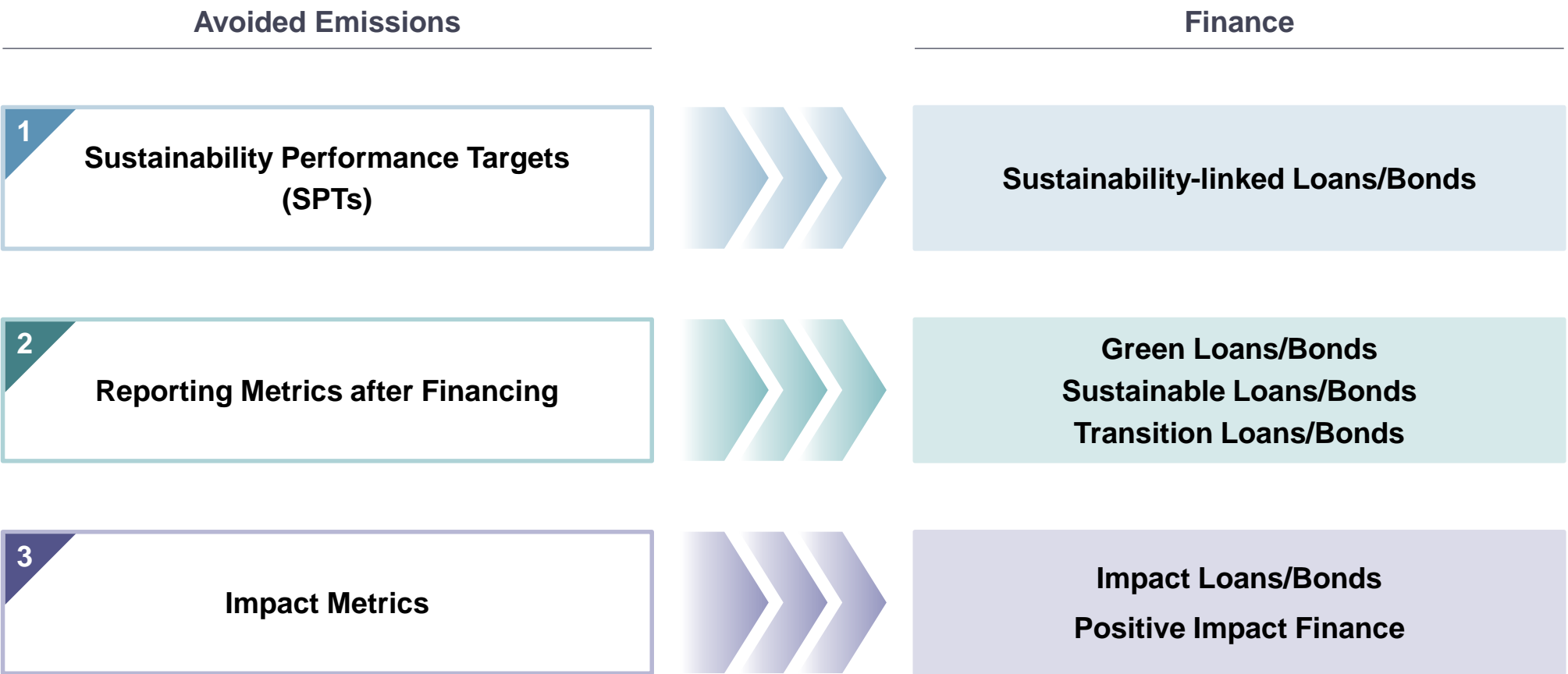


Mizuho's Value Chain for Avoided Emissions

Finance Using Avoided Emissions as Management and Reporting Metrics

- AE can be used as a management and reporting metric in a variety of finance.
- Utilization of AE leads to mobilization of private finance and promotion of transition.

Finance Using Avoided Emissions as Management and Reporting Metrics



Measurement and Disclosure of AE in Mizuho's Power Generation Sector Portfolio

- Since FY2020, Mizuho Bank has been disclosing financed emissions and CO2 AE through project finance in the power generation sector in accordance with PCAF Standard Part A.

Measurement and Disclosure of CO2 Avoided Emissions in Power Generation Sector Portfolio (Project Finance)

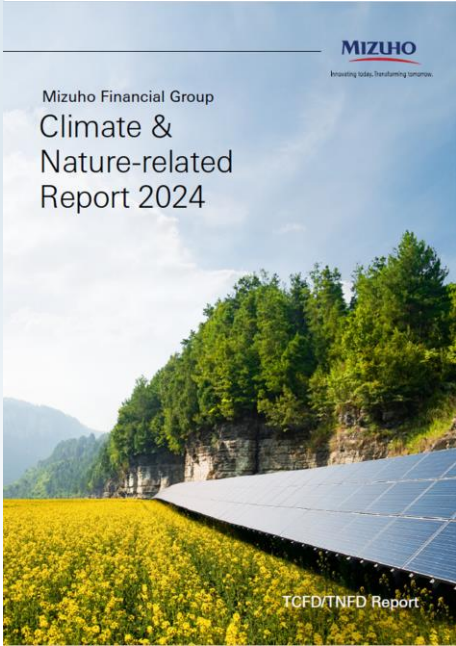
- From 2024, Mizuho began disclosing its CO2 avoided emissions from the power generation sector portfolio, which had been disclosed on the Mizuho website, in the Mizuho Financial Group “Climate & Nature-related Report”.

Column: Measurements of CO2 avoided emissions of power sector portfolio (project finance)

Since FY2020, Mizuho Bank has disclosed financed emissions and CO₂ avoided emissions for project finance in the power generation sector based on the PCAF concept. CO₂ avoided emissions are calculated based on the concept of Avoided Emissions in the PCAF guidance, by determining the CO₂ emission reductions when power generation shifts from fossil fuels to renewable energy through the renewable power projects financed by Mizuho. This calculation is based on the emission factor of the fossil fuel that has the largest impact on the power generation mix in the project region.

	FY2019	FY2020	FY2021	FY2022
Financed Emissions (ktCO ₂)	8,901	8,627	8,765	10,308
CO₂ Avoided Emissions (ktCO₂)	4,349	4,688	4,871	6,390

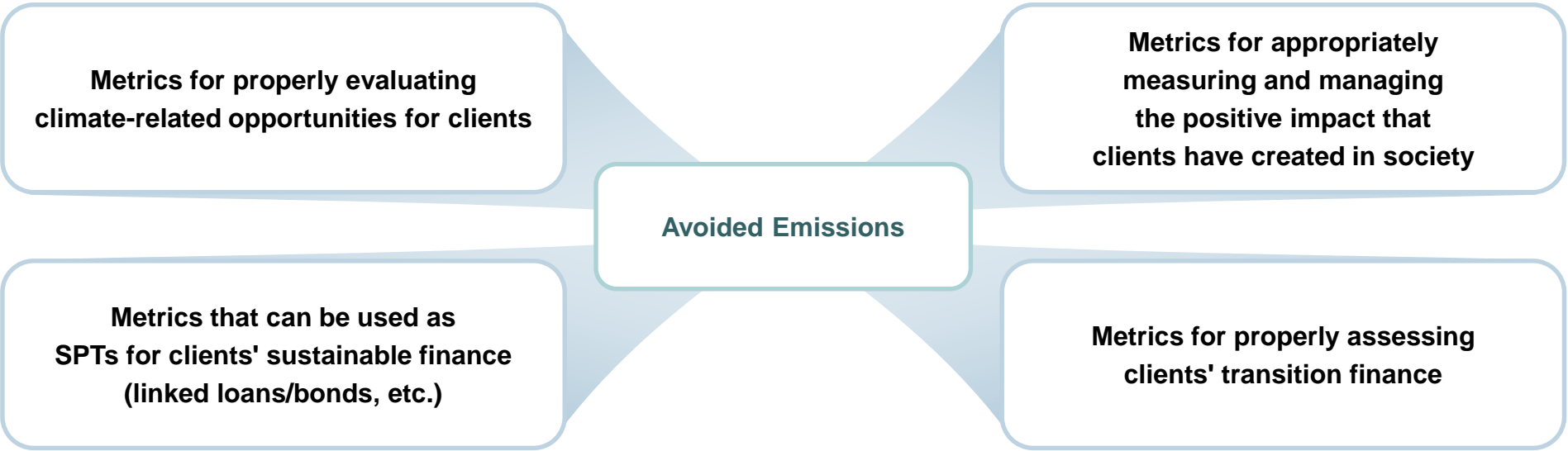
(See our webpage for the details: <https://www.mizuhogroup.com/sustainability/environment/activity/carbon>)



Future Potential of Avoided Emissions and Mizuho's Initiatives

- It is estimated that a huge amount of fund will be needed to achieve net zero globally. Under such circumstances, Mizuho is expected to assist clients in their efforts to achieve net zero by providing sustainable finance and other services.
- Mizuho also believes that avoided emissions are one of the most suitable metrics for evaluating clients' contribution to decarbonization and climate-related opportunities (enhancement of corporate value). By providing a variety of financial and non-financial solutions utilizing avoided emissions, Mizuho will accelerate the transition to create positive impact and achieve net zero.
- Mizuho has been focusing on avoided emissions from an early stage, and has implemented unique initiatives related to avoided emissions, such as sustainable finance and consulting, and its own climate-related disclosure.
- Going forward, Mizuho will continue to leverage its experience and expertise in avoided emissions, as well as the Mizuho group's management resources, work in cooperation with various stakeholders to further disseminate and promote avoided emissions around the world, and expand financial and non-financial solutions that utilize avoided emissions.

Utilization and Future Potential of Avoided Emissions in Sustainable Finance and Corporate Evaluation





Appendix

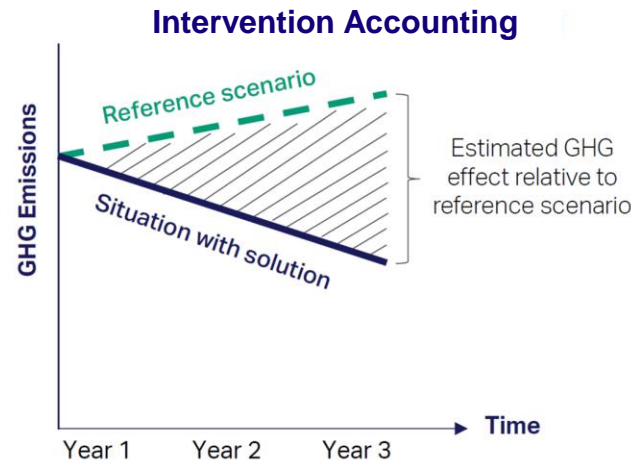
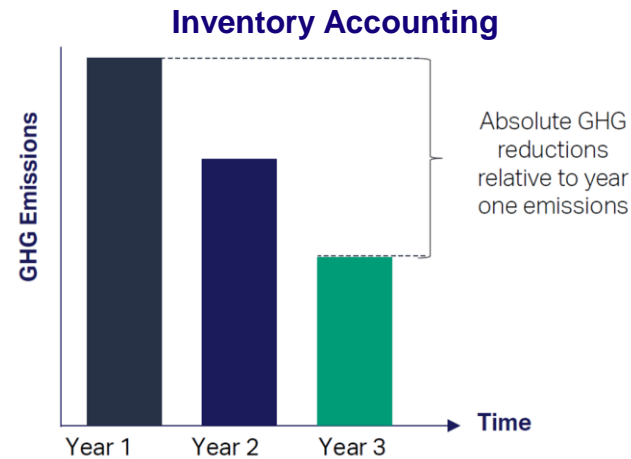
Difference between Inventory Accounting and Intervention Accounting

- The concept of GHG emissions (Scope 1, 2, 3) in inventory accounting is different from that of AE in intervention accounting.

Difference between Inventory Accounting (GHG Emissions) and Intervention Accounting (Avoided Emissions)

Category	Inventory Accounting (GHG Emissions: Scope 1, 2, 3)	Intervention Accounting (Avoided Emissions)
Scope	GHG emissions from a company's activities	GHG emissions in society
Principle	An assessment of annual absolute emissions from a company and its value chain	An assessment of the GHG impact of a solution provided by a company, compared to what would have occurred if the solution wasn't used (e.g., standard market solution)
Time	An assessment is made between two chronological points in time	An assessment is also made between two points in time, but made by comparing the solution's use to a hypothetical situation within the same time period
Reference	GHG emissions reductions are quantified against actual absolute emissions in a historical base year	Avoided emissions are quantified against a reference scenario
Certainty	The reference (historical base year) is real and accurate	The reference scenario is model-based, fictional and thus not verifiable per se
Reality	Emissions reductions compare the variation of a company's reported emissions over time	Avoided emissions compare the climate impact of a solution (what has happened or is expected to happen) and a reference scenario (what would have occurred without the solution)

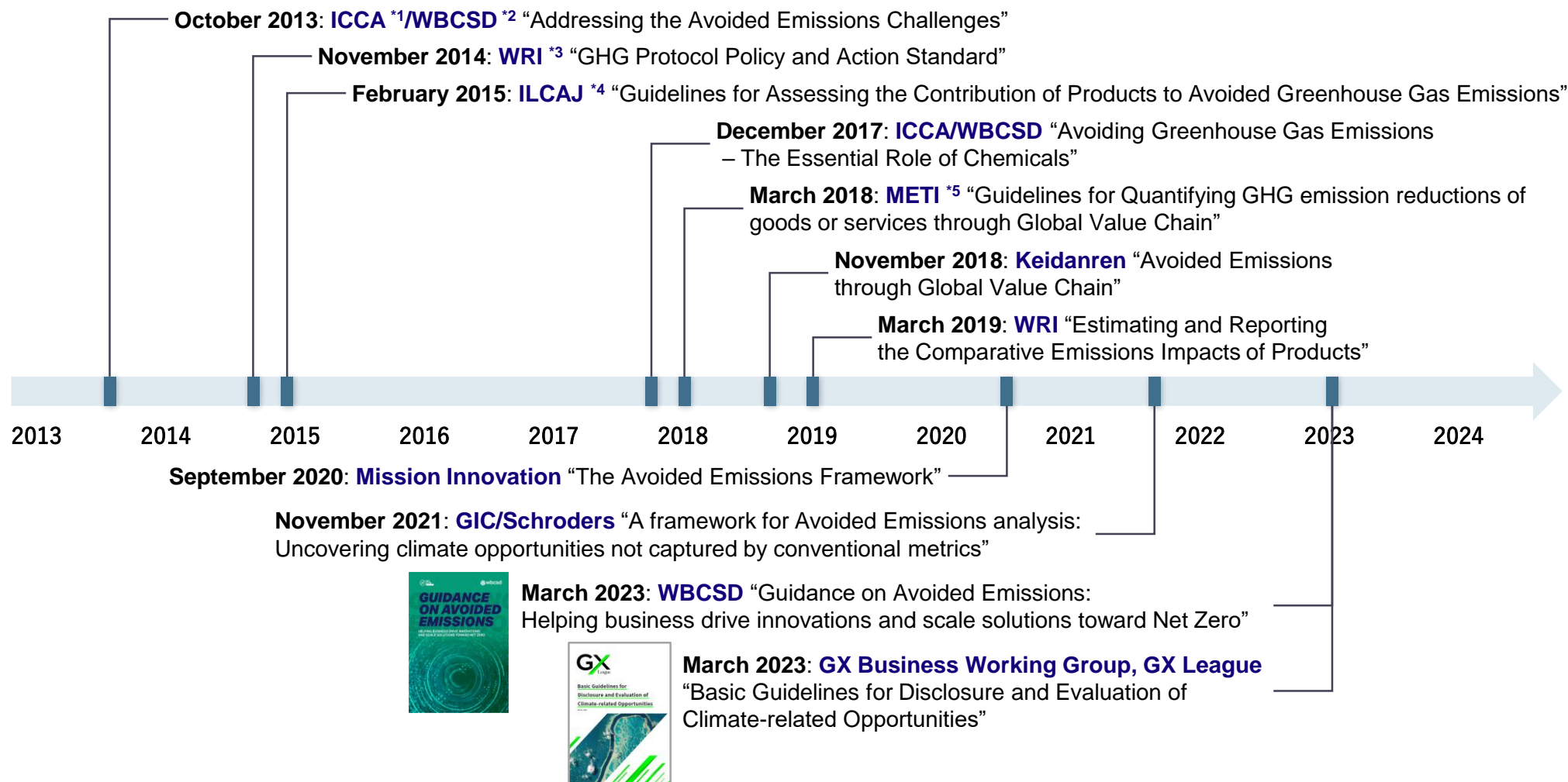
Difference between inventory and intervention



History and Guidance/Guidelines on Avoided Emissions

- Various organizations around the world have formulated and published guidance/guidelines on AE.
- Measurement and disclosure rules for AE considering industry characteristics are also being studied.

History and Guidance/Guidelines on the Avoided Emissions



- **G7 Ministers' Meeting on Climate, Energy and Environment was held from April 15 to April 16, 2023 in Sapporo City, Hokkaido, Japan, and the Communiqué mentioned "There is also value in acknowledging AE".**

2023 G7 Climate, Energy and Environment Ministers' Communiqué

51. Perspective to realize emission reduction throughout the value chain:

We stress the importance of and prioritize continuous efforts by various entities to make immediate, rapid and sustained GHG emissions reductions for themselves and throughout the value chains to keep a limit of 1.5°C temperature rise within reach. We encourage more positive climate action, including in the private sector, and encourage entities to commit to GHG net-zero emissions for themselves and throughout the value chains. We recognize the work of the United Nations high-level expert group on the Net Zero Emissions Commitment of non-state entities, including in particular for the credibility of private net zero pledges. **There is also value in acknowledging the contribution of a certain entity to emission reductions of other entities by providing decarbonization solutions in a given system, in other words "avoided emissions".** (see annex "Conclusions regarding the Industrial Decarbonisation Agenda" part B) **We note the World Business Council For Sustainable Development's first version of the guidance on avoided emissions in March as a private sector contribution to the discussion, and that a trusted mechanism may mobilize financial resources to accelerate the deployment of solutions.** We stress that claims on the environmental performance of various entities should be reliable, comparable and verifiable to empower consumers, companies and investors to accelerate efficient emission reductions and reduce the risk of inappropriate use in line with the principles decided in the conclusions of the G7 Industrial Decarbonisation Agenda (IDA).

"Conclusions regarding the Industrial Decarbonisation Agenda" Part B

Part B: Appropriate evaluation of avoided emissions towards net zero society

We stress the importance and recognize as priority continuous efforts by various entities in immediate, rapid and sustained GHG emissions reductions for themselves and throughout the value chains to keep a limit of 1.5°C temperature rise within reach. In order to encourage more positive climate action, including in the private sector, and encourage entities to commit for themselves and throughout the value chains on their path to GHG net-zero emissions, **there is also value in acknowledging the contribution of a certain entity to emission reductions of other entities by providing decarbonisation solutions in a given system, in other words "avoided emissions".**

The discussion of avoided emissions is already arising in the private sector, as a potential mechanism to facilitating innovation and scale-up investment in clean goods and services, which are key for realizing the necessary emissions reductions and achieving our climate goals, but until now there has been no widely recognized standardized method of calculation or reporting such as the GHG Protocol for the measuring of SCOPE1-3 emissions. **A shared, international standard for measuring avoided emissions is recommended to enable a common understanding and reduce the risk of inappropriate use of avoided emissions.**

(...)

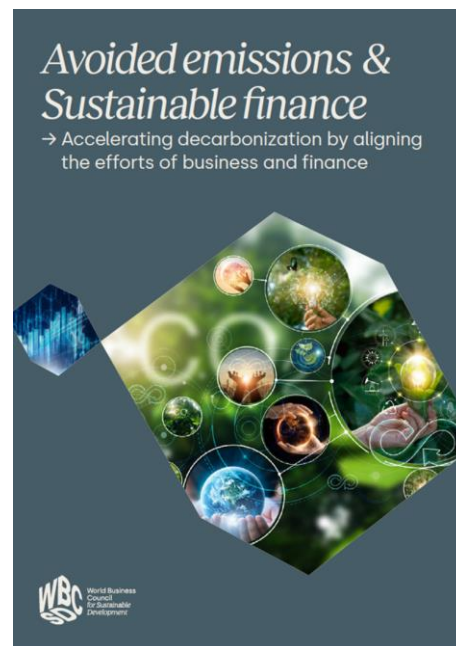
[Usage] 2. (In recognizing the potential value of avoided emissions, we acknowledge that this) is expected to be used as an additional perspective to **promote/facilitate/provide recognition of the diffusion of clean goods and services needed globally to reach net-zero. e.g.) Promoting investment from financial sectors by evaluating and unlocking the value from companies/solutions with high contribution to global emission reductions. Financial sectors can make use of this information to assess the company's climate-related opportunities and to formulate financial instruments for promoting investment.** Furthermore, it can also be used as a key metric to support decision-making within a company to prioritize and scale the deployment of solutions in markets with the greatest decarbonisation potential.

(...)

- On June 12, 2024, WBCSD released an AE insight paper “Avoided emissions & Sustainable finance”.
- It comprehensively explains finance, guidance, good practices/issues, regulations/standards related to AE.

WBCSD “Avoided emissions & Sustainable finance → Accelerating decarbonization by aligning the efforts of business and finance”

- The four purposes of this insight paper are as follows.
 - (1) Provide practical guidance and case examples how companies and financial actors can leverage avoided emissions solutions across asset classes and financial instruments
 - Private equity and venture capital
 - Public equity and bonds
 - Sustainability-linked loans
 - Green bonds and project finance
 - (2) Demonstrate the added value of avoided emissions perspectives in the context of low-carbon solution financing and wider net-zero emissions trajectories
 - (3) Discuss good practices and current challenges in avoided emissions assessments, attribution and reporting for companies and financial institutions
 - (4) Provide an overview of the current regulatory and (voluntary) standards landscape for financial actors and companies in the avoided emissions context
- Another feature of this insight paper is that global climate-related initiatives such as **GFANZ, PCAF, and the GX League are cooperating as knowledge partners.**



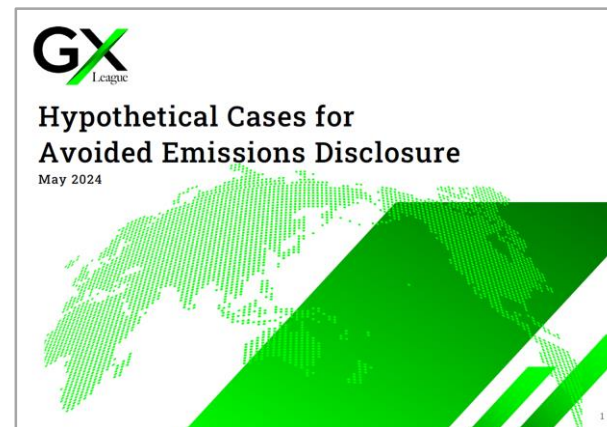
- GX Business Working Group, GX League, prepared “AE Financial Institution Case Studies” and announced it at COP28.
- In May 2024, “Hypothetical Cases for AE Disclosure” was published as a reference for business companies.

Leveraging Avoided Emissions: Financial Institution Case Studies



- The GX League prepared this case studies of financial institutions' use of avoided emissions to further disseminate avoided emissions, one of the disclosure items for assessing climate-related opportunities.
- In addition to introducing four types of examples of how avoided emissions are used by various financial institutions, such as asset owners, asset managers, and banks, in corporate and portfolio evaluations, the case studies also include interviews with financial institutions on the background of their use.
- GX League held discussions with the WBCSD, which published the Guidance on Avoided Emissions in March 2023, to disseminate avoided emissions globally.

Hypothetical Cases for Avoided Emissions Disclosure



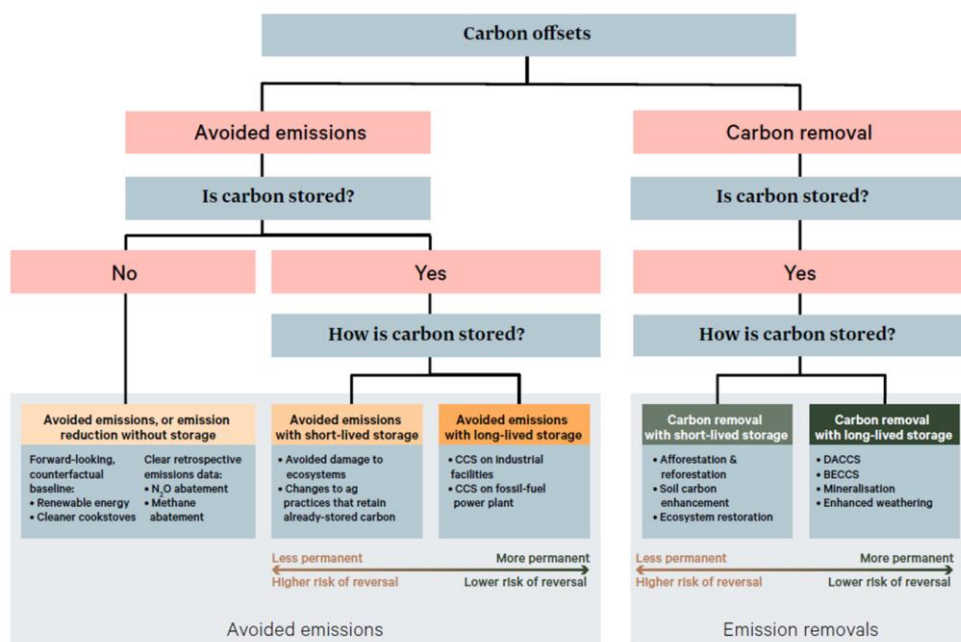
- In order to further promote the disclosure of avoided emissions, the GX League collected and created hypothetical cases for avoided emissions disclosure, referring to their actual disclosure by business companies.
- This hypothetical cases explain the key points when companies measure and disclose avoided emissions in accordance with the Basic Guidelines for Disclosure and Evaluation of Climate-related Opportunities, and is positioned as a supplementary document to the Basic Guidelines.

[Global initiatives/Standard-setting bodies] Utilization of Avoided Emissions in the PCAF and GFANZ

- PCAF Standard Part A allows financial institutions to disclose Financed AE only for renewable energy projects.
- GFANZ exemplifies AE as one of the metrics to measure the future GHG reduction impact of climate solutions.

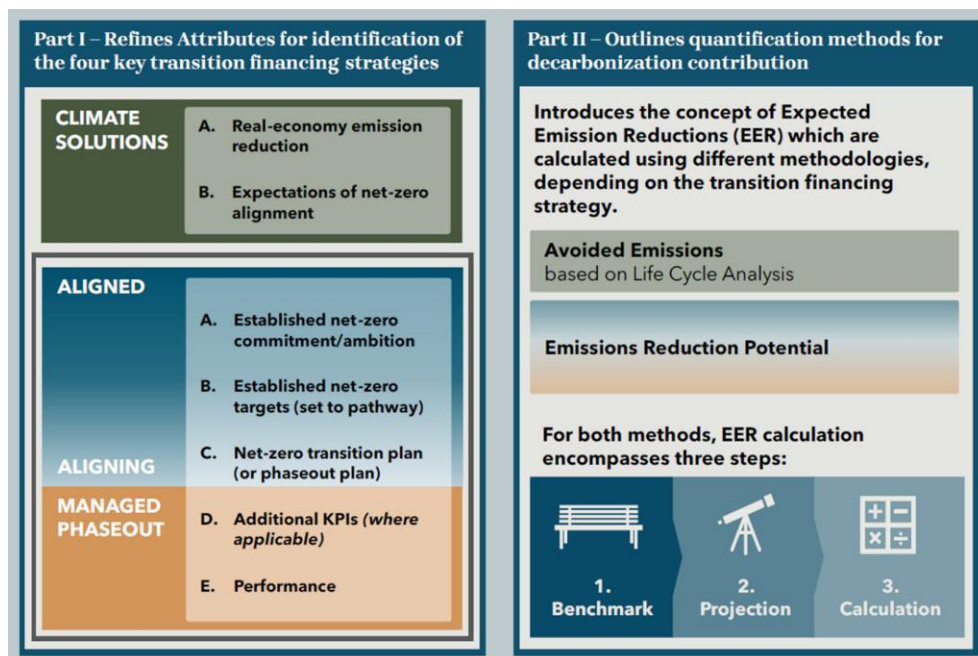
Utilization of Avoided Emissions in the PCAF

- PCAF (Partnership for Carbon Accounting Financials) is a global partnership of financial institutions that aims to develop a standardized for measuring and disclosing GHG emissions related to financial institutions' investments and loans (Scope 3 Category 15 Financed Emissions).
- PCAF Standard Part A allows financial institutions to measure and disclose Financed Avoided Emissions only for renewable energy projects.
- Financial institutions must disclose Financed Avoided Emissions separately from the GHG inventory (Scope 1, 2, 3).



Utilization of Avoided Emissions in the GFANZ

- GFANZ (Glasgow Financial Alliance for Net Zero) is an international coalition of net zero alliances and initiatives in each financial sector.
- As a decarbonization contribution of transition finance, GFANZ provides the example of avoided emissions as one of the forward-looking metrics to measure the Expected Emission Reductions (EER) of climate solutions which are the key transition financing strategy.



- Government Pension Investment Fund (GPIF) utilizes AE for analysis and impact assessment of investee companies.
- Norges Bank Investment Management (NBIM) refers to the analysis of AE in the expectations for investee companies.

Government Pension Investment Fund (GPIF)

- GPIF, one of the world's largest asset owners, conducted its first analysis of avoided emissions in the "2020 ESG Report" published in August 2021. This is an "Analysis of Inter-Industry Transfer of Transition Risks and Opportunities", performed by Astamuse, using data on industry-level required GHG reductions, expected avoided emissions of individual decarbonization technologies, and projections for the rate at which they will be implemented in society.
- In the "2022 ESG Report" released in August 2023, GPIF conducted a "Analysis of Avoided Emissions Based on the Bottom-up Approach" in cooperation with ICE (Intercontinental Exchange Group). GPIF focused on two products and services where the methodology is easily understandable and companies disclose the information necessary to calculate avoided emissions: "zero emission vehicles" and "utilities (renewable energy)".*1
- The GPIF's "2023 ESG Report" released in August 2024 analyzed avoided emissions from the domestic renewable energy facilities in its infrastructure portfolio and verified avoided emissions and greenium (green premium) impact in Euro-denominated bonds.

Norges Bank Investment Management (NBIM)

- NBIM, which manages the Norwegian Government Pension Fund, published its latest "Climate change: Expectations of companies" in September 2023, highlighting the need for companies to move from setting targets to developing transition plans.
- In the avoided emissions and lifecycle analysis of the foundations of corporate climate strategy, expectations were expressed that "To demonstrate the emissions benefits of their products or services, **companies are encouraged to use lifecycle emissions and avoided emissions analysis.** Such disclosures should be made in addition to Greenhouse Gas Protocol reporting. The major assumptions underpinning the calculations should be disclosed."
- On the other hand, in the decarbonisation strategy of transition plans, it is stated that "Companies should implement and disclose time-bound and quantified decarbonisation strategies. Details should include specific abatement measures needed to reach their interim emission reduction targets, including internal abatement measures, divestments, output changes, carbon credits and contractual instruments such as RECs (Renewable Energy Certificates). Avoided emissions should not be included in a decarbonisation strategy." and it is recommended that avoided emissions should not be used for the decarbonisation strategy (reduction plan of GHG emissions).

*1: In the report "ICE Avoided Emissions ~ Analysis of GPIF Portfolio ~", which was analyzed by ICE for the preparation of the ESG Report 2022, "mined minerals" was also analyzed in addition to "zero emission vehicles" and "utilities".

Sources: GPIF (2021, 2023, 2024). 2020 ESG Report., 2022 ESG Report., 2023 ESG Report., NBIM (2023). Climate change: Expectations of companies.

- In May 2023, European investors called for the establishment of a global database of AE.
- Announced in January 2024 that I Care and Quantis were selected to build a database of AE factors.

Announcement of Developing Avoided Emissions Global Database

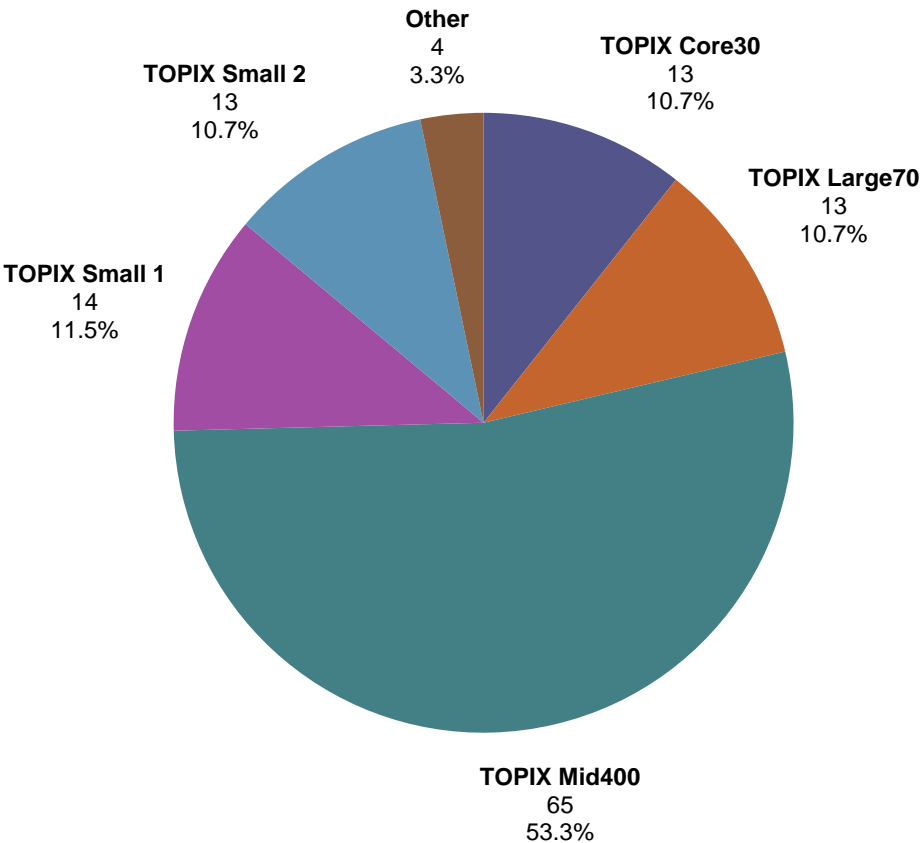
- While the data currently shared by companies on their direct GHG emissions and estimated indirect emissions (scope 2, scope 3) is based on solid methodological foundations, other metrics are needed to identify their respective contributions and to be able to compare solutions.
- The creation of a standard for a global database of emission avoidance **factors** is therefore a major step forward for many economic players. For the financial sector, this initiative will generate estimates of the emissions avoided by the activities financed, making them transparent and comparable. When such estimates are implemented in a standardized way across a wide range of solutions, they will enable investment to be channeled towards the solutions with the greatest potential for decarbonization, depending on where they are located.
- The database built by I Care by Bearing Point and Quantis will initially cover 80 specifically defined low-carbon solutions (examples: biomass energy, recycled plastic, low-carbon concrete, etc.). The geographical differentiation of the reference scenarios taken into consideration for each solution and the various links in the value chains of these solutions will result in the creation of ca. 9,600 distinct avoidance factors during this first phase, which will end in Q4 2024.
- Each emission factor will contain details of the assumptions made, in particular: functional unit used, carbon footprint of the solution, reference scenario used, lifespan of the solution, time value of carbon, and rebound effect. For all these parameters, precisely sourced default values will be provided and updated on an annual basis. The scope of the database will also be gradually extended to include many other low-carbon or green enabling solutions. The development of the database and the choice of methodologies will be overseen by a scientific committee comprising the main organizations behind the current standards for avoided emissions.
- Development of the database will commence in January 2024 and a first version will be made available to all stakeholders with a requirement to calculate avoided emissions in Q4.

【Companies】Disclosure of Avoided Emissions by Japanese Companies (FY2023) (1/2)

- Mizuho researched mainly TOPIX 500 *1 Japanese companies on AE disclosed in integrated reports, etc. in FY 2023 *2.
- 91 companies of TOPIX500 and 31 companies of non-TOPIX500 disclosed AE, and the number is increasing.

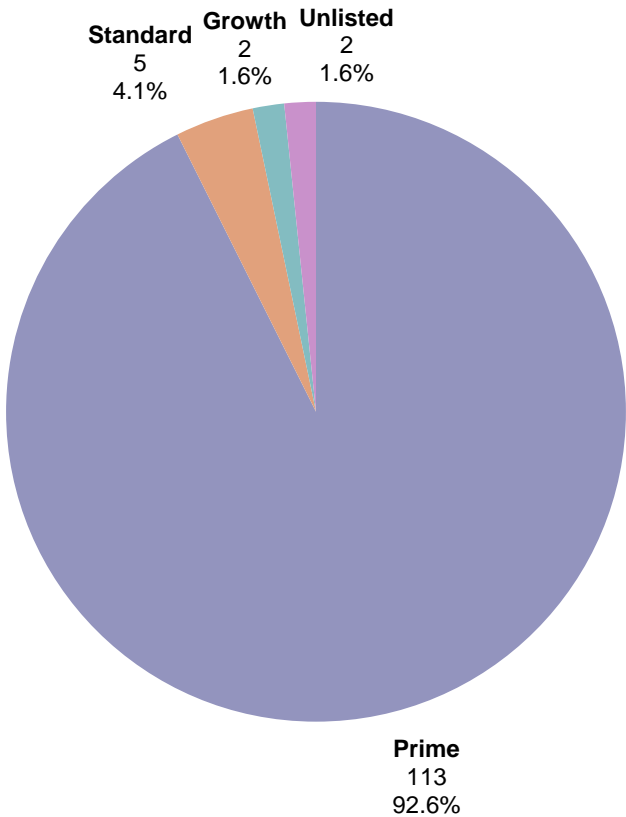
Number of Companies Disclosing AE (Company Size/FY2023)

(N = 122 Japanese companies disclosing avoided emissions
= 91 companies of TOPIX500 + 31 companies of non-TOPIX500)



Number of Companies Disclosing AE (Listed Market/FY2023)

(N = 122 Japanese companies disclosing avoided emissions
= 91 companies of TOPIX500 + 31 companies of non-TOPIX500)



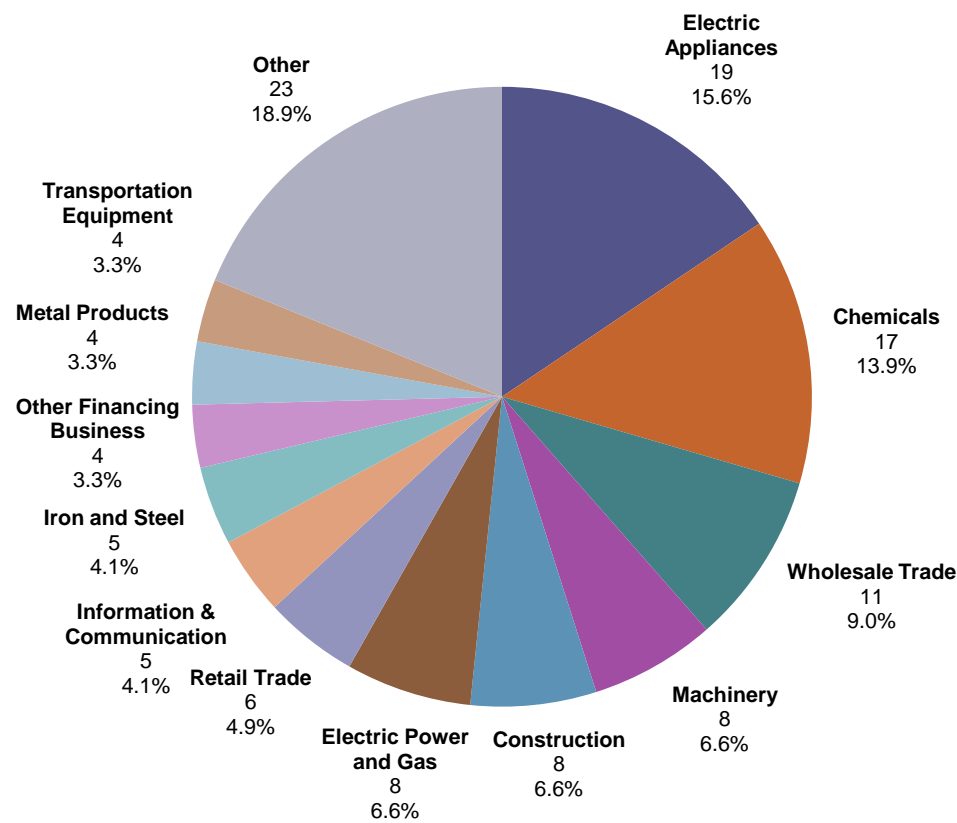
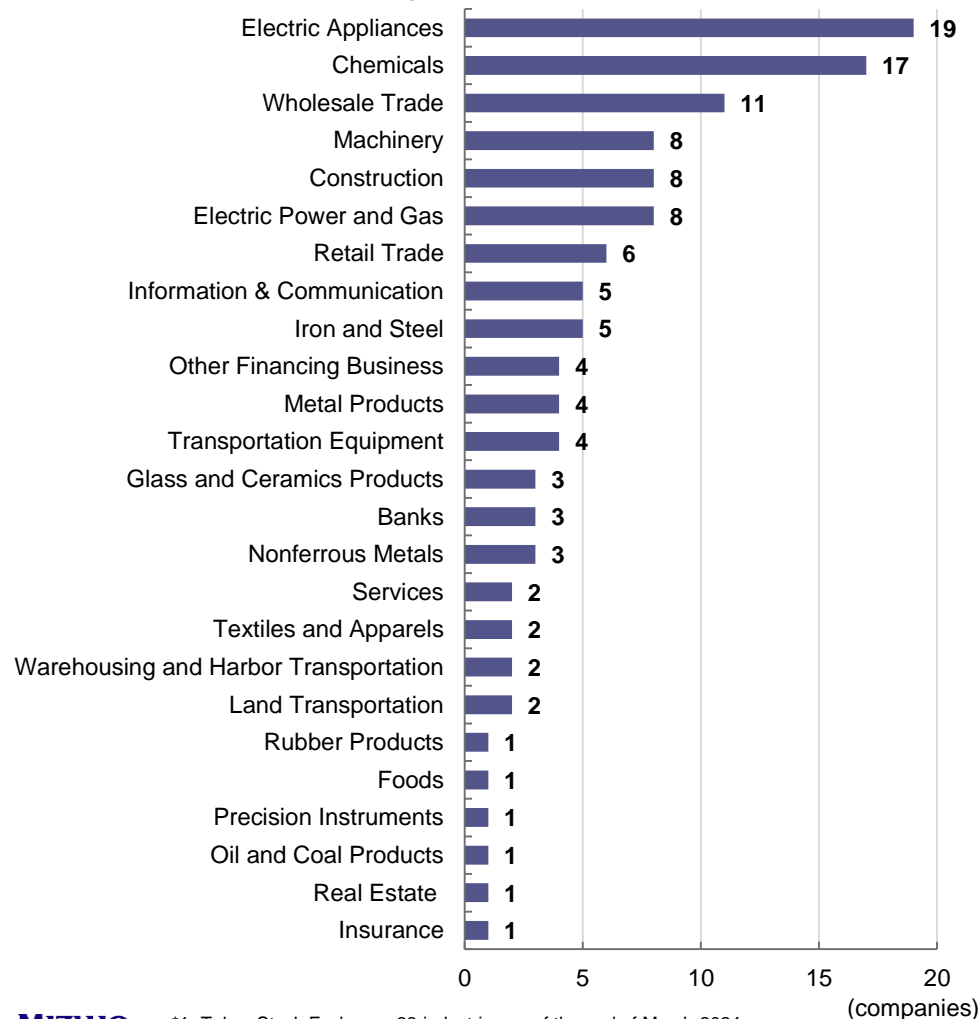
*1: TOPIX500 stocks, size categories, and listed markets as of the end of March 2024.
*2: Avoided emissions disclosed from April 2023 to March 2024.
Sources: Each company's disclosure.

【Companies】Disclosure of Avoided Emissions by Japanese Companies (FY2023) (2/2)

- Among TSE 33 industries ^{*1}, Electrical Appliances accounted for the largest share, with 19 companies disclosing AE.
- Chemicals came in second with 17 companies, and Wholesale Trade came in third with 11 companies.

Number of Companies Disclosing Avoided Emissions (TSE 33 Industries/FY2023)

(N = 122 Japanese companies disclosing avoided emissions = 91 companies of TOPIX500 + 31 companies of non-TOPIX500)

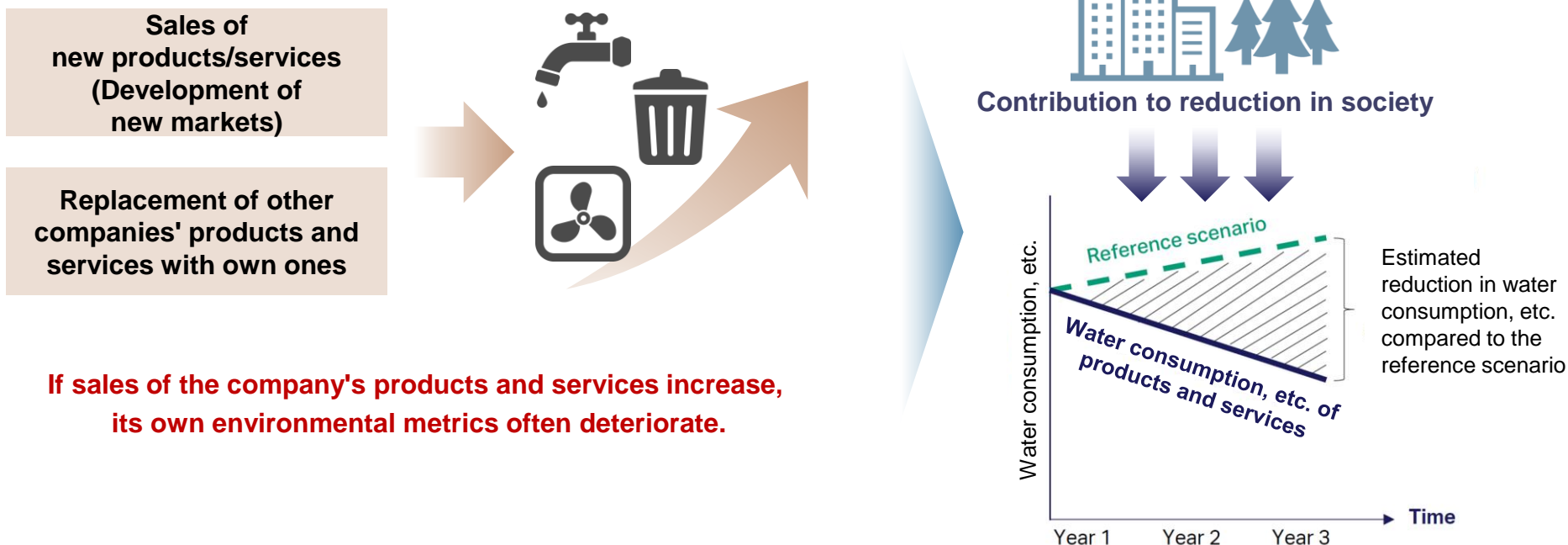


[Companies] Avoided Metrics Extending from GHG Emissions to Areas such as Water, Waste, and Pollutants

- As corporate production/sales increase, other environmental metrics, as well as GHG emissions, tend to deteriorate.
- Some companies have begun to disclose metrics similar to avoided emissions for water, waste, and pollutants.

Avoided Metrics (similar to Avoided Emissions) for Water, Waste, and Pollutants etc.

- Examples of avoided metrics for water, waste, and pollutants are shown below.
 - **Water:** Contribution to the reduction of water consumption in society by avoiding water consumption through the use of its products and services
 - **Waste:** Contribution to the reduction of waste in society by avoiding waste through the use of its products and services
 - **Pollutants such as PM2.5:** Contribution to the reduction of pollutants in society by avoiding pollutants through the use of its products and services
- In the case of environmental metrics, it is basically possible to consider avoided metrics using the concept of intervention accounting in the same way as GHG emissions.



If sales of the company's products and services increase, its own environmental metrics often deteriorate.

【Mizuho Bank】 Sustainability-linked Loans with Avoided Emissions Set as SPTs

- Mizuho Bank has served as the arranger for sustainability-linked loans (SLL) which set AE as the sustainability performance target (SPT).

Sustainability-linked Loans whose SPT is Avoided Emissions for which Mizuho Bank Served as Arranger

- An SLL is a loan designed to motivate a borrower to meet ambitious SPTs based on the borrower's Key Performance Indicators (KPI) and to link the loan's terms and conditions to the borrower's achievement of these SPTs.
- By forming SLL in which avoided emissions are set as the SPT by Mizuho Bank, it is possible to create positive impact and promote transition to achieve the SPT.

Example of SLL Setting Avoided Emissions as SPT for which Mizuho Bank Served as Arranger

Borrower	Time of loan execution	Loan term	Loan amount	SPTs related to avoided emissions
Tokyo Century Corporation	September 2021	5 years	JPY 22.5 billion	<ul style="list-style-type: none"> ● Achieve the annual power generation and CO2 avoided emission targets of Kyocera TCL Solar LLC's solar power generation business ● Achieve the assumed GHG avoided emission (cumulative) target of the Joint Crediting Mechanism (JCM)
	March 2022	3 years and 9 months	JPY 55.2 billion	<ul style="list-style-type: none"> ● Achieve the cumulative GHG avoided emission target of 49,000 tons under the JCM by the end of December 2023
Fuyo General Lease Co., Ltd.	September 2023	—	JPY 30.0 billion	<ul style="list-style-type: none"> ● CO2 avoided emissions: 500,000 t-CO2/year in FY2026 Result: FY2019 85,000 t-CO2, FY2020 147,000 t-CO2, FY2021 153,000 t-CO2, FY2022 220,000 t-CO2

[Mizuho Securities] Sustainable Bonds with Avoided Emissions as Reporting Metric

- Mizuho Securities supports issuers' efforts to reduce GHG emissions through their businesses and appeals for their contributions by structuring sustainable finance using AE as a reporting metric.

Nippon Steel Green Bond

Issue Date	March 2023
Issue Amount	JPY 50 billion
Coupon/Tenor	0.564%/5 years, 1.150%/10 years
External Reviewer	R&I (Rating and Investment Information, Inc.)

- Nippon Steel identified their efforts concerning climate change as the company's greatest priority issue and announced Nippon Steel's Carbon Neutral Vision 2050. Nippon Steel provided two values: "Reducing CO2 emissions in society (NSCarbolex® Solution)" and "Reducing CO2 emissions in the steelmaking processes (NSCarbolex® Neutral)."
- Nippon Steel issued their first green bond to be used funds for production facilities of non-oriented electrical steel sheets for eco-friendly car motors, which fall under the NSCarbolex® Solution.
- The company disclosed the amount of avoided emissions calculated based on the CO2 reduction effect per eco-car for environmental benefits.

Impact Reporting (September 2023)

CO2 emissions reduction = The number of eco-friendly cars produced ^{*1} ×
The effect of reducing CO2 emissions per eco-friendly car

CO2 emissions reduction (theoretical value)	Approximately 3.0 million t-CO2/year
--	--------------------------------------

Kawasaki Heavy Industries Transition Bond

Issue Date	February 2024
Issue Amount	JPY 10 billion
Coupon/Tenor	0.742%/5 years
External Reviewer	JCR (Japan Credit Rating Agency, Ltd.)

- Kawasaki Heavy Industries has set sustainable finance targets ^{*2} and established the world's first master framework for all types of sustainable finance ^{*3} in November 2023 to promote sustainability management initiatives toward the realization of the Group Vision 2030.
- Kawasaki Heavy Industries issued a transition bond in February 2024 to finance projects related to the transportation and storage of liquefied hydrogen carriers and liquefied hydrogen storage tanks, as well as for the use of energy such as hydrogen gas turbines for power generation.
- The company disclosed the amount of avoided emissions by the realization of a hydrogen society through the establishment of a clean hydrogen supply chain (hydrogen transportation, storage, and use) for environmental benefits.

Impact Reporting ^{*4} (July 2024)

Reduction in CO2 emissions by using clean hydrogen (225,000 tons/year)
transported through the establishment of a clean hydrogen supply chain

CO2 emissions reduction (theoretical value)	Approximately 1.6 million t-CO2/year
--	--------------------------------------

^{*1}: Calculated from the estimated total shipment volume of non-oriented electrical steel sheets for eco-friendly car motors.

^{*2}: Ratio of sustainable finance to long-term interest-bearing debt (long-term debt and corporate bonds): 50% by 2030 and 100% by 2050.

^{*3}: Green, Transition, Transition Linked, Blue, Social, Sustainability Linked.

^{*4}: Reporting of the impact of projects related to "Clean Hydrogen Supply Chain Construction" common to the 58th Series (Sustainability Bond, July 2021), 59th Series (Green Bond, July 2022), and 60th Series (Transition Bond, February 2024).

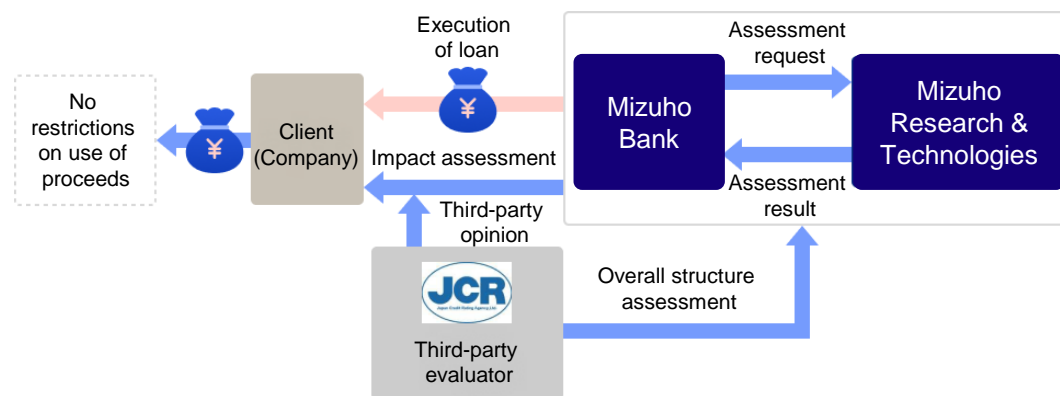
Sources: Nippon Steel Green Bond Framework, Nippon Steel Corporation: 7th and 8th Unsecured Corporate Bond (Green Bond) Reporting, Kawasaki Heavy Industries Master Framework, Press Release.

- **AE is used as the KPI of Mizuho Positive Impact Finance, a joint financing scheme by Mizuho Bank and Mizuho Research & Technologies.**

Mizuho Positive Impact Finance which Sets Avoided Emissions as KPI

- Positive impact finance involves financial institutions conducting a comprehensive analysis and evaluation of "Environmental, social and economic impacts of corporate activities (positive and negative impacts)" based on the Principles for Positive Impact Finance established by the United Nations Environment Programme Finance Initiative (UNEP FI) and procedures consistent with the UNEP FI implementation guidelines, and financial institutions provide loans with the aim of continuing support for the activities.
- Financial institutions prepare a framework for impact analysis and evaluation, and monitor the impact after implementation.
- Mizuho Positive Impact Finance uses an evaluation framework developed independently by Mizuho Research & Technologies, which has extensive knowledge of sustainability, to identify the state of a company's sustainability management system and the impact that the company will bring, and to evaluate KPI and target setting. After implementation, KPI progress will be assessed annually and recommendations will be made to improve impact.
- Examples of Mizuho Positive Impact Finance, in which Mizuho Bank acts as an arranger and sets avoided emissions as a KPI, are shown below.
 - **Syndicated loan for Fuyo General Lease Co., Ltd.:**
Executed in December 2022, the KPI is CO2 avoided emissions, and the target is CO2 avoided emissions of 500,000 t-CO2/year in FY2026.
 - **Syndicated loan for Tokyo Century Corporation:**
Executed in March 2023, loan amount is JPY 108.6 billion, the KPI is estimated GHG avoided emissions (cumulative) under the Joint Crediting Mechanism (JCM), and the target is estimated GHG avoided emissions (cumulative) of 56,000 t-CO2 in FY2025.

Mizuho Positive Impact Finance Scheme

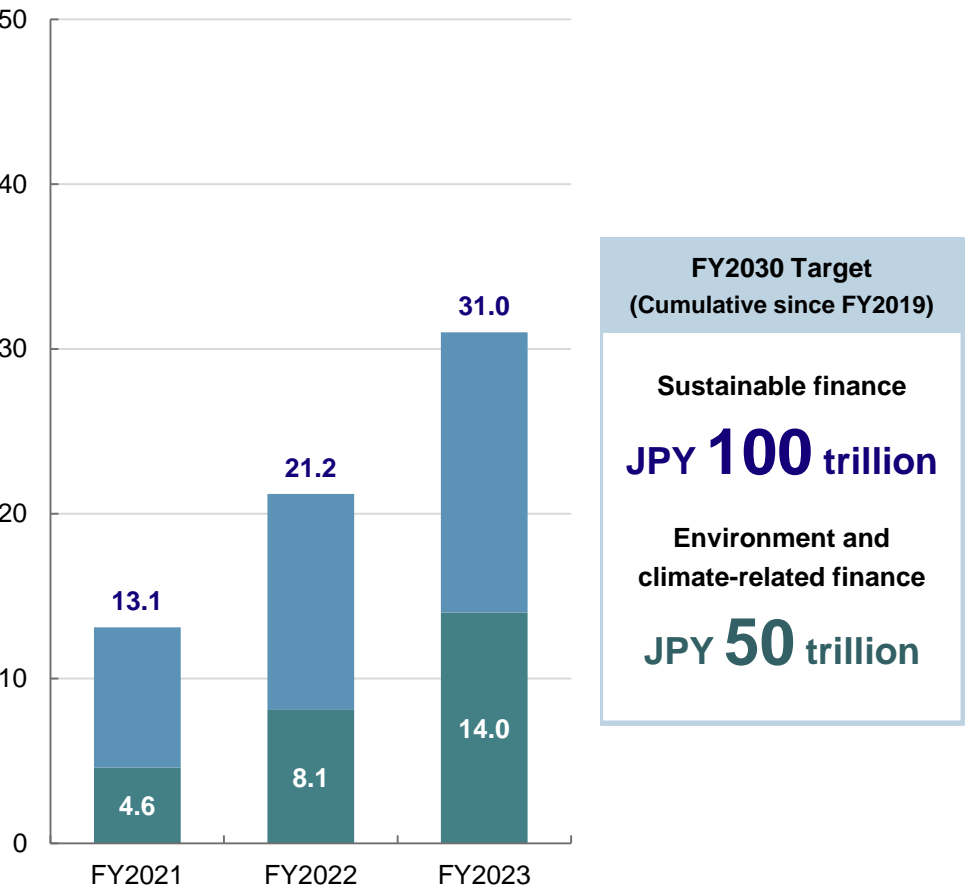


Mizuho's Sustainable Finance Targets and Results

- Mizuho has set a sustainable finance target of JPY 100 trillion, of which JPY 50 trillion is earmarked for environment and climate-related finance, recognizing our important role is to respond to the enormous financing needs of climate change.

Sustainable Finance Results

(Amount of sustainable finance: JPY in trillions, cumulative since FY2019)



■ Total amount of environment and climate-related finance

League Table

Global



Sustainable finance (loans)

(April 2023 to March 2024)

Japan



Publicly offered SDGs bonds

(April 2019 to March 2024)

Disclaimer

This material is prepared for discussion purpose only. The conditions described in this material are made based on the assumption, and Mizuho Financial Group does not guarantee the certainty and completeness of the information. The analysis in this material is made based on the assumption and Mizuho Financial Group does not declare the certainty of the results.

According to the information provided your company in the future, rating agency's opinions, changes to the rules and financial environment etc. Mizuho Financial Group may significantly change the process and scheme of the product. In such cases, please understand that your company may not get the effect as analysed in this material. Moreover, this material does not explain your company's risks exhaustively.

Please fully understand risks of the scheme described in this material and conclude an agreement at your own direction. Please undertake sufficient consultation with a lawyer with respect to the legal treatment, with an accountant with respect to the accounting treatment and with a tax accountant with respect to the tax treatment.