

MHI Group's Initiatives to Address Sustainability Material Issues



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Given the variety of social challenges surfacing, Mitsubishi Heavy Industries (MHI) Group has identified five significant “Material Issues,” for which we as a corporation should work on a medium- to long-term basis. Facilitating engagement, we aim to help overcome social challenges through our business operations. This report describes the purpose of Material Issues and the steps leading to its identification, in addition to our promotion system.

[Click](#) here for “Material Issues for MHI Group”

1. Purpose of Material Issues

Today people on this planet are faced with various issues, including climate change, depletion of resources, human rights violations such as forced labor, and energy problems. All of these issues have already escalated into a level that cannot be solved by a single nation or a certain organization alone, considering the scale and gravity of the situation. Therefore, global companies such as MHI Group are expected to initiate worldwide efforts to overcome these issues.

In 2020, under these circumstances, MHI Group identified five significant Material Issues on which our focus should be placed over the medium to long term. The identification was done by checking our products and businesses against social issues in light of the group’s growth strategies. The relevant activities are encouraged to be undertaken.

Engaging to help overcome social challenges through activities related to Material Issues is perceived as one of the responsibilities shared by our business units. MHI Group is thus developing products/services that can lead to a solution to these challenges. This special edition also presents examples in this regard.

2. Material Issues identification process and approach

Figure 1 shows the processes of identifying Material Issues in 2020.

In determining Material Issues, social challenges that are important to MHI Group were prioritized, and were then assessed along two axes: the impact on society and the impact on MHI Group. Then the social challenges that are of high importance were identified. Having held discussions based on the themes of critical social challenges, we determined five Material Issues for MHI Group.

Figure 2 shows our approach to identifying Material Issues.

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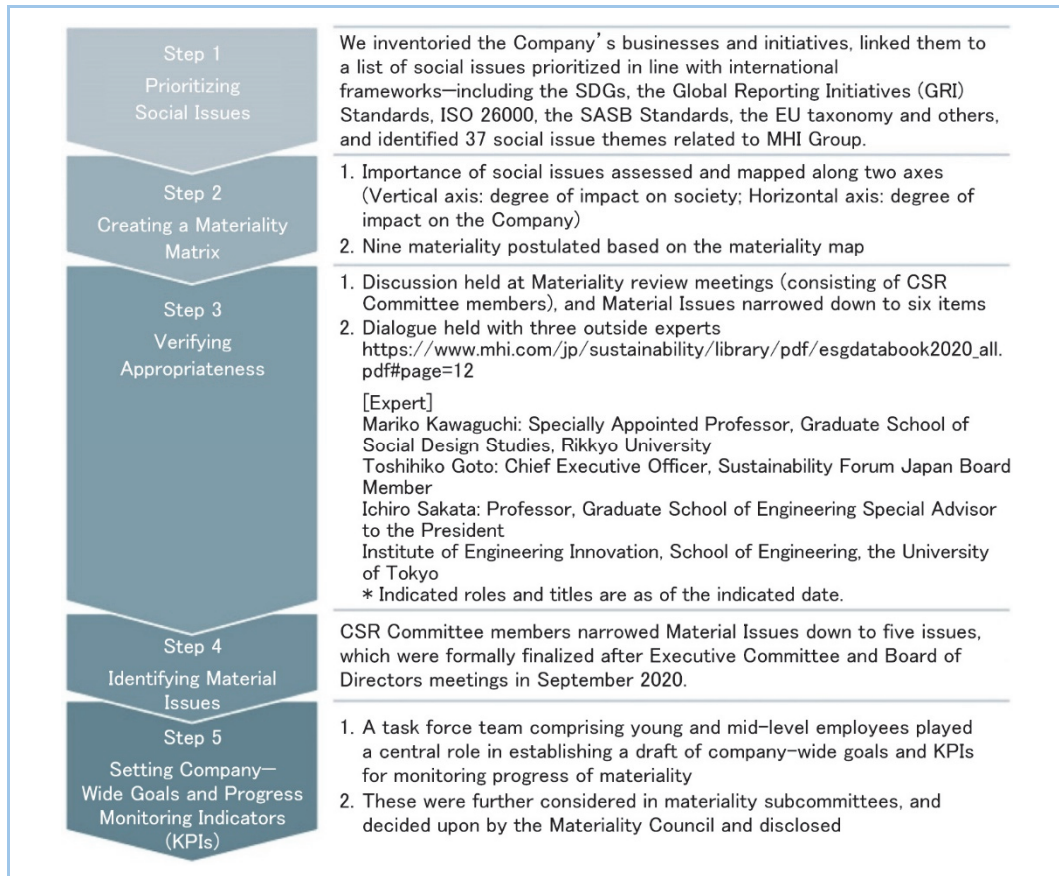


Figure 1 Processes of identifying Material Issues

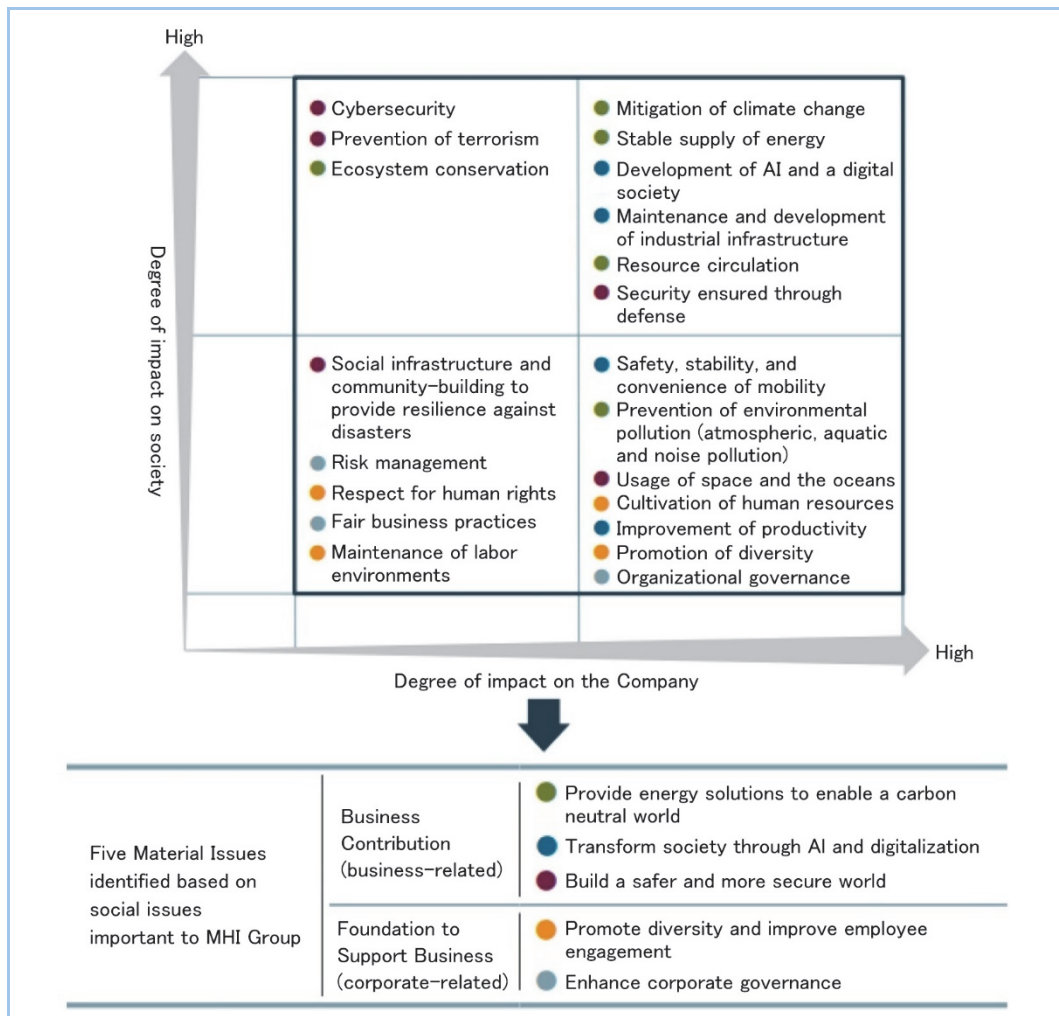


Figure 2 Approach to identifying Material Issues

3. Identified Material Issues

The following are MHI Group's five Material Issues that have been identified.

"MHI Group's Material Issues":

1. Provide energy solutions to enable a carbon neutral world
2. Transform society through AI and digitalization
3. Build a safer and more secure world
4. Promote diversity and improve employee engagement
5. Enhance corporate governance

For these identified Material Issues, we have set the company-wide goals, which are to be achieved from a medium- to long-term perspective, and key performance indicators (KPIs) as the indicators to monitor progress whereby progress is managed and the appropriate PDCA cycle is implemented. The relevant activities are thus encouraged to be undertaken.

The individual initiatives were framed in association with the KPIs under the leadership of a task force of junior and mid-level employees who will lead MHI Group in the future.

3.1 Provide energy solutions to enable a carbon neutral world

In recent years, as the effects of climate change become more serious, people eagerly await the realization of a carbon neutral world. In the future, energy infrastructure will be reconstructed in accordance with 3E+S^(Note) based on the characteristics of each country, while resource recycling and decarbonization are expected to develop on the demand side. To achieve this transformation of social infrastructure as quickly as possible, MHI Group has taken on the challenge from two standpoints: energy transition as an approach from the energy supply side, and smart social infrastructure as an approach from the energy demand side.

Our three pillars for energy transition are: "decarbonization of existing infrastructure", "creation of a hydrogen ecosystem" and "realization of a CO₂ ecosystem". Being engaged in the activities, we are working for considerable improvement of energy use efficiency, continued use of existing facilities through means such as CO₂ capture and fixation, promotion of carbon recycling, adoption of carbon-free fuels, and increased use of nuclear power generation with the world's highest safety standards.

When it comes to smart social infrastructure, we consider that our mission is to pursue the efficiency, optimality and sustainability on the energy demand side. Entering new business areas and technological development are promoted.

Table 1 summarizes the initiatives for Material Issue 1 "Provide energy solutions to enable a carbon neutral world", in terms of company-wide goals, KPIs and the progress that was made in fiscal 2023.

Note: Pursuit of stable supply (Energy Security), efficiency from an economic point of view (Economic Efficiency) and environmental compatibility (Environment), with safety as a prerequisite (Safety).

3.2 Transform society through AI and digitalization

Due to the rapid advancement of AI and digitalization present day, human values, activities, and lifestyles are undergoing major changes. In the midst of various social concerns such as climate change, aging societies with low birthrates, widening disparity between the rich and the poor, and COVID-19, two key themes are how to provide a convenient and comfortable life to everyone without discrimination and how to live in a sustainable manner. MHI Group will seek to realize a society that balances economic development with the resolution of social issues (Society 5.0) by breaking away from preconceived notions and maximizing the use of AI and digitalization to pursue the question of what it means for people to lead affluent lives.

Table 2 summarizes the initiatives for Material Issue 2 "Transform society through AI and digitalization", in terms of company-wide goals, KPIs and the progress that was made in fiscal 2023.

Table 1 Material Issue 1 “Provide energy solutions to enable a carbon neutral world”⁽²⁾⁽³⁾

Company-wide goals	(1) Reduce the CO ₂ emissions of MHI Group Achieve Net Zero CO ₂ emissions from its operation by 2040 (Scope 1 and 2) (2) Contribution to society throughout the value chain by 2040 Achieve Net Zero CO ₂ emissions from its entire value chain by 2040 (Scope 3 + reduction through CCUS)	
	Progress monitoring indicator (KPI)	Initiatives and the progress in FY 2023
(1) Reduce total CO ₂ emissions from business activities (Scopes 1 and 2) by 50% by 2030 (compared to 2014 levels), and achieve net zero by 2040	(1) Reduce total CO ₂ emissions from business activities (Scopes 1 and 2) by 50% by 2030 (compared to 2014 levels), and achieve net zero by 2040	<ul style="list-style-type: none"> Forecasting a reduction in 2023 CO₂ emissions of 42% (compared to 2014 levels). At Mihara Machinery Works, which is pioneering initiatives to reduce CO₂ emissions, forecasting a 97.7% reduction (compared to 2021 levels) through installation of solar panels, energy conservation, and streamlining⁽⁴⁾, and acquired practical plant decarbonization know-how.
	(2) Reduce CO ₂ emissions across the entire value chain (Scope 3 + CCUS contribution for CO ₂ reduction) by 50% by 2030 (compared to 2019 levels) and achieve net zero by 2040	<ul style="list-style-type: none"> Forecasting a reduction in 2023 CO₂ emissions (Scope 3 Category 11) of 36% (compared to 2019 levels)⁽⁵⁾.
	(2) Develop products and services that contribute to decarbonization of the energy supply by 2040 (Energy Transition)	<ul style="list-style-type: none"> Conducted a successful demonstration operation of 30%*¹ hydrogen fuel co-firing⁽⁶⁾ the GTCC demonstration power plant in Takasago Hydrogen Park, using a state-of-the-art JAC gas turbine. To increase global business opportunities for CO₂ capture, expanded partnerships, including concluding a general license agreement with the major engineering firm Saipem. Nearly completed the basic design for the Advanced Light Water Reactor “SRZ-1200,” which will have the world’s highest standards of safety. In addition, selected as the core company for design and development of a demonstration fast reactor and an HTGR (high-temperature gas-cooled reactor) demonstration reactor, both promoted by the Japanese government.
	(2) Develop products and services that contribute to conservation, decarbonization, and automation of the energy use by 2040 (Smart Infrastructures)	<ul style="list-style-type: none"> Responded to feasibility study (FS) and front-end engineering and design (FEED) requests for numerous projects in a variety of industries, including a FEED contract for a CO₂ capture plant for major cement manufacturer Heidelberg Materials. Prepared for commercialization in the electrification and data center fields by developing a new container-type data center with an immersion/air-cooled hybrid cooling system⁽⁷⁾, and by strengthening the North American service system through the acquisition of Concentric.
	(2) Develop and prove new products and services that contribute to the carbon cycle	<ul style="list-style-type: none"> Conducted demonstration tests for biowaste utilization (hydrolysis), and pursued development of production technologies for carbon-neutral fuels such as sustainable aviation fuel (SAF)⁽⁸⁾.

*1 The hydrogen mixture ratio is expressed as a volume ratio.

Table 2 Material Issue 2 “Transform society through AI and digitalization”⁽⁹⁾

Company-wide goals	(1) Expand lineup of useful and sustainable AI/digital products meeting needs of customers and users (2) Contribute to a sustainable society through future-oriented energy management strategies that use AI and digitalization to appropriately and efficiently manage power supply and demand (3) Improve our working environment to produce creative products	
	Progress monitoring indicator (KPI)	Initiatives and the progress in FY 2023
(1) Steadily increase the number of newly developed advanced AI and digital solutions (services, products, R&D) that solve customer issues	(1) Steadily increase the number of newly developed advanced AI and digital solutions (services, products, R&D) that solve customer issues	<ul style="list-style-type: none"> Confirmed the basic performance of the prototype for the next generation unmanned forklift (based on Σ SynX)⁽¹⁰⁾, and conducting demonstration activities for an automated picking solution at YHH*². Further development of intelligent logistics systems is also continuing. An automated material handling system for maritime transportation is under development. An intelligent system for operation of industrial machines is under development⁽¹¹⁾. Within our central R&D organization, MHI Group conducts advanced research and development, and the results are applied widely across our business areas. This allows us to promote the development of solutions such as AI and digital products and services for diverse business units.
	(2) Propose optimal energy infrastructures to customers according to the characteristics of the region	<ul style="list-style-type: none"> Started feasibility study of optimal energy infrastructure solutions for a city in Japan and the factory of a domestic beverage manufacturer, considering regional characteristics based on an assessment balancing social, economic, environmental factors, and carbon neutrality
	(2) Increase the number of products linked to future-oriented energy management systems	<ul style="list-style-type: none"> Conducted external verification of a core energy management system (EMS) with expanded control functions for heating equipment for use in carbon neutral EMS products⁽¹²⁾.
	(3) Improve employees’ awareness of creative time and environments	<p>The following were implemented in order to make MHI a more creative workplace:</p> <ul style="list-style-type: none"> Internal community site (EKYO BASE): Organized collaboration projects and distributed related digital contents such as one-on-one workshops. Expanding opportunities for dialogue and co-creation with employees from inside/outside of MHI. Future Design Task Force: R&D activity “Future design process” is ongoing. Eight new themes in six areas are under development. Formulated a human resource development plan in the field of Digital Innovation, under the strategic goal of developing 22,000 Digital Innovation experts groupwide. Advanced efforts in promoting groupwide use of CRM (Customer Relations Management), utilization of data foundation, and development of future IT architecture. YHH: Started verification tests and co-creation research for container DC, EMS, etc. Established LogiQ X Lab, a logistics intelligence project, and conducted verification tests with Kirin Beverage that led to an order for an actual logistic system. From October 2022, Continued human resources development program at YHH for entrepreneurship. Two employees contributed to revitalizing new business creation activities and improving business operations, after returning to their original posts.

*2 YHH (Yokohama Hardtech Hub): A co-creation space operated by MHI in Yokohama

3.3 Build a safer and more secure world

Building a safe and secure society is essential for realizing affluent lives. In recent years, we have faced various risks including natural disasters, pandemics, a shrinking workforce, and changes in the security environment, including cyberspace. Since its establishment, MHI Group has contributed to the development of society by building critical infrastructure and taking on challenges in the unknown worlds of space and the deep sea. By drawing on this wealth of knowledge and experience, we will build a flexible, robust, and labor-saving system that will contribute to the realization of a safer and more secure society.

Table 3 summarizes the initiatives for Material Issue 3 “Build a safer and more secure world”, in terms of company-wide goals, KPIs and the progress that was made in fiscal 2023.

Table 3 Material Issue 3 “Build a safer and more secure world”

Company-wide goals	(1) Boost the resilience of products, businesses, and infrastructure (2) Implement fully automated measures for repetitive simple tasks and difficult work in harsh environments (3) Continuously strengthen cybersecurity measures for all MHI products
Progress monitoring indicator (KPI)	Initiatives and the progress in FY 2023
(1) Carry out various disaster impact assessments, and promote the development and practical application of resilient designs and technologies	<ul style="list-style-type: none"> Completed the application of disaster prevention simulation for tsunamis, typhoon, heavy rain, storm surge, etc.⁽¹³⁾ at all domestic MHI factories. The weak points at each factory regarding various disasters were clarified, and the effectiveness of countermeasures was confirmed and verified. We will continue to promote measures to strengthen plant resilience and review our BCP. In the above simulations, we also conducted an impact assessment of severe heavy rainfall considering climate change scenarios in the wake of the flooding of the Hitachi plant caused by Typhoon No. 13 in September 2023. The disaster prevention simulation was applied in the proposal for a customer's plant construction.
(2) Promote the development and practical application of technologies that enable the remote operation and automatic inspection of products, businesses and infrastructure	<ul style="list-style-type: none"> Confirmed functional performance of forklift operation via low delay video transmission in cooperation with NTT. Started system design on the highway Vehicle-to-Infrastructure system, which uses wireless communication to connect ICT-enabled “connected” vehicles and related infrastructure components, in preparation toward realizing a future of autonomous mobility. Continued to promote the research & development of unmanned defense equipment. Developing a system for ferry cargo handling to perform repetitive simple tasks and difficult work in harsh environments. Delivered a monitoring platform (Σ SynX Supervision) for ships⁽¹⁴⁾. A remote monitoring and operation support system (MaiDAS®) for a waste incinerator plant has been verified and presented at a major academic conference⁽¹⁵⁾. Continued to promote the research and development of intelligent operation systems for paper converting machinery. Developing plant piping inspection robots ⁽¹⁶⁾. Developing an explosion-proof plant patrol inspection robot together with ENEOS.
(3) Promote the development and practical application of cybersecurity technologies	<ul style="list-style-type: none"> In FY2023, cybersecurity R&D investments increased 2.0 times the level of FY2020. In order to strengthen the security resistance of our factories, evaluation and verification of network security detection devices were conducted in Sagami-hara Machinery Works, YHH, Nagoya Guidance & Propulsion Systems Works – Komaki North Plant and other locations. The basic security requirements set by Charter of Trust*3 were shared at ICS Device Security Administrators Meeting. A webform to receive vulnerability information on products and services was established.

*3 Charter of Trust: An initiative by private corporations to build trust in cybersecurity. MHI has participated in this initiative since April 2019.

3.4 Promote diversity and improve employee engagement

Given the globalization of business in recent years, there is an urgent need to develop human resources who have a firm awareness of human rights across the supply chain and can operate on the international stage. In addition, to continue creating new value based on diverse ideas, it is essential to improve productivity and ensure safety by building a culture in which each individual is respected and can demonstrate and develop their abilities. Therefore, we support the growth and health of human resources through the promotion of diversity and health management. Our goal is to train human resources who are full of vitality and can contribute to society not only during their employment but also after retirement.

Table 4 summarizes the initiatives for Material Issue 4 “Promote diversity and improve employee engagement”, in terms of company-wide goals, KPIs and the progress that was made in fiscal 2023.

3.5 Enhance corporate governance

For a company to continue to provide value to society, it is important to earnestly address the issues and demands of global society and form a sound organizational culture. Since we have a particularly diverse range of businesses, it is essential that we strengthen the governance structure of the entire Group. We will promote compliance management and strengthen internal controls to

ensure compliance with laws and regulations and promote honest, fair, and equitable business practices. We will promptly identify opportunities and risks for the organization and take appropriate action. In addition, to earn the trust of society, we will implement timely and appropriate information disclosure regarding management, while ensuring fairness and transparency.

Table 4 Material Issue4 “Promote diversity and improve employee engagement”

Company-wide goals	
(1) Project new value through participation of diverse human resources (2) Ensure safe and comfortable workplaces (3) Improve our environment that maximizes employee performance, and develop human resources who are healthy, energetic and able to contribute to society	
Progress monitoring indicator (KPI)	Initiatives and the progress in FY 2023
(1) Increase the ratio of women on the Board of Directors to at least 30% by 2030	<ul style="list-style-type: none"> Continued our training program for potential future executive candidates in collaboration with each business unit. Expanded various employee support systems with consideration to childcare and caregiving in order to enable employees to continue their careers. Working to build a workplace environment and organizational culture allowing for a balance of professional and private life.
(1) Double the ratio of women in management positions by 2030 (compared to FY2021)	
(1) In accordance with the MHI Group Human Rights Policy, raise awareness of diversity among Group employees through education and other efforts	<ul style="list-style-type: none"> Enhanced the content of educational materials (e-learning) on respecting human rights in MHI Group.
(2) Reduce the number of serious accidents to zero	<ul style="list-style-type: none"> MHI achieved zero serious accidents in FY 2023.
(2) Maintain a labor (work absence) accident frequency at a rate that is equal to or lower than the industry average	<ul style="list-style-type: none"> The rate of lost-worktime injuries was slightly higher than the industry average. Implemented AI-based method for detecting signs of potential industrial accidents, and analysis of root causes. Established process and procedures of collecting safety management data from overseas group companies.
(3) Raise the employee awareness survey's "engagement" score above the global average by FY2030	<ul style="list-style-type: none"> Action policies organized based on the result of the 4th MHI Group Employee Survey, undertaken in March 2023. President's Town Meeting was held at five sites in Japan. Announced pulse survey tool to all MHI Group and continuing operational improvement.

Table 5 Material Issue 5 “Enhance corporate governance”

Company-wide goals	
(1) Further enhance deliberations by the Board of Directors (2) Promote legal compliance and honest and fair business practices (3) Further promote responsible (CSR) procurement in the global supply chain (4) Create opportunities to explain non-financial information	
Progress monitoring indicator (KPI)	Initiatives and the progress in FY 2023
(1) Maintain the ratio of Independent Outside Directors on the Board of Directors at 50% or more	<ul style="list-style-type: none"> Maintained the percentage of independent outside directors at 50% (6/12) and worked to speed up decision-making processes and strengthen oversight functions.
(1) Assess the effectiveness of the Board of Directors annually to ensure and improve it	<ul style="list-style-type: none"> Engaged in the following initiatives to evaluate the effectiveness of the Board of Directors in FY2023. <ul style="list-style-type: none"> Conducted questionnaires to all members of the board. Discussed the results of these evaluations in meetings of independent outside directors and reported the same to Board of Directors meetings. Established policies based on the results of the effectiveness evaluation and finalized the draft of disclosure, both by the resolutions of the Board of Directors. Also started planning the agenda schedule for FY2024.
(2) Maintain the number of serious laws/regulation violations at zero	<ul style="list-style-type: none"> There were no serious laws/regulation violations. Case studies related to compliance were published monthly to raise awareness within the company. Compliance information tailored to each region was shared with Group companies outside Japan in an effort to prevent compliance issues. Ensuring that overseas group companies set up hotlines for reporting on compliance issues.
(2) Continue activities that promote an open organizational culture	<ul style="list-style-type: none"> Implemented the following compliance training for employees both within and outside Japan. <ul style="list-style-type: none"> Japan: e-learning, discussion-based training, graded training Outside Japan: e-learning
(3) Promote sustainability and CSR procurement activities with partners to build a sustainable supply chain	<ul style="list-style-type: none"> Implemented a CSR questionnaire for Japanese and overseas partner companies with a certain amount of regular orders from MHI, and obtained their agreement to the MHI Group Supply Chain CSR Promotion Guidelines.
(3) Offer continuous educative information to suppliers/business partners in order to establish and maintain sustainable supply chain	<ul style="list-style-type: none"> Delivered educational materials on CSR procurement when sending the periodical CSR questionnaire for partner companies, and confirmed widespread understanding within each company. Performed CSR procurement education at business briefings and meetings with partners.
(4) Conduct ESG briefings to investors at least once a year	<ul style="list-style-type: none"> Held Energy Transition Briefing in May 2023 and explained our aim to contribute to the reduction of CO₂ emissions through our products, technologies, and services.

Table 5 summarizes the initiatives for Material Issue 5 “Enhance corporate governance”, in terms of company-wide goals, KPIs and the progress that was made in fiscal 2023.

4. Promotion and implementation of Material Issues

The activities to address Material Issues embody sustainability management from a business point of view. To enable these activities to be effective, each Material Issue has an appointed manager and business unit. Those in charge work together and formulate concrete measures and roadmaps.

Figure 3 shows MHI Group’s system for sustainability promotion, including Material Issues.

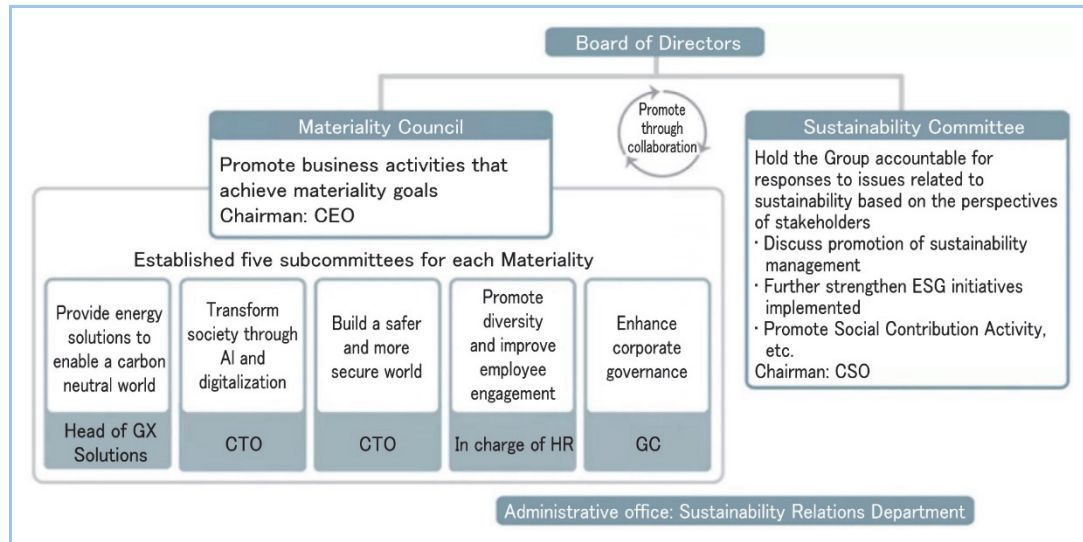


Figure 3 Sustainability Promotion System

Moreover, the “Materiality Council,” which was newly set up in October 2021, is chaired by the CEO and is attended by corporate officers and the heads of business domains and segments. The purposes of the council are to supervise business activities taking place to achieve the company-wide goals for Material Issues and instruct the business units to take necessary measures. The Materiality Council had been held six times up until July 2024. Through these meetings, the information on the progress made with respect to each Material Issue was shared and reported, along with the related projects of business units. Questions and opinions were also exchanged freely. These activities are regularly reported to the Board of Directors as the important themes in sustainability management.

5. Conclusion

MHI Group’s mission is to “integrate cutting-edge technology into expertise built up over many years to provide solutions to some of the world’s most pressing issues and provide better lives”. To fulfill its mission, MHI Group, being united as one, provides products that can help solve social and global issues. Moreover, we inform stakeholders, including customers, about the company’s stance that is the basis for creating products/services on diversity engagement, corporate governance, etc., from the perspective of solving social issues. Through these efforts, we aim to improve the image of the MHI Group and create new business opportunities.

This special edition presents some of MHI Group’s initiatives for Material Issues as part of the business activities being undertaken toward the goal of solving social issues.

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