# Guidance on Climate-related Financial Disclosures 2.0

## (TCFD Guidance 2.0) Case Examples

July 2020

TCFD Consortium

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# B. Examples of Disclosure Based on TCFD Recommendations

## (1) Governance

Examples of how climate change is addressed in an organization's governance structure include the following:

(See TCFD Guidance P.29)

### i) Include climate change on board agenda

#### RWE

It states that the Board of Directors (The Executive Board) is involved in the management process of climate change-related financial risks and opportunities.

> The Executive Board engages with the financial risks and opportunities associated with climate change in the control processes. This also includes the review of other risk mitigation options, for example through portfolio adjustments. However, the quantified results are not disclosed for competitive reasons.

Source: RWE "Our responsibility 2019" P.34

#### Equinor

The following points are described in the Sustainability Report.

- The Executive Board (CEC) and the Board of Directors (BoD) review and monitor sustainability issues, including climate change risks and opportunities.
- The Safety, Sustainability and Ethics Committee (BoD SSEC) under the Board of Directors assists the Board in overseeing its sustainability policies.
- Establishment of KPI on sustainability including climate change and its achievement are incorporated into the CEO compensation structure.

# Embedding sustainability in how we work

## Our management approach: Sustainability governance and performance framework

At Equinor, our approach to sustainability is embedded in how we work. This includes our corporate governance principles, performance and reward framework and management system.

### Governance

The Equinor ASA board of directors (BoD) and corporate executive committee regularly review, monitor and discuss sustainability issues. This includes climate-related business risks and opportunities, and sustainability aspects of investment decisions.

The BoD members are elected by the shareholders. In addition, there are employee-elected representatives as required by Norwegian law.

The BoD safety, sustainability and ethics committee assists the BoD in its supervision of the company's safety, security, sustainability and ethics policies, systems and principles. This includes quarterly reviews of risk issues and performance and an annual review of the sustainability report.

The company has a separate corporate risk committee chaired by the chief financial officer. The committee meets at least three times per year to give advice and make recommendations on Equinor's enterprise risk management, including climate-related risks.

Group level functions responsible for sustainability-related issues include safety and security, sustainability, people and leadership and legal. The heads of these functions at group level are responsible for setting strategic direction and reporting on risk and performance within these topics to the corporate executive committee and the BoD, including relevant committees.

The corporate sustainability function is responsible for overseeing climate change (including climate-related risk), environment, human rights and social issues. The corporate safety function is responsible for safety, health, work environment and security. The chief compliance officer is responsible for business ethics and compliance.

The business line is accountable for executing the company's sustainability ambitions and for managing relevant risks and performance. Dedicated safety, security and sustainability staff in the business line is part of company-wide functional networks and provides advice and support to the business line.

### Performance and reward framework

Management of sustainability performance is integrated in strategy, business planning, risk management, decision-making and management follow-up processes. Our performance framework translates our vision, values and strategy into actions and results. We measure progress and results in a holistic way, using key performance indicators when relevant.

Safety, security and sustainability management is an integrated part of our management system, which includes our policies, requirements and guidelines for all material topics. Together with our corporate governance principles and performance framework, this forms the basis for how we are embedding these topics in our business activities. The principles and framework are described in the Equinor book, which is approved by the CEO.

At Equinor climate and sustainability is embedded into our performance and reward framework. The performance evaluation of the CEO and his direct reports is holistic and assessed and rewarded against, among others, both ambitious climate targets (KPIs) and results, and their ability as leaders to be role models for sustainable development and the transition into new energy sources. Equinor's broader leadership is in the same way assessed and rewarded based on a number of goals including climate and sustainability. Within safety, serious incident frequency (SIF), total recordable injury frequency and oil/gas leakages are key performance indicators which are used to measure performance. Finally, the annual bonus for employees is based on a holistic assessment of company performance which includes, among other areas, $CO_2$ intensity and execution of climate strategies. A comprehensive set of performance indicators and monitoring reports are made available to all employees in our Management Information System (MIS).

Source: Equinor "2019 Sustainability Report" P. 12

## MTR

The Corporate Responsibility Committee, chaired by the CEO and composed of board members, meets twice a year to provide strategic guidance and review, including climate change issues. In addition, the number of meetings of the Board of Directors and the attendance of the Chairman are disclosed with reference to the Corporate Governance Report, etc.

# CLIMATE CHANGE

MTR recognises climate change as highly material with the potential to affect our operations and services. Our foresight study identified system resilience for climate change as one of the key strategic trends which poses risks and provides opportunities for us in the short, medium and long term.

## Climate-related Financial Disclosures

We structured our climate-related financial disclosures in four core areas: governance, strategy, risk management, and metrics and targets.

### Governance

Our board-level Corporate Responsibility Committee, led by the Chairman of the Corporation, meets twice a year to provide strategic guidance and review our corporate responsibility practices and performance, including matters related to climate change. The CoR Committee reports to the Board of Directors on these issues. The responsibilities of the CoR Committee and details on the work performed during the year can be found in the **Corporate Governance Report** of the Annual Report.

The Executive Committee, led by the Chief Executive Officer, is tasked with the day-to-day management of the Corporation. The Corporate Responsibility Steering Committee (CoRSC), chaired by the Corporate Affairs Director, meets three times a year with a focus on driving and reviewing the implementation of sustainability initiatives across all MTR divisions. Members of the CoRSC include a few other members of the Executive Directorate and colleagues representing MTR's major business units.

Source: MTR "Sustainability Report 2019" P.29

## ii) State that climate change is on the agenda of dedicated committees

### Kao Corporation

ESG Committee is established under the Board of Directors to discuss and determine the direction of ESG strategy activities. The ESG Committee is responsible for managing opportunities related to climate change issues, while the Internal Control Committee is responsible for risk management under the supervision of the Board of Directors.

It states that the ESG Committee meets four times a year and the Internal Control Committee meets at least once a year.

**Framework**

Risk management in relation to climate change issues is carried out by the Internal Control Committee and opportunity management is carried out by the ESG Committee, under the supervision of the Board of Directors. These committees are headed by the President and CEO.

The Responsible Care Promotion Committee, which manages policy/regulatory regime and technology risks, and the Risk and Crisis Management Committee, which manages market, reputational and acute risks, are under the Internal Control Committee. These committees are headed by the executive officer in charge of the Corporate Strategy.

The Responsible Care Department of Corporate Strategy Division acts as the Responsible Care Promotion Committee Secretariat while the Crisis Management Department of Corporate Strategy Division acts as the Risk and Crisis Management Committee Secretariat.

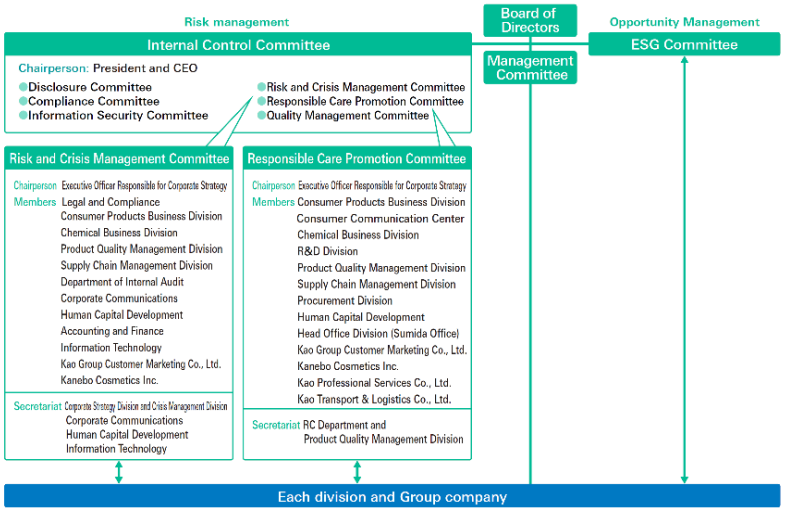
The Responsible Care Promotion Committee meets twice a year to report on and discuss compliance with laws and regulations, status of $CO_2$ reduction and other matters. It also sets targets for the following year. The Responsible Care Promotion Committee conducts monthly checks on compliance with laws and regulations, monitors $CO_2$ emission and water use, mainly at plants which have a large impact, and keeps abreast of the amount of chemical substances in wastewater, reporting on these and other matters to the head of the committee, committee members, members of the Internal Control Committee, auditors and others. The Risk and Crisis Management Committee which manages natural disaster including caused by climate change and reputational risks, meets four times a year.

The Internal Control Committee meets one or more times a year, receiving activity reports from the Responsible Care Promotion Committee and the Risk and Crisis Management Committee which it oversees and auditing the activities of the two committees.

Opportunity management relating to climate change issues is handled by the ESG Committee, which meets four times a year. Committee members are the persons in charge of the business, sales, R&D, SCM and other divisions, an arrangement which connects divisions horizontally. The Internal Control Committee, and the ESG Committee which it supervises, discuss climate change and environmental issues as well as social and governance issues.

The committee reports on its activities to the Board of Directors one or more times a year and is audited by the Board of Directors.

Decarbonization promotion structure




* As of December 2019.

Source: Kao Corporation "Kao Sustainability Databook 2020" P. 86

**Roles, structure and frequency of meeting of each organization**

| Organization | Roles | Structure | Frequency of meeting | Main deliberated items (2019) |
|---|---|---|---|---|
| ESG Committee | • Develop policy and strategy for Kao's ESG activities.<br>• Gain an understanding of the issues, risks and opportunities for sustainability of Kao and society and ESG.<br>• Deliberate and decide on matters raised in the ESG Promotion Meeting.<br>• Confirm the status of company-wide ESG activity implementation and take action accordingly. | Committee chairperson: President & CEO;<br>Members: Senior managing executive officers, managing executive officers, other executives | Four times/ year | • Establish the ESG Strategy and mid- to long-term targets.<br>• Establish the External Advisory Board.<br>• Select and approve focused actions.<br>• Internal communication plan.<br>• Create new systems to drive ESG. |
| ESG External Advisory Board | • Give advice and recommendations to the ESG Committee from outside viewpoints.<br>• Provide information to the ESG Committee to enable development and implementation of world-class plans.<br>• Provide opportunities for collaboration and cooperation with external parties. | Members: External influential experts<br>• Lisa MacCallum: Founder of Inspired Companies, specialist in business reforms<br>• Rika Sueyoshi: CEO, Ethical Association, specialist in ethical consumption | Once/year | • Implement the Kirei Lifestyle Plan internally.<br>• Ways Kao can support ethical consumption by consumers. |
| ESG Promotion Meeting | • Promote implementation of the ESG Strategy based on the direction decided by the ESG Committee and its directives and suggestions.<br>• Confirm the status of ESG activity implementation by divisions and take action accordingly.<br>• Establish task forces as necessary to implement focus themes. | Chair: Person responsible for the ESG Division;<br>Members: Responsible persons at business divisions, regions, functional divisions and corporate divisions | 8–12 times/ year | • Establish mid- to long-term targets for the Kirei Lifestyle Plan.<br>• Select focused action candidates.<br>• ESG-driven *Yoki-Monazukuri* system design.<br>• Confirm the progress of Kao Actions and future plans. |
| ESG Task Force | • Establish for individual focus themes when a cross-functional structure is needed. Propose activities based on the detailed plan developed by the ESG Promotion Meeting. | Members: Staff of the division relevant to the focus themes | As necessary | Set the agenda of issues and create plans to address them. |

Source: Kao Corporation "Kao Sustainability Databook 2020" P. 15

## National Grid

It states that the Audit Committee reviews and approves the content of the TCFD disclosures under the governance framework with respect to climate change.

> The **Audit Committee** remains responsible for reviewing and approving the content of our TCFD disclosures and is taking an increasingly active role in overseeing disclosures around metrics and targets. The Committee considered papers in September 2019, November 2019, March 2020 and May 2020 summarising the financial reporting and disclosure considerations in respect of climate change.

Source: National Grid "Annual Report and Accounts 2019/20" P.58

## Solvay

The Executive Committee appoints Climate Risks Officer (CRO) to ensure that climate-related issues are adequately considered in the Group's strategy and operations.

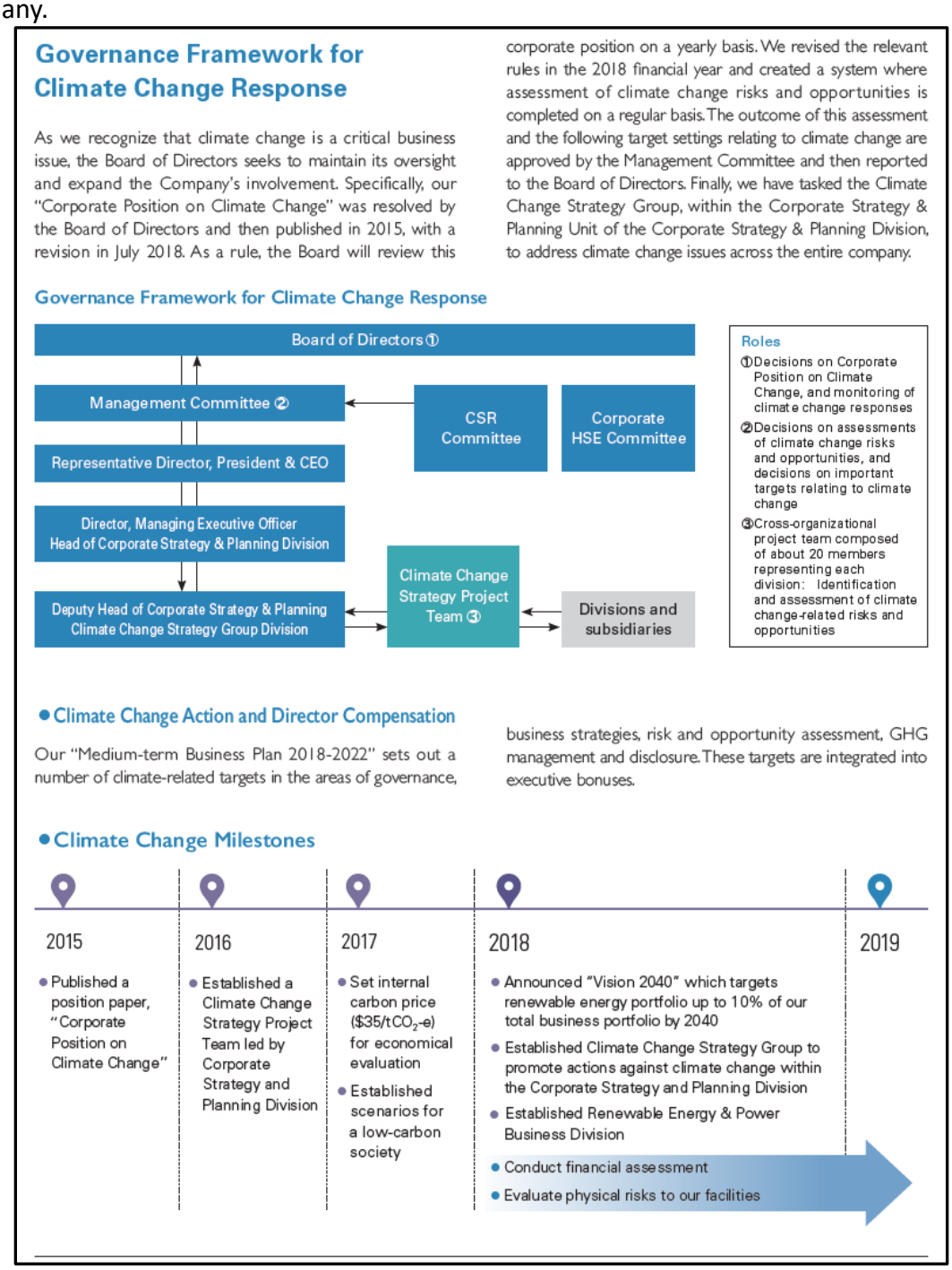
> **Governance**
>
> ⊕ The **Charter of Corporate Governance** describes how the Board of Directors manages sustainability-related aspects and is available on the Solvay Website. The Board thus devotes at least one meeting per year to an update on trends in global sustainable development issues, including climate change risks and opportunities;
>
> ⊕ A Climate Risks Officer has been appointed at Executive Committee level. He is in charge of ensuring that climate-related aspects are adequately considered in the Group's strategy and operations.

Source: Solvay website (https://annualreports.solvay.com/2018/en/extra-financial-statements/basis-of-preparation/task-force-on-climate-related-financial-disclosure.html)

## INPEX Corporation

The decision of the corporate position on climate change is made by the Board of Directors, and it is stated that the assessment of risks and opportunities related to climate change and the setting of targets are approved by the Management Committee and reported to the Board of Directors, and that the executive bonuses are linked with climate change actions.

In addition, the Climate Change Strategy Group Division was established within the Corporate Strategy and Planning Division to address climate change issues across the entire company.



### Governance Framework for Climate Change Response

As we recognize that climate change is a critical business issue, the Board of Directors seeks to maintain its oversight and expand the Company's involvement. Specifically, our "Corporate Position on Climate Change" was resolved by the Board of Directors and then published in 2015, with a revision in July 2018. As a rule, the Board will review this corporate position on a yearly basis. We revised the relevant rules in the 2018 financial year and created a system where assessment of climate change risks and opportunities is completed on a regular basis. The outcome of this assessment and the following target settings relating to climate change are approved by the Management Committee and then reported to the Board of Directors. Finally, we have tasked the Climate Change Strategy Group, within the Corporate Strategy & Planning Unit of the Corporate Strategy & Planning Division, to address climate change issues across the entire company.



### ● Climate Change Action and Director Compensation

Our "Medium-term Business Plan 2018-2022" sets out a number of climate-related targets in the areas of governance, business strategies, risk and opportunity assessment, GHG management and disclosure. These targets are integrated into executive bonuses.

### ● Climate Change Milestones



Source: INPEX "Sustainability Report 2019" P.45

## Mitsubishi Corporation

As regards climate change-related governance structures, the role of decision-making bodies, the frequency of meetings, and the decision-making process are described.

### Governance

Climate change is one of the most important issues acknowledged by MC's top management. MC's basic policy on climate change and important matters therein are deliberated and decided upon by its Executive Committee, the company's officer-level decision-making body.

As stipulated in the regulations governing MC's board of directors, the Executive Committee reports its findings regularly (at least once a year) to the board, appropriate supervision of which is facilitated by the structure of MC's governance framework. Before the Executive Committee has addressed basic policy and important matters pertaining to climate change, actions are taken by MC's Sustainability Advisory Committee and Sustainability & CSR Committee. The former fields opinions and advice from outside experts, and the latter (which reports directly to the Executive Committee) holds extensive hearings with all of the Business Group CEOs.

The Business Groups also act independently to address climate change. Group Chief Sustainability Officers and Group Sustainability Managers are appointed within each Group's department responsible for management strategy in order to oversee sustainability-related initiatives (including climate change) and reflect climate-related opinions and information into their respective businesses and strategies.

At MC, the company's basic policy on climate change and important matters therein are comprehensively addressed when making decisions on business strategies and investments.

**Board of Directors and Executive Committee Deliberations and Reports**

| | |
|---|---|
| Basic Policy on Climate Change | Covers climate-related initiatives through the company's businesses, adoption of TCFD recommendations, details on climate-related financial disclosures, etc. |
| Important Matters | Assessments of climate-change risks and business opportunities (including scenario analyses), greenhouse-gas reduction targets and action plans, etc. |

**Initiatives to Date**

| 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|
| Start of discussions on the resilience of MC's business to climate change | Formulation of policies to address climate change | Creation of a road map to respond to the TCFD | Start of detailed discussions on analyzing climate change opportunities and risks |

**Climate-Change Governance Structure**

| | | |
|---|---|---|
| Board of Directors | Supervises MC's climate-related actions and initiatives | Convenes approx. once per year |
| Executive Committee | Makes decisions regarding MC's basic policy on climate change<br>Makes decisions regarding important matters pertaining to climate change | Convenes approx. 2-3 times per year |
| Sustainability & CSR Committee (reports directly to Executive Committee) | Deliberates on MC's basic policy on climate change and important matters therein, and reports findings to Executive Committee | Convenes approx. 2-3 times per year |
| Sustainability Advisory Committee | Offers advice and recommendations regarding MC's basic policy on climate change and important matters therein | Convenes approx. twice per year |
| Officer in Charge | Masakazu Sakakida (Member of the Board, Executive Vice President, Corporate Functional Officer, Corporate Sustainability & CSR, Corporate Administration, Legal (Concurrently) Chief Compliance Officer) | |
| Department in Charge | Corporate Sustainability & CSR Department | |

Reference: Diagram of the Sustainability Promotion Framework

Source: Mitsubishi Corporation "ESG DATA BOOK 2019" P.30-31

## Unilever

The board is accountable for managing risks and opportunities, including climate change. In addition, the operation of sustainability related business strategies (Unilever Sustainable Living Plan – USLP) including climate change is integrated in the executive committee (Unilever Leadership Executive – ULE) which supports the Board of Directors. In addition, specialized governance groups (Energy Board, Sustainable Sourcing Steering Group, Water Board, etc.) have been established.

### Governance

The Boards take overall accountability for the management of all risks and opportunities, including climate change (see page 33). Our Chief Executive and Executive Board member, Alan Jope, is ultimately responsible for oversight of our climate change agenda. The Boards are supported by the ULE. During 2019, the USLP Steering Team was fully integrated into the main ULE agenda to reflect the integration of sustainability into our business strategy. The ULE meet monthly to discuss key strategic matters. During 2019, there were a number of agenda items on topics related to climate change including our climate goals.

A number of other specialist governance groups are in place to support our climate agenda, including:

- Energy Board: Drives delivery of our carbon positive ambition at corporate and country level and leads strategic partnerships and policy on renewables. Chaired by our Chief Supply Chain Officer, Marc Engel.
- Sustainable Sourcing Steering Group: Supports our strategy focusing on long-term, sustainable access to our key crops. Chaired by our Chief Procurement Officer, David Ingram.
- Water Board: Steers our strategy and targets on water, focusing on driving water-smart innovations for business growth. Chaired by our Home Care Category President, Peter Ter Kulve.

Remuneration linked to achievement of sustainability and climate change targets is a key part of our governance. For management employees – up to and including the ULE – incentives include fixed pay, a bonus as a percentage of fixed pay and a long-term management co-investment plan (MCIP) linked to financial and sustainability performance. The Sustainability Progress Index accounts for 25% of the total MCIP award and includes consideration of progress against our manufacturing scope 1 and 2 greenhouse gas and sustainable palm oil targets, which among others, underpin our climate strategy. See pages 60 to 77 for more on MCIP including the role of the Board's Remuneration Committee and Corporate Responsibility Committee in determining the MCIP award each year.

Source: Unilever "UNILEVER ANNUAL REPORT AND ACCOUNTS 2019" P.40

## Sekisui Chemical Co. Ltd.

The governance structure related to climate change including supervisory bodies, reporting and deliberation systems, and their frequency are described. Specific examples of past management decisions on climate change are also disclosed.

1. Governance Systems Related to Climate Change

1-1. Oversight by the Board of Directors, and the Role of Directors in Evaluating and Managing Risks and Opportunities

In response to external management risks such as climate change, appropriate measures, proportionate to the size of risks, are explored and decisions to act are taken under oversight by the Board of Directors.

Regarding SEKISUI's influence on external environmental issues such as climate change and its own social responsibility, until fiscal 2018, in its effort to alleviate the company's own impact and to contribute to solving these issues, Sekisui operated under the governance system displayed in fig. 5. Executive officers from each company participate in the environmental subcommittee (held twice per year), which addresses environmental issues and strategies. The subcommittee is chaired by the representative director in charge of the ESG Management Department. The subcommittee establishes targets related to climate change, keeping business strategies in mind; discusses strategies; and tracks progress. Resolutions made by this committee are reported to and deliberated upon by the CSR committee (held twice per year), which is attended by the presidents and other top officers of each company, as well as employee representatives to discuss management sustainability. Matters of high importance are then reported to and deliberated upon by the Board of Directors.


Fig. 5: Governance system for climate change-related issues

Examples of climate change-related decisions that have been discussed and decided by the management

- Quotas for Environment-Contributing Investments: end of fiscal 2016, management meeting to determine the budget (budget meeting)
- Supply chain initiatives and SBT certification and application: August 2017 policy meeting; September environmental subcommittee
- Expressing support for TCFD: November 2018 management meeting (corporate meeting)

Source: Sekisui Chemical Co., Ltd. "SEKISUI CHEMICAL Group's Response to Climate Change: Information Disclosure Based upon TCFD Recommendations" P.4

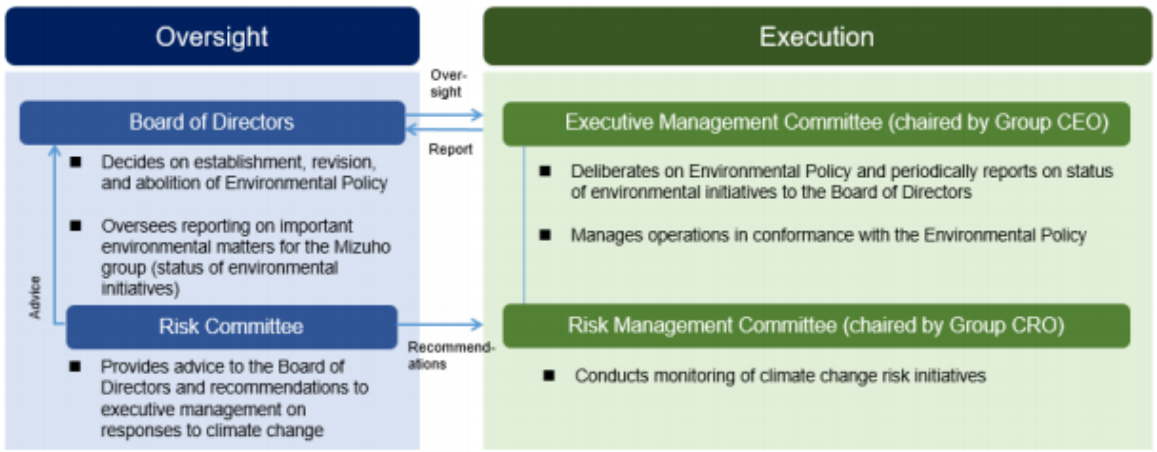
## Mizuho Financial Group

It is disclosed that the climate change-related governance consists of two pillars: oversight and execution. As regards the relationship between oversight and execution, discussions within the Risk Management Committee and the Executive Management Committee are reported to the Board of Directors, with the Risk Committee and the Board of Directors providing oversight.

### 2.1. Corporate governance related to climate change

As our various climate change initiatives are deeply interrelated with sustainability promotion, risk management, etc., following discussions at the business execution line, e.g. the Risk Management Committee and Executive Management Committee, and reporting to the Board of Directors, oversight is provided by the Risk Committee and Board of Directors in accordance with the structure for advancing and managing each initiative. (Figure 2, Table 1)

**Figure 2: Corporate governance structure**




Source: Mizuho Financial Group "TCFD Report 2020" P.10

In addition, the frequency of deliberations and the involvement of decision-making bodies is shown in a list of governance initiatives.

**Table 1: Corporate governance initiatives responding to climate change (FY2019)**

| Description | Frequency | Business execution line | | Supervisory line | |
|---|---|---|---|---|---|
| | | Risk Management Committee | Executive Management Committee | Risk Committee | Board of Directors |
| Establishment of Environmental Policy to strengthen environmental initiatives | - | ✔ | ✔ | ✔ | ✔ |
| Status of response to TCFD Recommendations | Annually | ✔ | ✔ | ✔ | ✔ |
| Review of management system for responsible investment, financing, and other services | Annually | ✔ | ✔ | ✔ | ✔ |
| Risk appetite policy | Annually | ✔ | ✔ | ✔ | ✔ |
| Our management of top risks | Quarterly | ✔ | ✔ | ✔ | ✔ |
| Revision of the fundamental approach to sustainability initiatives | - | | ✔ | | ✔ |
| FY2020 business plan (including key sustainability areas, initiative planning, and targets) | Annually | | ✔ | | ✔ |

Source: Mizuho Financial Group "TCFD Report 2020" P.12

## (2) Strategy

### I. Method for setting short-, medium- and long-term time frames

Examples of how time frames are taken into account in formulating strategies on climate change include the following:

(See TCFD Guidance P.32)

#### i) Formulation of strategies that takes into account product cycles

**General Motors**

It is described that responding to regulatory risks requires a long-term perspective, since it takes 3 to 4 years to design and develop a vehicle, and because a product remains competitive in the market for 4 to 7 years.

| Disclosure Focus Area | Recommended Disclosure | Source | Comment / Disclosure Examples |
|---|---|---|---|
| STRATEGY | | | |
| Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy and financial planning. | | Sustainability Report, CDP and 10K | GM's 2018 Sustainability Report, 2018 CDP Climate Change survey response and its fiscal year 2018 10K include information on actual and potential impacts of climate-related risks and opportunities on GM. |
| | a) Describe the climate-related risks and opportunities the organization has identified over the short, medium and long term. | 2018 Sustainability Report | CEO Letter to Stakeholders, Sustainability Strategy, Products, Personal Mobility, GRI Content Index |
| | | 2018 CDP Climate Change survey response, Question C2.2a & 2.2d, C2.3a, C2.4a | One of the most significant risks likely to impact GM are regulatory risks. Due to the potentially catastrophic effects of climate change, governments around the world have or are likely to enact policies and regulations that could impact our operations and products. Because it may take 3-5 years to design and develop a vehicle before it is launched in the market and then remain competitive and compliant for another 4-7 years, GM uses a long-term approach to regulatory risks. |

Source: General Motors "2018 Sustainability Report" P.185

### ii) Formulation of strategies for each of the short-, medium- and long-term categories

**Royal Dutch Shell**

In the annual report, it is stated that the company considers risks and opportunities in the short-, medium- and long-term time frames upon developing strategies.

- Short-term (3 years): Detailed financial projections are developed to manage performance and expectations.
- Mid-term (3 to 10 years): Assumes production and earnings from existing assets.
- Long-Term (More than 10 years): decision-making and risk identification are made according to the thematic structure of future portfolio.

This is how we describe the different time horizons and the relevance for the identification of risks and business planning:

- Short term (up to three years): detailed financial projections are developed and used to manage performance and expectations on a three-year cycle. This three-year plan is shared with the Board;
- Medium term (three years up to around 10 years): the majority of production and earnings expected to be generated in this period come from our existing assets; and
- Long term (beyond around 10 years): for this period, it is expected for the current Shell portfolio to go through changes and evolution with the energy transition. Decision-making and risk identification on the thematic structure of the future portfolio are guided by the pace of progress of society and in step with society as it moves towards the goals of the Paris Agreement.

Source: Royal Dutch Shell "Annual Report and Accounts 2019" P.96

## INPEX Corporation

Risks and opportunities are assessed for the short-term (up to 1 year), medium-term (1 to 5 years), and long-term (longer than 5 years), and the status of action plan is described accordingly.

### Fiscal 2018 Status of Climate Change Risks: Assessment Coverage, Expected Timing and Solutions

| | Risk category | Risk description | Expected Risk Timing | Action plan |
|---|---|---|---|---|
| Transition risks | Policies and regulations (Scope 1 emissions) | Potential for increased costs as a result of regulation that applies a direct or indirect price on carbon | Medium-term | •Monitor policy frameworks in the countries in which INPEX operates business<br>•Include internal carbon pricing in economic evaluation of projects |
| | Reputation (Scope 1 emissions) | Stakeholder concerns about increasing Scope 1 emissions | Short-term | •Ongoing management of GHG emissions and identification of emissions reduction activities |
| | Reputation (Scope 3 emissions) | Stakeholder concerns and a deteriorating image of the oil and gas industry due to emissions associated with the use of key industry products by customers | Medium-term | •Promote development of natural gas as an energy source for customers as the low carbon energy option for customers<br>•Increasing levels renewable energy in the company energy portfolio<br>•Promote development of technologies for practical application of carbon capture and storage |
| | Reputation (Financial impact) | Potential downside impacts on access to credit and/or equity due to a perception of insufficient information disclosure from investors and financial institutions | Medium-term | •Disclose information on climate related risks and opportunities in accordance with the recommended framework by the TCFD |
| | Market and technologies (Decrease in oil and gas demand and prices) | •Continuous decrease in demand and prices for oil and gas due to changing market preference to low-carbon energy<br>•Decrease in the cost of renewable energy, electric vehicles or battery storage | Long-term | •Conduct scenario-based monitoring of market and technology trends<br>•Maintain a framework enabling stable operations even in the lower oil-price environment with $50/bbl.<br>•Assess financial impact of portfolio with oil prices and carbon prices according to the IEA WEO 2℃ scenario.<br>•Conduct economic evaluation of projects using the supply cost curves. |
| Physical risks | Acute risks | Risk of adverse effect on operating facilities by extreme weather events | Long-term | •Assess impacts on operating facilities due to increasing average temperatures, changing precipitation patterns, rising sea levels and other climate change factors up to the mid-21st century according to the RCP8.5 scenario in the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report |
| | Chronic risks | Risk of adverse effect on operating facilities by long-term increasing average temperatures, changing precipitation patterns, and rising sea levels | Medium-term | |

### Fiscal 2018 Status of Climate Change Opportunities: Assessment Coverage, Expected Timing and Solutions

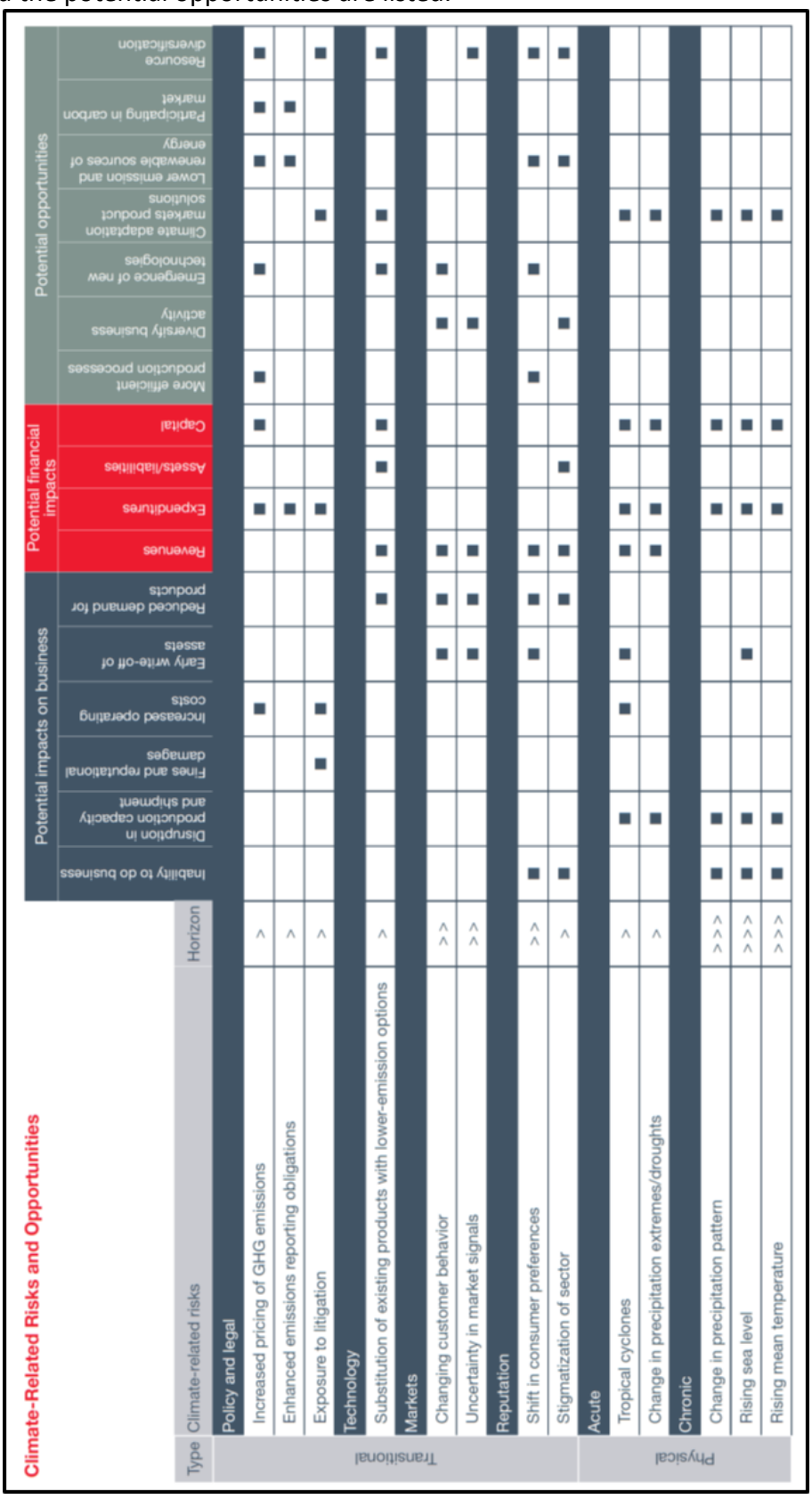
| | Opportunities | Opportunities covered | Expected opportunity timing | Action plan |
|---|---|---|---|---|
| Opportunities | Resource efficiency (Energy conservation) | Energy efficiency improvements in production processes | Short-term | •Design facilities with high energy efficiency and follow through maintenance plan to improve energy efficiency on a routine basis |
| | Energy sources (Utilization of renewable energy sources) | Utilization of renewable energy sources in production processes | Long-term | •Consider the potential of solar power generation for projects established in sunbelt regions of the world that receive high amounts of sunshine |
| | Low-carbon products (Expansion of renewable energy businesses) | Enhancement of initiatives for renewable energy businesses: Increase to 10% of portfolio by 2040 | Long-term | •Survey geothermal resources in Hokkaido, Akita and Fukushima Prefectures and develop investment cases for prospective resources where appropriate<br>•Currently participating in the Sarulla Geothermal IPP Project in Indonesia, the world's largest geothermal power generation business with an installed capacity 330 MW. |
| | Markets (Expansion of natural gas sales) | Building a global gas value chain | Medium-term | •Signed Memorandum of Understanding for an LNG bunkering partnership with ADNOC Logistics & Services in United Arab Emirates (December 2018) |
| | Products and services (R&D and innovation) | Research and development of technologies that contribute to building electricity, hydrogen and methane value chains | Long-term | •Conduct joint industry-academia research into a Sustainable Carbon-Cycle System that converts carbon dioxide to methane for reuse as an energy source<br>•Participate in the Research Association of Artificial Photosynthetic Chemical Process (ARPChem), a joint industry-academia-government project that uses hydrogen produced from sunlight and water using photocatalysts with the aim of manufacturing core chemical products from carbon dioxide, and promoting development of artificial photosynthesis technologies |

Short-term up to one year　Medium-term one to five years　Long-term longer than five years

Source: INPEX Corporation "Sustainability Report 2019" P.47

## Dow Chemical

A list of climate-related transition and physical risks is provided, and the horizon of each risk is presented in three stages: short-, medium- and long-term. The impact of each risk on the business and the potential opportunities are listed.




Source: Dow Chemical "2018 Sustainability Report" P.46

## Oji Holdings Corporation

The company analyzes climate-related risks and opportunities in the short-term (1 to 3 years), medium-term (3 to 6 years), and long-term (7 years or longer) and provides qualitative explanations of current and future financial and business impacts, risk management methods, and adaptation measures.

### Analyses of Risks and Opportunities

[Physical risks]

■ Short-term risks (1 to 3 years)

・Changes in maximum and minimum temperatures

The temperature rise in the summer reduces production efficiency because of the risk of heat stroke among employees.

■ Long-term risks (7 years or longer)

・Increasing seriousness of abnormal weather such as cyclones

Climate change has negative impacts, such as the falling of trees in our forest plantations and company-owned forests caused by destructive tropical storms including cyclones, a decline in the value of our assets caused by landslides, and a difficulty in procuring wood materials, recovered paper, and other key raw materials.

[Opportunities related to physical risks]

■Short-term risks (1 to 3 years)

・Changes in maximum and minimum temperatures

In response to the rise in the maximum temperature and the decline in the minimum temperature caused by climate change, there will be growing demand for comprehensive greenery business including roof greening, air-conditioner components, and biomass fuels, which help alleviate the problems.

■Long-term risks (7 years or longer)

・Increasing seriousness of abnormal weather such as cyclones

The increasing seriousness of abnormal weather will cause landslide disasters, including in forests, and the collapse of infrastructures such as roads. This will lead to growing demand for reforestation technologies, mineral materials needed for infrastructures, and facilities for power generation and other purposes as well as products and services for repair, construction, and maintenance of such facilities.

[Transition risks]

1) Risks attributed to political measures or regulations

■ Medium-term risks (3 to 6 years)

・Increase in the burden of carbon price tax

In Japan, the government is considering the further introduction of environmental taxes in addition to the Global Warming Tax, possibly raising the tax rates.

■Long-term risks (7 years or longer)

・Emissions trading system

There is a risk of an increase in costs for purchasing carbon credits if an emissions trading system is introduced in Japan, with emission limits are set for businesses, and we fall to achieve the limits.

・Mandatory energy efficiency target

There will be a risk of costs being incurred if the achievement of the energy efficiency target is made mandatory and fine system is imposed for any failure to the target, in the revision of the Energy Conservation Act, scheduled in just over a year.

Source: Oji Holdings Corporation "Climate Change: Risk, Opportunities, and Impact on Businesses" P.1-2

### iii) Timelines are divided into certain periods and strategies are formulated

**Standard Chartered**

For the decarbonization of the portfolio, milestones (2021, 2025, 2027 and 2030) has been set to achieve the long-term goal, which is concretely indicated.

**8. Focus on Risk Response: Coal Dependent Clients**

In September 2018, we announced that, save where we had an existing commitment, we would cease providing financing for new coal-fired power plants anywhere in the world. This announcement followed detailed consultation with a range of stakeholders.

Since then, we have been working to review our approach to mining, power generation and commodity trader clients who are dependent on thermal coal.

We have taken the decision to only support group level clients who have reduced their exposure to thermal coal below 10% by 2030. To support our clients to transition their businesses ahead of this date, we have set interim targets as follows:

- By January 2021, we will have no group level clients who are 100% dependent on earnings from thermal coal
- By January 2025, we will extend this threshold to group level clients who are greater than 60% dependent on earnings from thermal coal
- By January 2027, we will extend this threshold to group level clients who are greater than 40% dependent on earnings from thermal coal
- By January 2030, we will extend this threshold to group level clients who are greater than 10% dependent on earnings from thermal coal

Through the above commitment, we are reducing our support for thermal coal at a faster rate than well-established Paris Agreement-aligned scenarios from the Internal Energy Agency (IEA) (please see section 6.1 for further detail on scenarios).

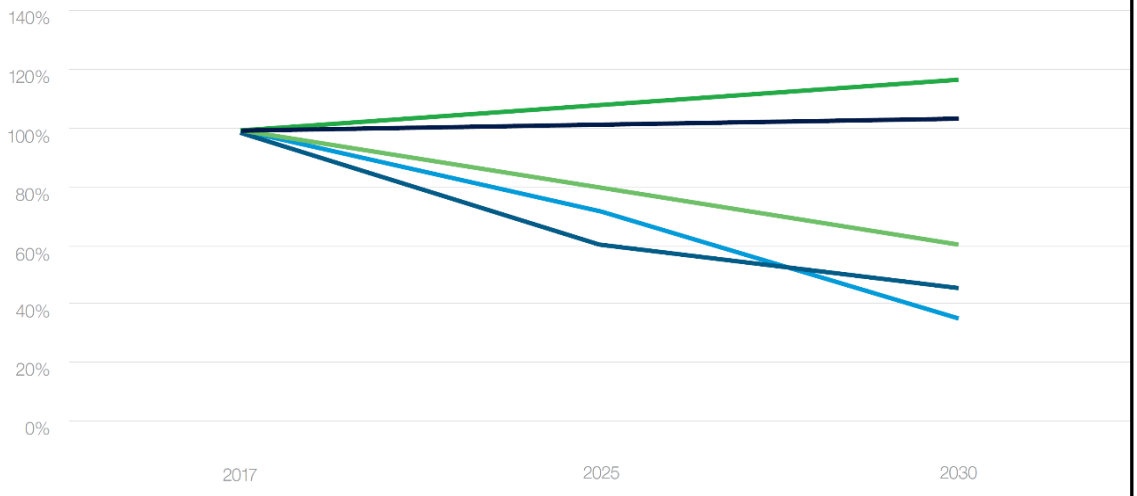



Figure 8: Our thermal coal position and Paris Agreement

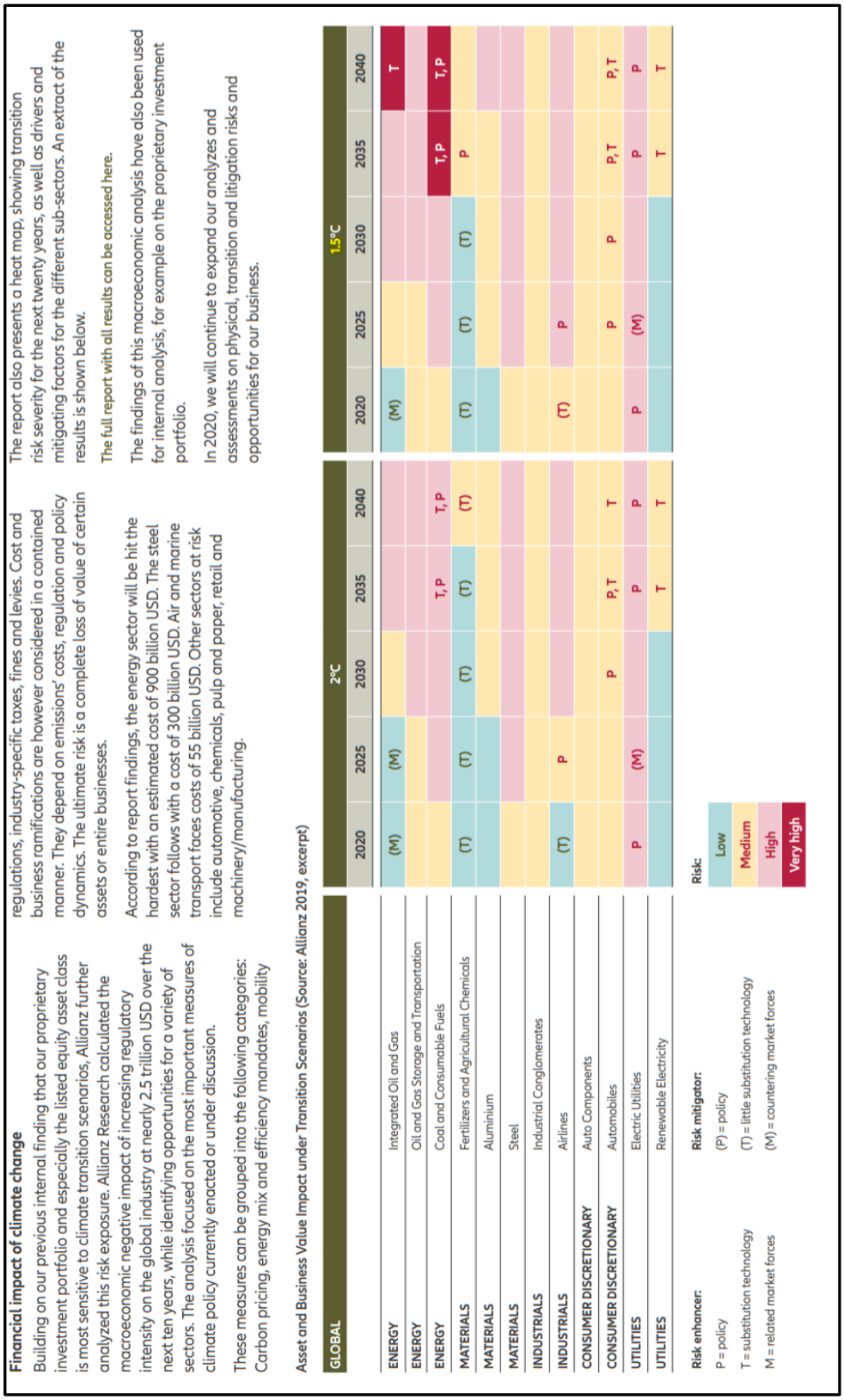
Current Policies Scenario
Sustainable Development Scenario
New Policies Scenario
New Policies Scenario
SCB's Weighted Average Thermal Coal-dependency

**Figure 8** is constructed using rate of reduction on thermal coal production / demand from various IEA scenarios, comparing against the rate of reduction for our clients' thermal coal dependency. Future projections of our portfolio are assuming constant exposure and clients' positioning in terms of thermal coal dependency. To illustrate the rate of reduction in figure 7, our current exposure-weighted average thermal coal dependency was taken as 100% on a relative basis to future projections. Given the uncertainty in precise percentage numbers, this was calculated using average thermal coal-dependency rates across multiple buckets, in line with our glide path above.

Source: Standard Chartered "Climate Change/Taskforce on Climate-related Financial Disclosures (TCFD) report December 2019" P.20

## Allianz Group

The period up to 2040 is divided into segments of five years, and the risk is qualitatively assessed and disclosed according to investment portfolio in four categories i.e. “low”, “medium”, “high”, and “very high”.



**Financial impact of climate change**

Building on our previous internal finding that our proprietary investment portfolio and especially the listed equity asset class is most sensitive to climate transition scenarios, Allianz further analyzed this risk exposure. Allianz Research calculated the macroeconomic negative impact of increasing regulatory intensity on the global industry at nearly 2.5 trillion USD over the next ten years, while identifying opportunities for a variety of sectors. The analysis focused on the most important measures of climate policy currently enacted or under discussion.

These measures can be grouped into the following categories: Carbon pricing, energy mix and efficiency mandates, mobility regulations, industry-specific taxes, fines and levies. Cost and business ramifications are however considered in a contained manner. They depend on emissions’ costs, regulation and policy dynamics. The ultimate risk is a complete loss of value of certain assets or entire businesses.

According to report findings, the energy sector will be hit the hardest with an estimated cost of 900 billion USD. The steel sector follows with a cost of 300 billion USD. Air and marine transport faces costs of 55 billion USD. Other sectors at risk include automotive, chemicals, pulp and paper, retail and machinery/manufacturing.

The report also presents a heat map, showing transition risk severity for the next twenty years, as well as drivers and mitigating factors for the different sub-sectors. An extract of the results is shown below.

The full report with all results can be accessed here.

The findings of this macroeconomic analysis have also been used for internal analysis, for example on the proprietary investment portfolio.

In 2020, we will continue to expand our analyzes and assessments on physical, transition and litigation risks and opportunities for our business.

Asset and Business Value Impact under Transition Scenarios (Source: Allianz 2019, excerpt)

| GLOBAL | | 2°C | | | | | 1.5°C | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2020 | 2025 | 2030 | 2035 | 2040 | 2020 | 2025 | 2030 | 2035 | 2040 |
| ENERGY | Integrated Oil and Gas | (M) | (M) | | | | (M) | | | | T |
| ENERGY | Oil and Gas Storage and Transportation | | | | | | | | | | |
| ENERGY | Coal and Consumable Fuels | | | | T, P | T, P | | | | T, P | T, P |
| MATERIALS | Fertilizers and Agricultural Chemicals | (T) | (T) | (T) | (T) | (T) | (T) | (T) | (T) | P | |
| MATERIALS | Aluminium | | | | | | | | | | |
| MATERIALS | Steel | | | | | | | | | | |
| INDUSTRIALS | Industrial Conglomerates | | | | | | | | | | |
| INDUSTRIALS | Airlines | (T) | P | | | | (T) | P | | | |
| CONSUMER DISCRETIONARY | Auto Components | | | | | | | | | | |
| CONSUMER DISCRETIONARY | Automobiles | | | P | P, T | T | | P | P | P, T | P, T |
| UTILITIES | Electric Utilities | P | (M) | | P | P | P | (M) | | P | P |
| UTILITIES | Renewable Electricity | | | | T | T | | | | T | T |

Risk enhancer:
P = policy
T = substitution technology
M = related market forces

Risk mitigator:
(P) = policy
(T) = little substitution technology
(M) = countering market forces

Risk:
Low
Medium
High
Very high

Source: Allianz Group ” Sustainability Report 2019” P.70
Graphic Reprinted with Permission ©2020 Allianz SE

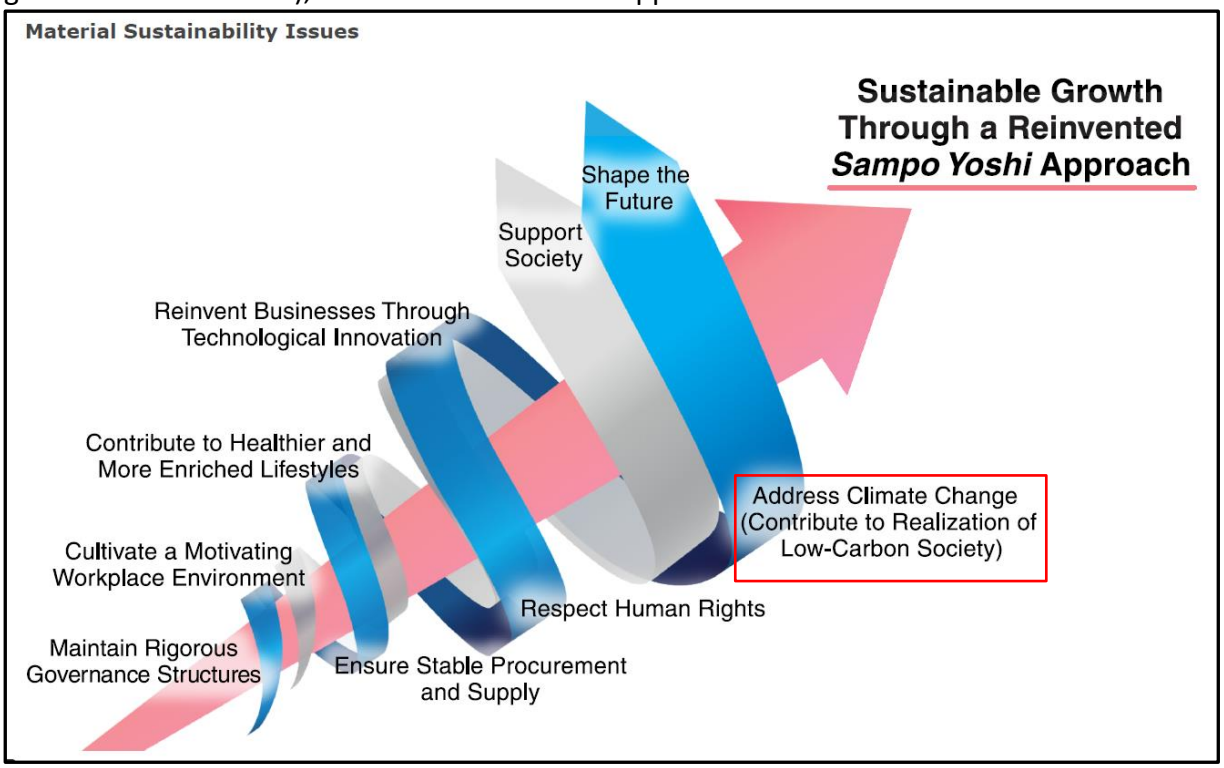
## II. Presentation of climate-related risks and opportunities

Examples of specific disclosure of the company's climate-related risks and opportunities include the following:

### iv) Identifying materiality and disclosing climate-related risks and opportunities

**Itochu Corporation**

The company identifies seven areas as material sustainability issues that incorporate ESG perspectives (address climate change, reinvent business through technological innovation, respect human rights, contribute to healthier and more enriched lifestyles, ensure stable procurement and supply, cultivate a motivating workplace environment, and maintain rigorous governance structures), and discloses risks and opportunities in each area.




Source: Itochu Corporation “ESG Report 2019” P.12

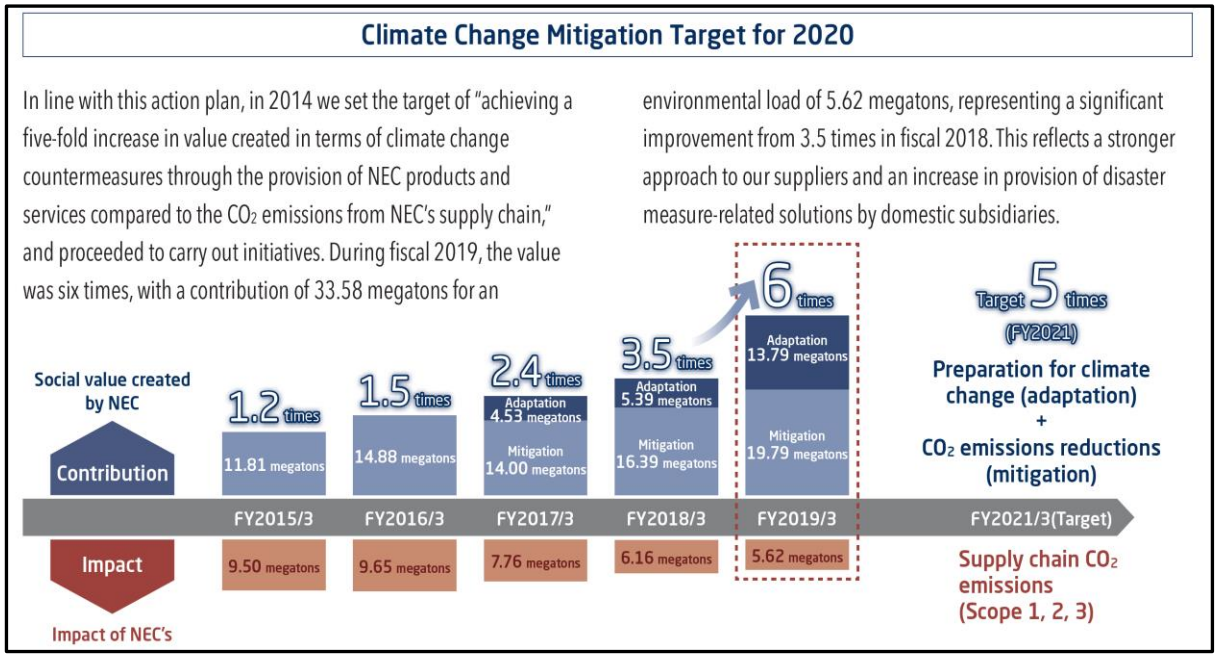
| Material Issues | Risks | Opportunities |
|---|---|---|
| Reinvent businesses through technological innovation | ● Obsolescence of existing business models accompanying the rise of new technologies such as IoT and AI<br>● Labor shortages in developed countries; flight of excellent talent from businesses that are slow to streamline | ● Creation of new markets; provision of innovative services<br>● Optimization of human resources and logistics by utilizing new technology; enhanced competitiveness by reforming how we work |
| Address climate change (contribute to realization of a low-carbon society) | **Transition risk**<br>● Reduction in demand for fossil fuels due to business restrictions on greenhouse gas emissions<br>**Physical risk**<br>● Damage to business due to the increase in abnormal weather (e.g., droughts, flooding, typhoons and hurricanes) | ● Increase in renewable energy and other business opportunities which will contribute to alleviating climate change<br>● Retention and acquisition of customers by strengthening supply structures that can adapt to abnormal weather |
| Cultivate a motivating workplace environment | ● Failure to handle the issue properly could lower worker productivity, cause excellent talent to leave, erase business opportunities, and add to health-related expenses | ● Providing a motivating workplace environment raises worker productivity, improves health and motivation, retains excellent talent, and enhances adaptability to change and new business opportunities |
| Respect human rights | ● Human rights problems occurring in more geographically expansive business activities could delay operations or pose a continuity risk<br>● Insufficient provision of social infrastructure services could erode trust in the company | ● Co-existence with local communities stabilizes business and retains excellent talent<br>● Consideration for human rights in the supply chain and improved working environments will build a safer and steadier product supply network |
| Contribute to healthier and more enriched lifestyles | ● Safety and health issues affecting consumers and service users could erode trust in the company<br>● Changes in government policy could impact business by destabilizing markets or social insurance systems | ● Advancing food safety/reliability and health will boost demand<br>● Growth in individual consumption and the spread of the internet will expand services in information, finance and distribution |
| Ensure stable procurement and supply | ● Impact from a backlash accompanying the outbreak of environmental problems or worsening relations with local communities<br>● A price-cutting war in consumer goods could structurally batter the entire industry | ● Higher demand for resources due to population growth and higher living standards in emerging countries<br>● A steady, environmentally-friendly supply of resources and materials wins client trust and creates new business |
| Maintain rigorous governance structures | ● Business continuity risks and unanticipated losses arising from dysfunctional corporate governance or internal controls | ● Establishing robust governance will raise decision-making transparency, enable proper adaptation to change, and lay the foundation for steady growth |

Source: Itochu Corporation “ESG Report 2019” P.15

### v) Examples of disclosures of corporate opportunities through climate change

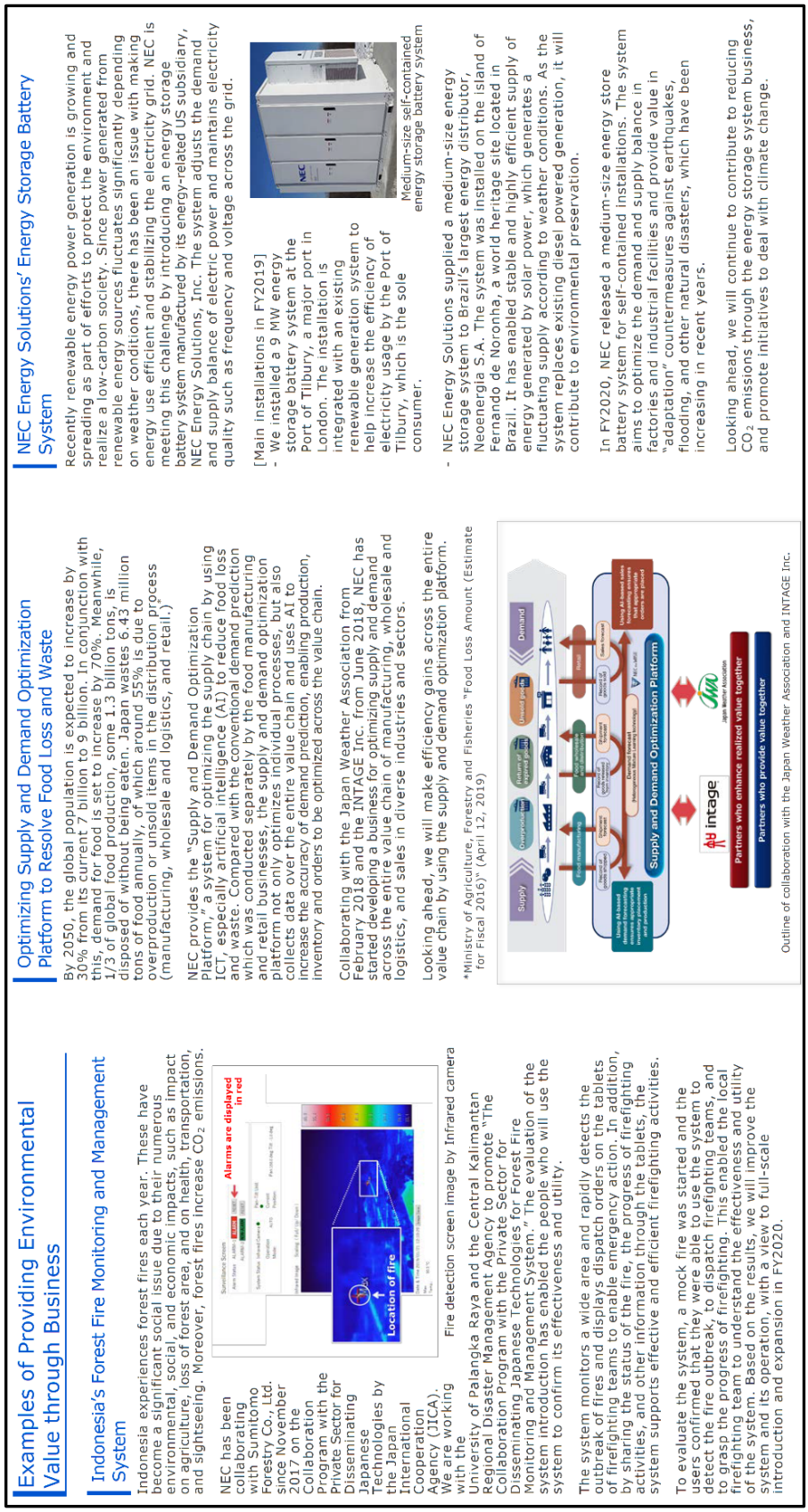
#### NEC

The company has set a goal of increasing the social value created through its business activities while reducing the impact of its business activities on climate change. The goal is to increase the $CO_2$ emission reductions achieved through its products and services by five times the amount of $CO_2$ emissions from its supply chain by 2020.




Source: NEC Corporation "Integrated Report 2019" P.24

As examples of actual solutions, forest fire monitoring and rapid response systems that contribute to reducing $CO_2$ emissions, supply and demand optimization platforms that help reduce food loss and disposal, and storage battery systems are introduced.



## Examples of Providing Environmental Value through Business

### Indonesia's Forest Fire Monitoring and Management System

Indonesia experiences forest fires each year. These have become a significant social issue due to their numerous environmental, social, and economic impacts, such as impact on agriculture, loss of forest area, and on health, transportation, and sightseeing. Moreover, forest fires increase $CO_2$ emissions.

NEC has been collaborating with Sumitomo Forestry Co., Ltd. since November 2017 on the Collaboration Program with the Private Sector for Disseminating Japanese Technologies by the Japan International Cooperation Agency (JICA). We are working with the University of Palangka Raya and the Central Kalimantan Regional Disaster Management Agency to promote "The Collaboration Program with the Private Sector for Disseminating Japanese Technologies for Forest Fire Monitoring and Management System." The evaluation of the system introduction has enabled the people who will use the system to confirm its effectiveness and utility.

Fire detection screen image by Infrared camera

The system monitors a wide area and rapidly detects the outbreak of fires and displays dispatch orders on the tablets of firefighting teams to enable emergency action. In addition, by sharing the status of the fire, the progress of firefighting activities, and other information through the tablets, the system supports effective and efficient firefighting activities.

To evaluate the system, a mock fire was started and the users confirmed that they were able to use the system to detect the fire outbreak, to dispatch firefighting teams, and to grasp the progress of firefighting. This enabled the local firefighting team to understand the effectiveness and utility of the system. Based on the results, we will improve the system and its operation, with a view to full-scale introduction and expansion in FY2020.

### Optimizing Supply and Demand Optimization Platform to Resolve Food Loss and Waste

By 2050, the global population is expected to increase by 30% from its current 7 billion to 9 billion. In conjunction with this, demand for food is set to increase by 70%. Meanwhile, 1/3 of global food production, some 1.3 billion tons, is disposed of without being eaten. Japan wastes 6.43 million tons of food annually, of which around 55% is due to overproduction or unsold items in the distribution process (manufacturing, wholesale and logistics, and retail.)*

NEC provides the "Supply and Demand Optimization Platform," a system for optimizing the supply chain by using ICT, especially artificial intelligence (AI) to reduce food loss and waste. Compared with the conventional demand prediction which was conducted separately by the food manufacturing and retail businesses, the supply and demand optimization platform not only optimizes individual processes, but also collects data over the entire value chain and uses AI to increase the accuracy of demand prediction, enabling production, inventory and orders to be optimized across the value chain.

Collaborating with the Japan Weather Association from February 2018 and the INTAGE Inc. from June 2018, NEC has started developing a business for optimizing supply and demand across the entire value chain of manufacturing, wholesale and logistics, and sales in diverse industries and sectors.

Looking ahead, we will make efficiency gains across the entire value chain by using the supply and demand optimization platform.

*Ministry of Agriculture, Forestry and Fisheries "Food Loss Amount (Estimate for Fiscal 2016)" (April 12, 2019)

Outline of collaboration with the Japan Weather Association and INTAGE Inc.

### NEC Energy Solutions' Energy Storage Battery System

Recently renewable energy power generation is growing and spreading as part of efforts to protect the environment and realize a low-carbon society. Since power generated from renewable energy sources fluctuates significantly depending on weather conditions, there has been an issue with making energy use efficient and stabilizing the electricity grid. NEC is meeting this challenge by introducing an energy storage battery system manufactured by its energy-related US subsidiary, NEC Energy Solutions, Inc. The system adjusts the demand and supply balance of electric power and maintains electricity quality such as frequency and voltage across the grid.

Medium-size self-contained energy storage battery system

[Main installations in FY2019]

- We installed a 9 MW energy storage battery system at the Port of Tilbury, a major port in London. The installation is integrated with an existing renewable generation system to help increase the efficiency of electricity usage by the Port of Tilbury, which is the sole consumer.
- NEC Energy Solutions supplied a medium-size energy storage system to Brazil's largest energy distributor, Neoenergia S.A. The system was installed on the island of Fernando de Noronha, a world heritage site located in Brazil. It has enabled stable and highly efficient supply of energy generated by solar power, which generates a fluctuating supply according to weather conditions. As the system replaces existing diesel powered generation, it will contribute to environmental preservation.

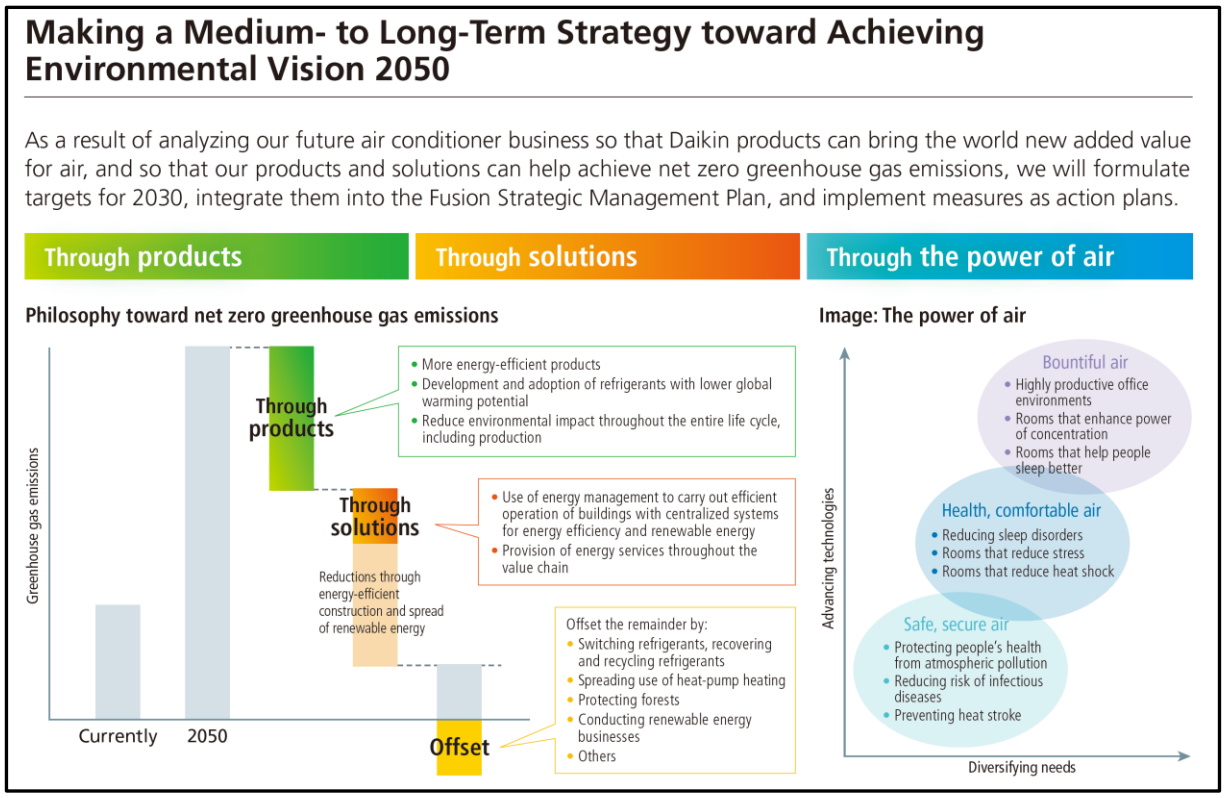
In FY2020, NEC released a medium-size energy store battery system for self-contained installations. The system aims to optimize the demand and supply balance in factories and industrial facilities and provide value in "adaptation" countermeasures against earthquakes, flooding, and other natural disasters, which have been increasing in recent years.

Looking ahead, we will continue to contribute to reducing $CO_2$ emissions through the energy storage system business, and promote initiatives to deal with climate change.

Source: NEC Corporation "Sustainability Report 2019" P.36

## Daikin Industries Ltd.

The company's annual report indicates the direction of the solutions that the company should provide for environmental issues including climate change, and specifically describes the products and solutions that can contribute to reducing $CO_2$ emissions.




Source: Daikin Industries, Ltd. "Sustainability Report 2019" P.14

## Marui Group

The risks and opportunities of the 1.5°C scenario is presented, along with a description of the quantitative financial impact and underlying factors, and strategies for capturing such opportunities.

2030 and will reach levels as high as ¥4 per kWh. Calculated based on the Company's current annual electricity consumption level of 200 million kWh, such prices would result in a total increase in costs of approximately ¥0.8 billion. Meanwhile, the introduction of a carbon tax in Japan could have an impact on MARUI GROUP amounting to around ¥2.2 billion (see Figure 3).

**Benefits of 1.5°C Scenario**

MARUI GROUP is encouraging EPOS cardholders to switch to renewable energy. This switch would increase the number of cardholders using their EPOS card to make recurring payments along with the number of Gold cardholders, thereby contributing to higher LTV for credit cards and consequently an increase in profit of approximately ¥2.0 billion.

In addition, if we achieve our goal of sourcing 100% of our electricity from renewable sources by 2030, we would not be impacted by potential carbon taxes, reducing costs by around ¥2.2 billion. We also expect to be able to lower costs by approximately ¥0.3 billion by entering into the power retail business. The combined financial benefits of these opportunities would amount to ¥4.5 billion (see Figure 4).

Furthermore, we are examining the possibility of introducing large-scale storage batteries at stores that could be charged at night to reduce electricity bills. The estimated benefit would be a reduction of around 7% in annual per store electricity bills.

**Figure 3: Financial Impacts of Risks**

Increases in renewable energy costs: Approx. ¥0.8 billion

Estimates based on current renewable energy prices*
• Large-scale power providers focusing on hydropower: +¥3-¥5/kWh
• Blockchain: +¥2.5/kWh
▶▶ Maximum increase estimated to be around **¥4**/kWh

Annual electricity consumption 200 million kWh **Approx. ¥0.8 billion**

* Estimates use projections for peak-hour usage around 2030

Introduction of carbon taxes: Approx. ¥2.2 billion

Estimates based on IEA's Sustainable Development Scenario Projections for carbon taxes in developed countries
• ¥6,000/t-$CO_2$ in 2025 • ¥14,000/t-$CO_2$ in 2040
▶▶ Further increase leading to taxes of around **¥20,000**/t-$CO_2$ in 2050

Annual $CO_2$ emissions 110,000 tons **Approx. ¥2.2 billion**

**Total: ¥3.0 billion**

**Figure 4: Financial Benefits from Opportunities**

Co-creation with power retailers: Approx. ¥4.2 billion

Increase in recurring payment transactions due to customers switching to renewable energy
▼
Rise in EPOS Gold cardholders
▼
Higher credit card LTV

**Approx. ¥2.0 billion**

Reduction in carbon taxes from achieving zero $CO_2$ emissions — **Approx. ¥2.2 billion**

Entry into power retailing business: Approx. ¥0.3 billion

Direct procurement as power retailer
Reduction in intermediary costs (commissions): Approx. 10%
× Annual power costs Approx. ¥3.0 billion

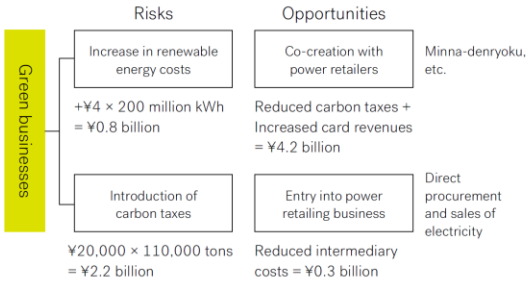
**Approx. ¥0.3 billion**

**Total: ¥4.5 billion**

**Opportunities of Green Businesses Exceeding Risks**

As explained, the financial benefits of opportunities for green businesses under the 1.5°C scenario will amount to ¥4.5 billion, exceeding the financial impacts of ¥3.0 billion from risks (see Figure 5).

**Figure 5: Risks and Opportunities in Green Businesses**




**Message from an Employee**

**Hideyuki Inami**
RE Development Section
Eco Management Division,
Planning Department
MARUI FACILITIES Co., Ltd.

The RE Development Section was established after we introduced renewable energy, and this section has been garnering attention within the Company. The rise in environmental awareness among employees has led to an increase in the number of people wanting to work in the RE Development Section. On a personal note, my son once came home boastful that he had won a commendation in his junior high school speech competition by talking about how his dad's job is contributing to the environment through renewable energy. I didn't expect this position to elevate my position in my own family.

Source: Marui Group "Co-Creation Management Report 2019" P.53

## Tokio Marine Holdings

With regard to the opportunities that climate change brings to its business, the report describes the development and provision of insurance for clean energy companies that take into account the changing needs of customers and the possibility of shifting to low-emission power generation, and the provision of weather insurance that takes into account the impact of weather disasters on grain yields in rural areas.

**Climate-Related Strategies**

■ **Physical Risk**

Climate change due to global warming is considered to possibly bring about major changes in the frequency and scale of weather disasters in the future. As such, basing analyses only on past statistical data may prevent appropriate risk assessment and significantly impact the calculation of insurance premiums and the ability to pay insurance claims in the event of a serious disaster. Occurrence of water immersion, power failure or other damage resulting from a flood or other natural disasters at any of the bases of Tokio Marine Group may disrupt the Group's business operations and cause financial impact, including response costs and lower revenues. For this reason, the Tokio Marine Research Institute and other Group companies have been assessing and calculating the impact on insurance losses under future climate conditions, using the Intergovernmental Panel on Climate Change (IPCC) Representative Concentration Pathway (RCP) scenarios. Specifically, RCP4.5 and RCP8.5 are used to simulate changes in typhoon risk, while RCP8.5 is used to simulate changes in flood risk due to increased rainfall. The results of analyses of such scenarios are referenced in managing risks through the Group-wide Enterprise Risk Management (ERM) system while considering the potential impact on insurance underwriting from more severe natural disasters arising due to climate change. In addition, we strive to make a faster, smoother response to losses after a typhoon or other wide-area disasters by strengthening our support structure in Japan, introducing electronic means to report loss internally and within each agent and taking other measures to enhance the competitiveness of our claims services.

■ **Transition Risk**

In line with the transition to a low-carbon society, enforcement of more stringent laws and regulations and rapid technological advancement may trigger changes in the Group's business environment and in customer needs, and possibly affect the way we do business and what products and services we develop and provide. However, we expect that replacement of the existing products and services with low-carbon options will occur gradually, allowing us to implement appropriate risk management and develop and provide adequate accident response services for insurance policies that have a relatively short term, including those renewed annually.

■ **Opportunities**

In the process of promoting GHG emissions reduction, a shift to "cleaner" modes of power generation may occur and further increase needs for insurance for clean energy providers, including solar, geothermal and wind power generation operators. Amid such a change, we have been conducting research to ensure appropriate risk assessment in insurance underwriting and have already developed and been providing insurance products for such clean energy providers as an effort to increase the opportunity to generate more revenues.

Offshore wind power generation that uses the force of offshore wind to generate power, in particular, has drawn much attention globally for its better generating efficiency than onshore wind and solar power generation. It is also considered a promising option in Japan as the country is surrounded by the sea and has long coastlines. In November 2018, the Diet passed the Act of Promoting Utilization of Sea Areas in Development of Power Generation Facilities Using Maritime Renewable Energy Resources for promoting the offshore wind power industry, thereby setting up a system to license operators to use designated sea areas for a certain period of time. However, in addition to substantial facility installation costs, offshore wind power generation faces many risks that vary from those encountered on land and thus requires adequate risk management. Tokio Marine Group has already been underwriting insurance for offshore wind power generation projects around the world. At the same time, the Group has accumulated know-how for analysis and assessment of the risk of natural disasters specific to Asia, including typhoons, earthquakes and tsunamis. Driving Japan's efforts in this area in terms of insurance, Tokio Marine Holdings has been sharing its know-how accumulated in past projects at international conferences and seminars and intends to play an important role in further promoting the use of offshore wind power generation.

There is also an expected rise in needs for stabilizing the lives of people in farming and other communities more vulnerable to climate change and weather disasters. As an example of our response, we have been selling Barish Bima Yojna / Mausam Bima Yojna in India, which is a weather insurance product that evaluates climate risks such as precipitation volume and temperature in all areas within the country and takes into account the impact of unseasonable climate on grain harvest yields in farming communities.

While using $CO_2$ emissions from business activities and the $CO_2$ fixation and reduction effect from mangrove planting, the purchase of green power and other activities as our metrics and setting out the target of achieving carbon neutral status, we are strengthening our ability to respond to the transition risk and creating additional opportunities for efficient use of resources and cost reduction.

Given these climate-related risks and opportunities surrounding Tokio Marine Group, we have specified climate change and natural disasters as issues having CSR materiality (material CSR issues)

Source: Tokio Marine Holdings, Inc. "Sustainability Report 2019" P.40-41

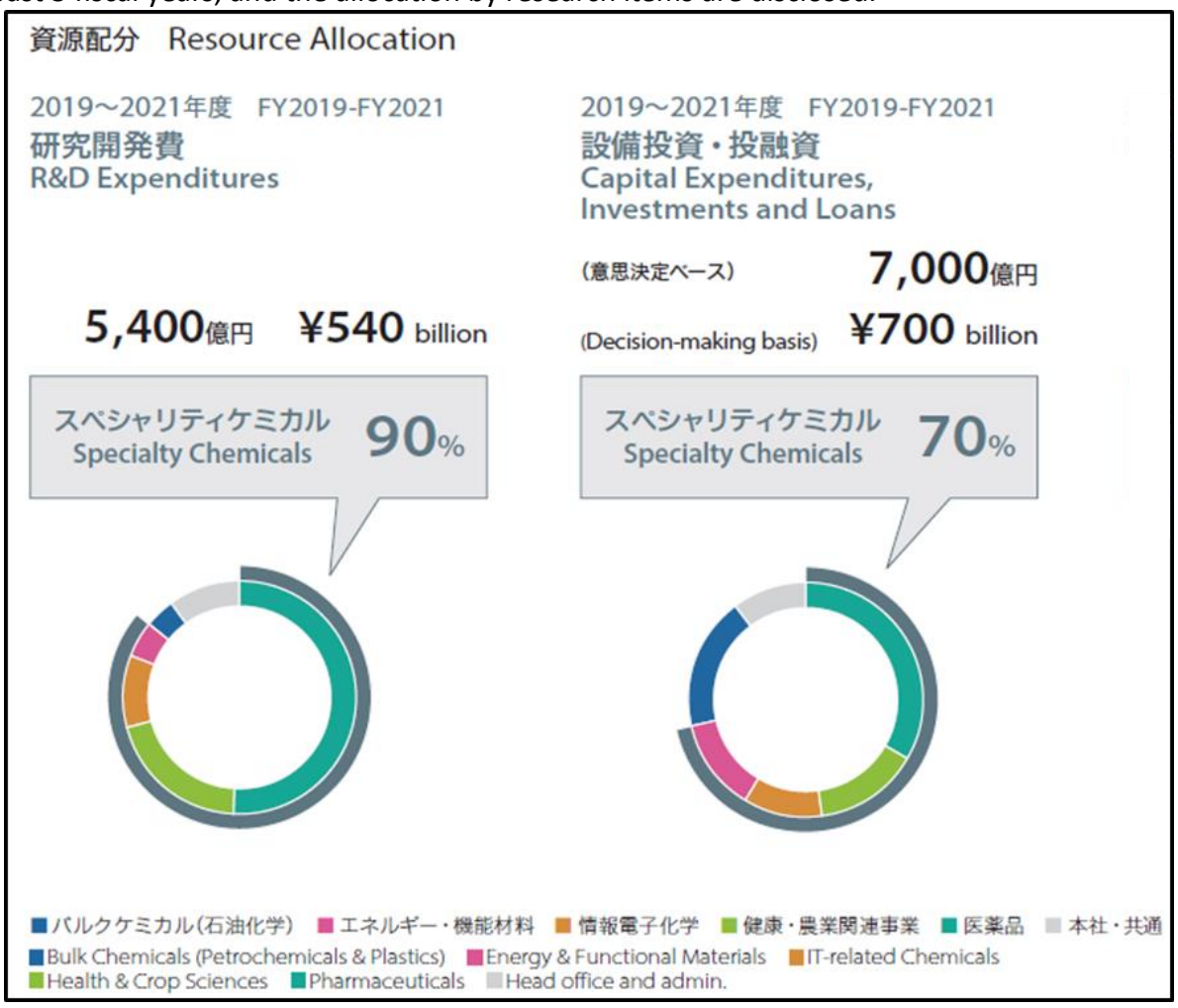
### III. Presentation of R & D activities

Examples of R & D activities linked to corporate strategies include the following:

(→ See TCFD Guidance P.36)

**Sumitomo Chemical Co. Ltd**

The total amount of R & D expenditure, capital expenditure, investments and loans in the past 3 fiscal years, and the allocation by research items are disclosed.




Source: Sumitomo Chemical Co. Ltd. "Investor's Handbook 2019" P.9

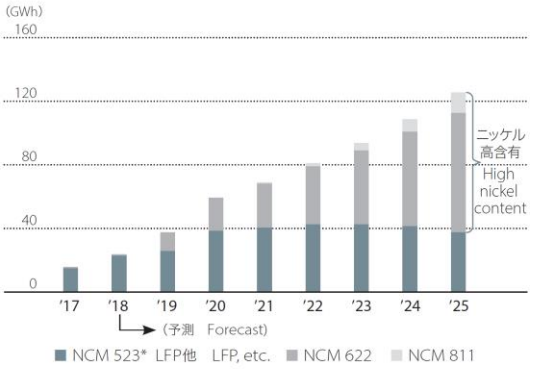
Regarding cathode materials, which are the key components of lithium-ion batteries, the company explains the future market trends in relation to its own development schedule, and indicates the timing of the development and introduction of next-generation products to the market in response to expected future demand.

## 正極材　Cathode Materials

### 正極材の市場トレンド
### Cathode Materials Market Trends

高容量電池搭載のEV需要伸長に伴い、車載用二次電池向け正極材の需要拡大
Growth in demand for cathode materials for automotive secondary batteries in line with growth in demand for EVs equipped with high-capacity batteries

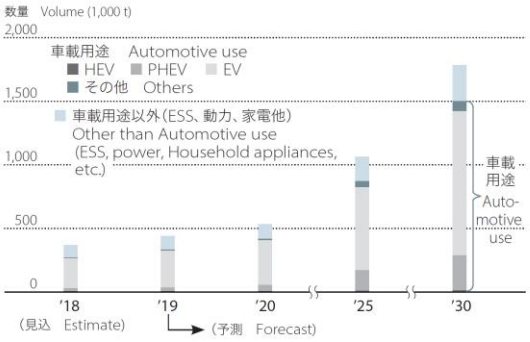
■ニッケル高含有LiB市場規模予測
High Nickel Content Lithium-ion Secondary Battery Market Size




* ニッケル：コバルト：マンガン＝5：2：3　Nickel: Cobalt: Manganese= 5: 2: 3

(出所) デロイトトーマツコンサルティング合同会社推計
(Source) Deloitte Tohmatsu Consulting LLC estimates

■正極材の用途別市場規模推移
Cathode Material Market Size by Use




(注) HEVはHEVトラック・バスを含む。EVはEVトラック・バスを含む。
(Note) 'HEV' includes HEV trucks and buses. 'EV' includes EV trucks and buses.

(出所) 富士経済「エネルギー・大型二次電池・材料の将来展望 2018 ―エネルギーデバイス編―」
(Source) "Future Outlook of Energy, Large Scale Secondary Battery, and Materials 2018; Energy Devices" by Fuji Keizai

### 住友化学グループの正極材事業
### Sumitomo Chemical Group's Cathode Material Business

■事業拡大への取り組み
Initiatives for Business Expansion

| | | | | | |
|---|---|---|---|---|---|
| 前駆体 Precursor | 2016年10月 October 2016 | 田中化学研究所 子会社化 Acquired Tanaka Chemical Corp. | | | |
| | 2017年11月 November 2017 | 増強（第一期） Expansion (Ⅰ) | 主原料溶解設備増強決定（田中化学） Decision to expand main raw material melting facilities (Tanaka Chemical Corp.) | ― | 2018年8月 稼働開始 Started operation in August 2018 |
| | 2018年 8月 August 2018 | 増強（第二期） Expansion (Ⅱ) | 製品生産設備・インフラ設備増強決定（田中化学） Decision to expand production and infrastructure facilities (Tanaka Chemical Corp.) | +約1,200トン/月 +approx. 1,200 t/month | 2019年7月 稼働開始予定 Planned to start operation in July 2019 |
| | 2018年11月 November 2018 | 増強（第三期） Expansion (Ⅲ) | 工場建屋・製品生産設備増強決定（田中化学） Decision to expand plant buildings and production facilities (Tanaka Chemical Corp.) | +約1,200トン/月 +approx. 1,200 t/month | 2020年6月 稼働開始予定 Planned to start operation in June 2020 |

■開発スケジュール
Development Schedule

| | |
|---|---|
| 次世代高容量電池向け For next-generation high-capacity batteries | 2020年代前半 生産開始 Start of production in Early 2020s |
| 全固体電池向け For all-solid-state batteries | 2020年代前半 コンセプト完成 Concept completed in Early 2020s |

Source: Sumitomo Chemical Co. Ltd. "Investor's Handbook 2019" P.36

## Toyota Motor Corporation

The company has set a "New Vehicle Zero $CO_2$ Challenge " to reduce $CO_2$ emissions per vehicle by 90% from 2010 levels by 2050.

Challenge 1 **New Vehicle Zero $CO_2$ Emissions Challenge**

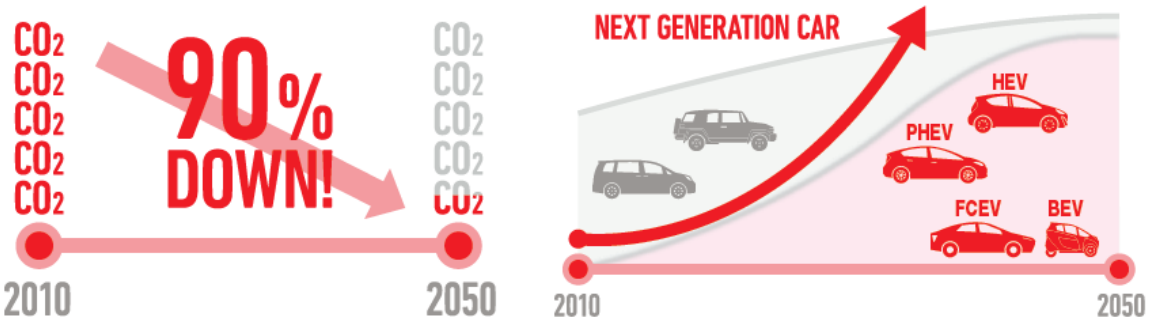
**Fundamental Approach**

Extreme weather phenomena around the world are wreaking havoc on society, attesting to the reality of global warming. If adequate measures are not taken, the harm will become even more severe, and the risks of global-scale damage have been pointed out. Under these circumstances, the Paris Agreement, which came into effect in 2016, sets long-term goals to hold the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels.
As the world is moving toward the realization of the beyond 2°C scenario, Toyota sees this situation as both a risk and an opportunity and announced the "New Vehicle Zero $CO_2$ Challenge." Toyota will strive to slash average $CO_2$ emissions per vehicle by 90 percent in comparison with 2010 levels, by 2050.

Based on the idea that eco-friendly vehicles contribute to society only when they come into widespread use, we are not only deploying technologies for conventional engine vehicles, but also accelerating advances in technology and its widespread adoption for the electrified vehicles that Toyota has been developing (including hybrid electric vehicles (HEVs), plug-in hybrid electric vehicles (PHEVs), battery electric vehicles (BEVs), and fuel cell electric vehicles (FCEVs)).
Toyota is committed to continue working hand in hand with stakeholders to build the necessary infrastructure that supports the widespread adoption of these vehicles.
Through these initiatives, we will contribute to achieving SDG 7.3 (improvement in energy efficiency) and 13.1 (reduction of $CO_2$).

**Related SDGs**

| | | |
|---|---|---|
| Target | 7.3 (improvement in energy efficiency) | 13.1 (reduction of $CO_2$) |
| Sixth plan targets and progress | No. 1, 2 (p.14) | No. 1, 2 (p.14) |




Source: Toyota Motor Corporation "Environmental Report 2019" P.19

As a milestone to achieve this goal, the company has set a target of at least 5.5 million electrified vehicles being sold globally by 2030, including at least 1 million zero-emission vehicles. In order to achieve the 2030 target, the number of models of electric vehicles (EV), fuel cell vehicles (FCV), and plug-in hybrid vehicles (PHV) will be expanded, while the performance of hybrid vehicles (HV) will be improved and the product line-up will be expanded.

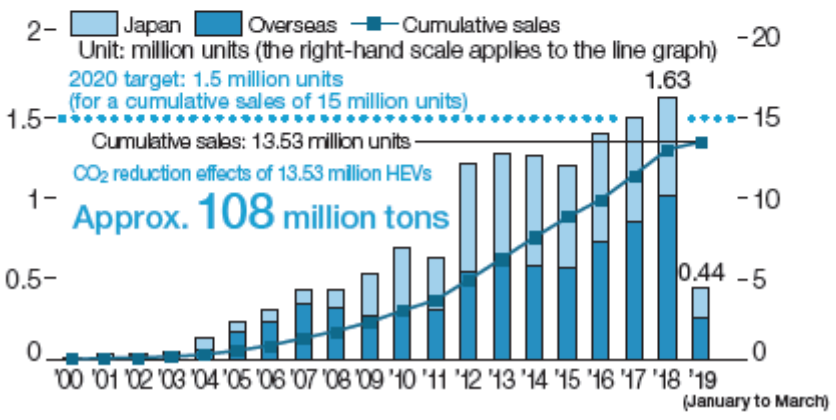
## Promoting Development of Next-generation Vehicles Using Electric Power, and Widespread Use According to Their Features

In order to curb greenhouse gases, we believe that effective vehicle electrification is essential for the efficient use of energy, and encouraging the use of alternative fuels. Since the launch of the Prius, a pioneering electrified vehicle, Toyota has taken the initiative in developing and promoting the widespread use of electrified vehicles based on the belief that eco-friendly vehicles can contribute to the environment only when they come into widespread use.
In December 2017, we announced the challenges toward the popularization of electrified vehicles, which is one of the medium- to long-term initiatives. We aim to achieve global sales of more than 5.5 million electrified vehicles including more than 1 million BEVs and FCEVs, which are ZEVs*, by 2030. We will expand dedicated electrified models and electric options through about 2025 and will have no vehicles available only as an engine model globally.
Starting in 2020, we will accelerate the introduction of BEVs, initially in China, and will expand BEV models to more than 10 in the first half of the decade worldwide.
We will also expand the lineup of FCEVs and PHEVs throughout the 2020s.
With regard to HEVs, we will raise the efficiency of the 2.0-liter Toyota Hybrid System (THS II) while developing various types of hybrid systems such as high-power and simplified versions, expanding the product line-up to meet customer needs.

Environmental Data p. 54-A

* Zero Emission Vehicles: Vehicles that do not emit $CO_2$ at all during operation such as BEVs and FCEVs

**Annual HEV Sales and Cumulative Sales (Global)** Third Party Assurance




Source: Toyota Motor Corporation "Environmental Report 2019" P.19

## IV. How to present scenario analysis

Examples of the content of scenario analysis and how to present the results include the following:

(See TCFD Guidance P.44)

### vi) Quantitative disclosure of scenario analysis results

**Kirin Group**

Using Group Scenario 1 (2°C scenario, SSP1, sustainable development) and Group Scenario 3 (4°C scenario, SSP3, unwanted world) set in 2018, the impacts of climate change in 2050 and 2100 are analyzed for each major country from which products are sourced.

Impact of climate change on major agricultural product yields/land suitable for cultivation

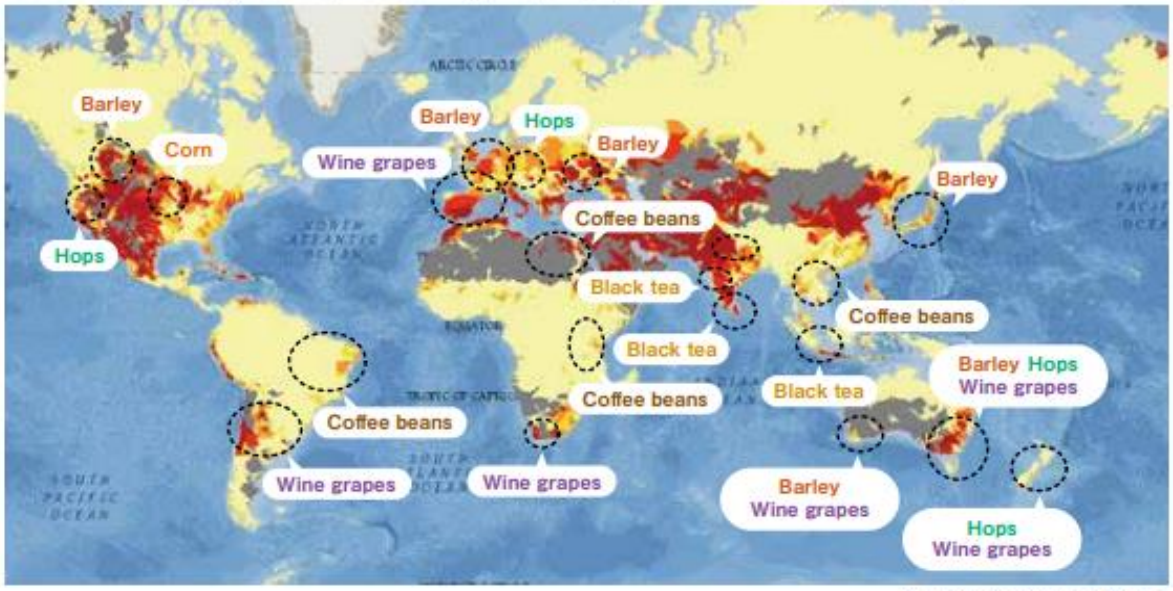
Legend: Negative/positive impact of less than 10% ▲/+
From 10% to less than 50% ▲▲/++
50% or more ▲▲▲/+++

| Agricultural products | Kirin Group Scenario3: 4℃, unwanted world, 2050 | | | |
|---|---|---|---|---|
| | United States | Asia | Europe/Africa | Oceania |
| Barley | | West Asia<br>Yield▲/+<br>South Korea<br>Yield+ | Finland<br>Spring wheat yield▲<br>Mediterranean coast<br>(West) yield▲, (East) yield+<br>France<br>Winter barley and spring barley: Both yields▲ | Western Australia<br>Yield▲▲ |
| Hops | | | Czech Republic Yield▲ | |
| Black tea | | Sri Lanka<br>Yields down in lowlands<br>Little impact of temperature rise in highlands<br>India (Assam region)<br>For each 1°C temperature rise above average temperature of 28°C, yields down 3.8%<br>India (Darjeeling region)<br>Yield▲▲~▲▲▲<br>(Sources from tea industry, not academic papers) | Kenya<br>Rise in altitude of suitable cultivation land<br>Major contraction of suitable cultivating land in Nandhi region and western Kenya<br>Kenyan mountain regions will remain suitable for cultivation<br>Malawi<br>Chitipa district: Suitable land▲▲▲<br>Nkhata Bay district: Suitable land▲▲▲<br>Mulanje district: Suitable land+++<br>Thyolo district: Suitable land++ | |
| Wine grapes | United States (California)<br>Suitable land: ▲▲▲<br>Northwestern United States<br>Suitable land: +++<br>Chile<br>Suitable land: ▲▲ | Japan (Hokkaido)<br>Expansion of suitable land<br>Enable cultivation of Pinot Noir<br>Japan (Central Honshu)<br>Suitable land expanded on the one hand, but high-temperature damage also caused | Northern Europe<br>Suitable land: +++<br>Mediterranean coast<br>Suitable land: ▲▲▲<br>Spain<br>Production volumes▲to▲▲<br>Western Cape, South Africa<br>Suitable land: ▲▲▲ | New Zealand<br>Suitable land: +++<br>Southern coastal regions of Australia<br>Suitable land: ▲▲▲<br>Outside southern coastal regions of Australia<br>Suitable land: ▲▲ |
| Coffee beans | Brazil<br>Suitable land for Arabica: ▲▲▲<br>Suitable land for Robusta: ▲▲▲ | Southeast Asia<br>Suitable land for Arabica: ▲▲▲<br>Suitable land for Robusta: ▲▲▲ | East Africa<br>Suitable land for Arabica: ▲▲<br>Suitable land for Robusta: ▲▲ | |
| Corn | Southwestern United States<br>Yield ▲▲<br>United States (Iowa in mid-West)<br>Yield ▲~▲▲ | | | |

Source: Kirin Group "Environmental Report 2019" P.14

In addition to the impacts on yields of major agricultural products, the report includes the results of assessments of physical risks, e.g. water risks such as floods and water stress, in major agricultural production areas and domestic manufacturing and distribution routes, and the impact of carbon pricing on the company's carbon emission costs.

Water stress in major agricultural production regions (2040, equivalent to Kirin Group Scenario 3)




source : World Resources Institute

Assessment of impact of carbon pricing

In event of inaction on medium-term GHG emission reduction target of 30% by 2030

Kirin Group Scenario1:2℃, sustainable deveropment
Kirin Group Scenario1:4℃, unwanted world

| | Kirin Group Scenario 3 | | Kirin Group Scenario 1 | |
|---|---|---|---|---|
| | 2025 | 2040 | 2025 | 2040 |
| Estimate cost of impact (unit: 1,000 USD) | 10,944 | 14,448 | 51,268 | 80,374 |
| Estimate cost of impact (unit: 1 million JPY) | **1,215** | **1,604** | **5,691** | **8,921** |

In event of achievement of medium-term GHG emission reduction target of 30% by 2030

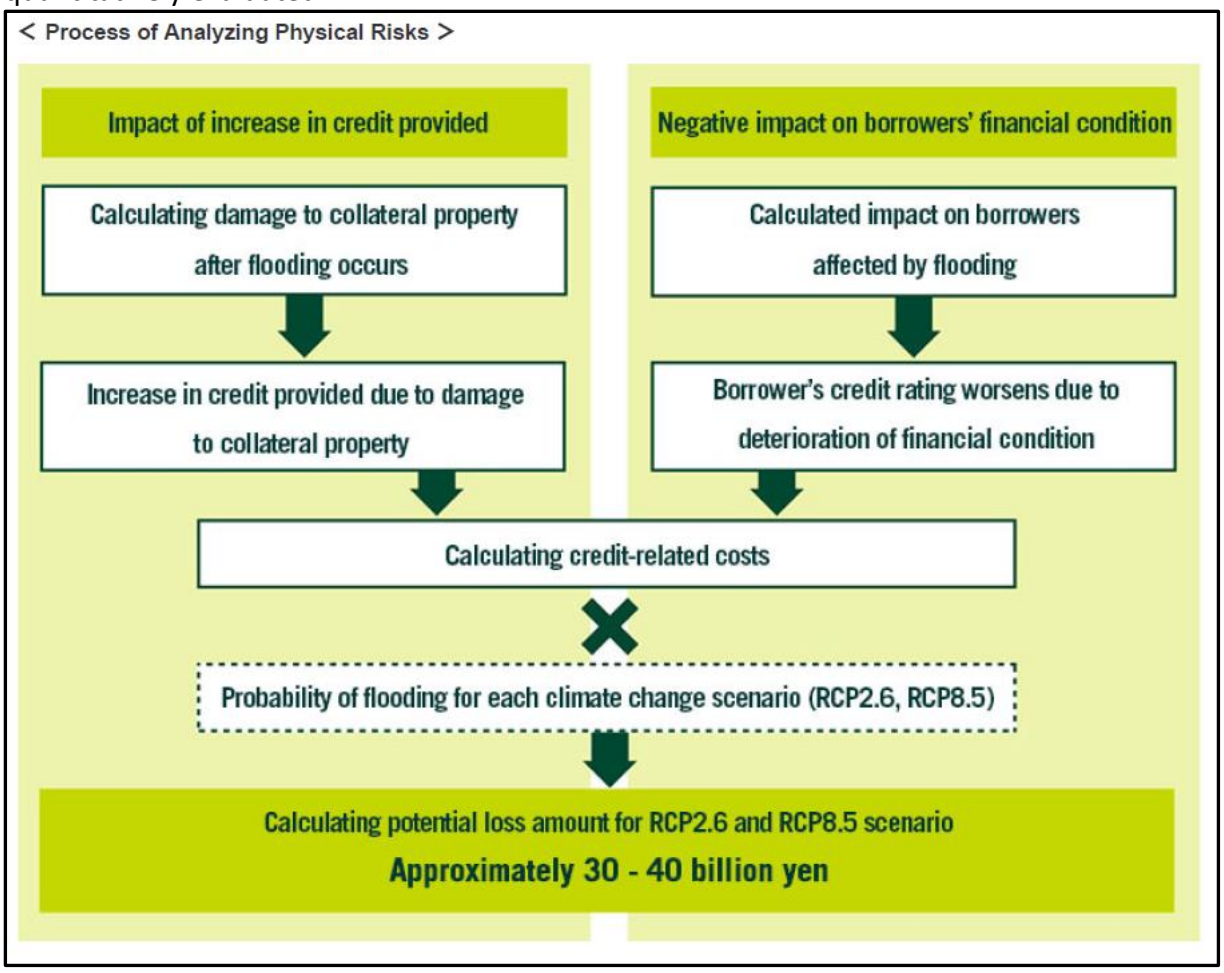
| | Kirin Group Scenario 3 | | Kirin Group Scenario 1 | |
|---|---|---|---|---|
| | 2025 | 2040 | 2025 | 2040 |
| Estimate cost of impact (unit: 1,000 USD) | 8,956 | 6,905 | 41,958 | 38,411 |
| Estimate cost of impact (unit: 1 million JPY) | **994** | **766** | **4,657** | **4,264** |

* Calculated by multiplying assumed $CO_2$ emissions in 2025/2040 by carbon price forecasts

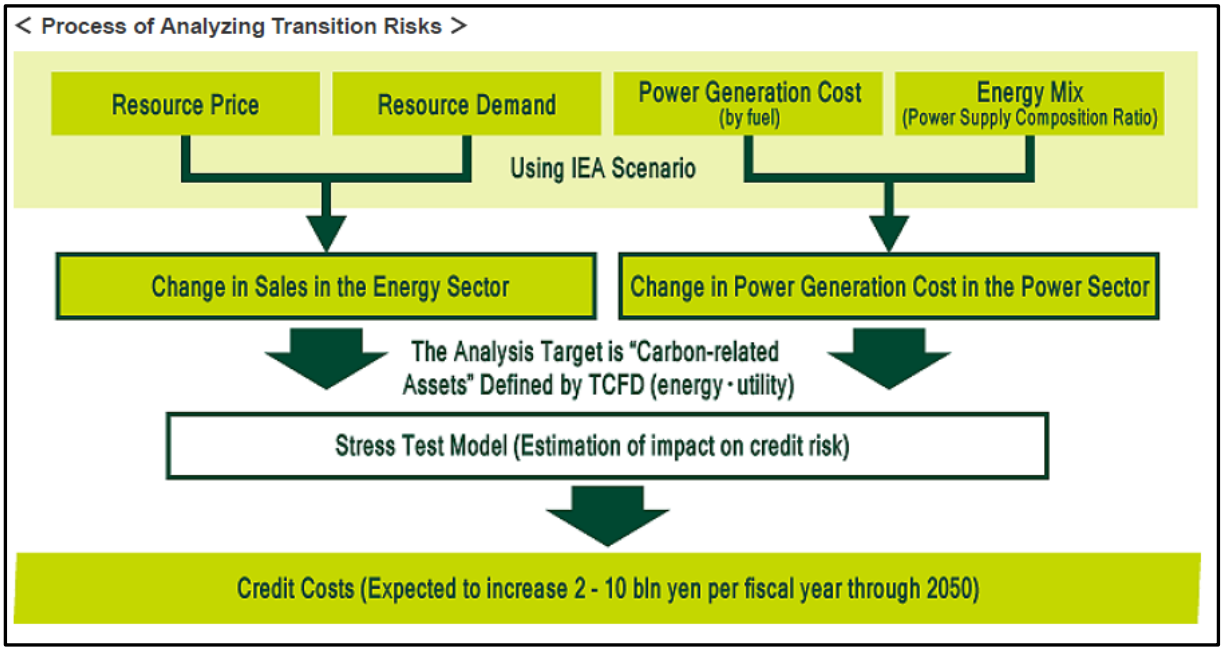
Source: Kirin Group "Environmental Report 2019" P.15

## Sumitomo Mitsui Financial Group Inc.

A flowchart is established to calculate the physical risks and transition risks, which are quantitatively evaluated.



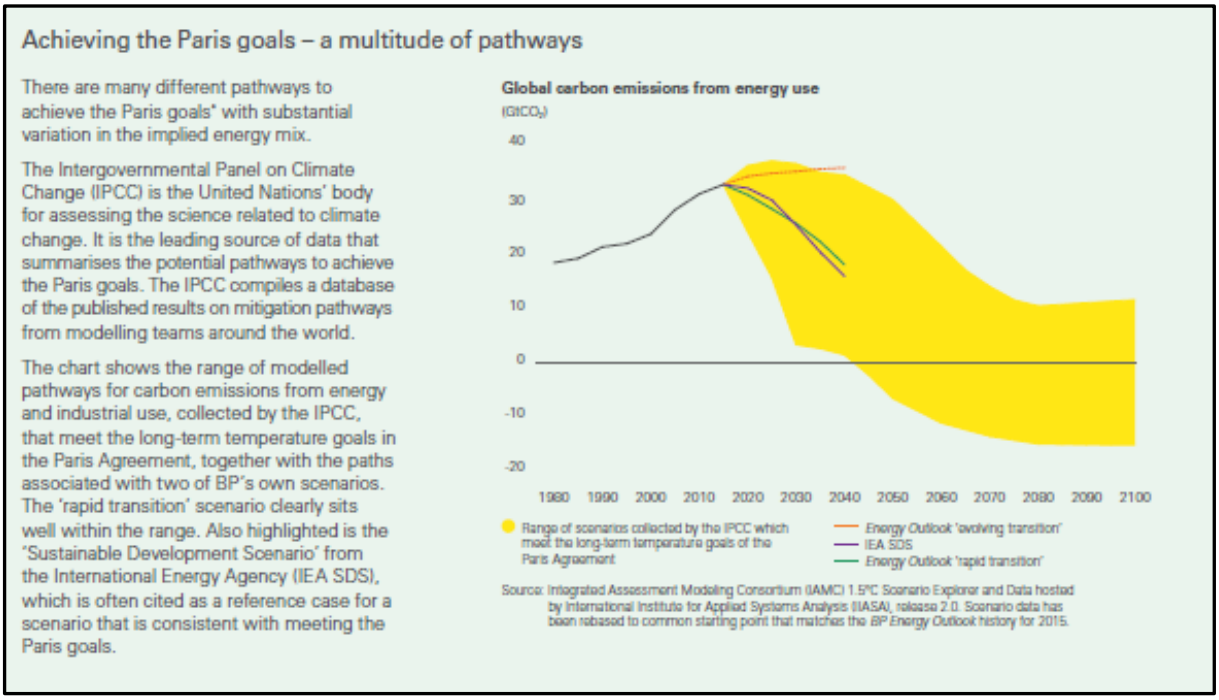

Source: Sumitomo Mitsui Financial Group Inc. "Sustainability Report 2019" P.56




Source: Sumitomo Mitsui Financial Group Inc. "Sustainability Report 2019" P.57

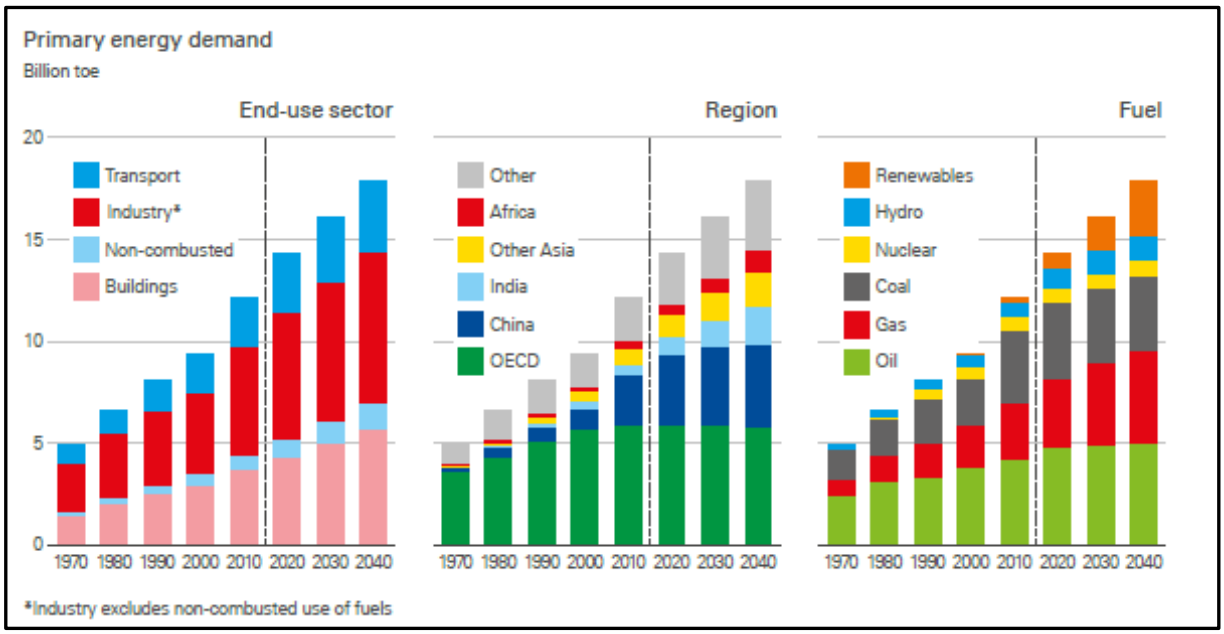
## BP

BP develops its own scenarios with varying assumptions about policies, technologies, and consumer behavior and analyzes in comparison with IEA and IPCC scenarios.




Source: BP "Sustainability Report 2019" P.9

Primary energy demand by sector, region, and fuel in 2040 is shown quantitatively.

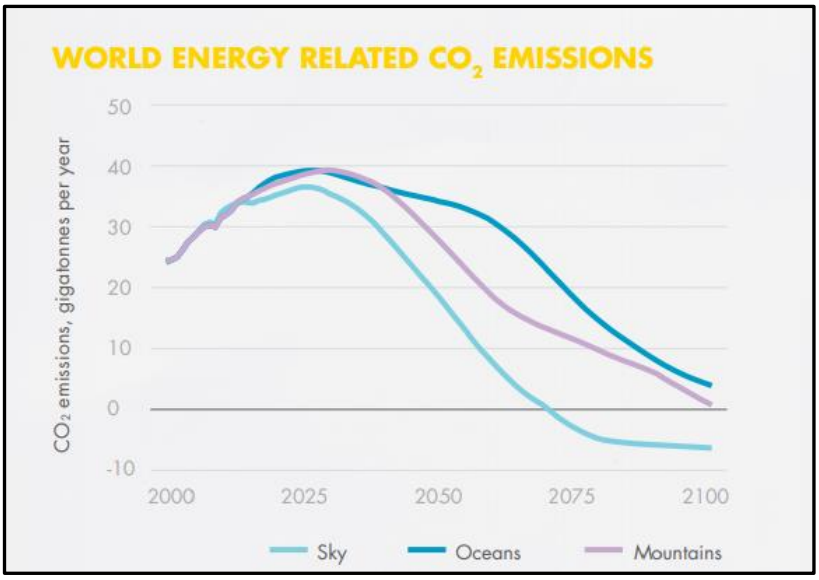



Source: BP "2019 BP Energy Outlook" P.15

## Royal Dutch Shell

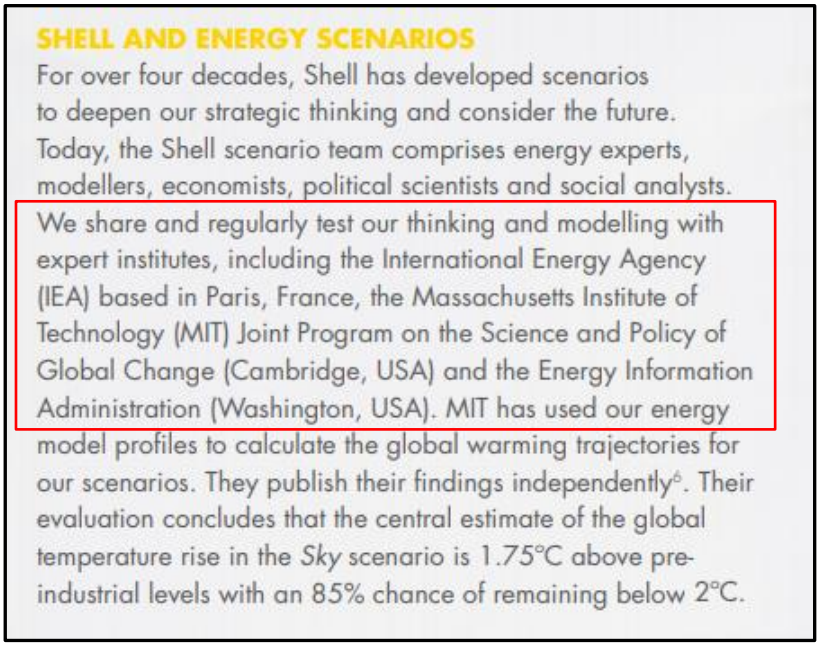
The company conducts scenario analysis using three original scenarios: Sky (below 2°C), Oceans, and Mountains.

- Mountains: A scenario in which governments promote gradual political and economic reforms.
- Oceans: A scenario in which the market and the general public becomes more influential, and changes become more volatile due to factors such as deregulation.
- Sky: A scenario to achieve the goal of the Paris Agreement to reach net-zero emissions by 2070.




Source: Royal Dutch Shell "SHELL ENERGY TRANSITION REPORT" P.19

The scenarios are regularly reviewed by external institutions such as the IEA, MIT and EIA.




Source: Royal Dutch Shell "SHELL ENERGY TRANSITION REPORT" P.19

The impact on demand of each energy product under the SKY scenario prepared by the company is calculated according to product, region, and year, and is quantitatively listed.

**DEMAND IMPACT UNDER *SKY* FOR DIFFERENT ENERGY PRODUCTS**

Compound annual growth rates (CAGR) for the defined period in time.

| | World | | | | India | | | | US | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2020-2025 | 2025-2030 | 2030-2040 | 2040-2060 | 2020-2025 | 2025-2030 | 2030-2040 | 2040-2060 | 2020-2025 | 2025-2030 | 2030-2040 | 2040-2060 |
| **Coal** | +0.3% | -0.6% | -1.7% | -2.8% | +5.8% | +2.5% | +1.6% | -1.0% | -3.4% | -4.4% | -7.8% | -3.8% |
| **Gas** | +2.1% | +0.9% | -0.5% | -3.3% | +5.4% | -1.4% | -3.3% | -0.3% | +1.0% | -0.8% | -1.2% | -3.7% |
| **Oil**[1] | +0.9% | -0.9% | -0.9% | -1.6% | +4.8% | +2.6% | +2.7% | +1.2% | -1.4% | -3.5% | -4.3% | -4.7% |
| **Biofuels** | +2.5% | +1.2% | +9.6% | +5.5% | +5.0% | +9.0% | +11.7% | +16.5% | -1.9% | -6.4% | +13.1% | +0.9% |
| **Oil products*** | +1.0% | -0.8% | -0.2% | -0.7% | +5.2% | +2.6% | +3.2% | +1.8% | -1.4% | -3.6% | -3.0% | -3.4% |
| consumed by road transport | +0.9% | -1.1% | -0.4% | -1.6% | +5.5% | +2.9% | +3.7% | +2.1% | -1.5% | -4.3% | -3.7% | -5.0% |
| consumed by aviation | +1.6% | +0.9% | +3.0% | +2.1% | +7.2% | +5.1% | +7.4% | +5.9% | -0.3% | -1.3% | +1.1% | +0.8% |
| consumed by marine | +1.2% | +0.8% | +0.7% | -0.0% | +19.7% | +12.9% | +5.5% | -0.5% | -0.6% | -1.0% | -0.8% | -1.1% |
| consumed by industry | +1.5% | -2.7% | -6.4% | -11.5% | +4.7% | +0.1% | +0.6% | -6.7% | 0.0% | -3.3% | -7.7% | -24.5% |
| used for (petro)chemicals | +2.1% | +1.3% | +0.8% | +0.2% | +5.5% | +3.6% | +2.3% | +0.8% | -0.2% | -1.5% | -2.6% | -6.9% |
| **Hydrogen** | +29.7% | +25.9% | +17.6% | +12.6% | +32.4% | +8.0% | +14.2% | +16.6% | +32.3% | +32.5% | +23.3% | +9.4% |
| **Solar PV** | +20.3% | +19.0% | +10.3% | +6.0% | +17.5% | +16.1% | +9.5% | +11.2% | +19.0% | +24.0% | +10.2% | +3.1% |
| **Solar Thermal** | +8.1% | +8.3% | +8.3% | +4.9% | +22.2% | +12.0% | +4.3% | +6.4% | +2.6% | +5.1% | +19.9% | -1.5% |
| **Wind** | +11.3% | +9.5% | +10.1% | +5.4% | +20.2% | +12.8% | +8.8% | +4.0% | +3.4% | +6.6% | +10.8% | +6.8% |

1 Oil demand excludes refinery gains, biofuels and synthetics.

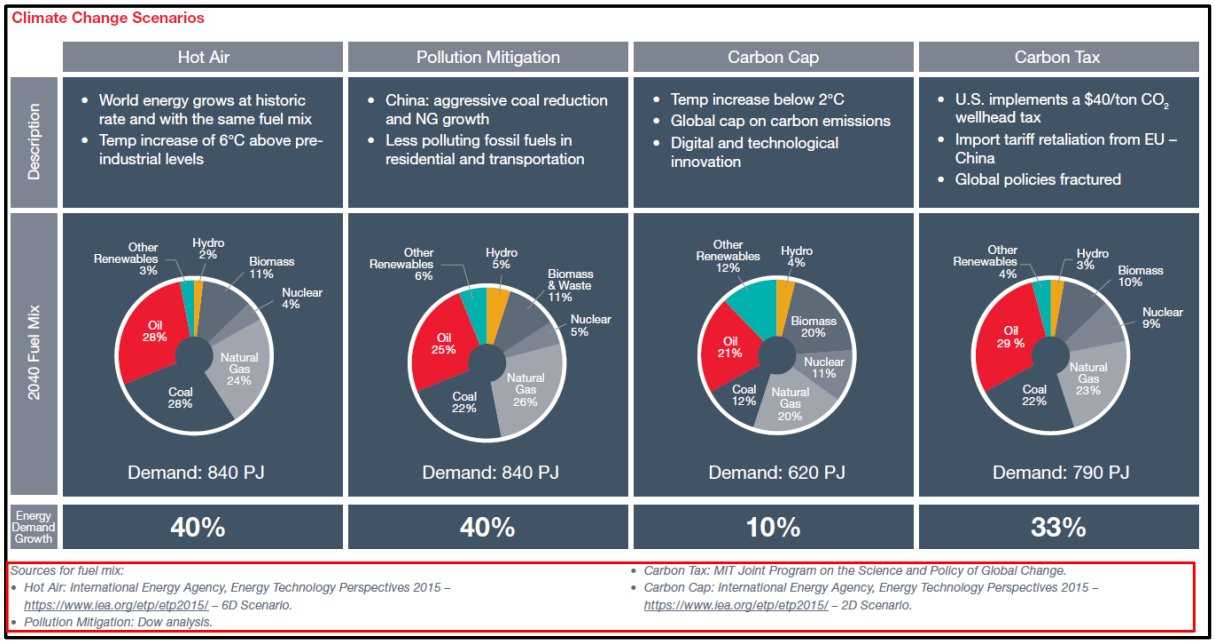
* The demand for liquid hydrocarbon fuels is used as a proxy for oil products demand. By 2030, a minor fraction (less than 5%) of the liquid hydrocarbon fuels will come from biofuels alongside crude oil. By 2060, this will be close to 25% on average globally (more than 10% in India and close to 40% in the USA).

Source: Royal Dutch Shell "SHELL ENERGY TRANSITION REPORT" P.30

## Dow Chemical

Analysis is performed using both existing and original scenarios. Based on these scenario analyses, investment plans are developed to minimize costs and capture opportunities over the next 10 years. In addition, the energy mix and rate of increase in energy demand in 2040 for each scenario are quantitatively described.

- Hot Air Scenario: IEA ETP 2015 6D Scenario
- Pollution Mitigation Scenario: Dow's Own Scenario
- Carbon Cap Scenario: IEA ETP 2015 2D Scenario
- Carbon Tax Scenario: Scenario based on the joint program with MIT

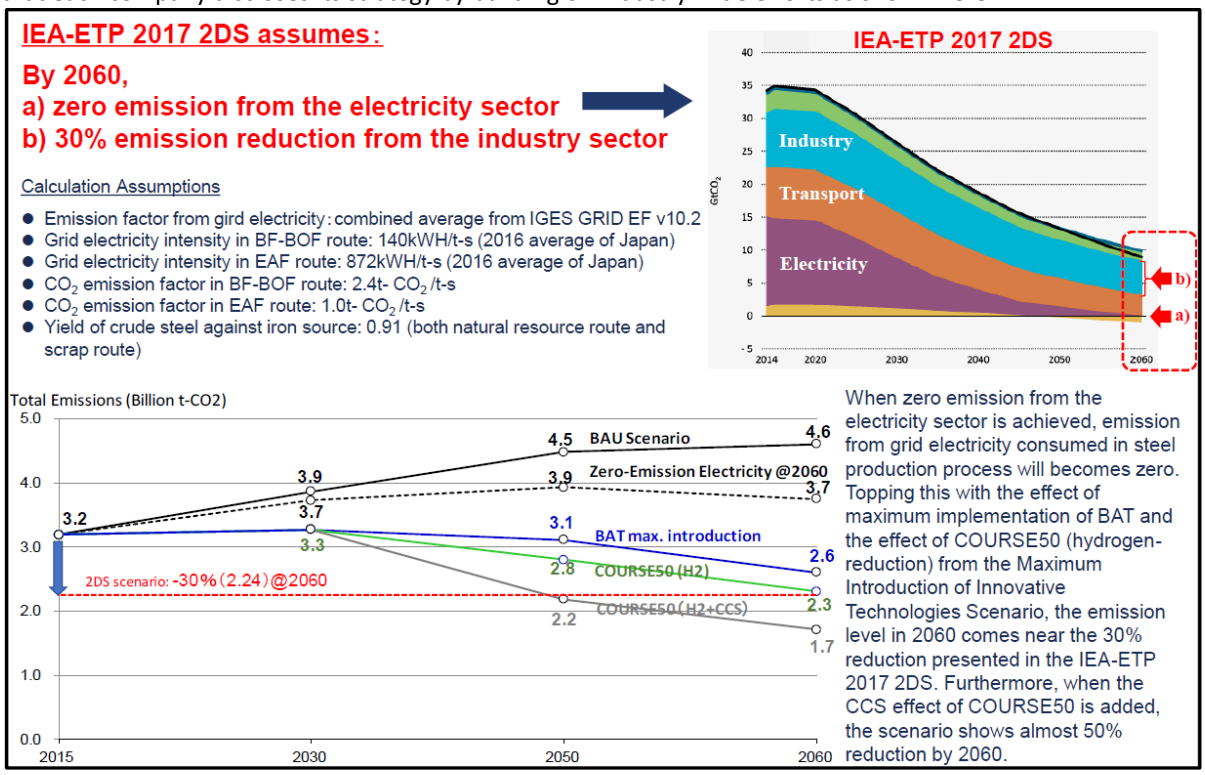



Source: Dow Chemical "2018 Sustainability Report" P.44

## Japan Iron and Steel Federation

The report draws upon the rate of GHG emissions reduction required for the industrial sector (30% emission reduction by 2060) under the 2°C scenario of the IEA Energy Technology Perspectives (ETP). The federation concluded that the iron and steel sector can achieve roughly the same level of GHG emissions reduction as that required by ETP through the implementation of BAT and innovative technologies, in addition to the effects of zero emissions achieved in the electric utilities sector.

Note: The TCFD recommends the disclosure of strategy by individual companies. Therefore, it is recommended that each company discloses its strategy by building on industry-wide efforts as shown here.

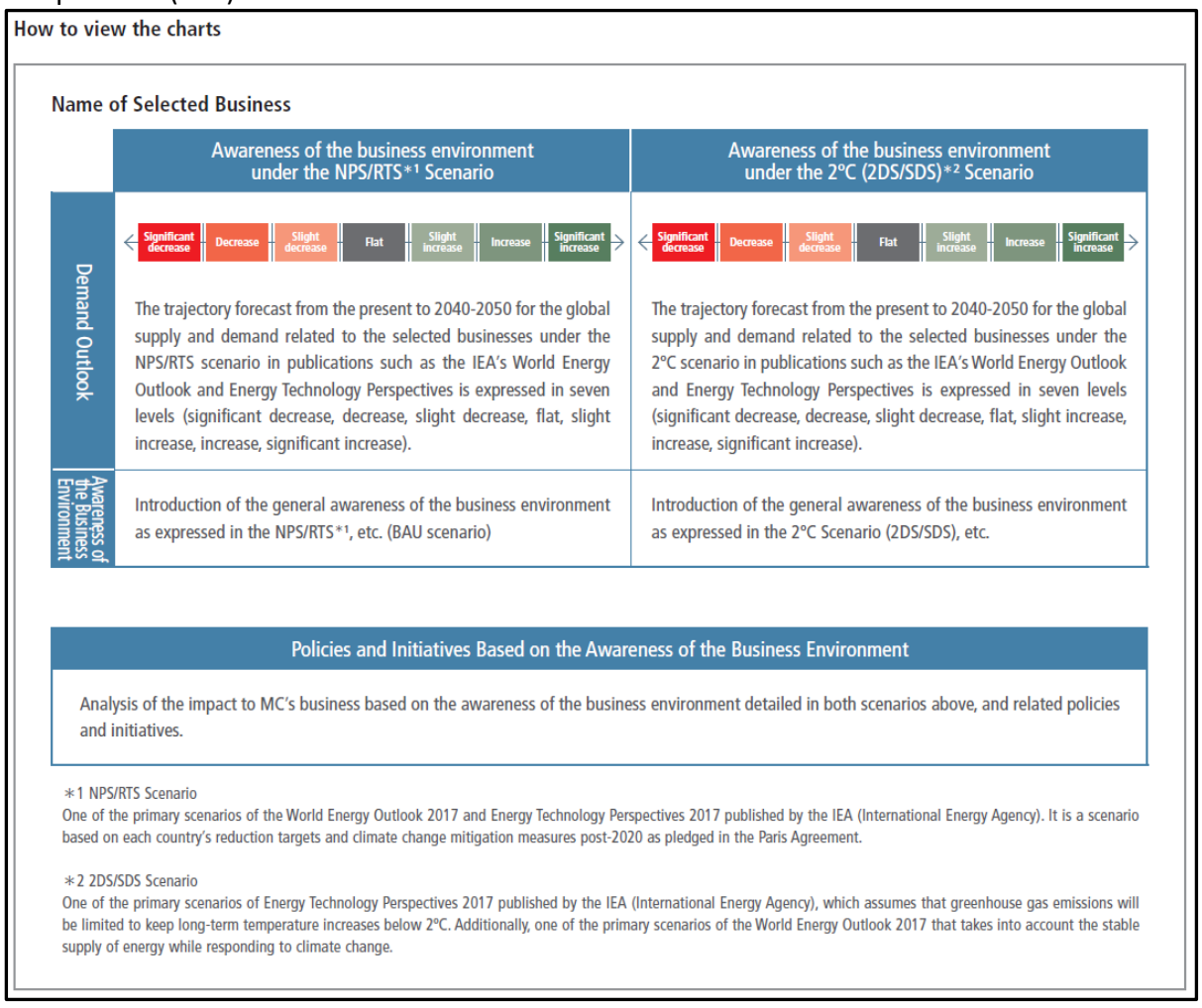



Source: Japan Iron and Steel Federation "JISF Long-term vision for climate change mitigation: A challenge towards Zero-carbon STEEL" P.13

### vii) Qualitative disclosure of scenario analysis results

## Mitsubishi Corporation

The company presents its understanding of the business environment and related policies, and initiatives based on its global demand forecast – the trajectory forecast for demand change, expressed in seven levels, from the present until 2040 - 2050 – under different climate scenarios including those in the IEA's World Energy Outlook (WEO) and Energy Technology Perspectives (ETP).




Source: Mitsubishi Corporation "ESG DATABOOK 2019" P.34

For example, as a result of the scenario analysis of the power generation business, the expansion of opportunities for renewable energy and clean gas-fired power generation is expected under the NPS/RTS scenario, and the decrease in business opportunities due to the reduction of fossil fuel power generation is expected under the 2°C scenario. In addition, a policy for strengthening business operations with lower environmental footprint and power trading functions is presented.

**Power Generation (Fossil Fuels)**

| | Awareness of the business environment under the NPS/RTS *1 Scenario | Awareness of the business environment under the 2°C (2DS/SDS) *2 Scenario |
|---|---|---|
| Demand Outlook | ← Significant decrease \| Decrease \| Slight decrease \| Flat \| **Slight increase** \| Increase \| Significant increase → | ← Significant decrease \| **Decrease** \| Slight decrease \| Flat \| Slight increase \| Increase \| Significant increase → |
| Awareness of the Business Environment | In order to respond to an increase in electricity demand, opportunities are anticipated for businesses such as renewable energy and clean gas-fired power generation.<br>However, given the nature of power generation being produced locally for local consumption, MC feels it is important to continue managing businesses by responding to the policies, etc. of each country and region. | Business opportunities are expected to decline in line with the reduction of fossil fuel power generation amount from the 2020s. In the 2030s, it is anticipated that the strengthening of regulations including carbon taxes could increase the cost of existing thermal power plants, and the profit structure will further change as gasfired power generation shifts to a dispatchable source of power. Moreover, from the 2040s, thermal power plants used for regulating supply and demand may also be required to reduce their $CO_2$ emissions, which could necessitate further reductions in operating hours. |

**Policies and Initiatives Based on the Awareness of the Business Environment**

In the thermal power generation business, in addition to facilitating collaboration between its gas-fired power generation business, which uses a fuel source with a lower environmental footprint, and its upstream natural gas business, MC is also strengthening its power trading function.
In line with "Transitioning to a Low-carbon Society", MC is taking steps such as converting to alternative fuel sources and raising the percentage of biomass co-combustion at existing coal-fired power plants. Furthermore, MC has adopted a policy not to enter into any new coal-fired power generation businesses, with the exception of projects which MC has already commenced development. Going forward, paying attention to factors including future technology trends for reducing $CO_2$ emissions (such as CCS), which will become necessary for promoting businesses while considering the environment, as well as progress towards achieving the energy mix of 2030 (including policy trends), MC will aim to reduce its coal-fired power generation capacity on a net equity basis based on 2°C scenario analyses. In the gas-fired power generation business as well, by conducting a risk analysis based on the impacts of climate change, MC will confirm the future outlook of the business and determine its strategic significance.
Furthermore, for the trading of components, MC has a policy to use best available technology (BAT) to the extent possible.

Source: Mitsubishi Corporation "ESG DATA BOOK 2019" P.35

## New World Developments Company Limited

It is stated that the scenario analysis that are planned but yet to be implemented are presented in addition to the scenarios considered.

- **Climate scenario planning study:** The Greater Bay Area is located in the coastal area of Southeast China and is more susceptible to climate hazards such as typhoons and flooding. The Board approved the commencement of a climate scenario planning study to assess physical climate risks for major properties, including but not limited to commercial, retail and residential buildings, in the Greater Bay Area and transition risk at the company level. Two scenarios have been studied:
  - A medium scenario with about 2.5°C of global surface warming in 2100, corresponding to the Intergovernmental Panel on Climate Change ("IPCC") Representative Concentration Pathway ("RCP") 6.0 scenario
  - An extreme scenario with over 4°C of global surface warming in 2100, corresponding to the IPCC RCP 8.5 scenario

  Under these scenarios, asset-level risk exposure to flooding, extreme wind, water stress and heat stress is being assessed. A risk score was assigned to each asset for each of the hazards under the two scenarios. In general, coastal cities such as Hong Kong are more prone to flood risks and storm surges than more inland cities such as Guangzhou in the Greater Bay Area. High-rise office buildings with glass façade are also more susceptible to the damages of strong winds and typhoons. Recommendations on resilience enhancement measures will then be studied. Insights gained from this analysis will also inform the design and planning of future buildings.

Source: New World Developments Company Limited "Sustainability Report 2019" P.33

## JFE Holdings

Based on the responses to the societal changes and changes expected under the 2°C and 4°C scenarios, most relevant factors for the company are identified and risks and opportunities are qualitatively assessed.

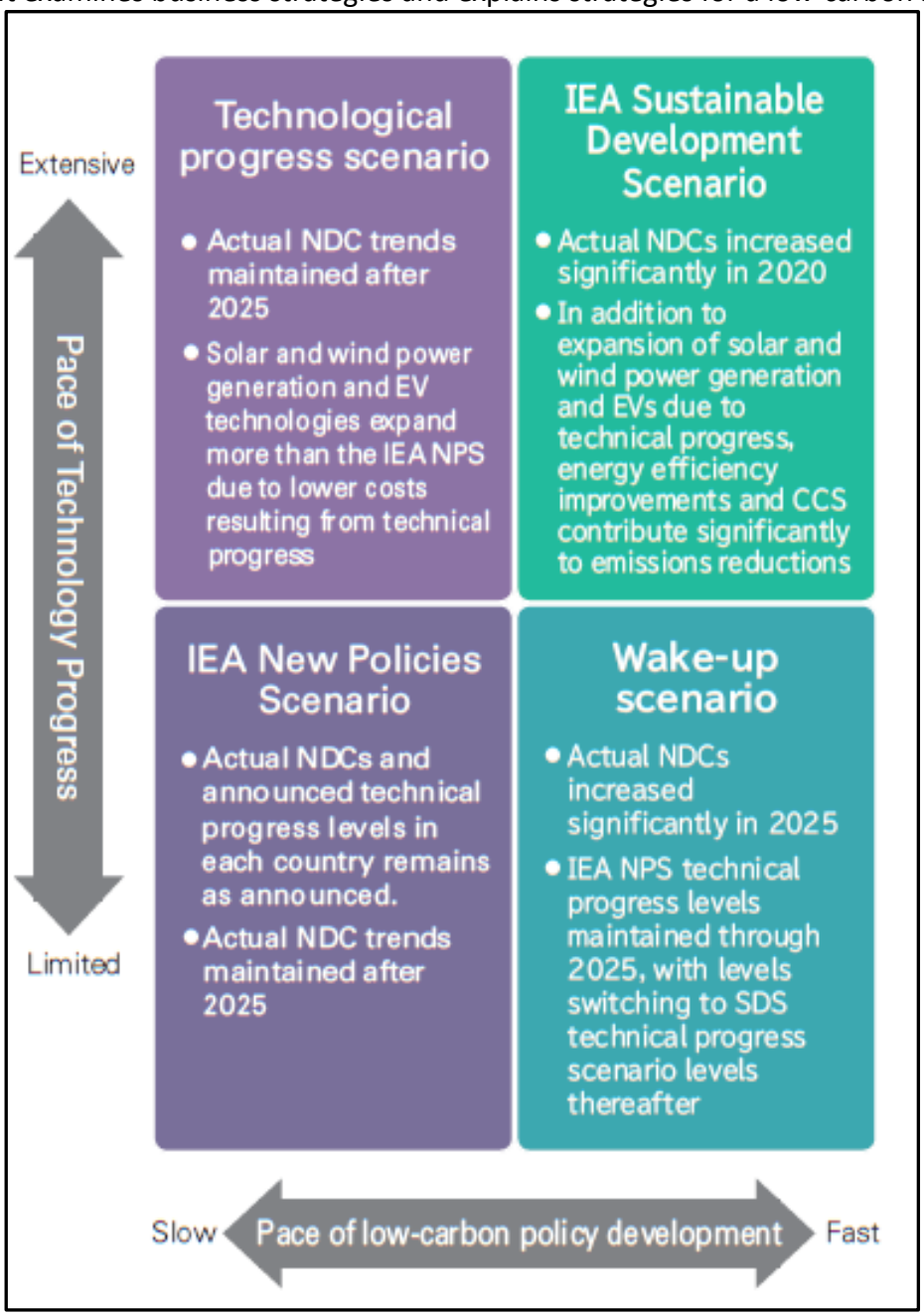
### Results of Scenario Analysis

| | Societal changes and responses to changes | | Expectations and concerns of stakeholders towards the JFE Group | Evaluation results |
|---|---|---|---|---|
| 2°C scenario<br>Important factor ❶<br>Decarbonization in steel production processes | Rising societal demands for decarbonization towards steel production processes | Implementation of innovative technologies that achieve large-scale decarbonization<br>Implementation of carbon pricing | • Significant contribution through innovative technologies<br>• Increase in investment in the implementation of innovative technologies<br>• Increase in operation costs due to the introduction of carbon pricing | Opportunities: Development and implementation of innovative technologies on top of existing technologies<br>Risks: Investment in the implementation of innovative technologies is possible<br>Cost competitiveness is maintained when carbon pricing is implemented worldwide |
| 2°C scenario<br>Important factor ❷<br>Increase in demand for the effective use of steel scraps | Increased focus on electric furnace method, which emits low levels of carbon | Rising expectations toward electric furnace steel<br>Increase in scrap generation | • Replacement of converter steel with electric furnace steel<br>• Increase in JFE Group's production of electric furnace steel | Opportunities: Restrictions on the amount of scrap provided, increase in production of converter steel<br>Increase in production of electric furnace steel and the need for electric furnace engineering<br>Expansion of the scrap logistics business |
| 2°C scenario<br>Important factor ❸<br>Change in demand for steel for automobiles and others | Change in automobile needs<br>Rising demands for eco-friendly raw materials | Increase of EV motors<br>Decrease of internal combustion engines<br>Reduction of weight and the increased use of multi-materials<br>Demand for decarbonization and recyclability | • Increase in demand for electrical steel sheets for EV motors<br>• Decrease in demand for special steel due to the decrease of internal combustion engines<br>• Replacement of automobile steel due to the increased use of multi-materials<br>• Demand for further decarbonization and recyclability in steel production | Opportunities: Increase in demand for electrical steel sheets due to more electric vehicles<br>Increase in demand for special steel due to increase in automobile sales<br>Increase in demand for high-tensile steel sheets for automobiles<br>Refocus on the recyclability of steel<br>Risks: Limited impact of the increased use of multi-materials |
| 2°C scenario<br>Important factor ❹<br>Increase in demand for solutions promoting decarbonization | Shifting to decarbonization | Increase in demand for solutions promoting transition toward decarbonization<br>Overseas development of energy conservation technologies | • Renewable-energy power generation plants<br>• Low-carbon business (Eco Solution) in developing countries using Best Available Technology (BAT) developed and commercialized in Japan | Opportunities: Integrated constructions and operations of renewable energy (biomass, geothermal, and solar power) plants<br>Integrated constructions and operations of waste incinerators and plastic recycling plants<br>Integrated constructions of CCU and CCS facilities<br>Overseas development of low carbon businesses |
| 4°C scenario<br>Important factor ❺<br>Procurement of raw materials becomes unstable due to increased frequency in climate disasters | Intensifying climate disasters alongside rising temperatures | Procurement of raw materials becomes unstable | • Procurement of raw materials becomes unstable | Risks: Undergoing concrete measures<br>"Alternative procurement methods and source distribution"<br>"Strengthening equipment capabilities" |
| 4°C scenario<br>Important factor ❻<br>Damages to business bases due to climate disasters | Intensifying climate disasters alongside rising temperatures | | • Increased damages due to typhoons and rainstorms<br>• Increased damages due to water shortages<br>• Flood damages due to rising sea levels | Risks: Flood and water shortage response measures already in motion<br>Flood impacts due to rising sea levels can be coped with the current measures |
| 4°C scenario<br>Important factor ❼<br>National resilience | Intensifying climate disasters alongside rising temperatures | Increase in importance of strengthening infrastructure<br>Increased demand for disaster prevention products | • Contribution with steel and related products that help strengthen infrastructure | Opportunities: Strengthening infrastructure with steel and related products |

Source: JFE Group "JFE Group Report 2019" P.61

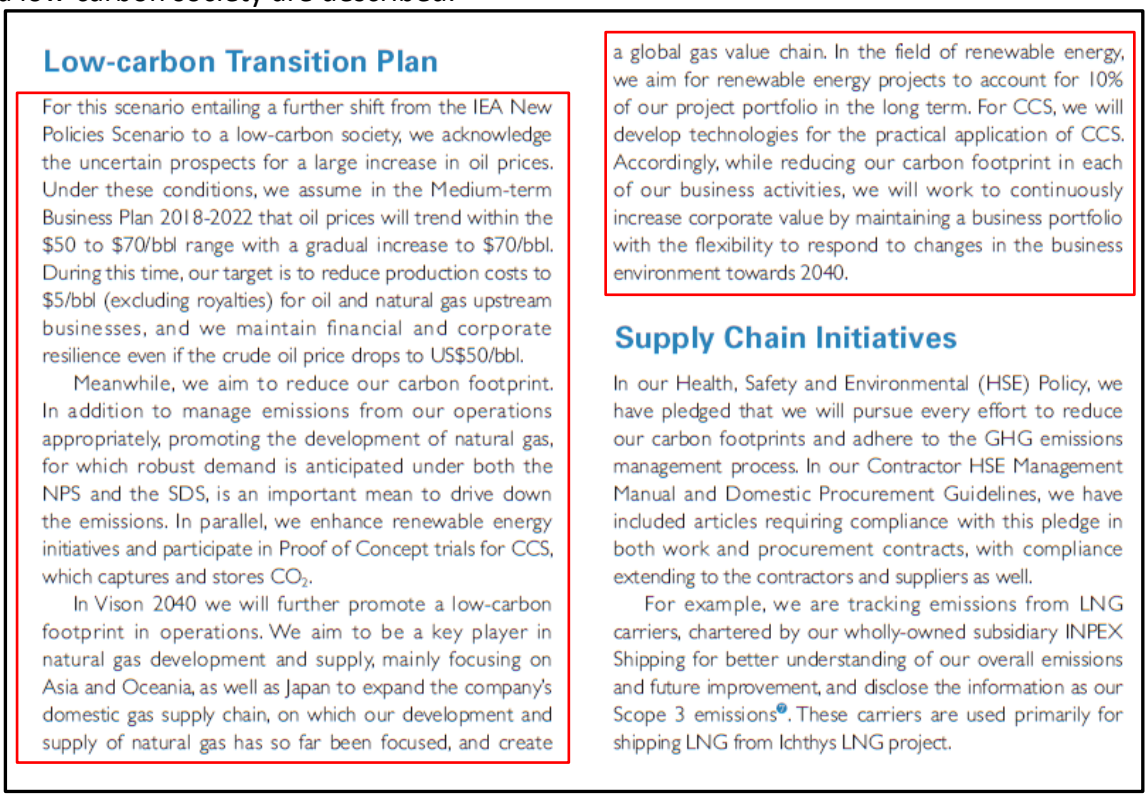
## INPEX Corporation

Based on the IEA WEO New Policies Scenario, two scenarios have been developed that varies the degree and timing of technological progress, referring also to the IEA WEO 2°C scenario. It examines business strategies and explains strategies for a low-carbon society.




Source: INPEX Corporation "Sustainability Report 2019" P.49

Based on these scenarios, business strategies are discussed and strategies for transitioning to a low-carbon society are described.



## Low-carbon Transition Plan

For this scenario entailing a further shift from the IEA New Policies Scenario to a low-carbon society, we acknowledge the uncertain prospects for a large increase in oil prices. Under these conditions, we assume in the Medium-term Business Plan 2018-2022 that oil prices will trend within the $50 to $70/bbl range with a gradual increase to $70/bbl. During this time, our target is to reduce production costs to $5/bbl (excluding royalties) for oil and natural gas upstream businesses, and we maintain financial and corporate resilience even if the crude oil price drops to US$50/bbl.

Meanwhile, we aim to reduce our carbon footprint. In addition to manage emissions from our operations appropriately, promoting the development of natural gas, for which robust demand is anticipated under both the NPS and the SDS, is an important mean to drive down the emissions. In parallel, we enhance renewable energy initiatives and participate in Proof of Concept trials for CCS, which captures and stores $CO_2$.

In Vison 2040 we will further promote a low-carbon footprint in operations. We aim to be a key player in natural gas development and supply, mainly focusing on Asia and Oceania, as well as Japan to expand the company's domestic gas supply chain, on which our development and supply of natural gas has so far been focused, and create a global gas value chain. In the field of renewable energy, we aim for renewable energy projects to account for 10% of our project portfolio in the long term. For CCS, we will develop technologies for the practical application of CCS. Accordingly, while reducing our carbon footprint in each of our business activities, we will work to continuously increase corporate value by maintaining a business portfolio with the flexibility to respond to changes in the business environment towards 2040.

## Supply Chain Initiatives

In our Health, Safety and Environmental (HSE) Policy, we have pledged that we will pursue every effort to reduce our carbon footprints and adhere to the GHG emissions management process. In our Contractor HSE Management Manual and Domestic Procurement Guidelines, we have included articles requiring compliance with this pledge in both work and procurement contracts, with compliance extending to the contractors and suppliers as well.

For example, we are tracking emissions from LNG carriers, chartered by our wholly-owned subsidiary INPEX Shipping for better understanding of our overall emissions and future improvement, and disclose the information as our Scope 3 emissions[9]. These carriers are used primarily for shipping LNG from Ichthys LNG project.

Source: INPEX Corporation "Sustainability Report 2019" P.50

## Toyota Motor Corporation

Based on the IEA 2°C and Beyond 2°C scenarios, the company has established a vision of the future society and has studied the impact on its strategy and finances. Though it was identified that the proportion of ZEV (Vehicles that do not emit GHGs while driving) in the 2030 milestone does not reach the Beyond 2°C scenario despite exceeding the IEA 2°C scenario, the company maintains that it can respond flexibly by changing the lineup of power train or elevating the sales target for electric vehicles.

**STEP 3 Confirm Measures Under 2030 Milestone**

| Milestone | | |
|---|---|---|
| **Challenge 1** | **Challenge 2** | **Challenge 3** |
| Electrified vehicle sales: 5.5 million units<br>ZEV sales: 1 million units | Reduce $CO_2$ emissions by 25% over the entire vehicle life cycle compared to 2013 | Reduce $CO_2$ emission from plants by 35% |

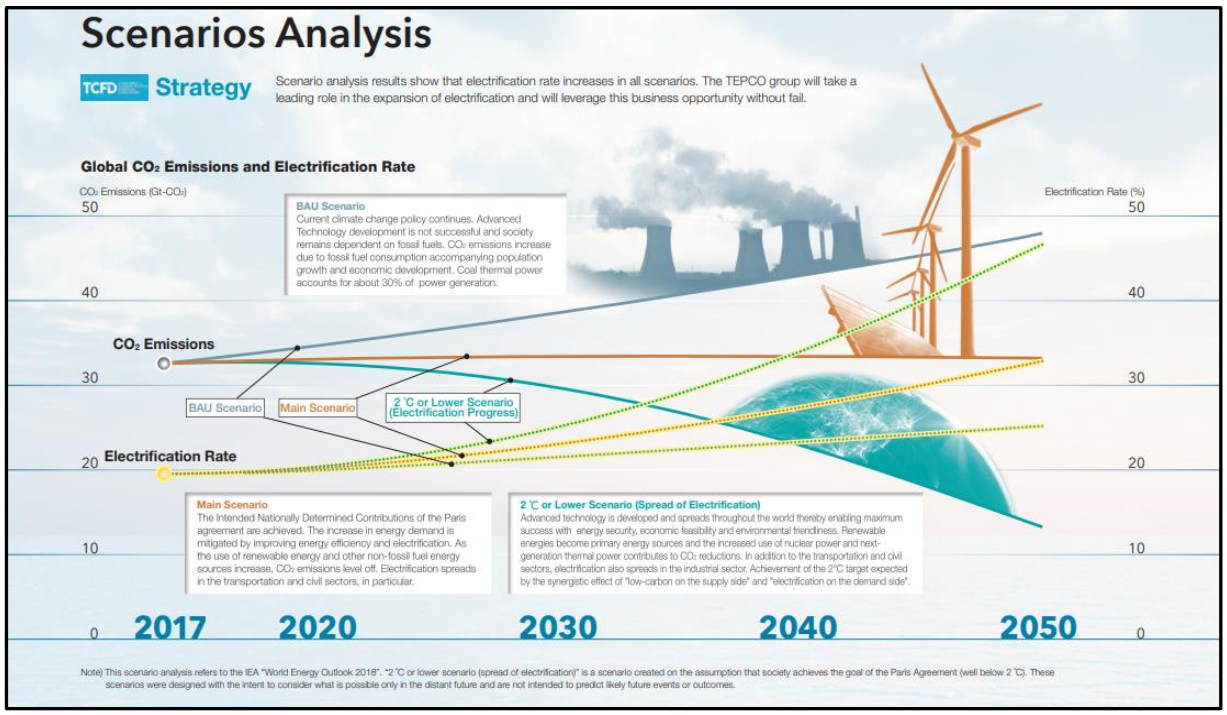
The percentages of electrified vehicles and ZEVs in global sales of new vehicles vary considerably depending on the scenario, and in anticipation of these circumstances, it will be important to flexibly consider powertrain lineups and development of mobility businesses.
Under the 2030 Milestone, the percentage of ZEVs will exceed the 2DS level, but will not reach the level necessary to achieve B2DS. However, through the development of HEVs, Toyota has been establishing a mass production base by cultivating the component technologies essential to electrified vehicles. These technologies can also be utilized in ZEVs, and Toyota is capable of making flexible and strategic changes to powertrain lineups according to demand changes. Therefore, Toyota will be able to respond to changes in social demand through advances in its electrified vehicle technologies.

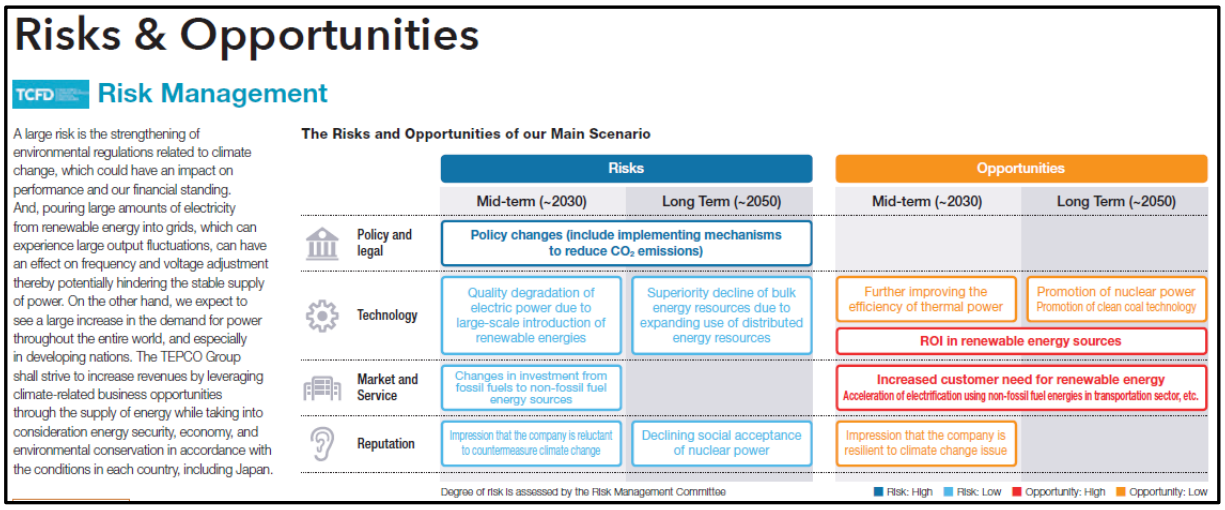
Specific measures relating to electrified vehicle sales targets include the announcement that the projection for achieving the electrified vehicle sales target in the 2030 Milestone has been moved up by approximately five years. Also, Toyota invested in Uber which develops a large sharing business in North America, and is steadily proceeding correspondence to the development of new mobility business including developing automated driving ridesharing.

Source: Toyota Motor Corporation "Sustainability Data Book 2019" P.54

## Tokyo Electric Power Company Holdings

The analysis results for the three climate-related scenarios (BAU scenario, main scenario, and 2°C or lower scenario electrification progress) are presented, and the medium-term (~2030 years) and long-term (~2050 years) risks and opportunities for the main scenario are described.




Source: Tokyo Electric Power Company Holdings "TEPCO Integrated Report 2019" P.28-29

## BHP Billiton

Results of scenario analysis using four original scenarios (shown below) are disclosed.

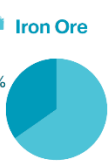
- A New Gear: Projects substantial changes, especially in developed countries
- Closed Doors: Countries lean toward protectionism, international cooperation declines, leading to low growth
- Global Accord: Countries collaborate and develop technologies for economic growth and the transition to a 2°C world
- Two Giants: United States and China become hubs, and measures will be taken mainly in the two regions.


Source: BHP Billiton "Climate Change: Portfolio Analysis (2015)" P.9

The impact on the company's products in a 2°C world is described qualitatively in terms of investment and product demand.

(For example, while the cost competitiveness of thermal coal can be maintained under the 2°C scenario, the future asset value needs to be carefully considered taking into account the effects of regulatory and societal pressures.)

Table 1

| Percentage contribution to FY2016 revenue (1) | Attractiveness of investment outlook (2) in Central case | Change in attractiveness of investment outlook (2) in Global Accord compared to Central case | Impacts under our Global Accord scenario |
|---|---|---|---|
| Thermal Coal 4%  |  |  | • Remains competitive on the cost curve and generates acceptable returns.<br>• Careful consideration would be required before pursuing growth opportunities given the current returns and growing regulatory and societal pressures that could impact future asset values.<br>• Failure to achieve a breakthrough in commercialising low emissions technologies such as CCS would reinforce this view. |
| Gas (3) 10%  |  |  | • Key transition fuel as concerted efforts to reduce emissions are expected to increasingly focus on utilising gas for power generation and transportation.<br>• This results in high demand for gas, particularly in the short to medium term, providing opportunities to invest in the quality gas resources in our portfolio. |
| Metallurgical Coal 11%  |  |  | • Although the sector is slightly less attractive, our higher quality assets remain very attractive compared to peers as penalties are applied to lower quality coals.<br>• Key consideration is around pace of material substitution (e.g. steel scrap in steelmaking) with the advent of tighter environmental regulations. |
| Oil (4) 12%  |  |  | • By 2035, real crude oil prices are lower than our Central case primarily due to the higher penetration of EVs.<br>• While crude oil will likely remain competitive in its core transportation market, it is the most adversely impacted commodity in our portfolio. Lower oil prices in this scenario reduce returns, but our options remain relatively attractive.<br>• Due to the steepness of the oil supply cost curve, our existing oil growth projects remain very competitive with other options in the portfolio. |
| Copper (5) 27%  |  |  | • Remains attractive due to growing demand driven by the growth in renewables and EVs, which generally require more copper to produce.<br>• Price is lower as higher demand is offset by higher recycling.<br>• Aluminium substitution is assumed to be no greater.<br>• Minimal impact on the copper growth portfolio as returns reduce minimally from the Central case and remain attractive.<br>• Increasing regulatory approvals for mines delay the supply of greenfield developments, an advantage for low-cost incumbents. |
| Iron Ore 34%  |  |  | • Sector remains attractive and has a minimal impact on our existing portfolio.<br>• Key consideration is around pace of material substitution (e.g. steel scrap in steelmaking) with the advent of tighter environmental regulations. |

(1) FY2016 revenue includes two per cent from other sources. Revenue is based on Group realised prices and includes third party products. Sale of third party products by the Group contributed revenue of US$1,068 million and Underlying EBITDA of US$55 million (2015: US$1,179 million and US$14 million).
(2) Attractiveness of investment outlook for each commodity is a measure that considers a commodity's average industry margin, market size and diversification, resilience of price to demand and supply shocks, expected demand growth and available investment opportunities.
(3) Gas includes natural gas, LNG and natural gas liquids.
(4) Oil includes crude oil and other petroleum revenues.
(5) Copper includes other commodities produced within our Copper segment.

Source: BHP Billiton "Climate Change: Portfolio Analysis Views after Paris (2016)" P.11

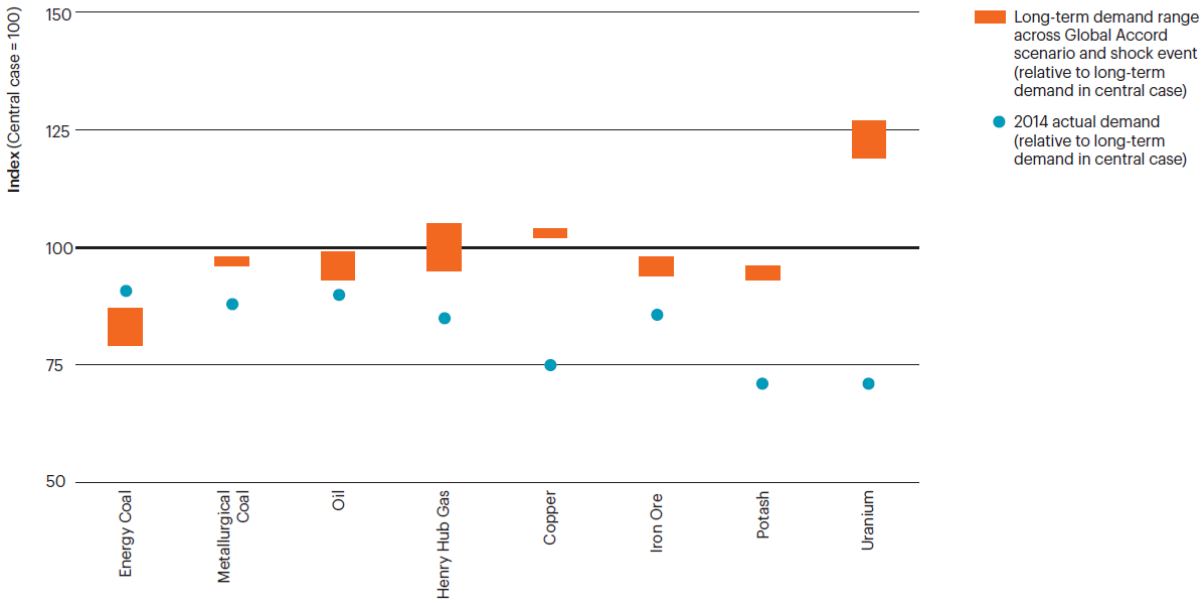
**Table 2: Critical uncertainties impacting demand for BHP Billiton's commodities in a 2°C world**

| Commodity | Critical uncertainties |
|---|---|
| Energy Coal | ↑ Economic carbon capture and storage solution<br>↑ Penalties for lower quality coal supply/minimum quality standards for power generation<br>↓ Switch from coal to gas in power generation<br>↓ Renewables capacity additions for power generation |
| Metallurgical Coal | ↑ Penalties for lower quality coal supply<br>↓ Increased rate of steel scrap collection<br>↓ Materials substitution |
| Copper | ↑ Energy efficient machinery<br>↑ Renewables capacity additions for power generation<br>↑ Increased adoption of electric vehicles<br>↓ Increased rate of copper scrap collection<br>↓ Materials substitution |
| Iron Ore | ↑ Penalties for lower quality iron ore supply<br>↓ Increased rate of steel scrap collection |
| Potash | ↑ Increased focus on balanced fertiliser nutrition<br>↓ Improved fertiliser efficiency and crop nutrient recycling |
| Gas | ↑ Switch from coal to gas in power generation<br>↑ Economic carbon capture and storage solution<br>↑ Increased use of gas in transportation<br>↓ Energy conservation in buildings and industry<br>↓ Renewables capacity additions for power generation |
| Oil | ↑ Higher level of economic activity and disposable income<br>↓ Energy conservation in buildings and industry<br>↓ Energy efficiency in transport<br>↓ Increased adoption of electric vehicles |
| Uranium | ↑ Governmental support of nuclear programs<br>↑ Successful implementation of small scale reactors<br>↓ Renewables capacity additions for power generation<br>↓ Less public acceptance following another nuclear power accident |

Source: BHP Billiton "Climate Change: Portfolio Analysis (2015)" P.12

The relative effect of each commodity on demand under the 2°C scenario compared to the central case (3°C scenario) is shown, and it is analyzed that demand for coal, etc. will decrease while demand for uranium and copper will increase.

**Figure 6: Long-term commodity demand range in a 2°C world**




Source: BHP Billiton "Climate Change: Portfolio Analysis (2015)" P.13

## Unilever

The scenario analysis is conducted under two scenarios (2°C and 4°C), and the possible impacts on the company under each scenario are described qualitatively.

- In the case of the 2°C scenario, the increase in raw material costs due to the introduction of carbon prices and the increase in the cost of agricultural production processes due to the demand for zero net deforestation are considered to be major impacts.
- In the case of the 4°C scenario, the main effects are considered to be an increase in raw material procurement costs in some regions due to an increase in water stress, an increase in the impact on manufacturing and distribution networks due to an increase in extreme weather, and a decrease in sales due to a decrease in GDP resulting from temperature increase and an increase in extreme weather.

The main impacts of the 2°C scenario were as follows:

- Carbon pricing is introduced in key countries and hence there are increases in both manufacturing costs and the costs of raw materials such as dairy ingredients and the metals used in packaging.
- Zero net deforestation requirements are introduced and a shift to sustainable agriculture e.g. Climate Smart Agriculture, puts pressure on agricultural production, raising the price of certain raw materials.

The main impacts of the 4°C scenario were as follows:

- Chronic and acute water stress reduces agricultural productivity in some regions, raising prices of raw materials.
- Increased frequency of extreme weather (storms and floods) causes increased incidence of disruption to our manufacturing and distribution networks.
- Temperature increase and extreme weather events reduce economic activity, GDP growth and hence sales levels fall.

Source: Unilever "UNILEVER ANNUAL REPORT AND ACCOUNTS 2019" P.40

Furthermore, the company has developed approaches to evaluate the impact of climate change on its key resource. A pilot was conducted on soybean oil, and it was concluded that the financial risk from procurement spending is low, the need for considering a wider range of indirect risks are mentioned.

## Assessing the impact on soybean oil

We selected soy based on its importance to Unilever (large purchased volume), it being a high-profile crop in the countries where it is grown and the availability of good historical price data and suitable climate models.

We developed a methodology which combined forecasting future yields and quantifying the impact on commodity prices of soybean oil. The forecasting of future yields was performed using a combination of crop specific and climate change models. The price model used a range of supply and demand drivers to determine the impact of changes in yield from direct risks of climate change, isolating other factors such as acreage and technology on price. Three modelling steps were performed:

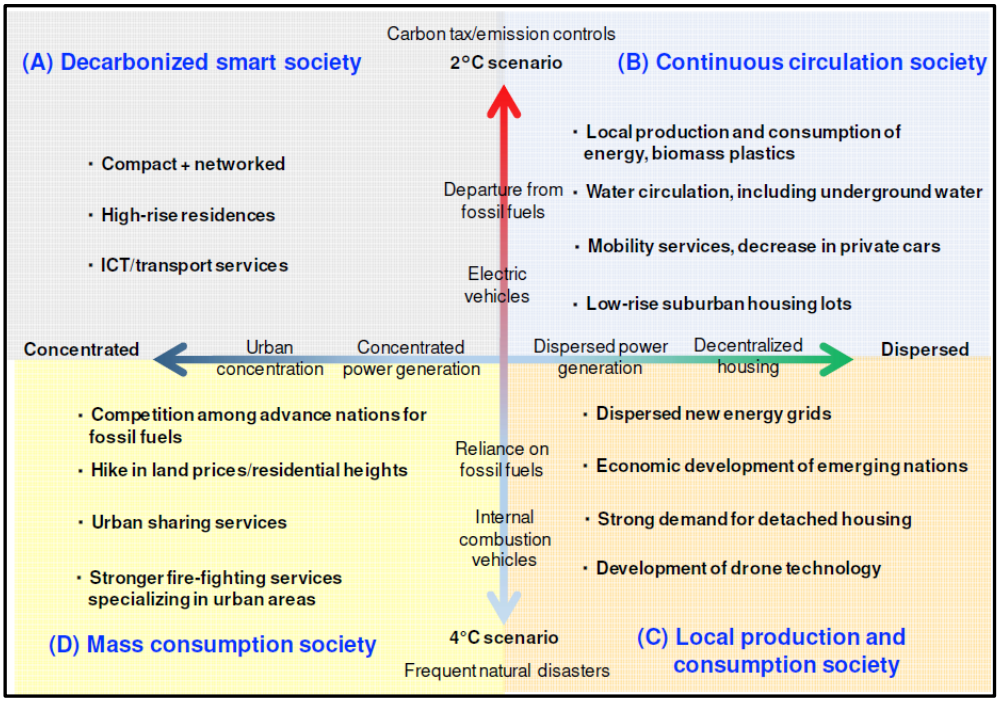
- Yield estimation: We analysed multiple crop and climate models to provide a forecast range of expected yields in key growing regions.
- Price relationship: An econometric model was developed, based on an analysis of the soybean oil market and historical trends, to estimate the impact of climate-induced yield changes on future prices. This model considered the importance of co-products e.g. soybean meal, substitution potential e.g. with sunflower oil and industrial uses of soybean oil, as well as the impact of yield on price.
- Impact estimation: Future yields and price impacts were then translated into an estimated financial exposure from climate change for our business, using our forecast procurement volumes.

Our pilot analysis showed that soybean yields may increase over the 2030 and 2050-time horizon and that subsequent lower prices may then lead to small potential reductions in our procurement spend on soy. While the results may indicate a low financial risk to our business, we need to consider a wider range of risk factors when determining our strategic response. Indirect risks from climate change, such as extreme weather events or external policy response and adaptation could also have an impact but were not included in our modelling. Furthermore, these pilot results are specific to soy and can't be applied to other crops.

Source: Unilever "UNILEVER ANNUAL REPORT AND ACCOUNTS 2019" P.41

## Sekisui Chemical Co. Ltd.

Results of scenario analysis are presented by adding two items to the temperature scenario (2°C and 4°C): concentration vs. decentralization of population and power generation, and risks, opportunities and countermeasures in four quadrants (decarbonized smart society, continuous circulation society, local production and consumption society, and mass consumption society) are disclosed.



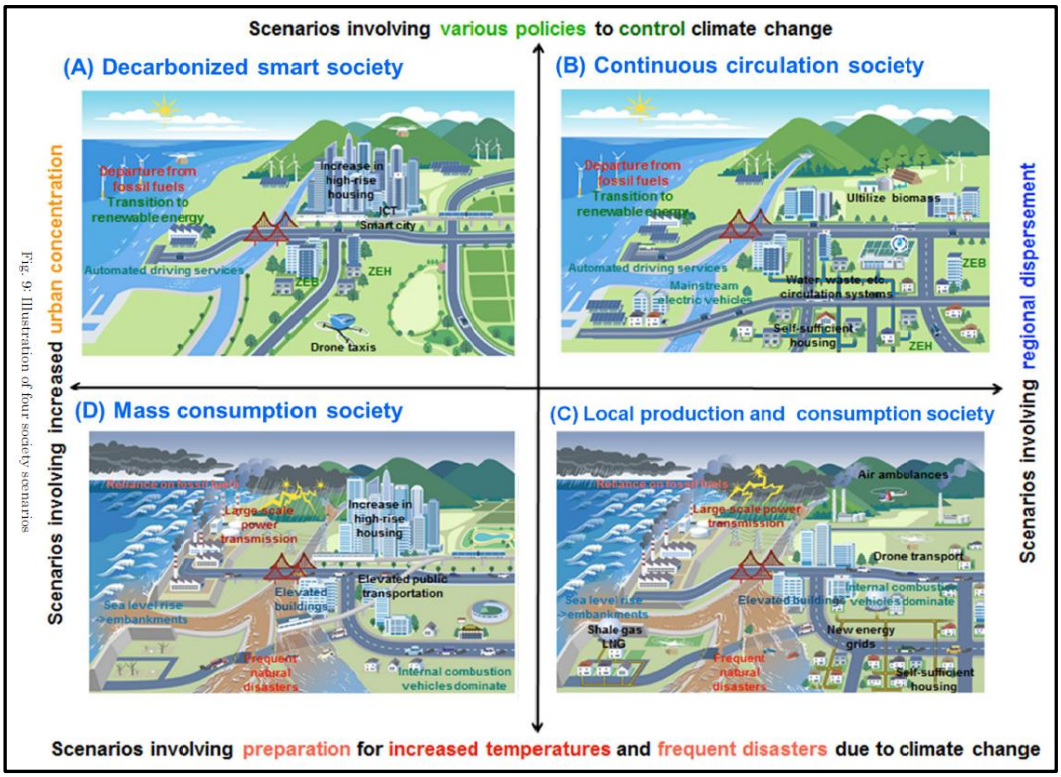




Fig. 9: Illustration of four society scenarios

Source: Sekisui Chemical Co., Ltd. " SEKISUI CHEMICAL Group's Response to Climate Change: Information Disclosures based upon the TCFD Statement of Support" P.9 - 10

Table 2: Response to Expected Scenarios

| | Scenario (A)<br>Decarbonized smart society scenario (2℃ X concentrated) | Scenario (B)<br>Continuous circulation society scenario (2℃ X dispersed) |
|---|---|---|
| Opportunities | ・Increased demand for smart infrastructure, remote control systems, etc.<br>-->sophisticated practical infrastructure technologies, expanded services | ・Dispersed power generation -->Increased demand for power generation, storage and related technologies |
| | ・Increased demand for power generation/storage products<br>-->Higher performance electric/energy products | ・Expanded cyclical use of resources such as power, water, carbon, etc.<br>-->Increased demand for outfitting recycling infrastructure |
| | | ・Increased demand for ZEH housing |
| Risks | ・Decreased car sales due to transition to mobility services<br>-->Decreased sales of housing and mobility related products | ← |
| | ・Transition to renewable energy<br>-->Increase in energy procurement costs | ← |
| | ・Decreased demand for low-rise housing<br>-->Decreased sales of housing related products | ・Decreased reputation among customers and investors due to failure to decarbonize<br>-->Decreased ability to procure funds |
| SEKISUI response | [Production activities] Begin transitioning to renewable energy<br>(introduction of megasolar (US), SMART HEIM Denki) | ← |
| | [Housing business] Standardize ZEH | ← |
| | [Energy] Begin storage battery business | [Energy] Promote the spread of energy self-sufficient housing (PV, storage batteries)<br>Also contribute to local energy production and consumption through TEMS |
| | [IT] Develop materials to promote ICT level-up<br>(heat dissipating materials, materials for LED and organic EL) | [Vehicles] Provide high performance, new function materials that support the functionalization of vehicles and aircrafts.<br>(S-LEC wedge-shaped HUD interlayers, KYDEX sheets, CFTRP) |
| | | ・Establish technologies for CCU systems (BR) |

| | Scenario (D)<br>Mass consumption society scenario (4℃ X concentrated scenario) | Scenario(C)<br>Local production and consumption society scenario (4℃ X dispersed scenario) |
|---|---|---|
| Opportunities | ・Promoting resilient infrastructure and automated driving infrastructures<br>-->Increased sales of highly durable infrastructure materials and construction services | ← |
| | ・Increased needs for energy-related products for large-scale generation<br>-->Increased sales of products related to stabilizing systems and improving generation efficiency | ・Creation of new energy grid construction market<br>-->Need for control system and energy infrastructure technologies |
| Risks | ・Increased raw material and energy costs due to efforts to secure disaster-resilient supply chains, distribution and energy | ← |
| | ・Increased costs to transfer plants in regions weak against natural disaster | ← |
| | ・Human cost increases due to increased warming-related illnesses | ← |
| | [Housing] Decreased demand for low-rise housing<br>-->Decreased sales of housing related products | ・Massive damages due to area disruptions to infrastructure |
| SEKISUI response | ・Consider the area and organizational risks at the level of persons-in-charge at business companies and sites, formulate BCPs, explore risk mitigation strategies | ← |
| | [Water infrastructure] Expand businesses contributing to more resilient water infrastructure<br>(Rejuvenation: SPR method, New construction:Collaboration with Vietnamese companies) | ← |
| | [Transportation infrastructure] Improve durability of transportation infrastructure<br>(Utsuku Sheet, InfraGuard) | ← |
| | ・Strengthen contract manufacturing system for pharmaceutical products | ← |
| | ・Contribute to more stable power supplies by moving grids underground<br>(CC-Box) | ・Explore HEMS and other TEMS technology for building smart grids (Smart Heim Denki |
| | | ・Develop urban planning businesses (expand services) |

Summary of Analyses of Scenarios

SEKISUI CHEMICAL Group housing and infrastructural products are all designed to be highly durable and resilient against disaster. In the aforementioned 4°C scenarios (C and D), the durability of these products and SEKISUI's renewal methods for existing infrastructure will contribute to solving climate change issues and likely lead to business expansion.

In the 2°C where greater mitigation is pursued, many business opportunities will also be available, such as solar-equipped housing which helps drive reduced GHG emissions and adoption of renewable energy, new energy generation technologies, and development of technologies to support energy efficiency for aircrafts and automobiles.

Source: Sekisui Chemical Co., Ltd. "SEKISUI CHEMICAL Group's Response to Climate Change: Information Disclosures based upon the TCFD Statement of Support" P.11

## Tokyu Fudosan Holdings

The company identifies risks and opportunities taking into account environmental changes under the scenarios of 4°C (impact of climate change is large) and 2°C (impact of regulation is large) for urban areas and resorts where it conducts business, and discloses the results of a study on the impact on business with a time horizon of 2050.

■Society in 4℃ Scenario (Impact of climate change is large.)

| Environmental change | Negative business impact | Financial impact | Positive business impact | Financial impact |
|---|---|---|---|---|
| Intensification of natural disasters | 〈Urban area〉<br>Frequent wind hazards/floods<br><br>〈Resort area〉<br>Increased damage caused by landslides | ↓ | 〈Urban area・Resort area〉<br>Properties being selected based on BCP | ↑ |
| Average temperature rise | 〈Urban area〉<br>Sea level rise and storm surges constrain construction sites and architectural design<br><br>〈Resort area〉<br>Due to the reduction of snowfall, the operation period of the ski resort is shortened | ↓ | 〈Urban area〉<br>Resilient buildings・Remote Work・Setting up satellite offices<br><br>〈Resort area〉<br>Deploying cutting-edge snow machine. | ↑ |

■Society in 2℃ Scenario (The impact of regulatory changes is significant.)

| | | | | |
|---|---|---|---|---|
| Introduction of carbon tax | 〈Urban area・Resort area〉<br>Cost of carbon tax incurred | ↓ | 〈Urban area・Resort area〉<br>Superiority of high environmental performance buildings. Utilization of renewable energy | ↑ |

**Financial quantification of climate change**

a: Costs associated with climate change

We expect apparent exposure to physical risks associated with climate change by year 2050. We have therefore established a set of expected climate change factors affecting our resort facility business in year 2050, and identified possible risks to the business:

- Decrease in revenue due to unexpected weather conditions including intense rainfalls and typhoons leading to fewer operating days.
- Added restoration cost related to collapsed slopes in the resort facilities caused by unexpected torrential rain.
- Decrease in revenue generated from our ski resorts and other winter sports facilities due to shorter operating period caused by warmer temperature and less snowfall amid global warming.

b: Investment in R&D on climate change

In order to reduce exposure to GHG emissions and therefore less sensitivity to changes in cost of carbon, we have been advancing our research of and exploring further deployment of renewable energy generation facilities including solar and wind power generations to our commercial and resort facilities.

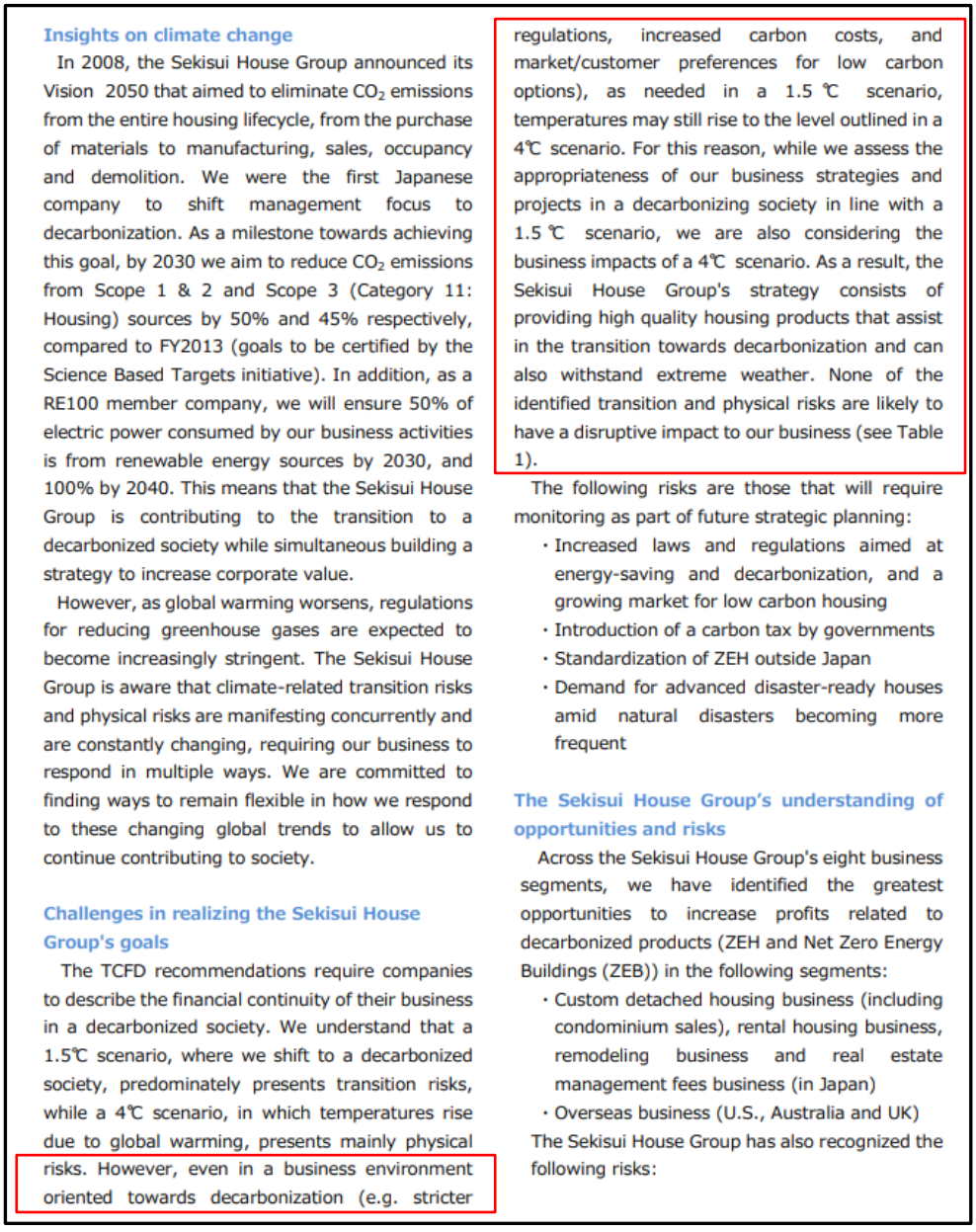
Source: Tokyu Fudosan Holdings website (https://tokyu-fudosan-hd-csr.disclosure.site/en/themes/25)

## V. Disclosure of resilience

Examples of how to express our resilience to climate change include the following:
(See TCFD Guidance P.53)

### Sekisui House Group

The company published its report ("TCFD Report 2019") which is aligned to the information disclosure delineated in the TCFD recommendations. As part of this, a scenario analysis was conducted for all group businesses, taking into account the impact of a temperature increase under the 1.5°C scenario and the 4°C scenario. It also examines the potential financial impact of the identified risks and opportunities and provides an analysis that the risks are not likely to have a disruptive impact.



**Insights on climate change**

In 2008, the Sekisui House Group announced its Vision 2050 that aimed to eliminate $CO_2$ emissions from the entire housing lifecycle, from the purchase of materials to manufacturing, sales, occupancy and demolition. We were the first Japanese company to shift management focus to decarbonization. As a milestone towards achieving this goal, by 2030 we aim to reduce $CO_2$ emissions from Scope 1 & 2 and Scope 3 (Category 11: Housing) sources by 50% and 45% respectively, compared to FY2013 (goals to be certified by the Science Based Targets initiative). In addition, as a RE100 member company, we will ensure 50% of electric power consumed by our business activities is from renewable energy sources by 2030, and 100% by 2040. This means that the Sekisui House Group is contributing to the transition to a decarbonized society while simultaneous building a strategy to increase corporate value.

However, as global warming worsens, regulations for reducing greenhouse gases are expected to become increasingly stringent. The Sekisui House Group is aware that climate-related transition risks and physical risks are manifesting concurrently and are constantly changing, requiring our business to respond in multiple ways. We are committed to finding ways to remain flexible in how we respond to these changing global trends to allow us to continue contributing to society.

**Challenges in realizing the Sekisui House Group's goals**

The TCFD recommendations require companies to describe the financial continuity of their business in a decarbonized society. We understand that a 1.5℃ scenario, where we shift to a decarbonized society, predominately presents transition risks, while a 4℃ scenario, in which temperatures rise due to global warming, presents mainly physical risks. However, even in a business environment oriented towards decarbonization (e.g. stricter regulations, increased carbon costs, and market/customer preferences for low carbon options), as needed in a 1.5 ℃ scenario, temperatures may still rise to the level outlined in a 4℃ scenario. For this reason, while we assess the appropriateness of our business strategies and projects in a decarbonizing society in line with a 1.5 ℃ scenario, we are also considering the business impacts of a 4℃ scenario. As a result, the Sekisui House Group's strategy consists of providing high quality housing products that assist in the transition towards decarbonization and can also withstand extreme weather. None of the identified transition and physical risks are likely to have a disruptive impact to our business (see Table 1).

The following risks are those that will require monitoring as part of future strategic planning:

- Increased laws and regulations aimed at energy-saving and decarbonization, and a growing market for low carbon housing
- Introduction of a carbon tax by governments
- Standardization of ZEH outside Japan
- Demand for advanced disaster-ready houses amid natural disasters becoming more frequent

**The Sekisui House Group's understanding of opportunities and risks**

Across the Sekisui House Group's eight business segments, we have identified the greatest opportunities to increase profits related to decarbonized products (ZEH and Net Zero Energy Buildings (ZEB)) in the following segments:

- Custom detached housing business (including condominium sales), rental housing business, remodeling business and real estate management fees business (in Japan)
- Overseas business (U.S., Australia and UK)

The Sekisui House Group has also recognized the following risks:

Source: Sekisui House Group "TCFD Report 2019" P.3

Table 1: Climate-related risks and opportunities and potential financial impacts

| ■Risks | | Climate-related risks | Potential financial impact | |
|---|---|---|---|---|
| Transition risks | Policy and legal | Increase in price of GHG emissions | According to our calculations based on emissions in FY2018, a carbon tax of 10,000 yen/t-$CO_2$ could increase the Group's cost burden by 19.5 billion Japanese yen/year, equating to 0.9% of sales. It is anticipated that the actual cost would be lower, as by the time a carbon tax is introduced, our annual emissions will be lower given our commitments to RE100 etc. | 19.5 billion yen/year |
| | | Strengthening of reporting requirements for emissions | We have established a system that can respond to the increased obligation to report emissions (additional costs are incurred due to changes in reporting rules). | Extremely low |
| | | Policy and regulations of existing products and services | It is possible that energy conservation standards may be strengthened, however we have already taken measures to anticipate this through standardizing ZEH specifications that are higher than existing standards, so no new measures will be needed in the short-term. | Extremely low |
| | | Exposure to lawsuits | The risk is extremely low because our business is not significantly $CO_2$ emissions intensive. | Extremely low |
| | Technology | Replacement of existing products and services with low-emission alternatives | Low-emissions alternatives are already part of the Group's core business and in the future, will be expanded to all business areas. As such, there is limited need for further research and development expansion, as there is unlikely to be major systemic changes. | Extremely low |
| | | Failure to invest in new technology | Currently there is no significant investment in new low-carbon technologies. | Extremely low |
| | | Costs of transitioning to low-carbon technologies | This risk is already being addressed in our products.<br>(In the future, electrification of the production line for original earthenware exterior wall panels will be required) | Extremely low |
| | Market | Changes in customer behavior | The Group is in the process of shifting to decarbonized products such as ZEH for detached houses, and will further promote this for rental housing and condominiums also. | Extremely low |
| | | Uncertainty of market signals | We are confident in the transition to ZEH, as they provide energy savings, comfort and resilience. | Extremely low |
| | | Rising costs of raw material | There may be an increased cost to procure timber due to global warming, and to procure iron products due to the shift to electric furnaces. However, these costs estimates are difficult to calculate presently. | Not calculated |
| | Reputation | Changes in consumer preferences | The degree of satisfaction of the Sekisui House Group's main product, ZEH, is very high. | Extremely low |
| | | Stigmatization of sector | The housing industry is steadily promoting decarbonization so it is unlikely to be criticized. | Extremely low |
| | | Growing stakeholder concerns or negative stakeholder feedback | The Sekisui House Group communicates its decarbonization plans to stakeholders. | Extremely low |
| Physical risks | Acute | Increased severity of extreme weather events, such as cyclones and floods | We have changed our design standards to incorporate risks associated with heavy rain and strong winds.<br>The development of flood-resistant housing will be considered in the future and is not calculated this time. | Not calculated |
| | Chronic | Changes in precipitation patterns and extreme fluctuations in climate patterns | We have estimated the risk of factory flooding (for our Kanto factory) to amount to 28.5 billion Japanese yen. However, damage losses are already covered by insurance. We do not have large assets, such as lots for sale that could be at risk of flooding. To avoid future damage, we have established rules for dealing with such assets, such as hazard maps when purchasing land. | (28.5 billion yen) |
| | | Rising average temperature | ZEH offers comfortable indoor settings. Measures have been planned at construction sites to avoid heatstroke, such as installing coolers at sites, wearable vital sensors and cooling jackets, etc., but these are not calculated this time. | Not calculated |
| | | Rising sea levels | The Sekisui House Group's five factories in Japan are more than 10 meters above sea level, and the factories in Australia and China are inland, with no likely direct damage exposure. | Almost none |

| ■Opportunities | | Climate-related opportunities | Potential financial impact | |
|---|---|---|---|---|
| Opportunities | Resource efficiency | Relocation to high-efficiency buildings | Increased demand for ZEB (not calculated this time) | Not calculated |
| | Energy source | Use of lower-emission sources of energy | To achieve our RE100 initiative targets, the purchase of renewable energy certificates could cost up to 150 million Japanese yen/year. Instead, the targets will be met at no additional cost by leveraging the Sekisui House Owner Denki - A system that purchases surplus power from solar power generation systems installed on the roofs of Sekisui House owner's houses and used as business power. | (150 million yen/year) |
| | | Use of supportive policy incentives | Use of ZEH subsidies (not calculated this time) | Not calculated |
| | Products and services | Development and/or expansion of low-emission products and services | The estimated sales increase by 2030 of each segment is: detached housing business (9.68 billion yen/year), rental housing business (4.08 billion yen/year), remodeling business (16.2 billion yen/year), real estate management fee business (2.5 billion yen/year) and the overseas business (3.3 billion yen/year). | 35.76 billion yen/year |

* Prepared with reference to the *Final Report: Recommendations of the Task Force on Climate-Related Financial Disclosures* (June 2017)

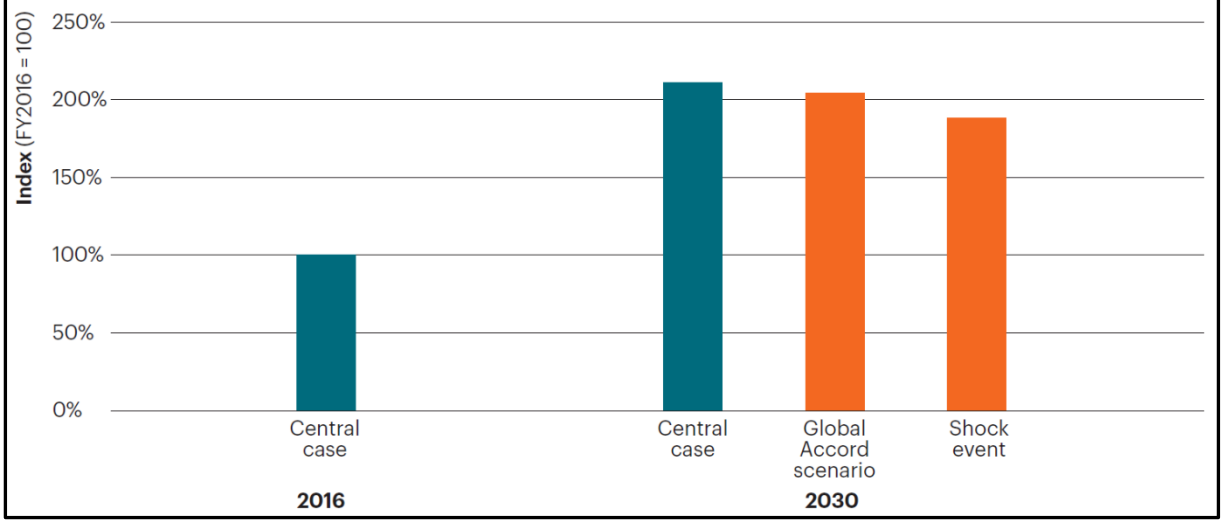
Source: Sekisui House Group "TCFD Report 2019" P.4 -5

## BHP Billiton

It is stated that, for all of the cases examined, i.e. Central case (3°C scenario), Global Accord scenario (2°C scenario), and Shock event scenario (scenario for decarbonization beyond the 2°C scenario), the company is able to generate return in 2030.

We have a strong project pipeline with many capital-efficient growth options that continue to generate high shareholder value in a 2°C world. The return on our organic projects remains high, with an overall project pipeline internal rate of return reducing slightly relative to the central case, but still averaging around 20 per cent in both the Global Accord scenario and the shock event. The resilience of our portfolio in a 2°C world is highlighted in Figure 7, which shows how earnings before interest, taxes, depreciation and amortisation (EBITDA) grow relative to FY2016 in the central case, the Global Accord scenario and the shock event.

**Figure 7: EBITDA**




Source: BHP Billiton "Climate Change: Portfolio Analysis (2015)" P.14

## Unilever

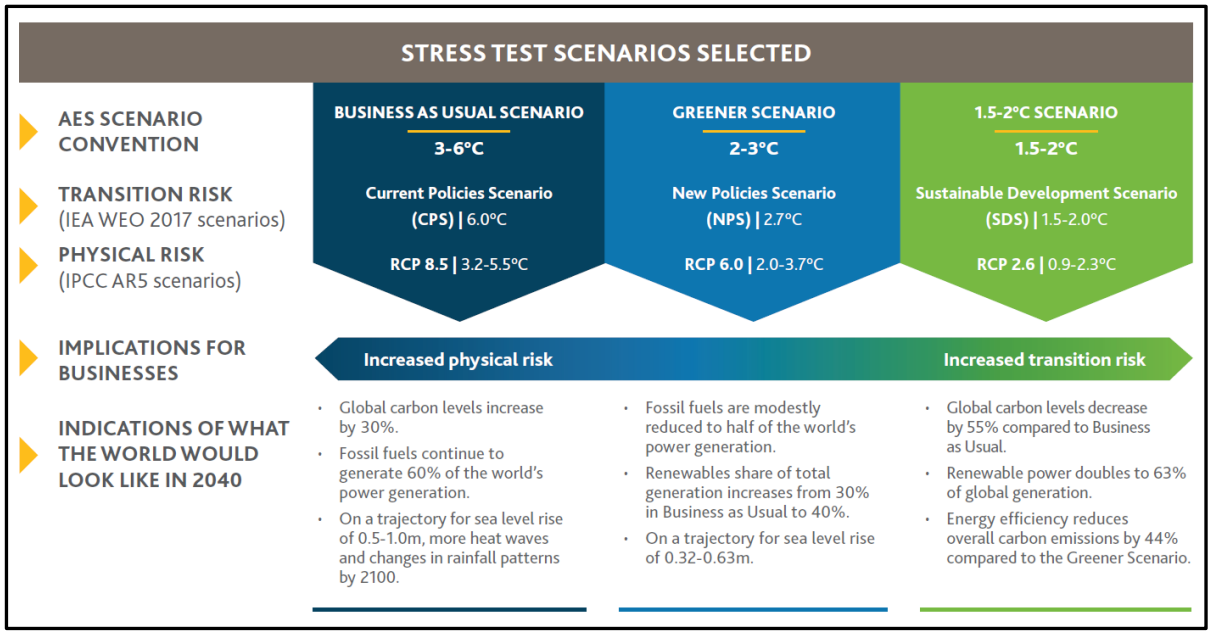
As a result of the scenario analysis, although there is a financial impact in 2030, it is stated that the impacts on sales from cost increase of raw materials and packaging in the supply chain are relatively small.

Our analysis shows that, without action, both scenarios present financial risks to Unilever by 2030, predominantly due to increased costs. However, while there are financial risks which would need to be managed, we would not have to materially change our business model. The most significant impacts of both scenarios are on our supply chain where costs of raw materials and packaging rise, due to carbon pricing and rapid shift to sustainable agriculture in a 2°C scenario and due to chronic water stress and extreme weather in a 4°C scenario. The impacts on sales and our own manufacturing operations are relatively small.

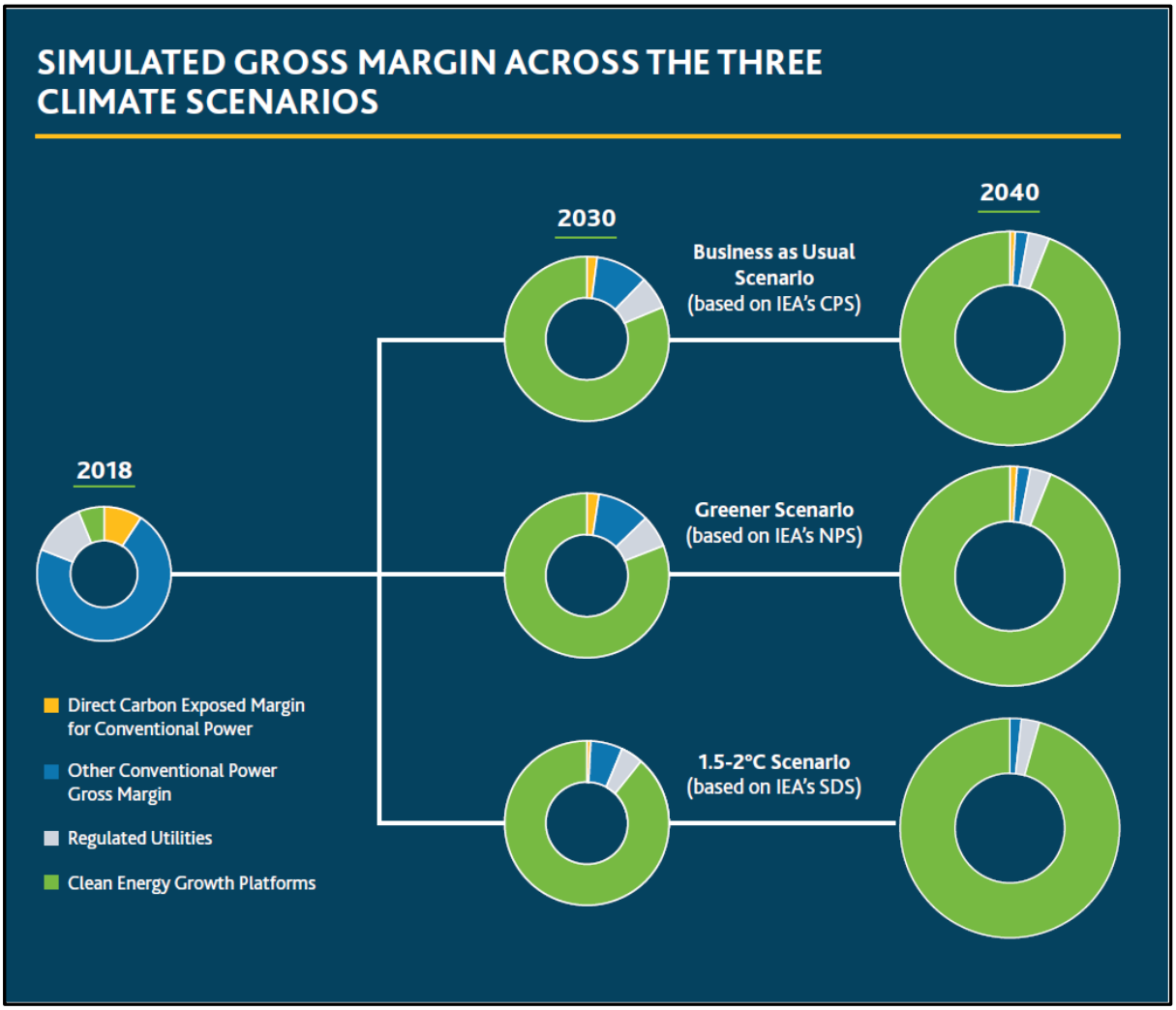
Source: Unilever "UNILEVER ANNUAL REPORT AND ACCOUNTS 2019" P.40 - 41

## AES Corporation

The results of stress testing of the business portfolio are presented for the three scenarios consistent with existing scenarios (IPCC, IEA、RCP, etc.). It concluded that both scenarios had resilience and growth potential because of the shift of its business portfolio to clean energy and the diversification of exposure.




Source: AES Corporation "AES Climate Scenario Report" P. 6




Source: AES Corporation "AES Climate Scenario Report" P.7

The stress test results highlight the resilient nature of our strategy in three primary ways:

- **Fundamental shift in our portfolio to clean energy sources and services:** Our growth is largely derived from our Clean Energy Growth Platforms, which, for the most part, are not adversely exposed to a carbon price. One way that we have been funding our platforms is through the divestment of a portion of our thermal portfolio, resulting in further reduced exposure to a carbon price.
- **Geographical diversification of our exposure:** We operate across 15 countries, inherently reducing our risks to any individual government's carbon policy.
- **Strong contracts that protect margin:** Our PPAs usually provide for capacity payments, which are unaffected by the amount a plant is dispatched as their purpose is to compensate generators that support the grid by being available to provide energy whenever needed. Please see *Focusing on Reliability and De-risking Our Thermal Assets* for more information on capacity payments. Reduced dispatch due to carbon prices should not alter capacity payments, which typically provide all or most of the margin for these assets. Additionally, most of our PPAs have provisions intended to pass-through future costs of carbon to our off-takers.

Source: AES Corporation "AES Climate Scenario Report" P.8

## AVIVA

The company assesses climate-related litigation risk through its underwriting business and concludes that the risk is low.

Aviva recognises the growing trend in climate-related litigation and has assessed its potential exposure to litigation risks accordingly. For example, the climate-related litigation risk posed to Aviva through the underwriting of directors and officers liability insurance has been assessed and considered to be low.

Source: AVIVA "Aviva's Climate-Related Financial Disclosure 2019" P.19

## VI. Scenario analysis of portfolio

### Nomura Asset Management Co. Ltd.

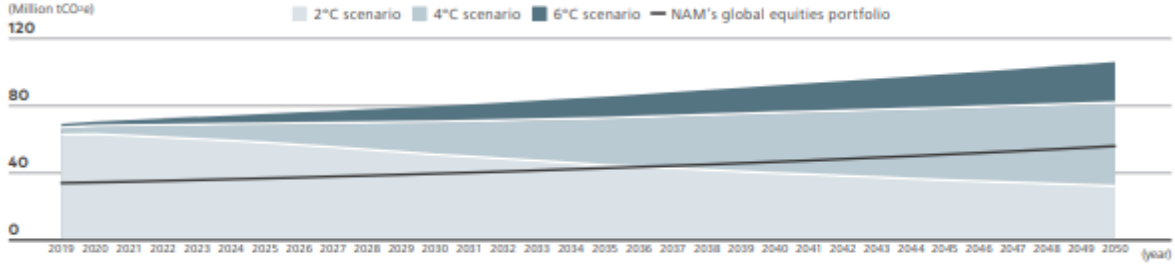
A comparative analysis of the Scope1 emissions of the company's domestic and foreign equity portfolios against the IEA's 2°C, 4°C, and 6°C scenarios has been conducted, and it has been shown that the total carbon emissions allowed under the 2°C scenario may be reached earlier in the global equities portfolio than in the Japanese equities portfolio.

**Scenario analysis**

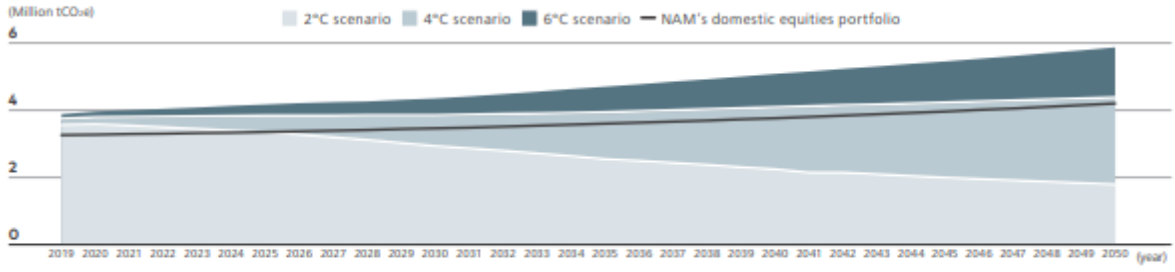
We compared the total carbon emissions of our Japanese and global equities portfolios (only Scope 1 in this scenario analysis) with the 2°C, 4°C, and 6°C scenarios agreed to in the Paris Agreement. These three scenarios are set out in an IEA (International Energy Agency) report.

The scenario analyses confirmed that global equities portfolio is likely to reach the total carbon emissions permitted in the 2°C scenario earlier than our Japanese equities portfolio. This is because our global equities portfolio includes shares in the energy, materials, and utilities sectors in emerging and developing countries, where GHG emissions are increasing in tandem with economic growth. Our analysis also hints at the importance of calling on measures to address climate change across the market, as our investment portfolios include many passive investments.

**NAM's Japanese equities portfolio**



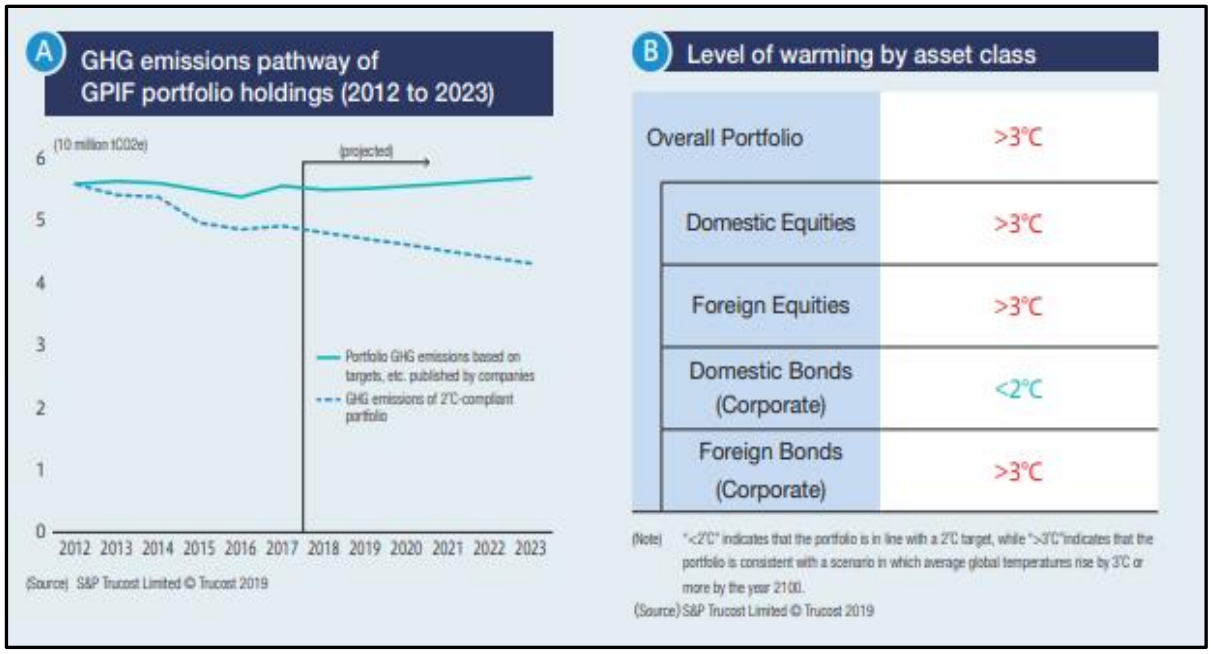

**NAM's global equities portfolio**




Source: Nomura Asset Management Co., Ltd., "Responsible Investment Report 2019" P.17

## Government Pension Investment Fund (GPIF)

GPIF projects GHG emissions of the companies included in its portfolio and analyzes the temperature scenario to which the portfolio is aligned.




Source: Government Pension Investment Fund, "ESG Report 2018" P.50

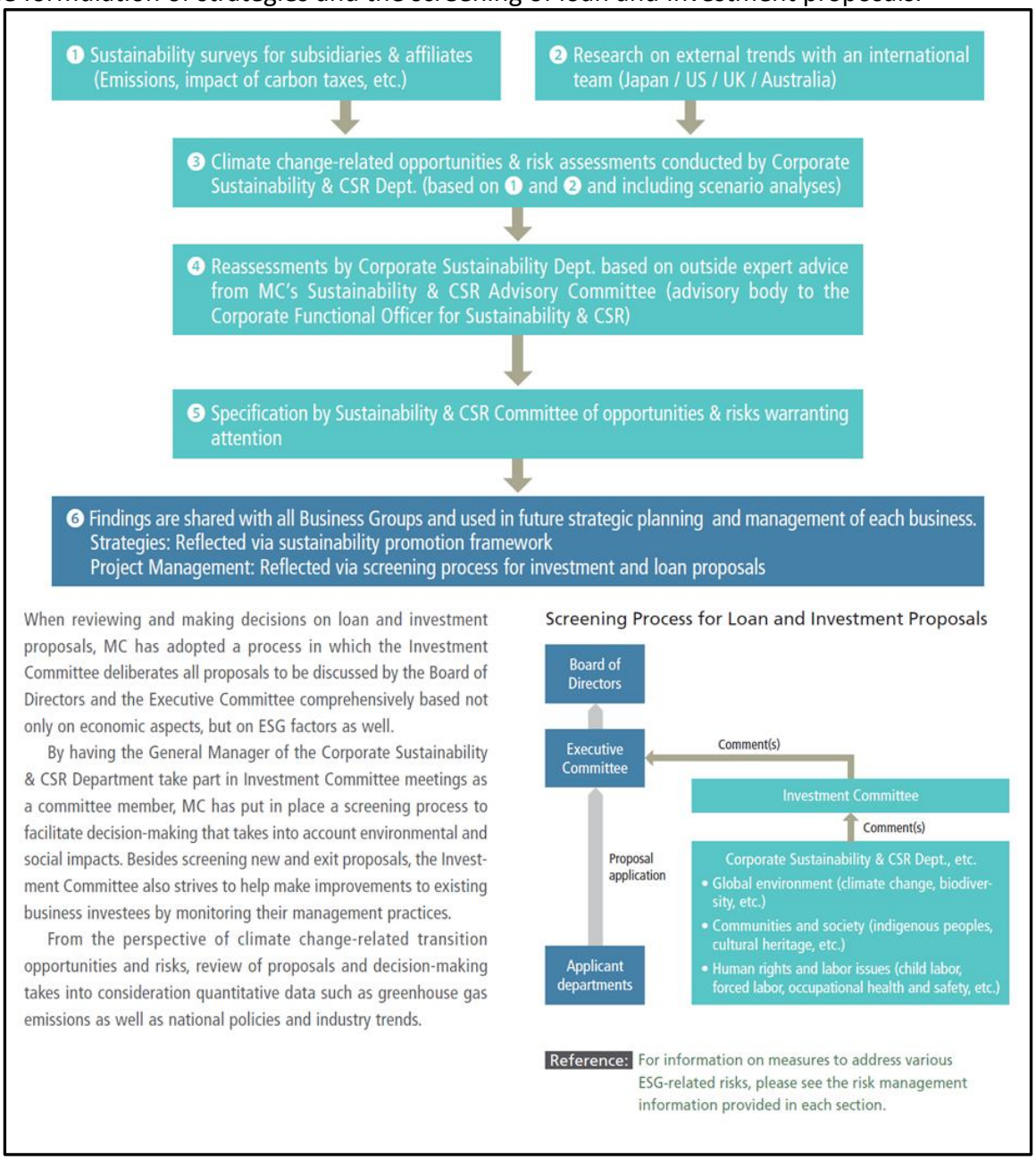
## (3) Risk Management

Examples of methods for managing climate change-related risks are shown below.
(See TCFD Guidance P.54)

### i) Examples that illustrate specific processes for climate change risk management

**Mitsubishi Corporation**

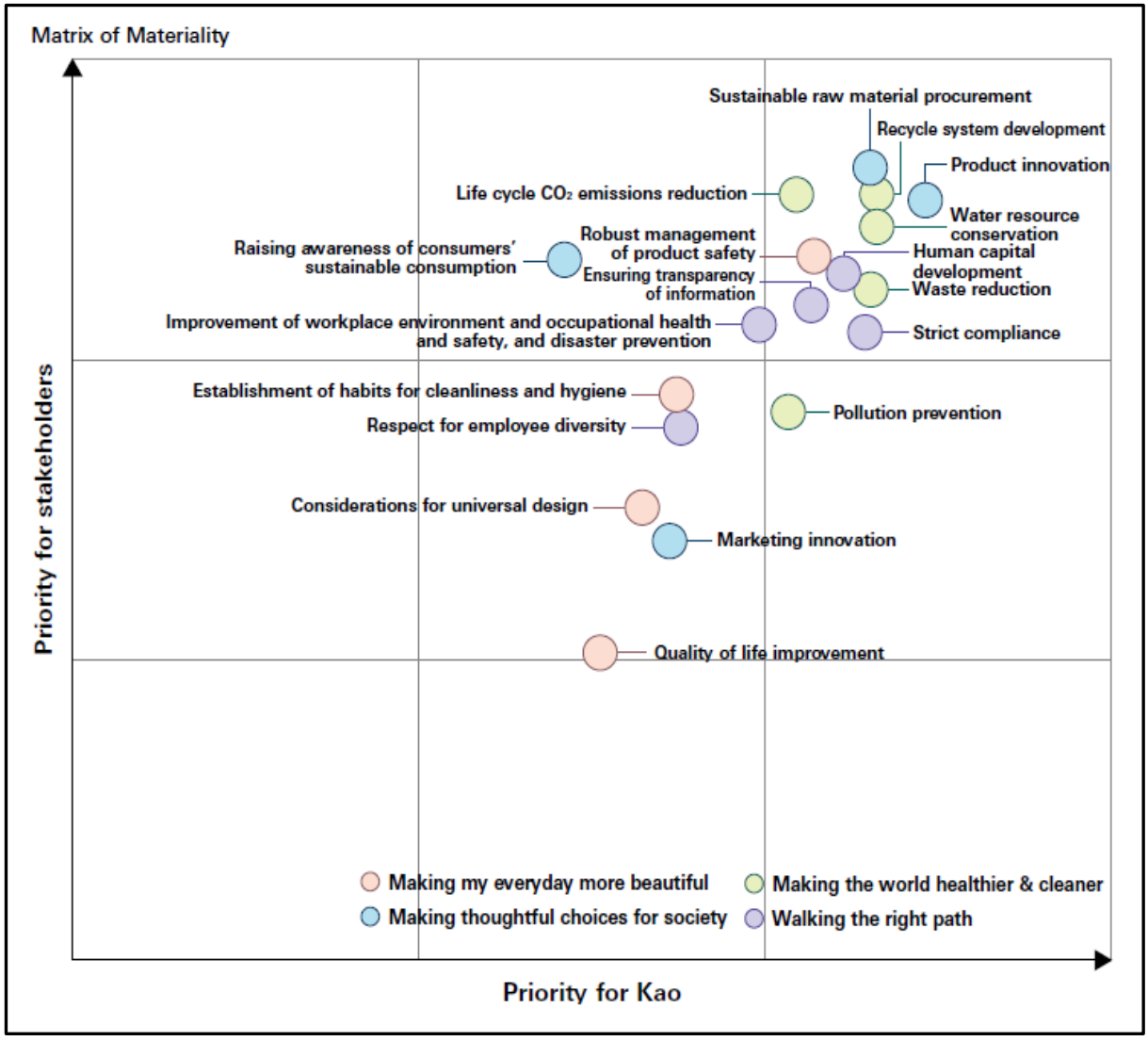
Processes and management systems for assessing and identifying climate-related risks are described using flowcharts. The company also states that the results of the review are used in the formulation of strategies and the screening of loan and investment proposals.




Source: Mitsubishi Corporation "ESG DATA BOOK 2019" P. 43

## Kao Corporation

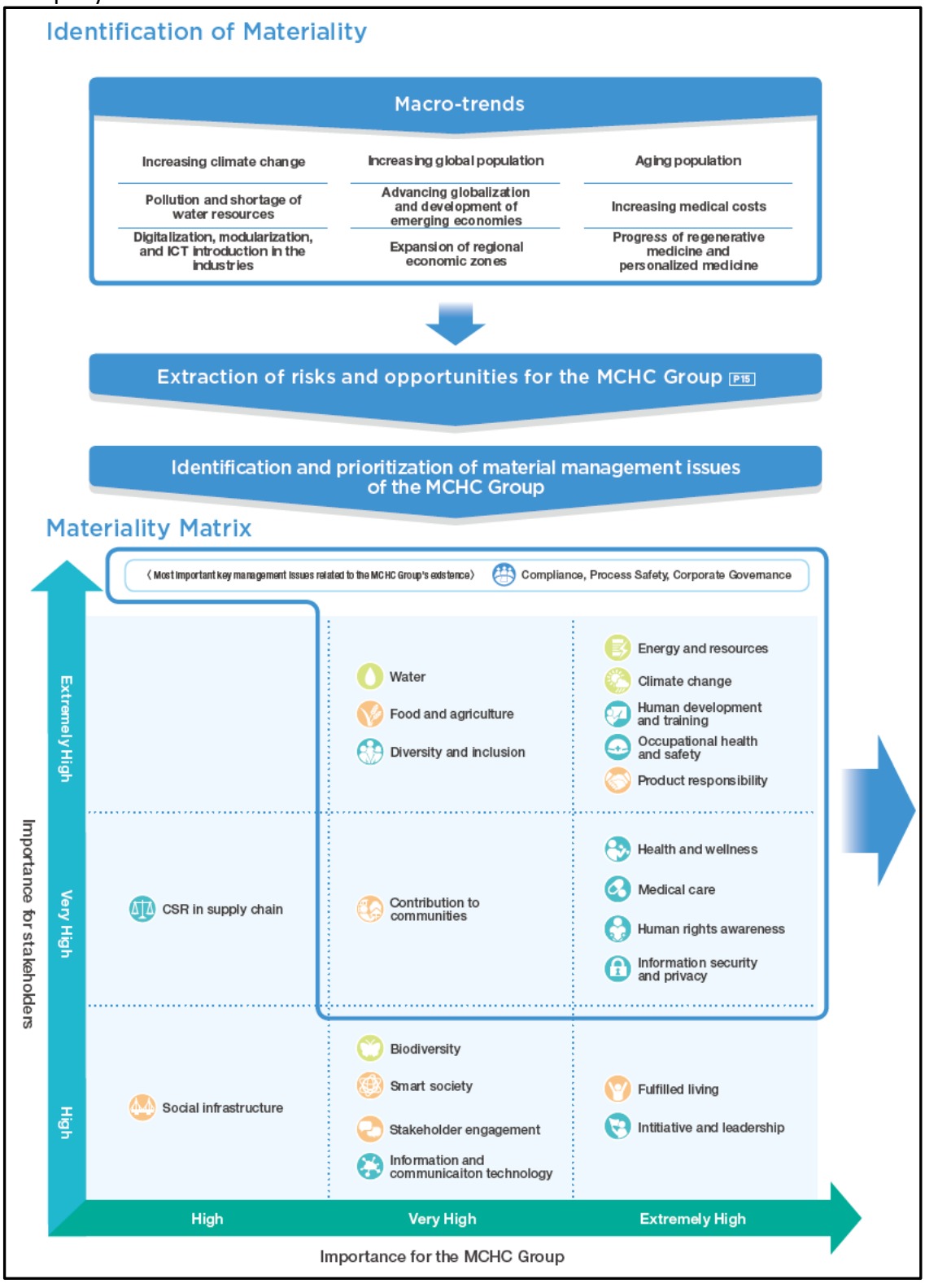
The company discloses a materiality matrix, mapping the priority to stakeholders and the priority to the company.




Source: Kao Corporation "Kao Sustainability Data Book 2020" P.13

## Mitsubishi Chemical Holdings

Through materiality assessment, the company identifies its materiality related to the environment, society, and governance, and discloses risks and opportunities. The importance of climate change is considered as extremely high from the perspective of stakeholders and the company itself.




Source: Mitsubishi Chemical Holdings Integrated Report "KAITEKI REPORT 2019" P.14

## Classification of the Materiality

| | |
|---|---|
| **Material issues related to the global environment** | Key management issues that the MCHC Group should address through its corporate activities, innovation, and provision of products and services with the aim of achieving a sustainable well-being of our planet Earth |
| **Material issues related to social systems** | Key management issues that the MCHC Group should address through its corporate activities, innovation, and provision of products and services in the aim of creating a sustainable well-being of society |
| **Material issues related to the company and its organizational structure** | Key management issues that the MCHC Group should address in its internal operations and social relations as a corporate group aiming to realize KAITEKI |

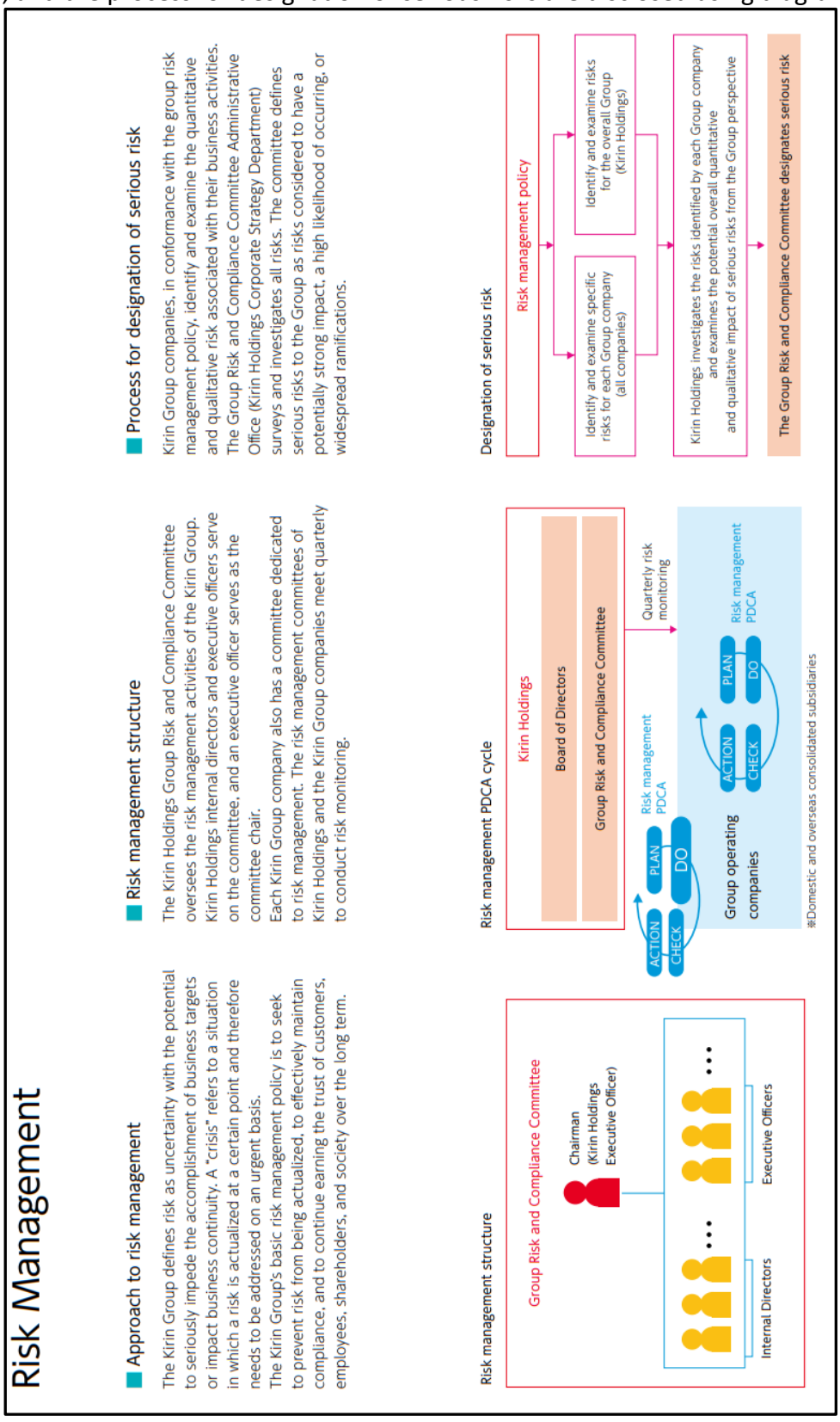
| | Material Issues | Risks for the MCHC Group | Opportunities for the MCHC Group |
|---|---|---|---|
| The global environment | Energy and resources | •Depletion of natural resources such as fossil resources and rare metals | •Transformation and diversification of resources and energy supply sources<br>•Practical application of renewable energy and accelerated technological development |
| | Climate change | •Increasing risk of extreme weather events and natural disasters associated with climate change<br>•Strengthening regulations caused by climate change | •Expanding products to mitigate and adapt climate change<br>•Acquiring medium- to long-term support from stakeholders |
| | Water | •Expanding water stress due to higher demand, climate change and other factors<br>•Increasing health risk due to shortages of hygienic water | •Expanding businesses such as water purification and recycling |
| Social systems | Food and agriculture | •Destabilization in society due to imbalance in the demand and supply of food | •Increase of factory-production of foods |
| | Product responsibility | •Loss of social credibility due to deterioration of quality, safety, environmental performance<br>•Interruption of the business | •Building a relationship of trust with business partners<br>•Customer retention and acquisition, expansion of the business |
| | Contribution to communities | •Impact on business activities due to decreased reliability | •Building trusted relationships by actively engaging in exchanges with and contributing to the communities of business operations<br>•Business stabilization through coexistence with the local communities |
| The Company and its organizational structure | Health and wellness | •Increasing lifestyle disease and mortality rates<br>•Increasing failure risk of health insurance systems | •Expanding health information service market (shifting from treatment to prevention) |
| | Medical care | •Increasing number of entries into the medical and healthcare business (increase in competition) | •Manifestation of unmet medical needs<br>•Advancing digitization of medical treatment and health information data through ICT |
| | Human development and training | •Labor shortage, outflow of human resources | •Securing and training of talented human resources<br>•Increasing creativity and vitality |
| | Occupational health and safety | •Impact on production due to physical damages and personal injuries, etc., loss of social trust<br>•Harassment<br>•Long working hours | •Securement of wellness and safety of employees<br>•Enhancement of labor productivity<br>•Enhancement of motivation |
| | Human rights awareness | •Delay of the business due to human-rights abuse, interruption of the business | •Building optimal supply chain management |
| | Information security and privacy | •Loss of social trust due to information leakage and falsification, interruption of the business<br>•Interruption of the business by cyber attacks | •Stabilization of business activities |
| | Diversity and inclusion | •Loss of competitiveness from failing to respond to diversifying needs | •Securement and trainings of talented human resources<br>•Enhancement of value creation process by accepting diversified human resources and values |

**Most important key management issues related to the MCHC Group's existence:**
**Compliance, Process Safety, Corporate Governance**

Source: Mitsubishi Chemical Holdings Integrated Report "KAITEKI REPORT 2019"P.15

## Kirin Group

The definition of risk and risk management, the PDCA cycle within the group and each company, and the process for designation of serious risks are disclosed using diagrams.




Source: Kirin Group "Environmental Report 2019" P.68

## Mizuho Financial Group

Risk management is disclosed in conjunction with the manner in which it is integrated into a comprehensive risk management system that takes into account risks other than climate change and with the corporate-wide ESG policy.

### 4.2. Integration of climate change risks into comprehensive risk management

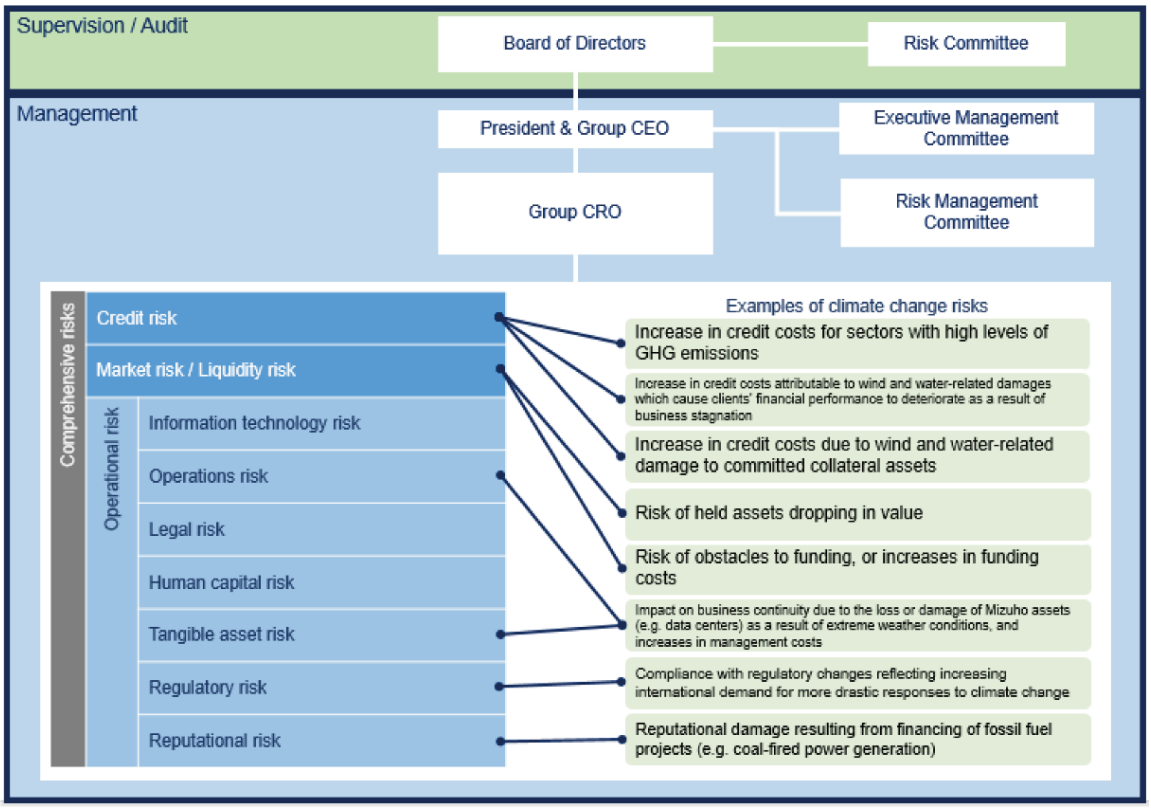
We recognize that conducting operations tailored to our risks and managing such risks is a key issue relating to overall management. In order to implement our business strategies while maintaining our financial stability, we maintain comprehensive risk management and control measures.

Mizuho Financial Group maintains basic policies for risk management established by the Board of Directors that are applicable to the entire group. In line with these basic policies, we maintain various measures to strengthen and enhance the sophistication of our risk management system.

We classify and manage the risks that arise in our businesses according to the various kinds of risk, including credit risk, market risk, liquidity risk, and operational risk. In addition to managing each type of risk individually, we have established a risk management structure to identify and evaluate overall risk and to keep risk within limits that are acceptable.

Regarding climate-change related risks, we have also integrated the risks described in section 3.3 (Risks posed to the Mizuho group by climate change) into our overall risk management framework, ensuring comprehensive risk management. (Figure 12)

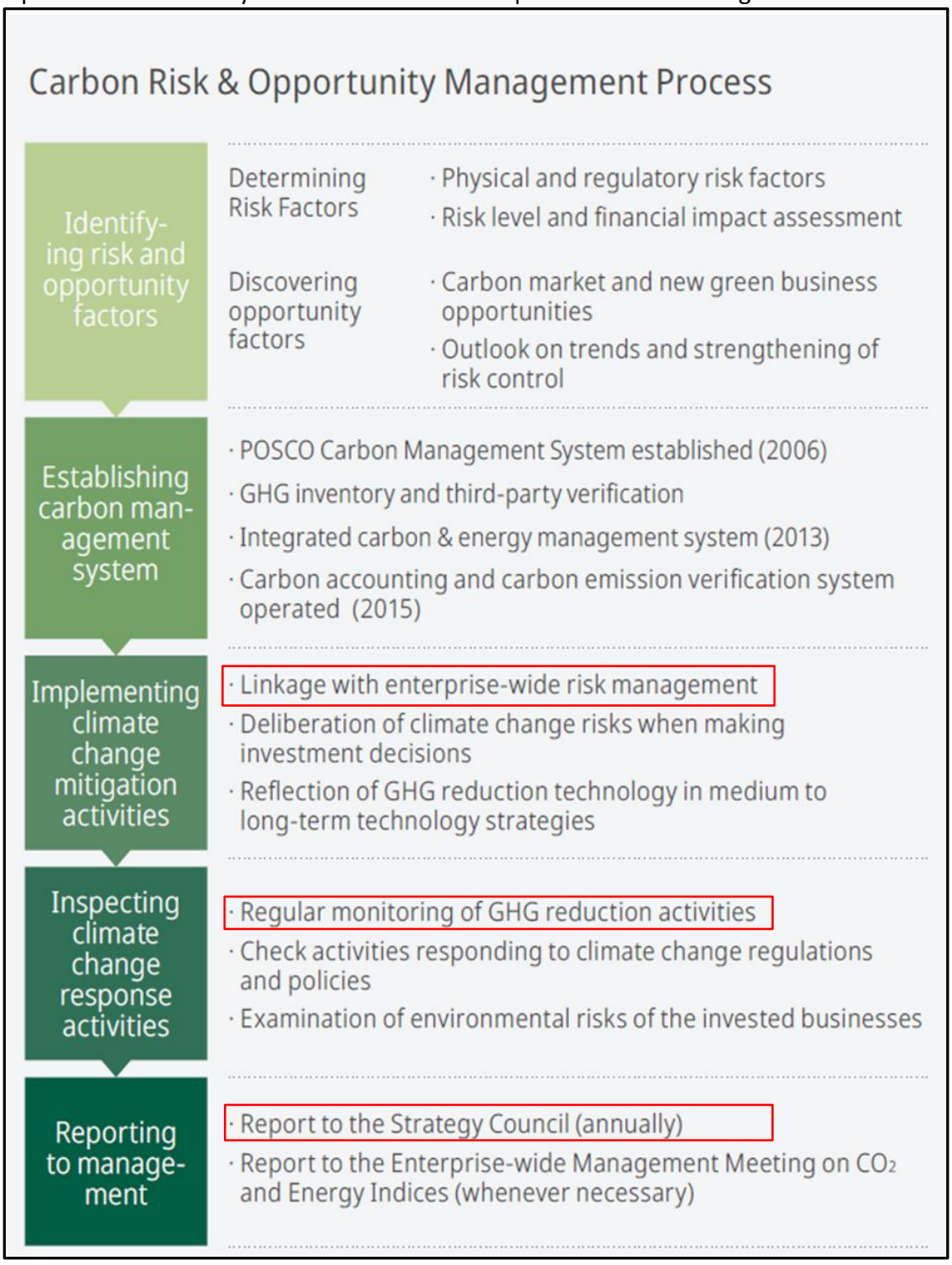
**Figure 12: Comprehensive risk management system**




Source: Mizuho Financial Group "TCFD Report 2020" P. 24

## POSCO

POSCO describes the process of managing climate change-related risks (Carbon Risk). In addition to conducting regular monitoring of activities to reduce GHG emissions, the report explains management processes such as reporting to the Group's Strategy Council once a year and points out that the system is linked with enterprise-wide risk management.




Source: POSCO "POSCO Corporate Citizenship Report 2018" P.42

## INPEX Corporation

The company provides an overview of the team to evaluate climate change risk, the PDCA cycle for risk management, and reporting to the board of directors. It also explains that this process follows relevant international standards (ISO 31000).

### Process for the Assessment and Management of Climate Change Risks and Opportunities

Annually, we assess and manage climate change risks and opportunities (Figure A). During the 2018 financial year, the Climate Change Strategy Group prepared a draft action plan against climate change related risks and opportunities, and the Climate Change Strategy Project Team discussed and evaluated it. The revised action plan was reported to the Management Committee and Board of Directors. The Climate Change Strategy Project Team is a cross-organizational project team composed of about 20 members from each division. This process is planned to evolve and increase the involvement of the Management Committee during the 2019 financial year. Our risk assessment process follows the international risk management standard, ISO 31000:2009 (Figure B); identifying risks, and analyzing the causes, preventive measures, mitigation measures and the results (Figure C).

Figure A.
Annual cycle of assessing and managing climate change risks and opportunities

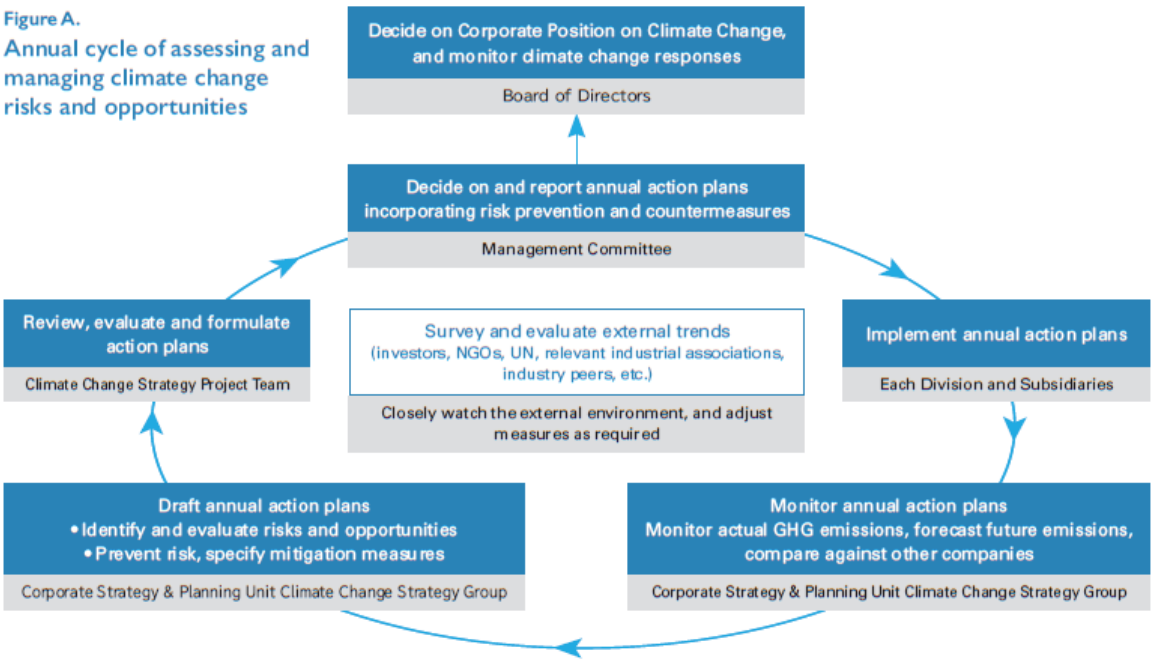



Figure B.
ISO 31000 Process

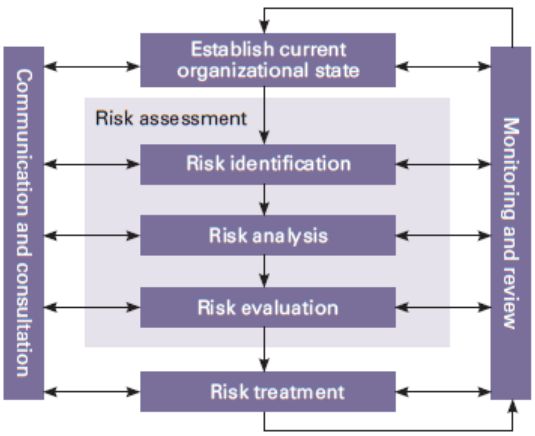
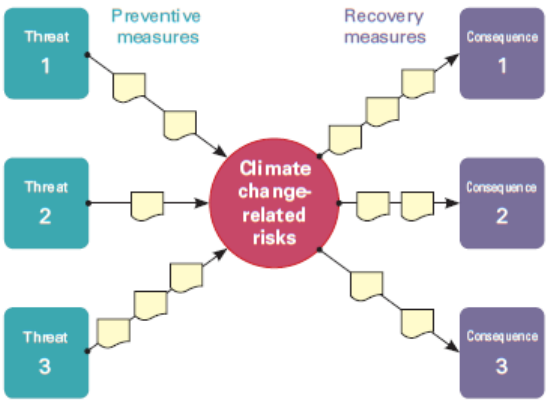



Figure C.
Risk Analysis Process




Source: INPEX Corporation "Sustainability Report 2019" P.46

## Unilever

The company describes monitoring of raw material availability, pricing, and related governmental developments, and taking necessary action on climate change risks.

| Nature of risk | Management of risk |
| --- | --- |
| **Climate change**<br><br>**Climate change and governmental actions to reduce such changes may disrupt our operations and/or reduce consumer demand for our products.**<br><br>Climate change is occurring around the world which may impact our business in various ways. It could lead to water shortages which would reduce demand for those of our products that require a significant amount of water during consumer use. It could also lead to an increase in raw material and packaging prices or reduced availability. Governments may take action to reduce climate change such as the introduction of a carbon tax or zero net deforestation requirements which could impact our business through higher costs or reduced flexibility of operations.<br><br>Increased frequency of extreme weather (storms and floods) could cause increased incidence of disruption to our manufacturing and distribution network. Climate change could result therefore in making products less affordable or less available for our consumers resulting in reduced growth and profitability. | As part of our sustainability targets we monitor climate change and are responding by ensuring we reduce the carbon intensity of operations and by developing products with a lower carbon footprint or that require less water during consumer use.<br><br>We aim to minimise our impact on climate change by committing to emission reduction targets and have developed a roadmap to be carbon positive by 2030.<br><br>We monitor trends in raw material availability and pricing due to short term weather impacts, and proactively reformulate our products where appropriate to ensure continued availability of input materials.<br><br>We monitor governmental developments around actions to combat climate change and take proactive action to minimise the impact on our operations. We also advocate for changes to public policy frameworks that will enable accelerated decarbonisation, in line with the upper level of ambition of the Paris Agreement on Climate Change. |

Source: Unilever "UNILEVER ANNUAL REPORT AND ACCOUNTS 2019" P. 36

## (4) Metrics and Targets

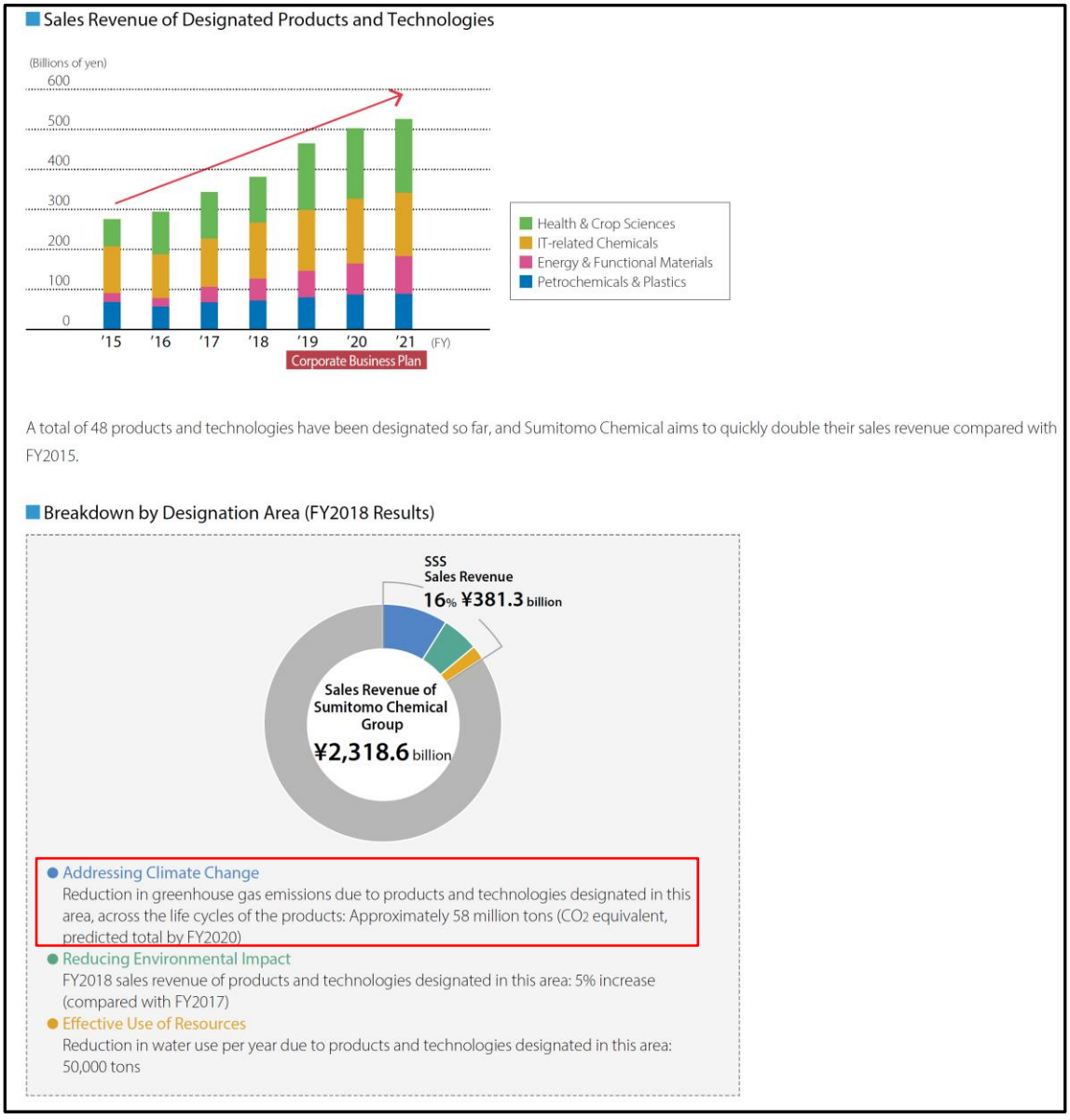
Examples of the content of scenario analysis and how to present the results include the following:

(→ Refer to TCFD Guidance P.58)

### Sumitomo Chemical Co., Ltd.

The Corporate Business Plan defines the sales and profits of the Group's products (SSS) that help mitigate climate change, reduce environmental impact, and make efficient use of resources, and discloses metrics and targets for opportunities.

It also discloses the amount of reduction contribution of SSS-certified products and technologies throughout their product life cycles (58 million t CO2).




Source: Sumitomo Chemical Co., Ltd. "Sustainability Data Book 2019" P.16

## Mitsubishi Chemical Holdings

Metrics are linked to identified themes based on their materiality, and their targets and actual results are listed.

| | Sustainability (MOS) Indices (Data elements) | Assessment Criteria (Units) | FY2018 Plan | FY2018 Result | FY2020 Target | Related SDGs |
|---|---|---|---|---|---|---|
| The global environment | Reduce burden on the atmospheric environment (GHG, SOx and NOx emissions) | Per-unit impact on the environment (LIME / ¥100 million) | 540 | 499.0 | 548.7 | |
| | Reduce burden on the water environment (Total phosphorous, total nitrogen in wastewater and COD emissions) | Per-unit impact on the environment (LIME / ¥100 million) | 6.5 | 5.5 | 6.1 | |
| | Reduce burden on the soil environment (total landfill) | Per-unit impact on the environment (LIME / ¥100 million) | 4.4 | 5.5 | 5.1 | |
| | Promote use of renewable energy | Volume of renewable energy generated and supplied (MW) | 56.0 | 55.6 | 50.0 | |
| | Provide products and services that contribute to reducing GHG emissions | Contribution to the reduction of GHG emissions (hundreds of millions of tons-$CO_2$ equivalent) | 0.81 | 0.75 | 1.5 | |
| | Provide products and services that help solve water resource problems | Volume of reused water supplied (hundreds of millions of tons) | 5.6 | 5.6 | 17 | |

Source: Mitsubishi Chemical Holdings, Inc. "KAITEKI REPORT 2019"P.42

## Mitsubishi UFJ Financial Group

Sustainable finance targets for FY 2019 to FY 2030 (cumulative total of JPY 20 trillion, including JPY 8 trillion for environment) and performance for FY 2019 are disclosed.

**Progress in Sustainable Finance Goals**

Performance in respect to the sustainable finance aggregate target of ¥20 trillion between fiscal 2019 and fiscal 2030 (of which ¥8 trillion is to be used for environmental finance)

〔Unit: trillion yen〕

| | | Fiscal 2019 performance | Fiscal 2030 target |
|---|---|---|---|
| Environment | Renewable energy finance projects, development of project finances, etc. | 0.9 | 8.0 |
| | Green bond underwriting | 0.5 | |
| | Others | 0.8 | |
| Society | Finance for social infrastructure, energizing of local communities, etc. | 0.9 | 12.0 |
| Other | Fields spanning both environment and social | 0.6 | |
| Total | | 3.7 | 20.0 |

Source: Mitsubishi UFJ Financial Group website "Initiatives to Counter Global Warming and Climate Change – Based on TCFD Recommendations –" (https://www.mufg.jp/english/csr/environment/tcfd/index.html)

## Asahi Group Holdings

The company sets mid- to long-term targets for climate change "Asahi Carbon Zero" and clearly states that the company will aim for zero GHG emissions by 2050. In order to achieve the target, efforts such as the use of green power in the manufacturing process are described, and GHG emission reductions through these efforts are disclosed.

**Asahi Carbon Zero targets**

| | Target | | Scope |
|---|---|---|---|
| 2050 | Scope 1,2 | Aim to achieve zero greenhouse gas emissions | Operating companies in Japan, Asahi Breweries Europe Ltd, Asahi Holdings (Australia) Pty Ltd |
| | Scope 3 | Aim to achieve zero greenhouse gas emissions | Asahi Breweries, Ltd., Asahi Soft Drinks Co., Ltd., Asahi Breweries Europe Ltd, Asahi Holdings (Australia) Pty Ltd |
| 2030 | Scope 1,2 | 30% reduction (in comparison with 2015 levels) | Operating companies in Japan, Asahi Breweries Europe Ltd, Asahi Holdings (Australia) Pty Ltd |
| | Scope 3 | 30% reduction (in comparison with 2015 levels) | Asahi Breweries, Ltd., Asahi Soft Drinks Co., Ltd., Asahi Breweries Europe Ltd, Asahi Holdings (Australia) Pty Ltd |

*Scope 3 targets for Asahi Breweries Europe, Ltd. and Asahi Holdings (Australia) Pty Ltd are in comparison with 2020 levels.

*SBT applies to operating companies in Japan only

Asahi Super Dry products manufactured using green power, including 350 ml beer cans, product packaging, and outer boxes for gift sets, bear the "Green Energy" label. In addition, the total green power usage volume from 2009 to 2019 was the highest of all "Green Energy" label products in Japan*1. This initiative has contributed to a cumulative total reduction in $CO_2$ emissions of approximately 102,000 tons*2.

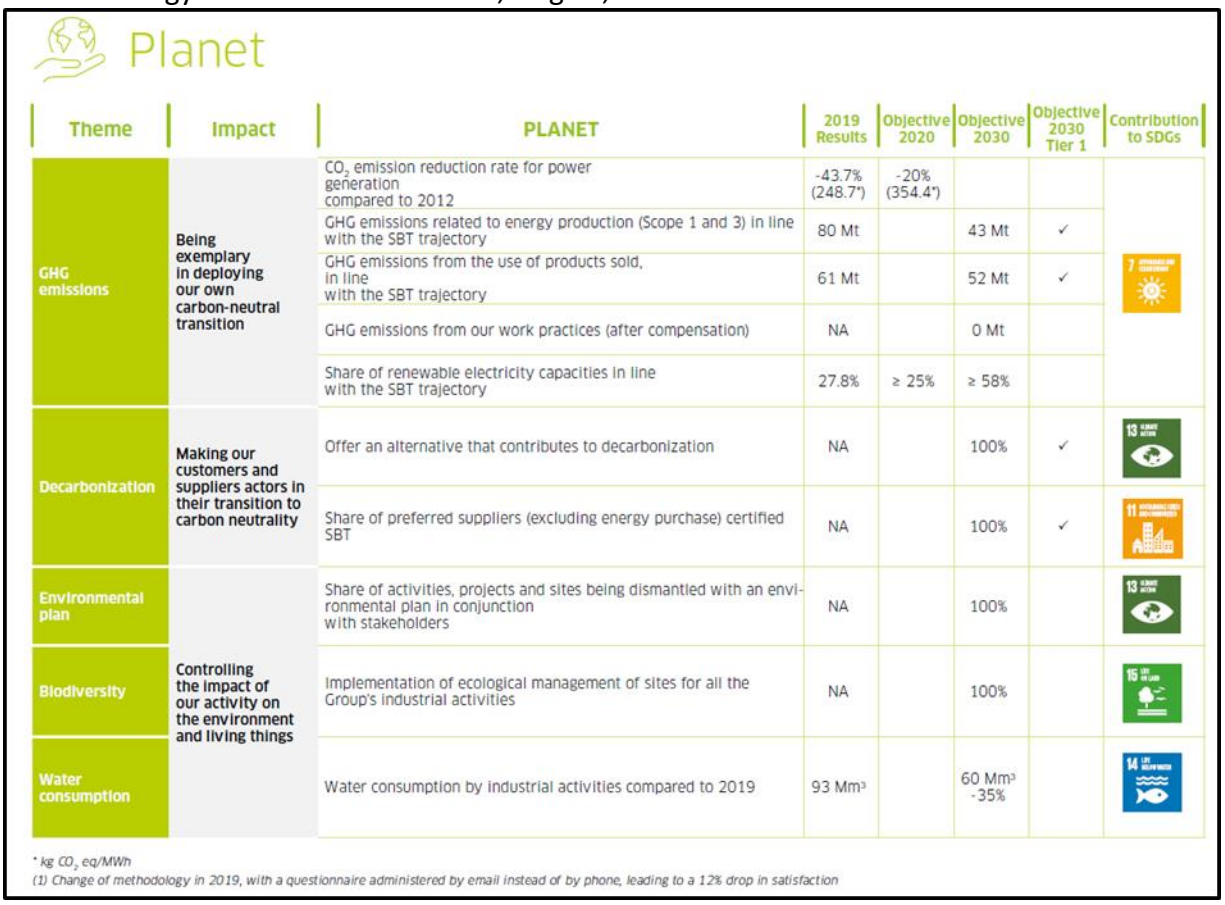
*1Selected from among products with the "Green Energy" labels as the No. 1 in Japan in terms of green power usage volume between May 2009 and December 2019 (recognized by JQA)

*2The $CO_2$ emissions coefficient used is the latest, issued annually by the Federation of Electric Power Companies of Japan.
(From 2016 onwards, the coefficient used is that provided by the Electric Power Council for a Low Carbon Society (ELCS))

Source: Asahi Group Holdings website " Reduction of Greenhouse Gases "
(https://www.asahigroup-holdings.com/en/csr/environment/greenhousegases.html)

## ENGIE

The strategy and associated metrics, targets, and results are listed.



Planet

| Theme | Impact | PLANET | 2019 Results | Objective 2020 | Objective 2030 | Objective 2030 Tier 1 | Contribution to SDGs |
|---|---|---|---|---|---|---|---|
| GHG emissions | Being exemplary in deploying our own carbon-neutral transition | $CO_2$ emission reduction rate for power generation compared to 2012 | -43.7% (248.7*) | -20% (354.4*) | | | |
| | | GHG emissions related to energy production (Scope 1 and 3) in line with the SBT trajectory | 80 Mt | | 43 Mt | ✓ | |
| | | GHG emissions from the use of products sold, in line with the SBT trajectory | 61 Mt | | 52 Mt | ✓ | |
| | | GHG emissions from our work practices (after compensation) | NA | | 0 Mt | | |
| | | Share of renewable electricity capacities in line with the SBT trajectory | 27.8% | ≥ 25% | ≥ 58% | | |
| Decarbonization | Making our customers and suppliers actors in their transition to carbon neutrality | Offer an alternative that contributes to decarbonization | NA | | 100% | ✓ | |
| | | Share of preferred suppliers (excluding energy purchase) certified SBT | NA | | 100% | ✓ | |
| Environmental plan | Controlling the impact of our activity on the environment and living things | Share of activities, projects and sites being dismantled with an environmental plan in conjunction with stakeholders | NA | | 100% | | |
| Biodiversity | | Implementation of ecological management of sites for all the Group's industrial activities | NA | | 100% | | |
| Water consumption | | Water consumption by industrial activities compared to 2019 | 93 $Mm^3$ | | 60 $Mm^3$ -35% | | |

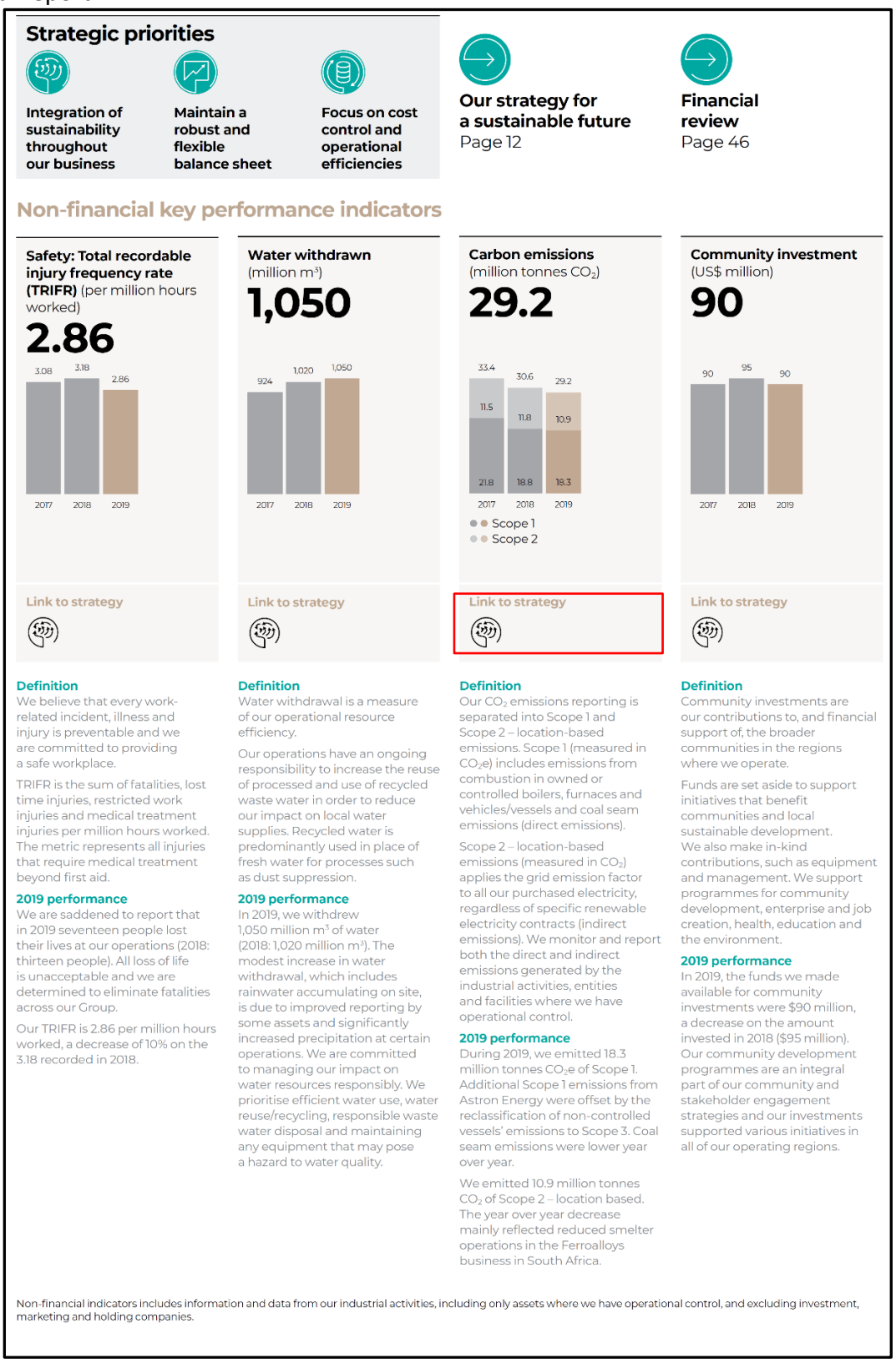
* kg $CO_2$ eq/MWh

*(1) Change of methodology in 2019, with a questionnaire administered by email instead of by phone, leading to a 12% drop in satisfaction*

Source: ENGIE "Integrated Report 2019" P.14

## Glencore

Metrics of non-financial information and its links to strategic priorities are presented in the annual report.



**Strategic priorities**

- **Integration of sustainability throughout our business**
- **Maintain a robust and flexible balance sheet**
- **Focus on cost control and operational efficiencies**

**Our strategy for a sustainable future**
Page 12

**Financial review**
Page 46

### Non-financial key performance indicators

**Safety: Total recordable injury frequency rate (TRIFR)** (per million hours worked)

**2.86**

3.08 (2017) 3.18 (2018) 2.86 (2019)

Link to strategy

**Definition**
We believe that every work-related incident, illness and injury is preventable and we are committed to providing a safe workplace.

TRIFR is the sum of fatalities, lost time injuries, restricted work injuries and medical treatment injuries per million hours worked. The metric represents all injuries that require medical treatment beyond first aid.

**2019 performance**
We are saddened to report that in 2019 seventeen people lost their lives at our operations (2018: thirteen people). All loss of life is unacceptable and we are determined to eliminate fatalities across our Group.

Our TRIFR is 2.86 per million hours worked, a decrease of 10% on the 3.18 recorded in 2018.

**Water withdrawn** (million $m^3$)

**1,050**

924 (2017) 1,020 (2018) 1,050 (2019)

Link to strategy

**Definition**
Water withdrawal is a measure of our operational resource efficiency.

Our operations have an ongoing responsibility to increase the reuse of processed and use of recycled waste water in order to reduce our impact on local water supplies. Recycled water is predominantly used in place of fresh water for processes such as dust suppression.

**2019 performance**
In 2019, we withdrew 1,050 million $m^3$ of water (2018: 1,020 million $m^3$). The modest increase in water withdrawal, which includes rainwater accumulating on site, is due to improved reporting by some assets and significantly increased precipitation at certain operations. We are committed to managing our impact on water resources responsibly. We prioritise efficient water use, water reuse/recycling, responsible waste water disposal and maintaining any equipment that may pose a hazard to water quality.

**Carbon emissions** (million tonnes $CO_2$)

**29.2**

33.4 (11.5 / 21.8) (2017) 30.6 (11.8 / 18.8) (2018) 29.2 (10.9 / 18.3) (2019)

Scope 1
Scope 2

Link to strategy

**Definition**
Our $CO_2$ emissions reporting is separated into Scope 1 and Scope 2 – location-based emissions. Scope 1 (measured in $CO_2e$) includes emissions from combustion in owned or controlled boilers, furnaces and vehicles/vessels and coal seam emissions (direct emissions).

Scope 2 – location-based emissions (measured in $CO_2$) applies the grid emission factor to all our purchased electricity, regardless of specific renewable electricity contracts (indirect emissions). We monitor and report both the direct and indirect emissions generated by the industrial activities, entities and facilities where we have operational control.

**2019 performance**
During 2019, we emitted 18.3 million tonnes $CO_2e$ of Scope 1. Additional Scope 1 emissions from Astron Energy were offset by the reclassification of non-controlled vessels' emissions to Scope 3. Coal seam emissions were lower year over year.

We emitted 10.9 million tonnes $CO_2$ of Scope 2 – location based. The year over year decrease mainly reflected reduced smelter operations in the Ferroalloys business in South Africa.

**Community investment** (US$ million)

**90**

90 (2017) 95 (2018) 90 (2019)

Link to strategy

**Definition**
Community investments are our contributions to, and financial support of, the broader communities in the regions where we operate.

Funds are set aside to support initiatives that benefit communities and local sustainable development. We also make in-kind contributions, such as equipment and management. We support programmes for community development, enterprise and job creation, health, education and the environment.

**2019 performance**
In 2019, the funds we made available for community investments were $90 million, a decrease on the amount invested in 2018 ($95 million). Our community development programmes are an integral part of our community and stakeholder engagement strategies and our investments supported various initiatives in all of our operating regions.

Non-financial indicators includes information and data from our industrial activities, including only assets where we have operational control, and excluding investment, marketing and holding companies.

Source: Glencore "Annual Report 2019" P.25

## Unilever

Based on its long-term strategy (The Unilever Sustainability Living Plan, 2030), key actions and corresponding metrics and targets are described. Annual performance and achievements are also shown.

### Non-financial performance

| | Target | 2019 | 2018 | 2017 |
|---|---|---|---|---|
| **Improving health & wellbeing**<br>**Big Goal: By 2020 we will help more than a billion people take action to improve their health and wellbeing. See page 18.** | | | | |
| **Health & hygiene** Target: By 2020 we will help more than a billion people to improve their health and hygiene. This will help reduce the incidence of life-threatening diseases like diarrhoea. | 1 billion | On ground reach: 615 million<br>TV reach: 710 million* | On ground reach: 570 million<br>TV reach: 670 million* | On ground reach: 523 million<br>TV reach: 78 million* |
| **Nutrition** Target: By 2020 we will double (i.e. up to 60%) the proportion of our portfolio that meets the highest nutritional standards, based on globally recognised dietary guidelines. This will help hundreds of millions of people to achieve a healthier diet. | 60% | 56%† | 48% | 39%◊ |
| **Reducing environmental impact**<br>**Big Goal: By 2030 our goal is to halve the environmental footprint of the making and use of our products as we grow our business. See page 19.** | | | | |
| **Greenhouse gases** Target: Halve the greenhouse gas impact of our products across the lifecycle (from the sourcing of the raw materials to the greenhouse gas emissions linked to people using our products) by 2030 (greenhouse gas impact per consumer use).+ | (50%) | 2%† | 6% | 9%◊ |
| Target: By 2020 $CO_2$ emissions from energy from our factories will be at or below 2008 levels despite significantly higher volumes (reduction in $CO_2$ from energy per tonne of production since 2008).** | ≤145.92 | 50.76† | 70.46Δ | 76.77◊ |
| **Water** Target: Halve the water associated with the consumer use of our products by 2020 (water impact per consumer use). | (50%) | 1%† | (2%) | (2%)◊ |
| Target: By 2020 water abstraction by our global factory network will be at or below 2008 levels despite significantly higher volumes (reduction in water abstraction per tonne of production since 2008).** | ≤2.97 | 1.58† | 1.67Δ | 1.80◊ |
| **Waste** Target: Halve the waste associated with the disposal of our products by 2020 (waste impact per consumer use). | (50%) | (32%) | (31%)Δ | (29%) |
| Target: By 2020 total waste sent for disposal will be at or below 2008 levels despite significantly higher volumes (reduction in total waste per tonne of production since 2008).** | ≤7.91 | 0.30† | 0.23Δ^ | 0.18◊ |
| **Sustainable sourcing** Target: By 2020 we will source 100% of our agricultural raw materials sustainably (% of tonnes purchased). | 100% | 62% | 56% | 56% |
| **Enhancing livelihoods**<br>**Big Goal: By 2020 we will enhance the livelihoods of millions of people as we grow our business. See page 18.** | | | | |
| **Fairness in the workplace** Target: By 2020 we will advance human rights across our operations and extended supply chain, by: | | | | |
| • Sourcing 100% of procurement spend from suppliers meeting the mandatory requirements of the Responsible Sourcing Policy (% of spend of suppliers meeting the Policy). | 100% | 70% | 61%‡Δ | 55%‡◊ |
| • Reducing workplace injuries and accidents (Total Recordable Frequency Rate of workplace accidents per million hours worked)**. | | 0.76*† | 0.69Δ | 0.89◊ |
| **Opportunities for women** Target: By 2020 we will empower 5 million women, by: | | | | |
| • Promoting safety for women in communities where we operate.<br>• Enhancing access to training and skills (number of women).<br>• Expanding opportunities in our value chain (number of women). | 5 million | 2.34 million* | 1.85 million Δ | 1.26 million◊ |
| • Building a gender-balanced organisation with a focus on management (% of managers that are women)**. | 50% | 51% | 49%Δ | 47%◊ |
| **Inclusive business** Target: By 2020 we will have a positive impact on the lives of 5.5 million people by: | | | | |
| • Enabling small-scale retailers to access initiatives aiming to improve their income (number of small-scale retailers). | 5 million | 1.81 million†* | 1.73 million | 1.60 million |
| • Enabling smallholder farmers to access initiatives aiming to improve their agricultural practices (number of smallholder farmers). | 0.5 million | 0.79 million†* | 0.75 million | 0.72 million◊ |

Baseline 2010 unless otherwise stated
** Key Non-Financial Indicators.
† PricewaterhouseCoopers assured in 2019. For details and 2019 basis of preparation see www.unilever.com/investor-relations/annual-report-and-accounts/
Δ PricewaterhouseCoopers assured in 2018. For details and 2018 basis of preparation see www.unilever.com/sustainable-living/our-approach-to-reporting/reports-and-publications-archive
◊ PricewaterhouseCoopers assured in 2017. For details and 2017 basis of preparation see www.unilever.com/sustainable-living/our-approach-to-reporting/reports-and-publications-archive
* The number of people reached through TV advertisements and programmes aimed at encouraging health and hygiene behaviour change ('TV reach') was only measured for our oral care brands in 2017. Lifebuoy and Dove started measuring TV reach in 2018 and 2019 respectively.
‡ During 2017 and 2018 we amended how we assessed compliance with the Responsible Sourcing Policy, hence year-on-year data is not comparable.
* Around 568,000 women have accessed initiatives under both the Inclusive Business and the Opportunities for Women pillars in 2019.
( ) Brackets around environmental targets indicate that our aim is to reduce our greenhouse gas, waste and water footprints. Brackets around the corresponding actuals indicate that we have reduced our footprints by the numbers quoted.
+ Target approved by the Science Based Targets initiative.
^ Restated from 0.20 kg/tonne of production due to a classification error during the data reporting process.
¤ 2019 Total Recordable Frequency Rate (TRFR) includes for the first time all acquisitions which operate as decentralised business units, as we now have processes in place to collect the data. Had we included these acquisitions in 2017 and 2018, our reported TRFR would have been approximately 6% higher in each year.

Source: Unilever "UNILEVER ANNUAL REPORT AND ACCOUNTS 2019" P. 22

## Nomura Asset Management

For its monitoring of GHG emissions in individual funds, the company shows the calculation method and its relationship with climate change score, and also describes its response in case the GHG emissions are higher than the benchmarks.

Column **Monitoring of GHG Emissions in Individual Funds**

In "Nomura Asset Management's TCFD Initiatives," we analyzed and evaluated climate-related risks and opportunities for all of our portfolios, but we also monitor the GHG emissions of individual funds using the following four metrics recommended by TCFD.
The results of monitoring are shared with each investment officer. In addition, these results are regularly reported to the Executive Management Committee and the Board of Directors through our Responsible Investment Committee.
If GHG emissions are high compared to the benchmarks, we check the contributions from the fund's constituent stocks or bonds, ensure awareness of climate-related risks and opportunities during engagement with portfolio companies, and discuss their efforts to reduce GHG emissions.

### Total Carbon Emissions

- Absolute GHG emissions associated with a portfolio
- Unit: $tCO_2e$($CO_2$ equivalent)

$$\sum_{n}^{i}\left(\frac{\text{current value of investment } i}{\text{issuer's market capitalization } i}\times\text{issuer's Scope 1 and Scope 2 GHG emissions } i\right)$$

### Carbon Footprint

- Total carbon emissions for a portfolio normalized by the market value of the portfolio
- Unit: $tCO_2e$/US$ million (investment amount)

$$\frac{\text{total carbon emissions}}{\text{market capitalization of portfolio}}$$

### Carbon Intensity

- Volume of carbon emissions per million dollars of revenue (carbon efficiency of a portfolio)
- Unit: $tCO_2e$/US$ million (revenues)

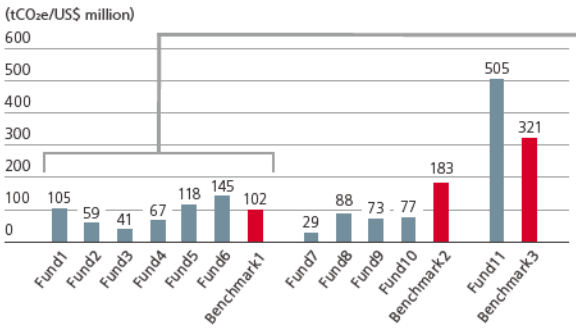
$$\frac{\text{Total carbon emissions}}{\sum_{n}^{i}\left(\frac{\text{current value of investment } i}{\text{issuer's market capitalization } i}\times\text{the revenues of portfolio companies } i\right)}$$

### Weighted Average Carbon Intensity

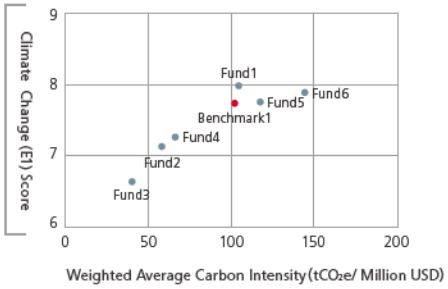
- Portfolio's exposure to carbon-intensive companies and metric recommended by TCFD
- Unit: $tCO_2e$/US$ million (revenues)

$$\sum_{n}^{i}\left(\frac{\text{current value of investment } i}{\text{market capitalization of portfolio}}\times\frac{\text{issuer's Scope 1 and Scope 2 GHG emissions } i}{\text{the revenues of portfolio companies } i}\right)$$

### Weighted Average Carbon Intensity




### Weighted Average Carbon Intensity and NAM's Own Climate Change (E1) Score




Source: Nomura Asset Management Co., Ltd. "Responsible Investment Report 2019" P.20

## Idemitsu Kosan Co., Ltd.

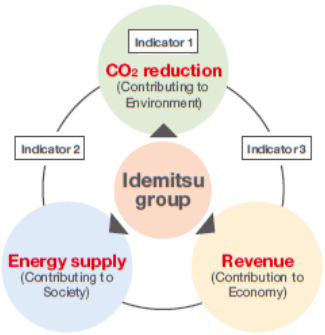
$CO_2$ reduction is viewed from the three perspectives of contribution to the environment, society, and economy, and targets and metrics for monitoring are disclosed.

Specifically, the company uses metrics that incorporates not only Scope 1 + 2 but also Scope 3 as well as avoided $CO_2$ emissions, and it is also related to the business opportunity.

### $CO_2$ Reduction Targets and Monitoring Indicators

We recognize that environmental contribution by reducing own $CO_2$ emissions is not enough in the light of corporate sustainability. At the same time, we believe it is important to contribute to society by providing low-carbon energy with a view to the transition to a low-carbon society in the future, and to contribute to the economy by continuing to generate profits while transforming our business portfolio.

In addition to its fossil fuel business, we conduct business related to the development of renewable energy and environmentally friendly products, as well as research aimed at solving social issues. These activities contribute to the reduction of $CO_2$ emissions on a global scale throughout our value chain. We recognize that this concept will become even more important in the future along with the reduction of $CO_2$ emissions by the Group.




Based on this recognition, our group will accelerate its efforts to reduce $CO_2$ emissions by establishing 3 indices.

The $CO_2$ reduction targets in Indicator 1 are set in Japan's 2030 Nationally Determined Contribution of GHG reduction targets in a way that greatly surpasses the targets of industry associations to which we belong. Indicator 2 is based on the assumption that energy demands of customers are stably supplied. At present, indicator level is set in a manner that is consistent with the levels required by society as outlined in our company's scenario "Prism." However, we will revise the indicator level as needed while monitoring trends in low carbon energy demand by society.

**Target value**

**Indicator 1** Scope1 + 2 Reduction of Our group

(An indicator of the extent to which "**Scope1 + 2 emissions**" has been reduced through promotion of energy conservation activities at refineries, plants, and factories, etc.)

**2030 Target (compared to 2017 levels): 2 million ton-$CO_2$ (▲15%)**

(Calculation formula) = $CO_2$ emissions in target year (Scope1 + 2) - $CO_2$ emissions in base year (Scope 1 + 2)

**Monitoring indicator**

**Indicator 2** Low carbon level of supplied energy

(Indicator of the extent to which an energy company can reduce the "**$CO_2$ emissions per unit of energy**" supplied to society)

**2050 Indicator Level (compared to 2017 level): ▲30%**

$$\text{(Calculation formula)} = \frac{CO_2 \text{ emissions (Scope1 + 2 + 3)} - CO_2 \text{ avoided emissions } *}{\text{Amount of energy supplied to society}}$$

**Indicator 3** Degree of carbon exit from corporate earnings

(Indicator of how the "**Revenue level per unit of $CO_2$**" emitted by the company as a whole is being raised)

$$\text{(Calculation formula)} = \frac{\text{Revenue}}{CO_2 \text{ emissions (Scope1 + 2 + 3)} - CO_2 \text{ avoided emissions } *}$$

* $CO_2$ reduction contribution through the entire value chain

Source: Idemitsu Kosan Co., Ltd. "Idemitsu Sustainability Report 2019" P.19

## AXA

The Climate Report presents several risk assessment models to quantify climate-related issues as company's investment objectives, and uses Carbon Delta's model to estimate and disclose the transition costs, physical risks costs, green revenues, and company cost of climate costs with respect to the company's fixed income portfolio, equity portfolio, and total assets.

| DATA PARTNER | ASSET CLASS | METRIC | WHAT DO WE MEASURE? |
|---|---|---|---|
| BEYOND RATINGS | SOVEREIGN DEBT | Carbon intensity | Carbon Footprint, **expressed in T eq.$CO_2$/GDP.** |
| | | Warming Potential | Contribution to global warming, **expressed in temperature.** |
| CARBON DELTA | CORPORATE BONDS & EQUITY | Warming Potential | Contribution to global warming, **expressed in temperature.** |
| | | Physical risks costs | Impact of extreme weather events (asset damages and business interruption), **expressed in % of revenues affected** |
| | | Transition risks costs | Impact of $CO_2$ emissions reduction, **expressed in % of revenues affected** |
| | | Green revenues | Future green revenues, **expressed in % of revenues.** |
| AXA Group Risk Management | REAL ASSETS | Physical risks costs | Building-level impacts of extreme weather events, **expressed in €m.** |
| Trucost ESG Analysis S&P Global | CORPORATE BONDS, EQUITY, SOVEREIGN DEBT, REAL ASSETS | Carbon intensity | Carbon Footprint of AXA's portfolio, **expressed in T eq.$CO_2$/m$ of revenues.** |

Source: AXA "2019 Climate Report" P.15

Overview of company-level climate-related "cost" metrics

| Asset class | Transition cost *(% of total revenues)* | Physical Risks Cost *(% of total revenues)* | Green Revenues *(% of total revenues)* | "Company" cost of climate *(% of total revenues)* |
|---|---|---|---|---|
| **Fixed Income** | **-5.2** | **-4.7** | **4.1** | **-5.8** |
| *Relevant benchmark: Bank of America Merril Lynch (BofAML)* | *-4.7* | *-4.9* | *3.8* | *-5.8* |
| **Equity** | **-2.2** | **-4.0** | **6.6** | **0.4** |
| *Relevant benchmark: MSCI World ACWI* | *-3.9* | *-4.5* | *5.3* | *-3.1* |
| **AXA Total Corporate Assets** | **-4.6** | **-4.6** | **4.4** | **-4.8** |

Source: AXA "2019 Climate Report" P.19

## (5) Other

### I. Response to TCFD Recommendations

Examples of companies that disclose their responses to climate change in line with TCFD recommendations include the following:

(See TCFD Guidance P.26)

**Nippon Steel Corporation**

The company shows all 11 items recommended to be disclosed in the TCFD recommendations where they are disclosed in its Sustainability Report.

[For reference] TCFD's recommendations and supporting recommended disclosures

| TCFD's recommendations and supporting recommended disclosures | Reference page |
|---|---|
| **[Governance] Disclose the organization's governance related to climate-related risks and opportunities.** | |
| a) Describe the board's oversight of climate-related risks and opportunities. | p. 18 |
| b) Describe management's role in assessing and managing climate-related risks and opportunities. | p. 18 |
| **[Strategy] Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material.** | |
| a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term. | p. 24 |
| b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning. | p. 24 |
| c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario. | p. 24 |
| **[Risk Management] Disclose how the organization identifies, assesses, and manages climate-related risks.** | |
| a) Describe the organization's processes for identifying and assessing climate-related risks | p. 18 |
| b) Describe the organization's processes for managing climate-related risks. | p. 18 |
| c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management. | p. 18 |
| **[Metrics and Targets] Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.** | |
| a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process. | p. 13 |
| b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks. | pp. 20, 22 |
| c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets. | p. 13 |

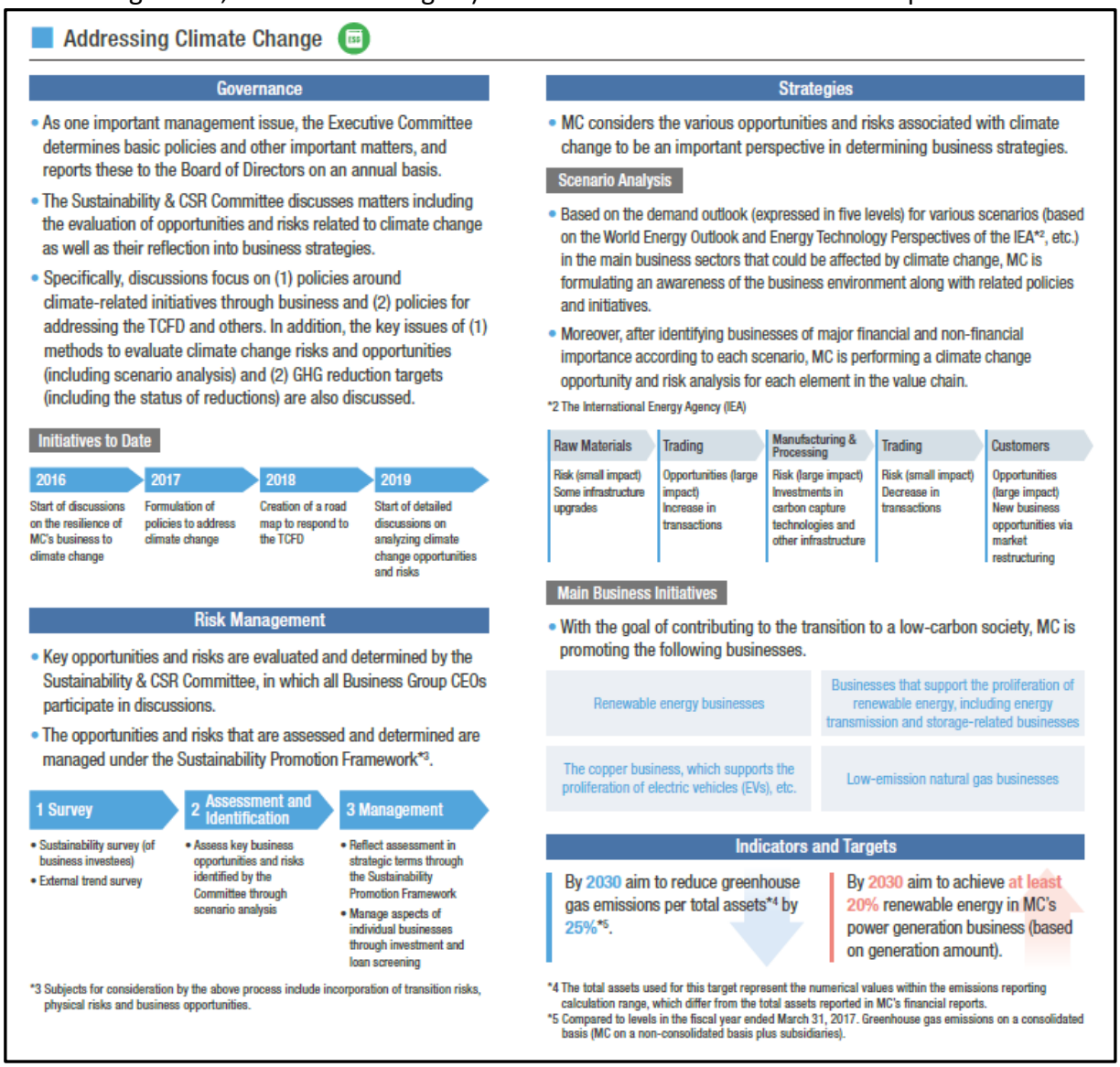
**1** Source for EV-related data: IEA ETP2017
EVs only refer to battery electric vehicles (BEVs) with no internal combustion engine (ICE). ICEVs include plug-in hybrid vehicles (PHVs).
**2** The ratio of the use of the EAF route is calculated from the estimated crude steel production in the JISF's paper "A challenge towards zero-carbon steel."

Source: Nippon Steel Corporation "Sustainability Report 2019" P.25

## Mitsubishi Corporation

The executive summary of the response to the TCFD recommendations is described in the integrated report, and the key points of the current state for each theme are shown.

In the ESG Data Book 2019, the status of each of the four themes (Governance, Strategy, Risk Management, Metrics and Targets) of the TCFD recommendations is explained.



### Addressing Climate Change

#### Governance

- As one important management issue, the Executive Committee determines basic policies and other important matters, and reports these to the Board of Directors on an annual basis.
- The Sustainability & CSR Committee discusses matters including the evaluation of opportunities and risks related to climate change as well as their reflection into business strategies.
- Specifically, discussions focus on (1) policies around climate-related initiatives through business and (2) policies for addressing the TCFD and others. In addition, the key issues of (1) methods to evaluate climate change risks and opportunities (including scenario analysis) and (2) GHG reduction targets (including the status of reductions) are also discussed.

**Initiatives to Date**

| 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|
| Start of discussions on the resilience of MC's business to climate change | Formulation of policies to address climate change | Creation of a road map to respond to the TCFD | Start of detailed discussions on analyzing climate change opportunities and risks |

#### Risk Management

- Key opportunities and risks are evaluated and determined by the Sustainability & CSR Committee, in which all Business Group CEOs participate in discussions.
- The opportunities and risks that are assessed and determined are managed under the Sustainability Promotion Framework*3.

| 1 Survey | 2 Assessment and Identification | 3 Management |
|---|---|---|
| • Sustainability survey (of business investees)<br>• External trend survey | • Assess key business opportunities and risks identified by the Committee through scenario analysis | • Reflect assessment in strategic terms through the Sustainability Promotion Framework<br>• Manage aspects of individual businesses through investment and loan screening |

*3 Subjects for consideration by the above process include incorporation of transition risks, physical risks and business opportunities.

#### Strategies

- MC considers the various opportunities and risks associated with climate change to be an important perspective in determining business strategies.

**Scenario Analysis**

- Based on the demand outlook (expressed in five levels) for various scenarios (based on the World Energy Outlook and Energy Technology Perspectives of the IEA*2, etc.) in the main business sectors that could be affected by climate change, MC is formulating an awareness of the business environment along with related policies and initiatives.
- Moreover, after identifying businesses of major financial and non-financial importance according to each scenario, MC is performing a climate change opportunity and risk analysis for each element in the value chain.

*2 The International Energy Agency (IEA)

| Raw Materials | Trading | Manufacturing & Processing | Trading | Customers |
|---|---|---|---|---|
| Risk (small impact)<br>Some infrastructure upgrades | Opportunities (large impact)<br>Increase in transactions | Risk (large impact)<br>Investments in carbon capture technologies and other infrastructure | Risk (small impact)<br>Decrease in transactions | Opportunities (large impact)<br>New business opportunities via market restructuring |

**Main Business Initiatives**

- With the goal of contributing to the transition to a low-carbon society, MC is promoting the following businesses.

| | |
|---|---|
| Renewable energy businesses | Businesses that support the proliferation of renewable energy, including energy transmission and storage-related businesses |
| The copper business, which supports the proliferation of electric vehicles (EVs), etc. | Low-emission natural gas businesses |

#### Indicators and Targets

By 2030 aim to reduce greenhouse gas emissions per total assets*4 by 25%*5.

By 2030 aim to achieve at least 20% renewable energy in MC's power generation business (based on generation amount).

*4 The total assets used for this target represent the numerical values within the emissions reporting calculation range, which differ from the total assets reported in MC's financial reports.
*5 Compared to levels in the fiscal year ended March 31, 2017. Greenhouse gas emissions on a consolidated basis (MC on a non-consolidated basis plus subsidiaries).

Source: Mitsubishi Corporation "Integrated Report 2019" P.44

## Utilizing the TCFD Recommendations to Capture Business Opportunities and Mitigate Risks

Due to the high degree of uncertainty surrounding the impacts of climate change, MC has adopted a flexible portfolio capable of adapting to medium to long-term changes in its operating environment. MC believes it is vital to capture business opportunities associated with climate change and take appropriate action to mitigate risks.

The TCFD provides business entities and investors with guidelines on voluntary climate-related financial disclosures and information useful for their decision making. MC utilizes these TCFD data as benchmarks for verifying its own climate-related action plans, identifying growth opportunities and strengthening risk management in ways that are designed to ensure its sustainable growth.

Portions of the TCFD's recommendations are still in the discussion stages, and others may take several years before action can be taken. Nevertheless, MC will disclose its efforts in a stepwise fashion to strengthen its information disclosure.

### Governance

Climate change is one of the most important issues acknowledged by MC's top management. MC's basic policy on climate change and important matters therein are deliberated and decided upon by its Executive Committee, the company's officer-level decision-making body.

As stipulated in the regulations governing MC's board of directors, the Executive Committee reports its findings regularly (at least once a year) to the board, appropriate supervision of which is facilitated by the structure of MC's governance framework. Before the Executive Committee has addressed basic policy and important matters pertaining to climate change, actions are taken by MC's Sustainability Advisory Committee and Sustainability & CSR Committee. The former fields opinions and advice from outside experts, and the latter (which reports directly to the Executive Committee) holds extensive hearings with all of the Business Group CEOs.

The Business Groups also act independently to address climate change. Group Chief Sustainability Officers and Group Sustainability Managers are appointed within each Group's department responsible for management strategy in order to oversee sustainability-related initiatives (including climate change) and reflect climate-related opinions and information into their respective businesses and strategies.

At MC, the company's basic policy on climate change and important matters therein are comprehensively addressed when making decisions on business strategies and investments.

**Board of Directors and Executive Committee Deliberations and Reports**

| | |
|---|---|
| Basic Policy on Climate Change | Covers climate-related initiatives through the company's businesses, adoption of TCFD recommendations, details on climate-related financial disclosures, etc. |
| Important Matters | Assessments of climate-change risks and business opportunities (including scenario analyses), greenhouse-gas reduction targets and action plans, etc. |

**Initiatives to Date**

| 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|
| Start of discussions on the resilience of MC's business to climate change | Formulation of policies to address climate change | Creation of a road map to respond to the TCFD | Start of detailed discussions on analyzing climate change opportunities and risks |

**Climate-Change Governance Structure**

| | | |
|---|---|---|
| Board of Directors | Supervises MC's climate-related actions and initiatives | Convenes approx. once per year |
| Executive Committee | Makes decisions regarding MC's basic policy on climate change<br>Makes decisions regarding important matters pertaining to climate change | Convenes approx. 2-3 times per year |
| Sustainability & CSR Committee (reports directly to Executive Committee) | Deliberates on MC's basic policy on climate change and important matters therein, and reports findings to Executive Committee | Convenes approx. 2-3 times per year |
| Sustainability Advisory Committee | Offers advice and recommendations regarding MC's basic policy on climate change and important matters therein | Convenes approx. twice per year |
| Officer in Charge | Masakazu Sakakida (Member of the Board, Executive Vice President, Corporate Functional Officer, Corporate Sustainability & CSR, Corporate Administration, Legal (Concurrently) Chief Compliance Officer) | |
| Department in Charge | Corporate Sustainability & CSR Department | |

**Reference:** Diagram of the Sustainability Promotion Framework

### Strategy

MC considers the opportunities and risks associated with climate change to be key variables in establishing its business strategies, and recognizes the possibility that the impact of climate change on its operations will grow over the medium to long term. Accordingly, MC is identifying where the risks and opportunities are likely to reveal themselves up to and even beyond the year 2030. Regular internal analyses and assessments also factor in changing external trends.

#### Main Opportunities and Risks Associated with Climate Change

**Transition Risks and Opportunities**

| | |
|---|---|
| Regulations | • Low-carbon and carbon-free products / proliferation of service-related subsidies<br>• Growing operational and systems-related costs due to carbon pricing mechanisms (carbon taxes, etc.) and increasing regulations |
| Technologies | • More new business opportunities due to the development and proliferation of renewable energy sources, electric vehicles and other new technologies or alternative products<br>• Obsolescence of products and services that rely on older technologies |
| Markets | • Shifting demand from fossil-fuel products and services to low-carbon products and services |

**Physical Risks**

| | |
|---|---|
| Increase in Unusual Weather Patterns | • Risks of water shortages, floods and other resulting phenomena having an adverse impact on business operations |
| Climate Change | • Risk of rising temperatures, etc. having an adverse impact on agricultural and marine products |

* The impacts of the above risks and opportunities will depend on both the relevant regions and products.
* With respect to physical risks, it is important to consider environmental changes (or possibilities thereof) on a region-by-region or product-by-product basis. Accordingly, MC's responses to phenomena such as floods and water shortages are tailored to the on-the-ground characteristics and needs of each of its businesses.



Source: Mitsubishi Corporation "ESG DATA BOOK 2019"PP. 30 - 31

## Kirin Group

In its Environmental Report, a table which indicates the recommended disclosure items of the TCFD recommendations, and the corresponding pages is shown.

### TCFD Recommendations' Recommended Disclosure Index

| Recommended Disclosure | | Page |
|---|---|---|
| Governance | a) Describe the board's oversight of climate-related risks and opportunities. | P.67-70 |
| | b) Describe management's role in assessing and managing climate-related risks and opportunities. | P.67-70 |
| Strategy | a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term. | P.8, 11-16 |
| | b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning. | P.12-16 |
| | c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2° C or lower scenario. | P.14-16 |
| Risk Management | a) Describe the organization's processes for identifying and assessing climate-related risks. | P.68 |
| | b) Describe the organization's processes for managing climate-related risks. | P.68-70 |
| | c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management. | P.68-69 |
| Metrics and Targets | a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process. | P.8, 9, 17, 55 |
| | b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks. | P.55, 64, 65, 85, 88-91 |
| | c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets. | P.8, 9, 17, 18, 21, 55 |

Source: Kirin Group "Environmental Report 2019" P.98

## Daikin Industries Ltd.

Links to the corresponding webpages for each subtopic of the TCFD recommendations are provided on the website.

### Climate-Related Financial Information Disclosure Taskforce Comparison Table

This comparison table discloses information categorized as recommended by the Task Force on Climate-related Financial Disclosures (TCFD).

| Disclosure Categories Recommended and Endorsed by the Task Force on Climate-related Financial Disclosures | Posted location |
|---|---|
| Governance | |
| Governance related to climate-related risks and opportunities | |
| a) Board of Director monitoring system with regard to climate-related risks and opportunities | › Management Structure |
| b) Management Role within the assessment and management of climate-related risks and opportunities | › Management Structure |
| Strategy | |
| Actual and potential impact of climate-related risks and opportunities on business, strategy and financial planning | |
| a) Details of climate-related risks and opportunities over the short-, medium- and long-term | › Risks and Opportunities |
| b) Impact of climate-related risks and opportunities on organization business, strategy and financial planning | › Risks and Opportunities |
| c) Strategic resilience in light of considerations based on climate related scenarios including scenarios where temperatures rise by 2 degrees or lower | › Long-Term Outlook Policy (Environmental Vision 2050) |
| Risk Management | |
| Process for identifying assessing and managing climate-related risks | |
| a) Process for specifying and assessing climate-relate risks | › Risks and Opportunities |
| b) Process for managing climate-relate risks | › Risks and Opportunities |
| c) Specification, assessment and management process integration of climate-related risks for comprehensive risk management | › Risks and Opportunities |
| Indices and Targets | |
| Indices and targets used to assess and manage climate-related risks and opportunities | |
| a) Indices used by organizations to assess climate-related risks and opportunities in line with strategy and risk management processes | › Environmental Action Plan |
| b) Scope 1–3 greenhouse gas emissions volume and related risks | › Overview of Environmental Impact |
| c) Targets and achievements for managing climate-related risks and opportunities | › Environmental Action Plan<br>› Search ESG Data |

Source: Daikin Industries website "CSR and the Environment" (https://www.daikin.com/csr/nav/guideline/)

## Ajinomoto Group

In the Sustainability Data Book, the responses to the four items of the TCFD recommendations are listed.

**Information disclosure in four areas based on TCFD recommendations**

| | |
|---|---|
| Governance | The Management Risk Committee and Environmental Committee under the Executive Committee review the appropriate responses to the risks and opportunities related to climate change.<br>The Management Risk Committee identifies the risks and opportunities related to climate change and considers the appropriate responses to them. The Environmental Committee develops the environmental targets and plans and monitors performance in keeping with the environmental management system. These are all reported to the Executive Committee at least once a year, which are then reported to the Board of Directors and included in the corporate strategy.<br>The Board of Directors makes decisions on capital investments from an overall perspective, taking into account the environmental assessment results, including the impact of climate change. |
| Strategy | The Ajinomoto Group's business domains of products range from seasonings and coffee to frozen foods, and its business activities extend into Life Support and Healthcare. The geographic range of its operations spans the globe. Climate change can impact the Group's operations in many ways, such as a major natural disaster halting its business activities, affecting its ability to procure raw materials and fuel, and altering consumption of its products.<br>For production in the short, medium and long term, the Group reviews the physical risks of climate change such as droughts, floods, rising sea levels and changes in yield of major raw materials, as well as transition risks such as rising energy prices, tight supply and demand, and price increases due to competition for major raw materials with other food sources and biofuels.<br>From fiscal 2018, the Group included scenario analysis of the impacts of climate change on business and established a framework for a more quantitative assessment of the risks based on the TCFD recommendations.<br>As a result of the scenario analysis, the Group will review counterstrategies against the physical and transition risks identified above, such as switching to energy sources with low GHG emissions. |
| Risk management | In light of the circumstances surrounding the Group, including global politics, economics, social conditions and climate change, the Management Risk Committee determines the overall level of risks based on the impact on business and likelihood of occurrence, selects the significant risks Group-wide and considers strategies to address them.<br>Climate-related risks are regarded as part of Group-wide significant risks, and the impacts of physical risks and transition risks, such as legal risks and market risks, are evaluated based on published reports and expert advice.<br>The Committee's review and recommendations are reported to the Executive Committee and the Board of Directors at least once a year. |
| Metrics and targets | In its medium and long-term environmental targets, the Group aims to reduce GHG emission volume vs. emission intensity by 50% and water usage vs. production volume unit by 80% compared to fiscal 2005 by fiscal 2030.<br>In addition, $CO_2$ emissions and water consumption have been measured and disclosed since 1996. |

[1] An international organization of representatives of central banks, financial supervisory agencies, and finance ministries.
[2] A consortium for investors and companies supporting the TCFD to jointly develop and use industry-specific scenario

Source: Ajinomoto Group "Sustainability Data Book 2019" P.64

## Nippon Life Insurance

In its annual reports, etc., the status of responses to the company's responses to TCFD recommendations is disclosed in a table. The risk and risk management items are described from the perspectives of both life insurance companies and institutional investors.

**Response to the Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)**

Nippon Life declared its agreement with the recommendations of the TCFD, which was established by the Financial Stability Board in December 2018. Going forward, we will promote initiatives and disclosure of climate change issue based on the recommendations of the TCFD.

| | |
|---|---|
| **Governance** | ● Formulated the "Environmental Charter" setting out our policy on initiatives for environmental protection as a Company<br>● Formulated the "Policy on Initiatives for ESG Investment and Finance," aimed at contributing to the formation of a sustainable society, including response to climate change, through asset management<br>● Identified "addressing climate change" as a key priority for sustainability at the Sustainability Management Promotion Committee, which is an advisory body to the Management Committee (status of initiatives to be reported to the Management Committee and the Board of Directors) |
| **Strategy** | ● The following climate change opportunities and risks have been recognized, and appropriate risk management put in place, while green finance is being increased for companies that contribute to the transition to a low-carbon society<br>**Opportunities**<br>● Increase in investment and finance opportunities in corporations, technologies, and projects that contribute to low carbon emissions<br>**Risks**<br>● Increase in insurance payments due to extreme weather events in the insurance business, increase in hospitalization and mortality rates due to higher average temperatures, and related risks<br>● A risk of value loss on investment and finance assets associated with the transition to a low-carbon society in asset management |
| **Risk Management** | ● Recognizing the impact and risk of climate change on the insurance business and asset management, implement risk management through the following initiatives<br>**Insurance Business**<br>● Investigate and research the impact on insurance claim payments of changes in the frequency and scale of natural disasters and the medium- to long-term impact of increasing hospitalization and mortality rates due to higher average temperatures<br>**Asset Management**<br>● 1) Established investment and finance standard, 2) Engaged with recipients of investment and finance, 3) Established systems for analyzing the impact on investment and finance assets<br>– Applied Equator Principles to large scale development projects<br>– Conducted climate change-related dialogue in stewardship activities |
| **Indicators and Targets** | ● Disclosed $CO_2$ emissions associated with business activities |

Source: Nippon Life Insurance "Nissay Annual Report 2019" P.67

## Daiwa House Group

In its sustainability report, the status of response to each of the four items (Governance, Strategy, Risk management and Metrics and targets) of the TCFD recommendations is explained.

### Announcing support for TCFD (Task Force on Climate-related Financial Disclosures) recommendations

TCFD TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

With the effects of climate change more and more serious year by year, extreme weather and natural disasters, of which climate change is thought to be one of the instigators, are becoming more frequent, and housing space and safety and peace of mind in living, the foundation of the value we offer, are being threatened. On the other hand, countries and governments across the world have taken a drastic turn to decarbonization after the adoption of the Paris Agreement and the role the private sectors including us play is also significantly changing.

However as external environmental changes accompanied by climate change are highly uncertain, we find it important to pursue appropriate handling of risks and business opportunities simultaneously with multiple scenarios taken into account.

We are going to use the items "Governance," "Strategy," "Risk Management," and "Metrics and Targets," of which the TCFD recommends the disclosures, as a tool to verify the validity of our engagement in climate change and pave the way to constructive communication with investors through active information disclosures.

Keeping with this notion, we announced support for the TCFD recommendations in September 2018 and have been part of the TCFD consortium, which was founded in May 2019.

Items of which TCFD recommends disclosures

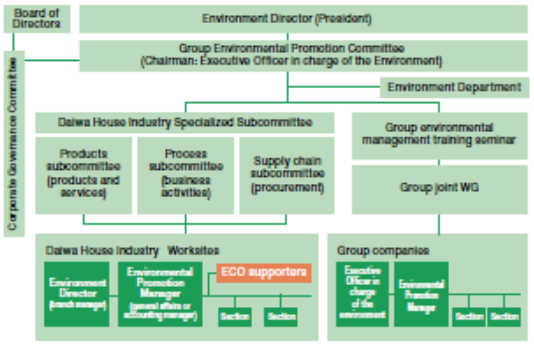
| | |
|---|---|
| Governance | Organization's governance of climate-related risks and opportunities<br>Board of directors' governance of risks and opportunities, management's role in assessing and managing risks and opportunities |
| Strategy | Impacts on an organization's business, strategy, and finance<br>Short-, medium- to long-term risks and opportunities, impacts on business, strategy, and finance, and resilience of strategy based on climate scenarios |
| Risk Management | Status of identification, assessment, and management of climate-related risks<br>Status of integration of process of risk identification and assessment, and process of risk management into the entire organization's risk management |
| Metrics and Targets | Metrics and targets used to assess and manage climate-related risks and opportunities<br>Metrics used by an organization to assess and manage risks, targets and results for risk and opportunity management |

### Governance

Our Group positions "slowing and adapting to climate change" as one of the important management issues and has appointed a Senior Managing Executive Officer as Executive Officer in charge of the Environment, who is responsible for implementing a climate change strategy, with the Group Environmental Promotion Committee chaired by an Executive Officer in charge of the Environment. The committee, which is convened biannually, discusses and makes decisions on basic matters about our Group's environmental initiatives including climate change-related ones and risks and opportunities, managing the Group's environmental initiatives.

"Endless Green Program," an Action Plan for the Environment which is formulated every three years in accordance with a Medium-Term Management Plan, contains the Group's strategies for climate change, performance targets, plans, and risk management policies, all of which are discussed at the Corporate Governance Committee as important items for environmental management before being reported to the board of directors. During the period of the program, the Executive Officer in charge of the Environment reports the progress of the program to the board of directors once a year in line with the aggregation of final management indices, with possible reviews of strategies, targets, plans, etc.

Related page P151 Environmental Management




| Conference body | Principal members | Principal roles in handling climate change | Conference frequencies |
|---|---|---|---|
| Board of Directors | Director, External Director | Supervision of climate change strategy | Annually |
| Corporate Governance Committee | Representative Director, External Director, Auditor, External Auditor | Discussing and reporting important items about climate change strategy to the board of directors | Biannually |
| Group Environmental Promotion Committee | Executive Officer in charge of the Environment, Division Manager of the Head Office, Group Environmental Promotion Manager | Drafting and examining our climate change strategy and adopting the final text, managing the progress of the Group management indicators | Biannually |
| Daiwa House Industry Specialized Subcommittee | Relevant Division Manager, Promotion Manager | Implementing our climate change strategy, managing the progress of individual management indicators | Quarterly |
| Group environmental management training seminar | Group Executive Officer in charge of the Environment | Promoting climate change strategy across the Group | Annually |

### Strategy

Climate change-related risks and opportunities can result from two factors: "transitions" derived from tightening of regulations, technological advancement, and changes in market environment accompanied by a shift to a decarbonized society; and "physical changes" such as acute extreme weather and chronic temperature rise as a result of global warming. Some effects of climate change may not last long, but others can have medium- or long-term consequences. Classifying the factors of various external environmental changes accompanied by climate change into "transitions" and "physical changes," we assess possible financial impacts facing us on a scale of large, medium, and small with affected periods assumed, trying to identify important risks and opportunities.

In addition, based on such risks and opportunities, in order to devise business strategies that flexibly respond to external environmental changes in the future, we assess the degree of impact on our business by using multiple scenarios. When analyzing them, we refer to Nationally Determined Contribution (NDC) for the scenario in which "transitions" progress, and Representative Concentration Pathways (RCP) 8.5 for the scenario in which extreme "physical changes" progress to verify the validity of our business strategies.

A recent simplified scenario analysis has shown that our net zero energy housing and buildings and environmental greening businesses are forecast to grow with the profit increase likely to cover negative financial impacts under any scenarios, which has made us reaffirm the validity of our risk management and the importance of active pursuit of opportunities. Note that this analysis, as the first steps, is simplified only for important risks and opportunities for the housing, commercial and office building businesses in particular.

In addition to targeting more businesses, we are going to improve completeness of risks and opportunities and refine scenario analysis.

Source: Daiwa House Group "Sustainability Report" P.163

■ Principal risks and opportunities related to climate change

Short term (0 to 3years), medium term (3 to 10 years), long term (10 to 30 years)

| Types | | | Content | Affected periods | Degree of financial impacts |
|---|---|---|---|---|---|
| Risks | Transitions | Policies, laws and regulations | ◆ Tightening of Building Energy Efficiency Act<br>With the scope of application of compliance with the Building Energy Efficiency Act expanded or energy efficiency standards elevated, the number of businesses or properties to be regulated can balloon, which can increase workloads and costs of houses and buildings we offer. | Short-term | Medium |
| | | | ◆ Carbon tax hike and expansion of emissions trading<br>With the carbon tax significantly raised or emissions trading expanded, a significant increase in operational costs or additional business tasks out of regulations will be needed, which can result in reduced work efficiency. | Medium-term | Small |
| | Physical changes | Chronic | ◆ Maximum temperature in summer rising<br>With the maximum temperature in summer rising, workers in construction sites where outside work is common can be at higher risk for heatstroke, which can lead to delay in construction periods or reduced productivity in construction sites. | Short-term | Small |
| Opportunities | Transitions | Products / services | ◆ Demand for houses and buildings with fewer greenhouse gas emissions growing<br>We have a domestic policy target of "making newly-constructed houses and buildings zero energy-oriented by 2030." With support for achieving the goal continued and expanded, demand for ZEH and ZEB, products with high unit price per building, can grow. | Present time | Large |
| | | Products / services | ◆ Creation of carbon credits through the supply of low-carbon houses and buildings<br>With emissions trading introduced nationwide, demand for carbon credits will grow, which can promote the creation and acquisition of the credits through the supply of low-carbon houses and buildings and generate additional profits through their sale. | Medium-term | Medium |
| | Physical changes | Products / services | ◆ Expansion of the environmental greening business beneficial to heat-island phenomenon control<br>With urban heat-island phenomenon becoming severer accompanied by maximum temperature in summer rising, there can be a growing need for the temperature adjusting function by greening, which can expand the greening business. | Medium-term | Small |

■ Summary of the result of scenario analysis

| External scenario | Reason for choice | Result of analysis | Application to policies and strategies |
|---|---|---|---|
| Nationally Determined Contribution (NDC) | Most viable as the future of domestic business, which accounts for much of our business. The scenario is of high precision. | A possible increase in operational costs due to tightening of regulations can be covered by an increase in sales of ZEH and ZEB as well as revenues out of the creation of credit. | Under the policy of "maximizing sales increase and minimizing profit decrease with early development of ZEH and ZEB, and cost reduction pushed forward," we performed monitoring of the growth of sales rate of ZEH and ZEB as important management indicators, both indicators reflected in our business strategies. |
| Representative Concentration Pathway (RCP8.5) | The scenario that foresees the greatest physical impact was chosen to simulate the most extreme situation. | Possible additional costs such as construction delayed damages due to increased extremely hot days can be covered by an increase in sales of products that can mitigate the heat island phenomenon. | Under the policy of "thoroughgoing measures against heatstroke in construction sites" and "demonstration of group synergy in the environmental greening business," we performed monitoring of the number of heatstroke cases and the company facilities with greenery development projects as important management indicators, both indicators reflected in our business strategies. |

## Risk management

We recognize that the climate change risk is one of the risks that have significant impacts in the medium and long run and integrate it in the Groupwide risk management process. We carefully identify and assess risks and opportunities nearly every three years, their identification and assessment used to identify priority issues in a Medium-Term Management Plan, which is formulated every three years, and an Action Plan for the Environment or reflected in major policies and target levels in these plans. In response to the Environment Department's identification of "external environmental changes" accompanied by a shift to a decarbonized society and "physical changes" derived from global warming, we assess important risks and opportunities from the likelihood of these changes and possible financial impacts when they have become realized. With identified important risks and opportunities discussed by each department for its concrete measures, the Group, each department, and each worksite set important management indicators and targets in an Action Plan for the Environment, trying to meet them. For progress monitoring, the Group convenes the Group Environmental Promotion Committee biannually, while there are a quarterly subcommittee review for each department and a biannual worksite ECO diagnosis/training for each worksite.

Related page P151 Environmental Management

## Metrics and targets

Aiming to minimize risks and maximize opportunities accompanied by climate change, we have set short-, medium- and long-term targets as below.

**Promoting decarbonization in business activities in terms of social responsibility and risk reduction**

- SBT (CO₂ reduction)
  - Greenhouse gas emissions (per unit of sales)
  - 2030: -45% (from fiscal 2015 level)
  - 2055: -70% (from fiscal 2015 level)
- EP100 (Energy efficiency)
  - Energy efficiency (sales / energy consumption)
  - 2030: up 1.5 times (from fiscal 2015 level)
  - 2040: up 2 times (from fiscal 2015 level)
- RE100 (Renewable energy)
  - Renewable energy rate (renewable energy generation / electricity consumption)
  - 2030: 100% (including selling electricity)
  - 2040: 100% (self-consumption)

Virtuous circle

**Promoting the development of towns with 100% renewables energy, using knowhow developed through the company facilities**

- SBT (CO₂ reduction)
  - Greenhouse gas emissions (per floor area)
  - 2021: -6% (from fiscal 2015 level)
  - 2030: -30% (from fiscal 2015 level)
- ZEH (Housing)
  - ZEH sale rate (single-family housing)
  - 2021: 60%
  - 2025: ZEH on average
- ZEB (Commercial office buildings)
  - ZEB sale rate (offices, factories, warehouses)
  - 2021: 30%
  - 2030: ZEB on average

## Dialogue with a financial institution

Details to be disclosed in the 2019 Integrated report issued on August 31, 2019

Talked about climate change-related risks and opportunities, cooperation with TCFD

Mr. Takegahara from Development Bank of Japan (left) and Koyama, Manager of Environment Department, Daiwa House Industry (right)

Source: Daiwa House Group "Sustainability Report" P.164

## II. Disclosure methods for companies with diverse business models

Examples of disclosure methods for companies with multiple business models with different risks and opportunities for climate change are shown below.

(See TCFD Guidance P.61)

### Hitachi Group

The group identifies businesses with a relatively high likelihood of being affected by climate change from its own business portfolio and provides an overview of business risks and opportunities based on climate-related scenarios and their responses in its integrated report, while describing details in their sustainability report.

**Responding to the Business Risks and Opportunities of Climate Scenarios**

We are examining the impact of the 2°C and 4°C scenarios for five businesses that have a relatively high likelihood of being affected by climate change.

**Strategies for 2°C/4°C Scenarios Based on TCFD Recommendations (abridged)**

| Target businesses | Railway systems | Automotive systems | Water systems | Power generation and power grids | IT systems |
|---|---|---|---|---|---|
| Responses to future business risks and opportunities | Continue to strengthen the railway business, as global demand for railways will increase under either scenario | Enhance response to new markets, such as for electric vehicles, under the 2°C scenario, and also to existing technologies like internal combustion engines under the 4°C scenario | Strengthen provision of seawater desalination facilities and other water generation systems in response to increased water demand from global economic growth, urbanization, and population growth under either scenario | Continue to enhance responses to relevant markets in view of expected higher demand for non-fossil energy under either scenario | Continue to develop innovative digital technologies and enhance digital service solutions that generate new value in view of expected market expansion under either scenario |

Source: Hitachi Group "Hitachi Integrated Report 2019" P.77

In their disclosure in the sustainability report, factors other than environment are considered in addition to temperature scenarios (2°C, 4°C) for each business, and the impact to each business unit is disclosed, including financial information.

## Strategies for the 2°C and 4°C Scenarios

| Target businesses | Railway systems | Automotive systems | Water systems | Power generation and power grids | IT systems |
|---|---|---|---|---|---|
| The business environment under the 2°C scenario | • Demand for railways, which run on electricity and emit less $CO_2$, will grow as regulations for $CO_2$ emissions are strengthened globally<br>• Shift to energy-saving railcars will further accelerate, including on existing routes | • Electric vehicles will rapidly spread as tighter laws and regulations on fossil fuels push up fuel prices and discourage ownership of internal combustion engine vehicles. Markets for alternative, non-fossil technologies like hydrogen and biofuel vehicles will expand<br>• The number of countries and regions with near zero sales of internal combustion engine vehicles will increase | • Need for efficient water treatment systems that emit less $CO_2$ will expand as tighter regulations on $CO_2$ emissions in each country and region lead to stringent energy regulations on pumps used in water treatment | • Power generation facilities for $CO_2$-free renewable energy, nuclear power, and other non-fossil sources, as well as high-efficiency power generation facilities that contribute to $CO_2$ reduction will expand with tighter $CO_2$ emission regulations in each country and region<br>• Demand will expand for construction of power networks enabling the mass introduction of renewable energy with large output fluctuations<br>• Innovations in energy-saving technologies will further expand demand for energy-saving equipment and services | • Climate change will lead to tighter $CO_2$ emission regulations in each country and region and changes in the market environment, prompting shifts in customers' business portfolios and IT investments<br>• The development of and demand for energy-saving, high-efficiency IT and data analysis technologies will further expand<br>• Demand will increase for high-efficiency IT systems utilizing $CO_2$-free non-fossil energy<br>• Investments and loans for low-carbon businesses, green bond issues, and other financial businesses will expand |
| The business environment under the 4°C scenario | • Transport-related energy regulations will remain weak, discouraging a shift to railways, and conventional modes of transportation like automobiles and motorcycles will persist in some areas<br>• The risk of flood damage to railways and related facilities will increase due to a rise in such natural disasters as typhoons and floods | • Fuel efficiency laws and regulations will remain lax globally, and internal combustion engine vehicles will remain a major mode of transport; the modal shift will be slow, as conventional automobiles and motorcycles will remain predominant<br>• The risk of damage to vehicles will increase due to a rise in such natural disasters as typhoons and floods in various areas | • Demand for clean water will increase due to an increase in abnormal weather phenomena like floods, intense heat, and drought<br>• Rising temperatures will cause a rise in the volume of required cooling water, the growth of bacteria and algae, and a deterioration in water quality due to floods<br>• The risk of damage to water-related equipment from such natural disasters as typhoons and floods will increase | • The cost competitiveness of non-fossil energy will increase and demand for renewable, nuclear, and other non-fossil energy will increase as the expansion of energy consumption pushes up the price of fossil fuels<br>• The risk of damage to power plants and networks will increase due to such natural disasters as typhoons and floods | • Demand for new, high-efficiency technology will expand as damage to information equipment from such natural disasters as typhoons and floods increases and as energy demand for multiplex IT systems in response to BCP increases<br>• Investment in social and public systems to reduce damage from more frequent natural disasters will increase |
| Non-environmental factors (neither the 2°C nor 4°C scenario) and market conditions | • Economic growth, urbanization, and population growth will drive the railway business globally as an efficient form of public transport for large numbers of passengers, regardless of whether $CO_2$ regulations are tight; market size in Japan will remain flat, but other markets in Asia and elsewhere will expand<br>• Major railway manufacturers will expand their business to meet global demand | • Economic growth, urbanization, population growth, and infrastructure development like road construction will expand the global market for automobiles as a flexible and personal means of transport<br>• Carmakers will have varying degrees of enthusiasm in promoting electrification<br>• Non-environmental factors like safety, security, and comfort will drive competitiveness, as demand increases for new functions like autonomous driving and advanced safety features, and new mobility services like car sharing grow | • Economic growth, urbanization, and population growth will push up demand for water in some areas<br>• In Japan, local governments and other entities will accelerate wide-area collaboration and privatization in building water systems and improving the efficiency of their management<br>• Replacement demand for aging water treatment facilities will increase in developed countries | • Economic growth, urbanization, and population growth will push up demand for energy, especially electricity, mainly in developing countries<br>• Energy source will be chosen from the perspective of not just $CO_2$ emissions but also environmental burden, economic performance, safety, and supply stability<br>• Stability and efficiency of the power supply will increase through the use of digital technology<br>• Both companies and individuals will seek to diversify their energy supply and demand | • Further digitization will exponentially increase the volume of data circulated, accumulated, and analyzed<br>• New services and businesses utilizing big data, IoT, AI, and other digital technology will expand rapidly |
| Responses to future business risks and opportunities | **Response to 2°C or 4°C scenario**<br>• Continue to strengthen the railway business, as global demand for railways will increase under either scenario<br>• Promote R&D of new products and services that improve efficiency of railway services through digital utilization, such as dynamic headway (flexible operation in response to passenger demand), thereby offering customers increased value | **Response to 2°C scenario**<br>• Promote R&D of electrification technology and other alternative technologies to enhance response to new markets, such as for electric vehicles<br>**Response to 4°C scenario**<br>• Promote R&D and product development in existing technologies, including internal combustion engines, to not only improve energy efficiency but increase such non-environmental value as safety, security, and comfort | **Response to 2°C or 4°C scenario**<br>• Strengthen provision of seawater desalination facilities and other water generation systems in response to increased water demand from global economic growth, urbanization, and population growth under either scenario | **Response to 2°C or 4°C scenario**<br>• Continue to enhance response to relevant markets in view of expected higher demand for non-fossil energy under either scenario<br>• Strengthen the grid solution business in response to increased use of renewable energy with large output fluctuations and diversification of energy suppliers<br>• Promote digital service solutions business for diversifying needs of power customers | **Response to 2°C or 4°C scenario**<br>• Continue to develop innovative digital technologies and enhance digital service solutions that generate new value in view of expected growth in society's demand and markets for digital services under either scenario |
| Financial information (sales volume of each target sector) | Impact on part of 616.5 billion yen in Railway Systems Business Unit sales (FY 2018) | Impact on part of 971 billion yen in automotive system business sales (FY 2018) | Impact on part of 169.1 billion yen in Water & Environment Business Unit sales (FY 2018) | Impact on part of 456.6 billion yen in Energy Sector sales (FY 2018) | Impact on part of 2,121.6 billion yen in IT Sector sales (FY 2018) |

**We believe that by paying close attention to market trends and developing our business flexibly and strategically, we have high climate resilience in the medium to long term under either the 2°C or 4°C scenario**

Note: The above scenario analyses are not future projections but attempts to examine our resilience. How the future unfolds may be quite different from any of these scenarios.

Source: Hitachi Group "Hitachi Sustainability Report 2019" P.53

## Glencore

The relative contributions to sales and the results of scenario analysis for each of its businesses are shown in the table.

Portfolio Resilience Analysis

| BUSINESS UNIT (2016 EBITDA CONTRIBUTION) | SCENARIO | OUTLOOK | IMPACTS UNDER AMBITIOUS ACTION SCENARIO |
|---|---|---|---|
| Copper 31% | Delayed Action | ↑ | Marketing attractiveness is robust and demand growth improves as climate action is globally coordinated driving electrification of energy and transport systems. Increased demand supports low cost incumbents as prices rise to reflect the need for investment in lower yielding ore bodies. |
| | Committed Action | ↑ | |
| | Ambitious Action | ↑ | |
| Marketing 28% | Delayed Action | ↑ | Marketing and trading margins not impacted by climate initiatives. Remains core to Glencore's business model and differentiates Glencore from its peers. |
| | Committed Action | ↑ | |
| | Ambitious Action | ↑ | |
| Zinc 18% | Delayed Action | ↑ | Demand growth for Zinc based on its anti-corrosive properties and use as an alloy to form materials that are used in automobiles, electrical components, and household fixtures will be supported by ongoing electrification, industrialisation and urbanisation. |
| | Committed Action | ↑ | |
| | Ambitious Action | − | |
| Seabourne Coal 13% | Delayed Action | ↑ | Seaborne traded coal differentiated from the broader coal market as ongoing investment in low cost coal based power generation across south east Asia supports seaborne demand. Glencore's competitive portfolio continues to generate acceptable returns. |
| | Committed Action | ↑ | |
| | Ambitious Action | − | |
| Nickel 4% | Delayed Action | ↑ | Marketing attractiveness is robust and demand growth improves as climate action is globally coordinated driving electrification of energy and transport systems. Increased demand supports low-cost incumbents as prices rise to reflect the need for investment in lower yielding ore bodies. |
| | Committed Action | ↑ | |
| | Ambitious Action | − | |
| Ferroalloys 4% | Delayed Action | − | The high cost of carbon assumed under the Ambitious Action Scenario would potentially lead to the closure of some of South Africa's marginal ferrochrome producers, resulting in major job losses. |
| | Committed Action | − | |
| | Ambitious Action | ↓ | |
| Agriculture 1% | Delayed Action | ↑ | Agriculture maintains positive investment attractiveness under each of Glencore's scenarios. |
| | Committed Action | ↑ | |
| | Ambitious Action | ↑ | |
| Oil 1% | Delayed Action | − | Oil has a neutral investment attractiveness under each of Glencore's scenarios. We will continue to monitor any increase in carbon prices which may provide a driver for investment into emission reduction options to reduce our overall risk to the business. |
| | Committed Action | − | |
| | Ambitious Action | − | |

↑ POSITIVE INVESTMENT OUTLOOK
− NEUTRAL INVESTMENT OUTLOOK, ONGOING MONITORING
↓ NEGATIVE INVESTMENT OUTLOOK

Source: Glencore "2017 Climate Change Considerations for Our Business" P.20