

Responses to Risks and Opportunities Caused by Climate Change (Disclosure in Accordance with TCFD Recommendations)

MHI Group has endorsed the Task Force on Climate-Related Financial Disclosures' (TCFD) recommendations and discloses climate-related information in accordance with the TCFD recommendations.

Governance

One of the important issues ("materiality") identified by MHI Group is to "provide energy solutions to enable a carbon neutral world."

To address materiality, the Materiality Council chaired by the President and CEO meets twice a year to monitor business activities aimed at achieving materiality targets and to direct business divisions to take appropriate actions. Furthermore, our Sustainability Committee, which is chaired by the Chief Strategy Officer (CSO), generally meets twice a year to address sustainability issues and to further strengthen ESG initiatives. In FY2021, the Sustainability Committee established a task force for disclosure in accordance with TCFD recommendations, and the Committee monitored the progress of efforts.

The committee also reports to the Board of Directors on a regular basis on the status of the Sustainability Committee's activities, including disclosure in accordance with TCFD recommendations.

Strategies (Scenario Analysis)

Climate Scenarios

We have developed the following two climate change scenarios and assessed their future impact on each business in 2030.

■ Decarbonization Scenario

A "scenario to promote decarbonization through stricter climate change policies," which aims to achieve economic growth while limiting the global average temperature rise to a maximum of 1.5°C above pre-industrial levels in the year 2100.

■ Fossil Fuel Dependency Scenario

A "scenario in which climate change policies are not made stricter and the dependence on fossil fuels proceeds,"

which assumes a global average temperature increase of 4.0°C above pre-industrial levels in the year 2100.

Risks and Opportunities under the Hypothetical Climate Scenarios

As a transition risk shared by the Group, the Decarbonization Scenario assumes that regulations such as carbon taxes will be escalated, and the cost of carbon emissions will rise significantly. However, we believe that there are numerous business opportunities to be had by leveraging the strengths of our emission reduction-supporting products and technologies.

The Fossil Fuel Dependency Scenario, on the other hand, focuses on the physical risks associated with climate change. In terms of opportunities, as it is difficult to imagine that future regulations will be eased in developed countries that are already promoting various environmental regulations, we can assume that business opportunities will arise by offering the benefits of our emission reduction technologies.

Strategies for the Risks and Opportunities (Scenario Analysis)

We have conducted an examination of the risks and opportunities associated with the two climate scenarios described above in terms of what should be addressed as a whole Group and what should be incorporated into the strategies of each individual business. We ran scenario analyses on the Energy Systems domain including Nuclear Energy Systems segment and the Logistics, Thermal & Drive Systems domain which are the divisions typically responsible for the growth strategies of Energy Transition and Smart Infrastructure and have relatively large operating scales.

We will continue to broaden and refine the scope of our risk and opportunity analysis as appropriate to changes in the business environment.

Decarbonization Scenario

Common Risks Across the Group (Transition Risks) Decarbonization Scenario – Carbon pricing	
Risks	<ul style="list-style-type: none"> Increased cost burden due to escalated carbon pricing, including carbon tax. Particularly concerning is the tightening of regulations in Japan, which accounts for over 70% of our bases' emissions.
Measures	<ul style="list-style-type: none"> Shift to carbon neutral manufacturing See page 34 for details. Consider incorporating technologies such as high-temperature heat pumps, hydrogen power generation equipment, and CCUS in our manufacturing facilities.

Decarbonization Scenario

Fossil Fuel Dependency Scenario

Common Risks Across the Group (Physical Risks) Both Scenarios – Natural disasters	
Risks	<ul style="list-style-type: none"> Damage to the factories or supplied plants of our group or partners. Especially damage to properties in Japan, given that around 90% of disasters in the last 5 years have been in Japan (typhoons and torrential rain).
Measures	<ul style="list-style-type: none"> Regularly review the BCP (Business Continuity Plan) and conduct training for employees and relevant persons. Hedge risks with damage insurance. Implementation of measures to counter risks identified in risk assessments at all Japan plants.

Decarbonization Scenario

Business Risks (Transition Risks) Decarbonization Scenario (Scope: Energy Systems Domain and Nuclear Energy Systems Segment)	
Risks	<ul style="list-style-type: none"> Delays in the establishment of supply chains for hydrogen and ammonia as cleaner energy sources to replace or supplement fossil fuels, and consequently, delays in the launch of new markets. As a result of delays in launching CCUS markets, a decrease in after-sales service due to the decommissioning of existing thermal power plants that would have been used. Rapid decline of demand for large-scale centralized power supplies due to more than expected promotion of renewable energy innovation.
Measures • Opportunities	<ul style="list-style-type: none"> Accelerate the commercialization of hydrogen gas turbines through verification of all stages of the process from hydrogen production to power generation, an example being the construction of Takasago Hydrogen Park. See page 35 for details. Apply CCUS to existing coal-fired power plants Develop clean fuels such as ammonia/biomass-fired boilers, etc. Support the restarting of nuclear power plants which are large-scale carbon-free power sources, the installation of severe accident management facilities, and the establishment of nuclear fuel cycles. Develop and commercialize next-generation light water reactors with enhanced safety (mid-2030s). Develop and commercialize small light water reactors as distributed power sources, fast reactors that contribute to resource efficiency and the reduction of radioactive waste toxicity, and high-temperature gas reactors that meet the emission reduction/hydrogen needs of industry (after 2040).

Decarbonization Scenario

Business Risks (Transition Risks) Decarbonization Scenario (Scope: Logistics, Thermal & Drive Systems Domain)	
Risks	<ul style="list-style-type: none"> The commoditization of products due to electrification could result in a decline in the superiority of our engineering and manufacturing technologies. Impact from supply shortages of semiconductors, batteries, and other components due to rapid electrification.
Measures • Opportunities	<ul style="list-style-type: none"> Propose solutions that take advantage of our collective knowledge. Accelerate the development of not only conventional battery-powered vehicles, but also fuel-cell-powered forklifts and port logistics equipment.

Metrics and Targets

In October 2021, MHI Group planned and announced two new targets aimed at achieving a carbon neutral society.

The first target is to reduce the Group's CO₂ emissions (Scopes 1 and 2*) to Net Zero by 2040. As an interim target, we also plan to reduce emissions by 50% by 2030 (versus 2014 levels). This represents a reduction of CO₂ emissions from production activities at the Group's plants and other facilities. Through such efforts, we are committed to achieving carbon neutral plants by applying our developed technologies and promoting further energy saving.

The second target is to achieve Net Zero CO₂ emissions across the entire value chain by 2040. As an interim target, we also plan to reduce emissions by 50% by 2030 (versus 2019 levels). This is primarily based on our customers reducing CO₂ emissions (Scope 3**), through the use of our Group's products, as well as reduction contributions from the widespread use of CCUS.

The Group possesses a broad selection of technologies and solutions in all business areas, including the decarbonization of customers' existing equipment, and will continue contributing to the reduction of global CO₂ emissions by offering a variety of solutions.

*1 Scopes 1 and 2 of the GHG Protocol, an international standard for the accounting and reporting of greenhouse gas (GHG) emissions.

*2 Scope 3 of the GHG Protocol, an international standard for the accounting and reporting of greenhouse gas (GHG) emissions.

▶ For details, see the special feature "MHI Group's Carbon Neutrality Initiatives" on page 30.

Risk Management System

Transition risks and physical risks are factors we consider when developing a management plan in all business divisions. The Sustainability Committee verifies the findings of analyses on the most prominent items among the aforementioned climate change risks and opportunities.

The activities of the Sustainability Committee, including the aforementioned, are also regularly reported to the Board of Directors.

▶ For more details about disclosure in accordance with TCFD recommendations, please visit our website at: https://www.mhi.com/sustainability/environment/climate_tcf.html