

# Act on a Shared Vision, Thrive on Challenge

## SUSTAINABILITY REPORT 2022

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# Hazama Ando's Sustainability Strategies

At Hazama Ando, we are striving to become a corporate group that meets the expectations of society and creates greater social value. To achieve this, we have established key strategic themes (material issues) from the perspective of the environment, society, and governance (ESG).

## Hazama Ando's Materiality






### Materiality ① Helping to solve social issues and create value for society

Create new value in various facets of our businesses and flourishing alongside the communities we serve as we move toward the realization of a sustainable society

Key CSR Themes	Key Performance Indicators	Relevant SDGs
Achieving the satisfaction of society and customers and earning their trust	Productivity improvement (fiscal 2025 target) (Compared to fiscal 2020) <b>Over 10%</b>	  
Working in harmony with the communities we serve	Number of patent applications (fiscal 2025 target) <b>75 /year</b>	 







### Materiality ② Protecting and being attuned to the natural environment

Contribute to the realization of a carbon-free, recycling-oriented society with a low environmental impact to pass on the earth's abundance to the next generation

Key CSR Themes	Key Performance Indicators	Relevant SDGs
Creating environmental abundance	CO <sub>2</sub> emission reduction rate (fiscal 2030 target) Total reduction rate for Scope 1 and Scope 2 emissions (compared to fiscal 2017, consolidated) <b>33%</b>	  
	Proportion of renewable energy used for electricity (fiscal 2030, consolidated) <b>80%</b>	 

### Materiality ③ Promoting sustainable management and taking full responsibility for corporate actions


Realize fair and honest business practices across the supply chain as the foundation for sustainable management

Key CSR Themes	Key Performance Indicators	Relevant SDGs
Conducting fair and honest corporate activities	Frequency rate (fiscal 2022) <b>0.40</b> or less	  
Creating safe, comfortable working environments	Eight or more closures in four weeks (Civil Engineering and Building Construction) (Every year) <b>100%</b>	  
Engaging in dialogue with stakeholders		

# Ongoing Implementation of Key Performance Indicators to Create Greater Value

The core SDGs and key performance indicators visualize how we should carry out strategies in line with our material issues. We will continue to position these goalposts as central indicators of our strategy under the medium-term management plan, positively impacting society and the environment in a way that integrates financial and non-financial elements, systematically improving non-financial performance while contributing to the SDGs.

## Priority Core SDGs and Key Performance Indicators (updated July 2022)

 Metrics and deadlines are updated according to achievement status

Material Issues Key CSR Themes Relevant SDGs	Key Actions	Core SDGs	Key Performance Indicators	Metrics	Deadline (FY)	Fiscal 2021 results
<b>Helping to solve social issues and create value for society</b> Key CSR Themes ■ Achieving the satisfaction of society and customers and earning their trust ■ Working in harmony with the communities we serve 	▶ Innovate infrastructure creation with leading-edge, high-quality solutions ▶ Continue to deliver resilient, leading-edge lifestyle and economic foundations to society		■ Productivity improvement* <sup>1</sup> ■ Number of patent applications	10% or more (compared with FY2020) 75/year	2025 2025	1.8% 41
			■ Number of on-site tours ■ Environmental and social contribution activities (volunteer activities, participation in clean-up activities, etc.) - Civil engineering sites - Building construction sites - Offices	100 or more tours/year 3 times/site 3 times/site 80 times/year	Every year 2024  4.0 times 3.5 times 96 times	
<b>Protecting and being attuned to the natural environment</b> Key CSR Themes ■ Creating environmental abundance 	▶ Continue rigorous efforts to reduce the Group's environmental footprint (low CO <sub>2</sub> emissions, high recycling rates, biodiversity conservation) ▶ Actively develop services to help reduce society's environmental impact		■ CO <sub>2</sub> emission reduction rate (Scope 1 and 2) ■ Proportion of A rank or higher in the simplified CASBEE rating (Comprehensive Assessment System for Built Environment Efficiency)	33% (compared to FY2017) 70% or more	2030 2024 	56.3% (using non-fossil fuel certificates) 60%
			■ Number of ZEB projects ■ Proportion of renewable energy used for electricity	5 80%	2024  2030	2 90% (using non-fossil fuel certificates)
			■ Serious environmental incidents ■ Recycling of construction site waste - Civil engineering: Reduction of overall mixed waste volume - Building construction: Reduction of mixed waste intensity at new construction projects	0 cases 0.8 ton/construction cost (100 millions of yen) 6.5 kg/total floor space (m <sup>2</sup> )	Every year 2024 	0 cases 0.62 tons 4.06 kg
<b>Promoting sustainable management and taking full responsibility for corporate actions</b> Key CSR Themes ■ Conducting fair and honest corporate activities ■ Creating safe, comfortable working environments ■ Engaging in dialogue with stakeholders 	▶ Foster workplaces where diversity is valued, and employees can draw on their individuality and different abilities ▶ Inculcate respect for rights and work practices to protect employee health and safety		■ Serious work-related accidents ■ Frequency rate	0 cases 0.40 or less	Every year 2022 	0 cases 0.71
			■ Ratio of female employees (full-time)	15% or more	2025	13.3%
			■ Eight or more closures in four weeks* <sup>2</sup> - Civil engineering - Building construction ■ CCUS* <sup>3</sup> card clock-in rate ■ Information security course attendance ■ Compliance training attendance	100% 100% 55% 100% 100%	Every year 2022  Every year Every year	96.3% 91.0% 46% 100% 100%

\*1 Calculated based on the productivity index of the Japan Federation of Construction Contractors. Based on construction amount per engineer and skilled worker per 8-hour day (completed construction amount/manpower)

\*2 Excluding sites where eight or more closures are unfeasible (ensure annual closures of at least six closures in four weeks, develop a framework to ensure workers have eight days off in four weeks).

\*3 CCUS = Construction Career Up (=Advancement) System: A system that uses IC cards distributed to skilled workers to gather their on-site work history and qualifications based on industry standards.

Card clock-in rate (work history record rate): the number of skilled workers who clocked in using card readers, etc., when entering construction sites ÷ the total number of skilled workers who entered construction sites.

## Engagement that Addresses Risks and Opportunities

To make steady headway in addressing the material themes the Group has identified, we are working to grasp fully the expectations, concerns, and demands of our stakeholders and build a mechanism to reflect these in our activities, while always being attentive to the risks and opportunities involved. Since the start of 2020, the COVID-19 pandemic has significantly impacted our ability take action related to each key theme. Considering this context, we are implementing a PDCA cycle sensitive to changes in business and living styles in a “new normal” or “post-COVID” environment.

### Social and Environmental Risks and Opportunities Facing the Group: Elements that Have Gained Importance in Recent Years

#### Risks Surrounding Our Businesses

Mounting calls for non-financial management approaches and financial implications

- Changes to social and economic systems adapting to the pandemic and a post-pandemic world
- Calls to enhance disclosure of climate change and diversity strategies

Impact of climate and disasters on business

- Impact of the COVID-19 pandemic on order volumes in Japan and overseas
- Ongoing reinforcement of business continuity plans in response to catastrophes

Increasingly sophisticated social expectations and technical requirements in line with infrastructure demand

- Growing needs for infrastructure design that corresponds to business practices and lifestyles under the “new normal”
- Customer demands to address digital transformation (DX) initiatives

Needs for further improvement in the occupational safety environment

- Reinforcing health and safety management amid the pandemic
- Growing interest in society in non-crisis health management

Need for compliance and risk management across the supply chain

- Rigorous measures at each site to prevent COVID-19 infection
- Respect for human rights, including among overseas business partners

#### Opportunities to Contribute to Society and Pursue Mutual Flourishing

Improving customer satisfaction and contributing to society by building high-quality, resilient social infrastructure with superlative environmental performance

- Heightened social expectations for low-carbon solutions, labor-saving solutions, and other solutions that address social change
- Creating further value and boosting efficiency by incorporating digital technologies into our construction

Attracting quality personnel and building mutually flourishing relationships with excellent partner companies by promoting occupational safety and working style reforms

- Expanding opportunities to secure more diverse human resources by offering flexibility in working styles
- Pursuing technological innovation and boosting competitiveness by means of diverse human resources

Conducting fair and honest business activities, building relationships with and contributing to society by strengthening partnerships with local communities

- Promoting a more open supply chain through more rigorous enactment of the Group’s procurement policy

## Stakeholder Engagement

Amid ongoing changes in social values, to fulfill the Group’s responsibilities as a member of society and continue to realize building operations that are of value to customers and society, Hazama Ando believes that the process of dialogue and collaboration with various stakeholders is essential. Based on this, we are taking advantage of various opportunities and pursuing initiatives to reflect the concerns of society in our corporate activities. Key content of such dialogue is shared appropriately with management through various committees and other venues, and is reflected in our ongoing response to material issues.

Stakeholder	Approach, Policy	Major Channels for Dialogue	Major Themes, Areas of Interest
<b>Customers</b>	Attentive to the needs of customers and the demands and expectations of society, we will pursue secure, safe, high-quality “good building operations” based on our solid technological prowess. Through these operations, we will strive to bring about customer satisfaction, earn greater trust from society, and address social issues.	Customer inquiry desk, satisfaction surveys, business activities	High-quality building operations, construction that addresses social issues
<b>Shareholders and Investors</b>	By means of timely and appropriate disclosure and two-way dialogue, we will seek the evaluation of shareholders and investors as appropriate. Their opinions and requests will also inform our corporate activities, as we strive to enhance corporate value by contributing to the advancement of society.	Meetings with investors and shareholders, general meeting of shareholders, results announcements and briefings, investor and shareholder information website (timely disclosure, etc.), site tours	Timely and appropriate disclosure, disseminating information in terms of both risks and opportunities
<b>Business Partners, Collaborating Companies</b>	By engaging in fair business practices and building a supply chain that is sensitive to human rights, occupational health and safety, and the environment, we will collaborate in helping to bring about a sustainable society and create social value, aiming to grow along with our partners.	Hazama Ando Cooperative Association, business activities, exhibitions, events	Occupational health and safety, appropriate construction management, fair business practices
<b>Employees</b>	To enable diverse employees to work securely, safely, and in a rewarding way as they reach their full potential, we will cultivate working environments and various support systems and endeavor to treat employees fairly and support career development.	Employee satisfaction surveys, regular interviews, labor-management consultations, employee helpline	Occupational health and safety, consideration for diversity, career development, fair treatment
<b>Local Communities</b>	Through our business activities and social contribution activities in various regions, we will contribute to the advancement of local communities and the cultivation of future generations, fulfill our duties as a corporate citizen, and seek to coexist with the communities we serve.	Social and cultural contribution activities, site tours, hands-on workshops	Support for local communities, including harmonious relationships and cultivation of future generations

## Our CSR Policy

Pursuing rigorous CSR management and helping to bring about a sustainable society are the essential mission of a company. Guided by this conviction, Hazama Ando has established a CSR Policy and is implementing various activities to realize the policy’s aims. Going forward, to further reinforce our efforts involving the SDGs and ESG and carry forward the themes set forth in the Group’s materiality, we will continue to instill in every employee the policy that forms the backbone of our CSR activities. We will also work together across the Group to meet the ever-increasing expectations of society for a truly sustainable corporate strategy.

### CSR Policy

Through the practice of secure, safe, high-quality “good building operations” that draw on sound technology and passionate commitment, Hazama Ando will contribute to the advancement of society and our customers and seek to bring about an abundant, bright future.



# Helping to solve social issues and create value for society

## Overview of Fiscal 2021 Results

To address the material issue of helping to solve social issues and create value for society, the Group is implementing PDCA activities based on two key CSR themes and key performance indicators.

Under the key theme of achieving the satisfaction of society and customers and earning their trust, we are pursuing operations that are deeply connected to Goals 9 and 11 of the SDGs, which we identified as core SDGs for this materiality. In the fiscal year ended March 2022, we worked to accumulate new technologies and construction methods and, in collaboration with partner companies, actively developed technologies, construction methods, and management systems utilizing ICT, AI and building and construction information modeling (BIM, CIM) technology. We targeted ongoing improvements in customer satisfaction by means of greater productivity, comfort, resilience, and quality control. Our achievements have been recognized with various awards.

Under the key CSR theme of working in harmony with the communities we serve, we continue to undertake corporate citizenship activities, working to contribute to and participate in local communities as a member of society. In the fiscal year ended March 2022, in light of ongoing concerns about the COVID-19 pandemic, we took special care with various events. We engaged in cultural contribution activities and held site tours and other events appropriately while taking careful precautions to prevent infection.

**1 Activity Highlights**

**Steps Toward Realizing the Digital Transformation Vision**

In the Digital Transformation Report it put out in 2019, the Ministry of Economy, Trade and Industry called on companies in Japan to swiftly undertake digital transformation to preserve and strengthen their competitiveness. Since then, the importance of digital transformation for companies has only increased. The Japanese government created a new Digital Agency in 2021. With a mission to “achieve human-friendly digitalization that leaves no one behind,” the

Agency is seeking to create a society in which people can choose services that meet their needs and achieve well-being in a variety of expressions. In line with these developments, we formulated the Digital Transformation Vision 2030. By making steady headway with three concrete steps, we will make the Digital Transformation Vision a reality and create new value for our customers, shareholders, the environment, and employees.

**1. Digital Transformation Vision 2030**

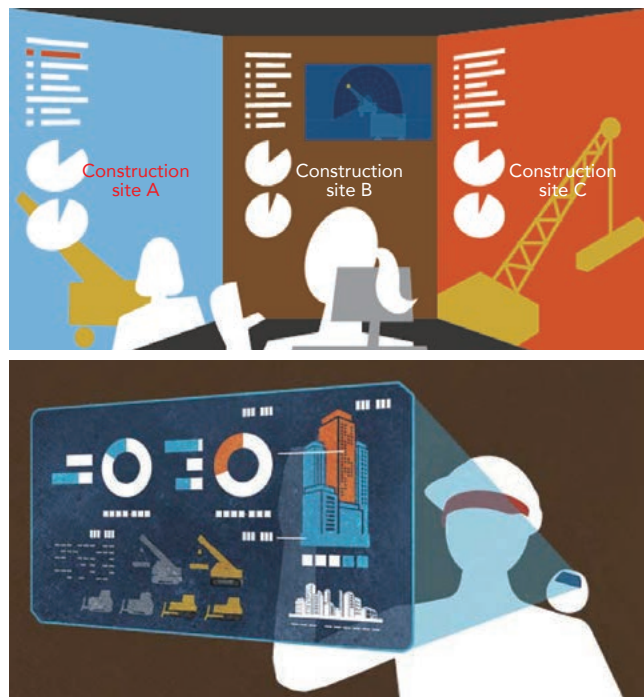
We aim to realize the Digital Transformation Vision by 2030. It consists of three pillars that demarcate the future operating environment Hazama Ando aims to bring about.

- (1) **New ways of working:** Working styles that suit individual lifestyles will become the norm. It will be possible to eliminate solo assignments, extended business trips, and overtime work.
- (2) **People:** We will leverage career development programs and digital technology to enable people to quickly acquire numerous skills and expand their career options.
- (3) **Creating new value:** We will create new value by powerfully harnessing our experience and knowledge in the construction industry through the use of digital technologies.

As for the new ways of working anticipated by this vision, incorporating a digital-twin\* approach at work sites will enable people to share all sorts of data in real time, wherever they are located. This opens up the possibility that staff in charge of a work site and remote support staff can work together to carry out construction work.

As a result, work will no longer be conditional on people coming to or remaining at a work site or office. Career development programs and the use of digital technology will also greatly expand the personal skills and knowledge of employees. Moreover, robots assigned to each person can carry out routine work on their behalf. Meanwhile, vast amounts of historical data will indicate points to keep in mind in work processes and optimal response measures.

This framework will allow younger employees to acquire high-level skills. In addition, the framework will support career development to address changes in the construction



business anticipated by 2030 and the development of new businesses, not only fostering skills required for construction but also supporting the mastery of other skills. The digital reskilling of all employees in particular has moved ahead, greatly improving productivity in the construction businesses.

\* Digital twin: A technology that uses sensors and the Internet to gather information from real-world space, and reproduces real-world space virtually based on the sent data.

**2. Steps toward Realizing the Digital Transformation Strategy**

The digital transformation strategy involves three steps which together form a process for achieving the Digital Transformation Vision. Steady progress in these steps across all our operations will lead to digital transformation.

- (1) Digitization
- (2) Digitalization
- (3) Digital transformation

Digitizing and quantifying business processes yields a constant stream of digital data related to the processes, which can be shared and linked with other processes. The data to be integrated and linked is entered into a database.

Digitalization involves visualizing, analyzing, and evaluating digitized data, rendering it useful for identifying busi-

ness process issues, planning and implementing solutions, promoting process innovation and systematization, and accelerating business reforms and measures to boost operational efficiency.

Digital transformation involves creating new value by replacing existing business systems with systems that have been transformed by digitalization. Moreover, digital transformation can give rise to systems that hold promise for applications outside the Group, which we can develop and launch as new businesses and products.

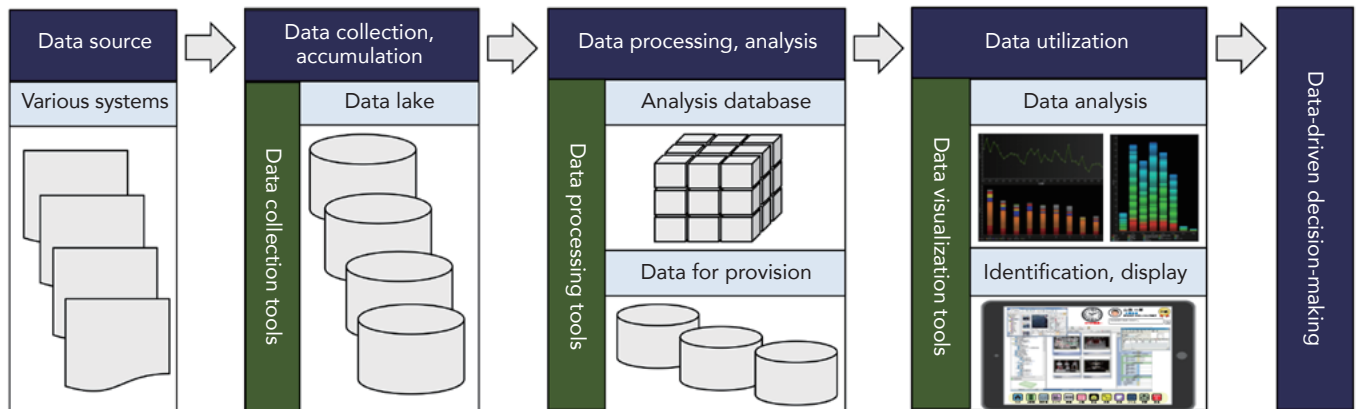
These three steps will guide our ongoing efforts to achieve the Digital Transformation Vision across all business processes.



### 3. Building a Data Utilization Platform

To support digital transformation in the Group, we will build a data utilization platform and establish a flow in which data is input, stored, accumulated, analyzed, evaluated, and visualized in real time. This will empower more effective

decision-making, such as by helping to identify issues and plan and implement response measures based on objective, up-to-date data, giving further impetus to business improvement and transformation efforts.



### 4. Digital Transformation, Securing and Fostering IT Personnel

Digital transformation depends on securing and fostering digital transformation and IT personnel. The Group is pursuing the following approaches in collaboration with the Career Development Department, newly established this year, to promote the reskilling of all employees and the transformation of our corporate culture.

- (1) Securing highly skilled IT personnel
- (2) Formulating an IT HR development plan
- (3) Offering video- and e-learning-based education
- (4) Encouraging acquisition of an IT passport

## 2 Activity Highlights

### Recognized as a DX Certified Business Operator in May 2022

The DX business operator certification system was established by the Ministry of Economy, Trade and Industry (METI) to recognize companies that comply with the basic items of the Digital Governance Code based on the Act on Promotion of Information Processing. Businesses ascertained to have made the preparations needed to transform their businesses through digital technology are certified as DX-Ready.

Certification represents METI's imprimatur that a company is ready to move ahead with digital transformation. Certified business operators can also publicize the fact that they are actively pursuing digital transformation by displaying the DX-

Ready logo.

Building on the DX certification by METI, we will continue to pursue digital transformation, engaging the resources of the entire Group as we work to transform our businesses, our organization, our processes, and our corporate culture.



DX Certified Business Operator logo.

## 3 Activity Highlights

### Proactive Use of BIM to Help Solve Social Issues and Create Value for Society

We are building a value chain of digital information throughout the life cycle of buildings, from design to construction and maintenance, including building information output and the advanced utilization of information. In this way, we are working to help solve social issues and create value for society.

- (1) Our goal is to build a highly mature front-loading workflow in which all stakeholders jointly produce and utilize building information in the design, construction, and maintenance phases by means of a building information modeling (BIM) platform. The hope is that we can produce and deliver buildings more efficiently and with higher quality. In principle, we are currently employing BIM for all projects carrying a construction cost of over 1 billion yen, both

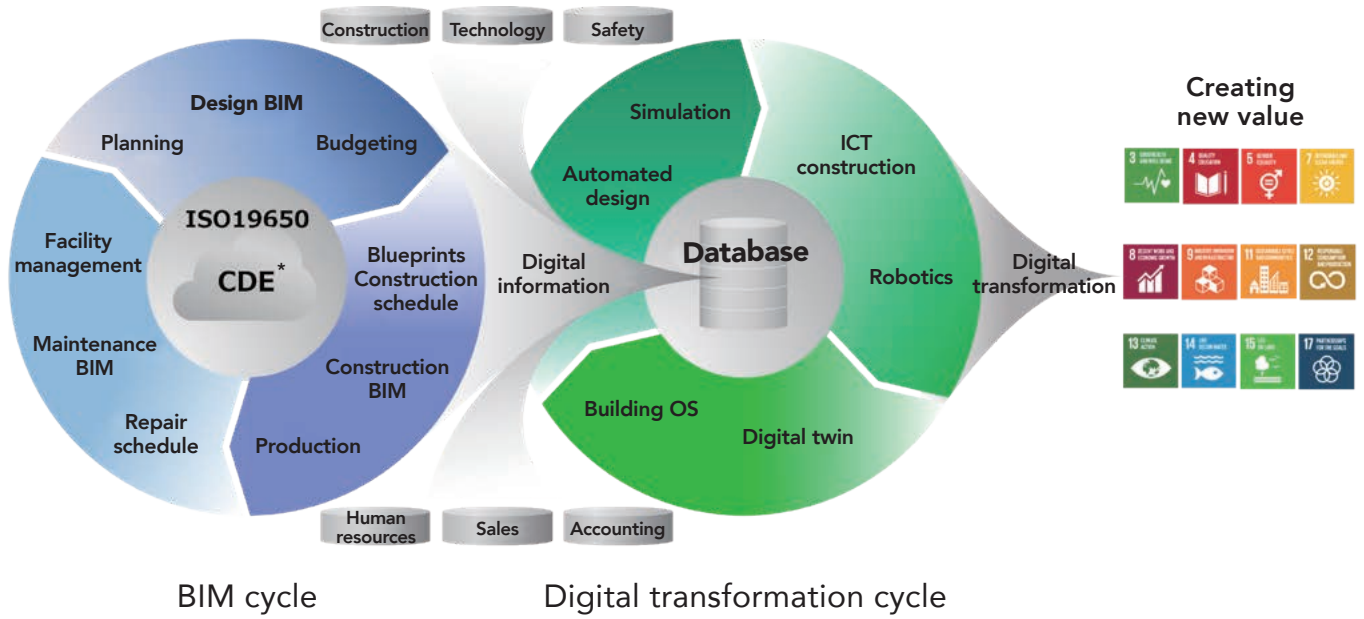
integrated design-build projects and normal projects, developing a cross-process BIM platform that generates consistent digital information. In addition, to optimize the process of exchanging information, in July 2022 we obtained ISO 19650 certification, the international BIM standard.

- (2) We also launched BIM-LEAN, a project to effectively utilize the digital information produced by BIM, and are working to achieve production processes that reduce waste. In addition, we are integrating BIM digital information and ICT technology to construct and use a digital twin approach at work sites. Our goal is to digitally transform the production process to achieve better outcomes safely,



quickly, and without waste, to lessen the environmental impact of buildings. Moreover, by leveraging BIM via a database, we aim to support data-based decision-making that supports faster, more sophisticated building production processes.

(3) By harnessing database-driven building data, we will work to expand into new business areas by offering the added value of new information services.



\* Common Desktop Environment

# Achieving the satisfaction of society and customers and earning their trust



By providing society with high-quality buildings backed by superior technology, Hazama Ando is striving to boost customer satisfaction and earn society’s trust.

## Policies and Approach

### Approach

Civil engineering and building construction provide Hazama Ando’s points of contact with society. Thus, the first step toward contributing to society is our commitment to achieve “good building operations” that are responsive to the needs of customers, offering high quality at a fair cost. We want to earn the trust of society at large by continuing to support the daily lives of people through highly reliable buildings.

### Quality Policy

Promote construction activities using reliable technology, contributing to society and seeking customer satisfaction.

- 1 Understand customer demands and legal requirements, and see situations from the customer’s perspective.
- 2 Pursue activities that add greater value at each stage of sales, design, construction, and follow-up support.
- 3 Develop and implement new technologies to address the further expectations of customers and society.
- 4 Continuously improve quality management systems and pursue high quality.

### Intellectual Property Strategy

Recognizing the utilization and development of intellectual property (IP) that contributes to business to be a key management issue, the Hazama Ando Group has established the following strategy for promoting the active utilization and development of IP in our businesses.

- 1 Raise awareness of the importance of invention among all employees, and work together to generate a wealth of IP.
- 2 Define strategic areas and actively implement IP activities that contribute to business.
- 3 Build and actively utilize an IP network that ensures competitive superiority.
- 4 Monitor infringement of owned IP and prevent leakage.

### Pillars Supporting Our Initiatives and Promotion Framework

#### 1. Quality Control and Improvement Efforts

Based on our quality management systems, the Group is engaged in production activities to boost customer satisfaction at each stage of sales, design, construction, and follow-up support.

Under the leadership of the representative director, the director of the Construction Division, who oversees civil engineering and construction operations as well as technology and R&D, is in charge of quality control. He promotes efforts to maintain and improve quality control. We are also making continuous improvements through management reviews and internal audits, and ensuring that these are implemented at each branch and construction site.

#### 2. Forward-Looking Development of Technology and Construction Methods

We have a two-fold approach to research and technological development: construction technology directly tied in with construction sites, carried out by the civil

engineering and construction technology management divisions of the Construction Division; and R&D of basic and advanced technologies undertaken by the Technical Research Institute. The various technology management divisions are in charge of developing technology that supports construction in specific projects; they implement and guide the use of technology on site. The Technical Research Institute is concerned with longer-term issues, advancing R&D of new technological areas ranging from basic to cutting-edge technologies.

Also, within the Corporate Strategy Division, we have established the Innovation Department, which supports strategies related to new businesses and collaborative efforts that contribute to the diversification of the Group’s earnings base and promotes measures to achieve these strategies, and the DX Strategy Department, which formulates and carries forward Group-wide digital transformation and IT policies and strategies that contribute to greater management and operating efficiency and productivity.

## Pillars Supporting Our Initiatives 1: Quality Control and Improvement Efforts

### Concrete Compaction AI Screening System

In collaboration with Kanazawa Technical Research Institute, we developed a deep learning\*-based concrete compaction AI screening system. Field tests using a prototype at a concrete product factory confirmed that the AI system could display in real time judgments about whether concrete compaction was complete or not.

This system proposed a deep learning-based screening method as an alternative to the conventional screening method based on human visual evaluation. This enables judgments about compaction that do not depend on workers' abilities and ensures consistent concrete construction quality. Going forward, we will further improve the screening program and expand applications of the system to concrete product factories (indoor construction).

#### Technical features

- Successful deep learning of the compaction screening results of concrete experts
- Real-time screening
- Screening results displayed in color frames for each mesh

\* An AI method in which the computer "learned" the correspondence between image frames of a concrete surface during compaction taken by video camera in advance and the compaction status (complete or incomplete). The computer can classify input images frames into high-confidence classes.

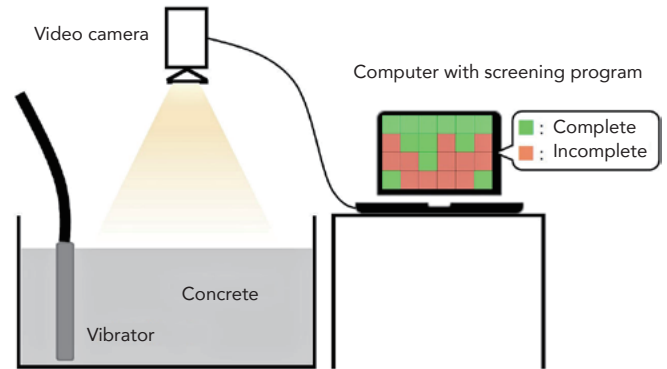
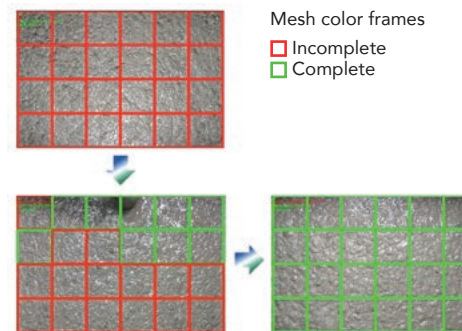


Diagram of concrete compaction AI screening system.



Screening results displayed.

### Various Awards (in order received)

Numerous technologies and projects developed by the Group have been recognized with awards.

Granting organization	Award	Technology, projects recognized
Engineering Advancement Association of Japan	13th Engineering Commendation Award	New construction technology development team for desalination, re-alkalization, and electrodeposition (Hazama Ando, Tokyo Technical Research Institute, Denka)
Association of New Urban Housing Technology	Fiscal 2021 CFT Structural Award	Kaminarimon No. 1 Building
Ministry of Land, Infrastructure, Transport and Tourism Kanto Region Development Bureau	Fiscal 2020 Excellence in Construction Director's Award	No. 20 Chofu (2) utility tunnel and other construction Hazama Ando and Wakachiku Construction joint venture
Ministry of Land, Infrastructure, Transport and Tourism Chubu Region Development Bureau	Fiscal 2021 Excellence in Construction Director's Award	Shitara Dam Seto-Shitara Line No. 5 Bridge left bank lower section construction
Ministry of Land, Infrastructure, Transport and Tourism Chubu Region Development Bureau	Fiscal 2021 Outstanding Construction Engineer Award	Shitara Dam Seto-Shitara Line No. 5 Bridge left bank lower section construction Shigeyuki Matsunaga
Ministry of Land, Infrastructure, Transport and Tourism Kinki Region Development Bureau	Fiscal 2021 Outstanding Construction Contractor Director's Award	Ono Aburazaka Road Arashima No. 1 Tunnel lower Yuino district construction
Ministry of Land, Infrastructure, Transport and Tourism Tohoku Region Development Bureau	Fiscal 2021 Excellence in Construction Manager's Award	Route 399 Jumonji Tunnel construction Office in charge: Iwaki National Highway
Japan Federation of Construction Contractors	2nd Civil Engineering Award	Kanogawa Dam Tunnel spillway new construction Shimizu Corporation and Hazama Ando joint venture
Kyushu Branch, West Nippon Expressway	Fiscal 2021 Excellent Business Site Award Safety Award, Quality Award	Nagasaki Expressway Hakamano area emergency restoration work
Japan Society of Civil Engineers (JSCE)	Fiscal 2021 Japan Society of Civil Engineers National Convention 76th Annual Scientific Lectures Excellent Lecture Award	Development of image-based 3D positioning system for moving objects Moe Shigaki
Japan Society of Engineering Geology	Fiscal 2021 Japan Society of Engineering Geology Research Presentation Excellent Lecture Award	Development of 3D forward excavation site prospecting using blasting Masashi Nakatani
Kansai Branch, West Nippon Expressway	Fiscal 2021 Excellent Business Site Award	Hanwa Expressway Gobo Tunnel, one other tunnel construction
Japan Dam Foundation	41st Dam Construction Merit Award	Sadayuki Kobayashi, Tateno Dam Work Site Supervisor, Kyushu Branch
Japan Dam Foundation	41st Dam Construction Merit Award	Yoichi Kato, Komagome Dam Site Supervisor, Tohoku Branch
Japan Building Disaster Prevention Association (JBDPA)	Fiscal 2021 Seismic Retrofit Excellence in Architecture Award	Kuroshima Cathedral (important cultural asset)
Kansai Branch, Japan Society of Civil Engineers	Fiscal 2021 Outstanding Civil Engineering Achievement Branch Award	Measures to increase the amount of power generated at Sakaigawa power plant by installing a new Kasura River intake facility Kansai Electric Power and Hazama Ando
Ministry of Land, Infrastructure, Transport and Tourism (METI)	Fiscal 2021 Overseas Infrastructure Project Outstanding Engineer METI Award	Hiroyuki Goto, Director of National Highway No. 9 Bridge Reconstruction Project (Laos)
Japan Society of Civil Engineers	Fiscal 2021 Outstanding Civil Engineering Achievement Award	Japan's first ICT construction using remote technology in a mountain tunnel (Tamashima Kasaoka Road Rokujo joint tunnel construction)
Atomic Energy Society of Japan	Fiscal 2021 Decommissioning Contribution Award (Excellence Award)	Completion of mega float tsunami risk mitigation work with materials that effectively utilize coal ash Ryoichi Takagi

## Pillars Supporting Our Initiatives 2: Aggressive Development of Technologies and Construction Methods

### Automating Volume Design at the Planning Stage to Reduce the Exploratory Period to One-Fifth

Using AI and data analysis, we have collated a concept to automate volume design at the planning stage of construction, which is the work done prior to the basic planning stage of building design to determine a building's maximum volume. Development of a system using this concept is underway. The aim is to automate the generation of volume plans, including cost estimates—allowing work to be done in one day that would typically take relatively inexperienced designers four or five days to complete. Reducing working hours to one-fifth will free up time for designers to think more creatively about their designs while boosting value-added productivity.

Essentially, after inputting basic information about the planned site and building into the system, the designer enters some simple additional conditions. The system then generates both a volume plan and a cost estimate as a planned volume proposal. Specifically, three steps are involved: (1) the volume formation process, (2) the plan formation process, and (3) the cost estimation process. The system aids designers in creating proposal plans and narrowing down multiple proposals.

Having developed the technology for steps (1) and (2), in the fiscal year ended March 2022 we developed the technology needed to generate planned volume proposals, subject to some limitations in terms of conditions and building uses. Going forward, while expanding the system's range of applications, we will confirm the validity of the system and aim to bring it to bear on actual properties by the end of the fiscal

year ending March 2023.

Technology underlying the cost estimation process is currently under development. We have now reached the stage of running cost estimate trials using statistical methods for certain building uses. Down the road, our goal is to automatically calculate the cross-section of parts used in frames for the upper floors of buildings and produce quantity estimates at the basic design stage. Going forward, we will refine the technology for use in an integrated system.

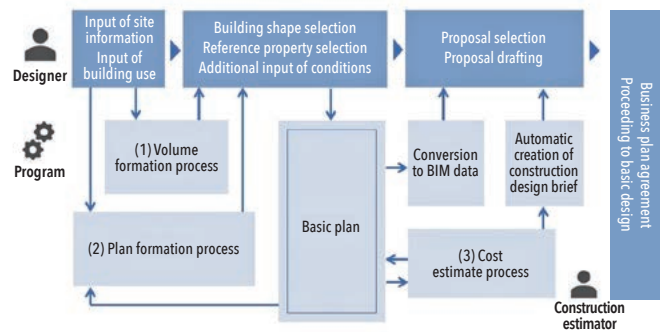
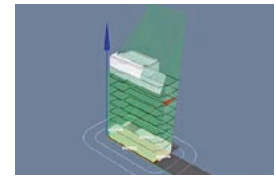


Diagram of volume design system.



Display of a planned volume proposal.

### Using AI to Create an Environment to Allow Anyone to Carry Out Expert-Level Structural Calculations

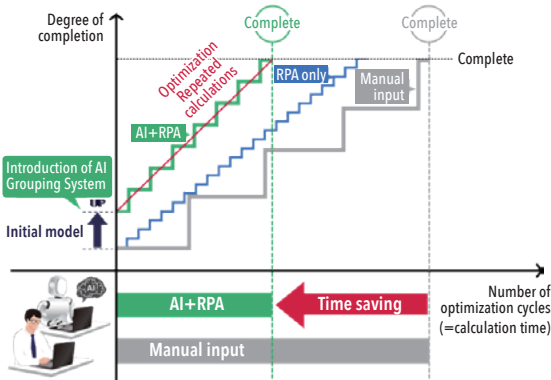
To build an environment in which anyone can carry out optimal structural calculations with limited time, we have developed an AI Grouping System that uses AI tools to automatically group the parts that go into structural calculation models.

Combining this system with an RPA\*-based automatic calculation system we already built will halve the time it takes to obtain the results of calculations, enabling faster turnaround. In addition, the system allows users to explore multiple frame types in a limited time period, supporting more comprehensive building proposals. Moreover, since the system does not depend on the knowledge or experience of the project manager, it yields outcomes that offer the same level of completeness.

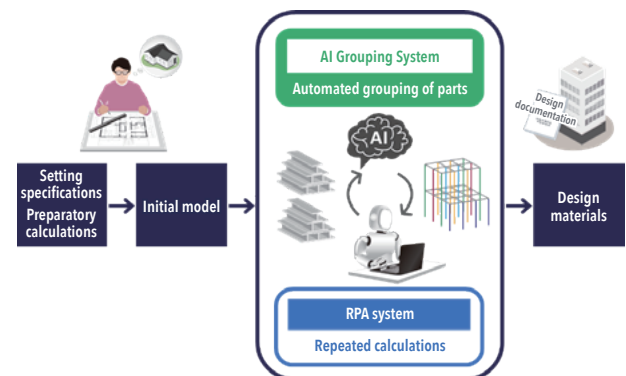
The system was the fruit of a joint effort with three other

companies, for which this was the first collaborative technology development with a construction company: Leave a Nest Co., Ltd., which offers planning and consulting services related to education and research in the fields of science and technology; Humanome Lab., Inc., which engages in R&D into academic integrated analysis technology related to human understanding; and Solar Tec Co., Ltd., a provider of manufacturing support in the construction industry. By pursuing cross-industry collaboration with a variety of partners and exploring an array of possibilities, the Group will accelerate the development of differentiated technologies that meet the needs of customers.

\* Robotic Process Automation (RPA): An initiative to make use of rule engines that can replace human beings for tasks that were previously considered possible only for human beings or for more sophisticated tasks.



Optimization cycle of the structural design support system.



Structural calculation flow using structural design support system.



## Visualizing Mixing Blades in Ground Improvement Work at Great Depths to Mitigate Final Form and Quality Risks

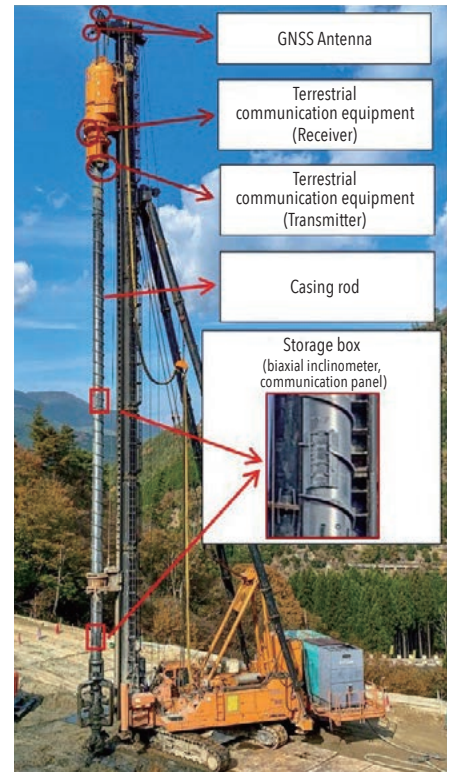
In a joint effort with System Construction Co., Ltd. and Group company Aoyama Kiko Co., Ltd., we developed a system for measuring the position of mixing blades at great depths, with the aim of mitigating risks involving the final form and quality of ground improvement work at great depths and improving construction accuracy.

The system is equipped with a high-precision inclinometer and underwater radio functionality for use in ground improvement utilizing a deep cement stabilization (DCS<sup>\*1</sup>) method. The system can check the position of the lower mixing blade edges during construction with a high degree of accuracy—something that was impossible to measure until now. By linking this system with another system we developed to visualize data from pile driving and ground improvement work (3D pile viewer<sup>\*2</sup>), all construction data (e.g., electric current value, slurry flow rate, rotation speed) can be shared in real time between operators and people involved in the construction work. This also contributes to lower construction risks and greater efficiency in construction management.

Going forward, we will continue to accumulate and analyze data to improve the system's usability. At the same time, we will work to effectively apply the system for the purpose of reducing risks in construction at great depths and construction projects in confined spaces and improving the final form and quality of work. We also plan to register the method on the government's New Technology Information System (NETIS) database and expand its application to construction other than work using the DCS method, including ground improvement, pile driving, and earth retention work.

\*1 A ground improvement method where a large-diameter improvement form (maximum diameter of 2.5m) is built by discharging a binding material (cement-based slurry) into the ground and mixing it with soil. The inner and outer mixing blades rotate in opposite directions, enabling high mixing performance and uniform ground improvement.

\*2 A system that uses 3D to visualize location and construction data (electric current value, amount of binding material, etc.) during construction, which is shared among people involved in the construction in real time over a cloud-based platform.



Ground improvement work status.

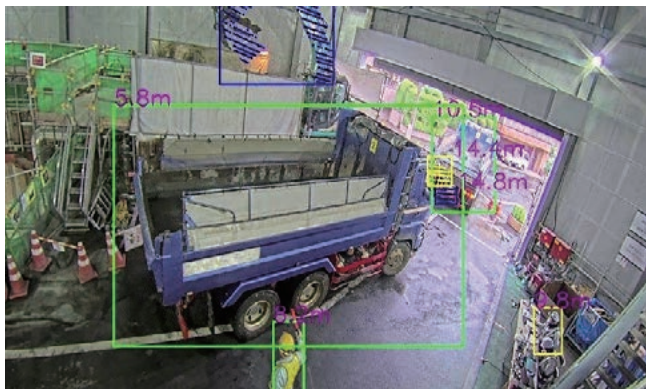
## Automated Power Shovels Tried at an Actual Work Site

The Group is working on the development of ICT-based automated operating systems for construction machinery, with the aim of improving productivity at construction sites. One initiative is work with Kobelco Construction Machinery Co., Ltd. to automate the power shovels that are widely used at construction sites. In December 2021, we conducted a trial run of automated power shovels at one of our active construction sites.

The trial was a step forward for the efforts of our two companies to establish automated construction machinery technology, which began in 2019. The trial took place under the various constraints found at an actual work site (e.g., side

loading of dump trucks, smooth movement to prevent soil spills, avoiding contact with surrounding objects). The results showed that the basic functions and safety assurance mechanisms required to adapt automated machinery to actual work conditions functioned without any issues. This represents a significant advance toward the practical application of autonomous driving technology, which can contribute to improved productivity and safety at construction sites.

Building on the results of this joint research, the Group and Kobelco Construction Machinery will continue to work together to develop even more sophisticated automated operating technology for a broader range of practical applications.



A monitoring support system detects site status.



Trial autonomous operation of a power shovel.

Video: Hazama Ando YouTube official channel [https://www.youtube.com/watch?v=47\\_iYqLHpSc](https://www.youtube.com/watch?v=47_iYqLHpSc)



# Working in harmony with the communities we serve

As a corporate citizen, the Group places high value on our relationships with the various communities we serve through our operations and work proactively to maintain and foster harmony in the community.

## Policies and Approach

### Approach

Building operation sites are supportable only with daily cooperation between the Group and local residents. We will continue to contribute to the various communities that make up the regional societies in which we work, fulfilling our duties as a corporate citizen.

We view as an equally important corporate responsibility our actions, as a Group entrusted with education and culture, to contribute to the younger generation as they prepare to shape the future. We are promoting activities in multiple directions to this end.

### Pillars Supporting Our Initiatives

- 1. Activities that Contribute to Society
- 2. Activities that Contribute to Culture

## Pillars Supporting Our Initiatives 1: Activities That Contribute to Society

### Site Tours and Other Activities

We hold tours at our various sites for local residents and elementary, junior high, and high school students, to provide a venue for interaction with the community and to gain greater understanding of our business. We also carry out a range of CSR activities at these sites.

### Supporting the Art of Possibility Project: Posting Works by Artists with Disabilities at Construction Sites

Hazama Ando is supporting the Art of Possibility Project\* jointly undertaken by Toppan Printing Co., Ltd., NPO Support Center DREAM, and the Borderless Art Organization foundation, by posting work by artists with disabilities on the temporary walls enclosing our construction work sites. Seen by countless passers-by, the walls serve as a platform for giving broad public exposure to the artists' work. As of May 2022, artwork had been exhibited at 29 sites nation-

wide—a steady increase from the previous year. We are also working to familiarize people with the Art of Possibility Project by adopting selected artwork for use in novelties.

We will continue this initiative to help build a society in which artists with disabilities can continue to find fulfillment through creative activities.

\* An initiative that places value on artwork created by artists with disabilities ("art of possibility"), aiming both to address the social issue of supporting the independence of persons with disabilities and to pursue economic activities.



Artwork painted on a construction site wall.



Novelty incorporating an artist's artwork.



### Tokyo Branch: Tunnel Art Completed at Yazawa River Diversion Channel Construction

At the Yazawa River diversion canal construction site in Setagaya Ward, a project being undertaken for the Tokyo Metropolitan Government, we asked sixth graders from the nearby Tamazutsumi Elementary School for their help in conveying the appeal of the construction industry. In all, 74 students cooperated in making the tunnel art as their graduation project.

Under the theme of the 60th anniversary of Tamazutsumi Elementary School, the students freely created their artwork. The art was printed out on special sheets and affixed to the walls of the tunnel. Extending from the entrance to around 250 meters into the tunnel, the artwork significantly brightens up the tunnel atmosphere.



Tunnel art.

Video: Hazama Ando YouTube official channel <https://www.youtube.com/watch?v=KM1MMmJvdUU>

The COVID-19 pandemic prevented us from inviting students to tour the site in person. However, a team of Hazama Ando employees visited the school and showed a video of the tunnel construction to the students. We also produced an introductory video that can be viewed on the project website allowing students and local residents to observe the state of the tunnel art during and after installation.

We feel this initiative left the graduating students with positive memories and served to spark interest in the construction industry.

### Tokyo Branch: Site Tour at Higashi-Murayama Welfare Center

A site tour was held for teachers and staff of Tanashi Technical High School at the work site of the second stage of the Higashi-Murayama Welfare Center renovation project being undertaken for the Tokyo Metropolitan Government. At the request of the school, we set aside time for both a lecture and site tour. This formed part of the educators' training, better equipping them not only to guide students in the architecture department academically but also to give career guidance.

In the lecture, we gave an overview of the project and a typical day's schedule on site. We also explained several distinctive initiatives at the site, including the placement of young supervising engineers, the implementation of a strict five-day work week, and facilities such as a women-only changing room and break room, giving participants a feel for how conditions at construction sites in Japan are changing. Some participants noted that, by hearing directly from employees who work on site during the tour, they learned that construction management positions, often seen to be out of reach, are something students can aim for—it is simply a matter of the individual's motivation and effort. They said this was something they wanted to pass on to students.



Participants on the site tour.

We see it as part of our task not only to convey the appeal of the construction industry to youth but also to deepen the understanding of the teachers who train them, enhance the image of the industry, and offer young people further options for the future.

### PR at the Technical Research Institute

The Technical Research Institute, which opened in 1992 in Tsukuba, Ibaraki Prefecture, has been carrying out R&D for more than a quarter of a century. Since its opening, the Institute has served as a venue for publicizing the activities not only of Hazama Ando but also of the construction industry as a whole, as we have invited a host of visitors to discuss how the infrastructure of people's lives is created.

Although visits were suspended again in the fiscal year ended March 2022 over COVID-19 concerns, a typical year

includes various events. During Science and Technology Week, for example, there is a tour of the Institute for the general public, sponsored by the Ministry of Education, Culture, Sports, Science and Technology. There is a science and technology promotion program for elementary and middle school students, called "Tsukuba Little Professors." We also offer on-site hands-on workshops for Japanese and foreign students. To foster awareness of our technology going forward, we will continue to actively interact with people in Japan and overseas.



"Tsukuba Little Professors" visit (held prior to the COVID-19 pandemic).



Students participate in an on-site hands-on workshop (held prior to the COVID-19 pandemic).

## Pillars Supporting Our Initiatives 2: Activities that Contribute to Culture

### Preserving, Repairing, and Restoring Cultural Properties and Historic Buildings

For many years, the Group has engaged in preserving, repairing, and restoring cultural properties and historic buildings.

We have been involved in many such projects in recent years, as well as in the seismic retrofitting of buildings constructed since the Meiji era that are considered modern heritage sites. One project now underway is seismic retrofitting and repair work on the former Moji Mitsui Club, an important cultural property, undertaken for the city of Kitakyushu in Fukuoka Prefecture. Another project involves work to preserve and enhance utilization of the former Shigenobu Okuma villa and the former Furukawa villa (former residence of Munemitsu Mutsu), which are both town tangible cultural properties in Oiso Town in Kanagawa Prefecture, undertaken for the Ministry of Land, Infrastructure, Transport and Tourism Kanto Region Development Bureau. Aside from buildings, Hazama Ando's technology has gained wide recognition for its use in preserving and repairing traditional stone walls in castles and other structures.

We are also focusing on technological development that fuses advanced and traditional techniques. We created a 3D model of the wooden shafts of Ozu Castle in Ehime Prefecture, and then employed a traditional tatekata technique of

raising the wooden framework on a building information modeling (BIM) platform. We are showcasing this work at exhibitions by means of an animated film.

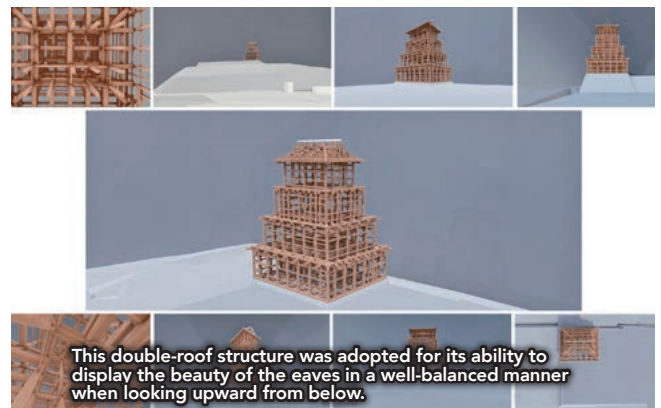
Going forward, we will continue to contribute to society by applying the technology we have gained over the years to the preservation, repair, and restoration of cultural properties, historical buildings, and civil engineering structures.



Former Moji Mitsui Club.



Former Shigenobu Okuma villa.



Ozu Castle construction on a BIM platform.

This double-roof structure was adopted for its ability to display the beauty of the eaves in a well-balanced manner when looking upward from below.

### Supporting Dedication of Outdoor Firelight Noh Performances at Meiji Jingu Shrine

Hazama Ando co-sponsors the dedication of outdoor firelight Noh performances held at Meiji Jingu Shrine in Tokyo every autumn. 2021 marked the 40th time the performance has been held since the first such performance was attended by Prince Hironomiya (the current Emperor) in 1982.

The Group's involvement in the Noh performances began in 1980, when we received an order for the construction of the National Noh Theater in Tokyo's Shibuya Ward. The outdoor performance by firelight was started in the hope of helping to pass on traditional Japanese performing arts and spark interest in the study of Noh theater. Every year, desiring a wide range of people to enjoy Noh by firelight, we invite about 2,000 people to attend without charge, including people from the general public chosen by lottery. The performances have been well received, not only by spectators but also by the Noh and Kyogen (short comic play) performers themselves.

The 40th dedicated firelight Noh performance was held at Meiji Jingu Shrine in October 2021. Because our top pri-

ority was on preventing COVID-19 infection and on the health and safety of visitors, however, the dedicated performance was carried out this year without spectators.



The 40th dedicated firelight Noh performance held at Meiji Jingu Shrine, entitled "Okina" (Photograph: Fuminori Mikami).



## Protecting and being attuned to the natural environment

### Overview of Fiscal 2021 Results

In addressing the material issue of protecting and being attuned to the natural environment, we have sought to construct a business framework that can help realize the key CSR theme of creating environmental abundance, centered around the approaches of reducing environmental impact and risks and taking steps to achieve biodiversity. In the fiscal year ended March 2022, we identified Goals 7, 12, and 13 as the core SDGs linked with this material issue. By further incorporating key performance indicators, we are accelerating the promotion of carbon-neutral businesses, the construction of a business framework that contributes to a circular society and low environment impact, and the enhancement of disclosure.

To establish a PDCA framework for each issue with reference to the supply chain, Hazama Ando formulated environmental objectives and targets for the three-year period ending March 2022, and has pursued various actions based on these objectives. In the fiscal year ended March 2022, we made steady headway with our objectives while verifying and summarizing the results, and have formulated new environmental objectives and targets starting from the fiscal year ending March 2023. In particular, taking into account mounting demands by society for businesses that are carbon-neutral, we will accelerate the shift to carbon-neutral electricity for use in our business. At the same time, we will press forward with initiatives that are of keen interest to stakeholders, such as the Hazama Ando Next-Generation Energy Project and shifting to net zero-energy building (ZEB) standards for construction projects.

## 1 Activity Highlights

### Procuring 100% renewable energy for electricity used in business activities

In the fiscal year ended March 2022, we procured all electricity used in the Group's business activities from renewable energy sources. This put us above the interim target set under the RE100 initiative for the relevant fiscal year (80% use of electricity from renewable energy sources in fiscal 2030). In terms of greenhouse gas emissions, we achieved a reduction of 16,000 tons of CO<sub>2</sub> for the year.

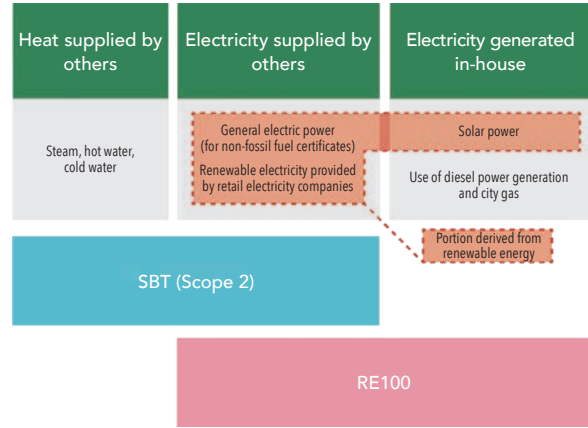
Electricity from renewable energy sources also includes power generated by solar power equipment installed at our various bases. We also procured electricity by combining electricity derived from renewable energy sources provided by retail electricity suppliers with purchases of non-fossil fuel certificates\*.

These actions form part of our own commitment to meeting the targets set out by the SBT and RE100 initiatives. We also work to help customers reduce emissions in their own supply chains.

Going forward, with our sights set on achieving the SBT and RE100 targets, we will procure renewable energy and participate in renewable energy projects, while also accelerating development of next-generation energy management systems.

The Hazama Ando Group is pressing forward to help bring about a carbon neutral, circular society, to leave a fertile global environment to the next generation.

\* Non-fossil fuel certificate: A certificate attesting to the environmental value of not emitting CO<sub>2</sub>, including through electricity generated from non-fossil fuel sources (i.e., solar power, wind power, etc.), separate from electricity.



\* Of electricity generated in-house, diesel power generation and city gas use are excluded from the RE100 results.

## 2 Activity Highlights

### Applying "Ash-Crete" to Tsunami Breakwater at Fukushima Daiichi Nuclear Power Station

Hazama Ando has developed proprietary "ash-crete" using high coal ash content and has effectively used more than 1.7 million tons of coal ash to date.

We are currently involved in decommissioning work for the ground floor of the Fukushima Daiichi Nuclear Power Station. Following the construction of a mega float (which received a Decommissioning Contribution Award (Excellence Award)\*) we applied "ash-crete" to materials manufacturing work for the ground floor Japan trench tsunami breakwater (see figure below). We are using a terre armée reinforced earth technique to erect the breakwater. For the embankment inside the terre armée structure, rather than ordinary soil we are using "ash-crete" manufactured at a temporary dedicated plant located near the breakwater (see photo). In this way, we solved the difficulty of procuring large quantities of materials and other process-related issues. We are sourcing

ing coal ash from the nearby Hirono Thermal Power Station, and project using a total of more than 100,000 tons of coal ash for the entire project. The construction period spans the fiscal year ended March 2022 to the fiscal year ended March 2024. By effectively using coal ash in a long-term and consistent manner, we are helping to reduce environmental impact.

\* Awarded by the Atomic Energy Society of Japan Fukushima Daiichi Nuclear Power Station Decommissioning Review Committee



Dedicated "ash-crete" plant.

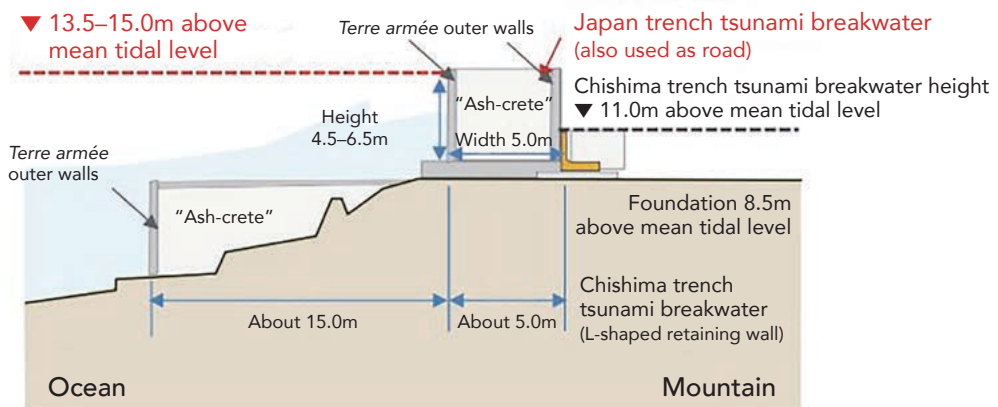


Figure provided by Tokyo Electric Power Company Holdings, Inc.



# Creating environmental abundance

To pass on an abundant global environment to the next generation, the Group will actively work to bring about a carbon-free, circular society. We will also take actions to protect, restore, and create biodiversity to help realize a society that can coexist with nature.

## Policies and Approach

### Approach

We revised the Group's Environmental Policy in April 2018 to further accelerate environmentally oriented management aimed at bringing about a low-carbon, circular society that can coexist with nature. Starting in the fiscal year ended March 2022, based on new three-year environmental objectives and targets, we are steadily putting environmental practices in place. We are also taking steps to help promote further carbon-neutrality and bring about a sustainable society by obtaining Science Based Targets (SBT) certification and participating in the RE100 (Renewable Energy 100%) initiative, as well as disclosing climate change-related information based on the TCFD recommendations.

### Environmental Policy

To protect the abundant green earth and bring about a sustainable society, we will contribute to protecting the environment and reducing environmental impact across the Group.

- 1 Work to reduce greenhouse gas emissions to help bring about a low-carbon society
- 2 Reduce construction by-products to help bring about a circular society
- 3 Take actions to protect, restore, and create biodiversity to help bring about a society that coexists with nature
- 4 Continuously improve environmental management systems and achieve greater results from environmental conservation

### Key Environmental Initiatives

We have established key medium- and long-term environmental initiatives to give concrete shape to the Environmental Policy.

- 1 Initiatives related to global warming
  - Reduce greenhouse gas emissions and promote energy saving
- 2 Initiatives related to biodiversity conservation and sustainable use
  - Consider risks to biological resources and ecosystems and minimize impact
- 3 Initiatives to ensure material recycling and build a circular society
  - Mission to achieve net zero construction waste
  - Extend the life cycle of buildings, build an environmentally conscious society
- 4 Initiatives related to water conservation
  - Work toward conserving a sound water environment attentive to the conservation of regional characteristics and biodiversity
- 5 Initiatives related to air quality conservation
  - Reinforce efforts to combat air pollution and deal with asbestos, etc.
  - Reinforce efforts to address living environment issues such as noise and vibrations
- 6 Initiatives to establish comprehensive chemical substance measures
  - Increase understanding of environmental risks caused by chemical substances and reduce risks

### Three-Year Environmental Objectives and Targets (Fiscal 2022–Fiscal 2024)

The Group established new three-year environmental objectives and targets in the fiscal year ended March 2023. In addition to initiatives to bring about a low-carbon, circular society that can coexist with nature as indicated in the Environment Policy, we formulated key medium- and long-term environmental targets to give concrete shape to the policy. To reduce greenhouse gas emissions, in addition to setting a new target for total CO<sub>2</sub> emissions, we are stepping up efforts to shift to net zero-energy building (ZEB) standards as an environmentally friendly target for design. In terms of bringing about a society that can co-exist with nature, we set targets for biodiversity conservation actions. To bring about a circular society, we set a target for the reduction of mixed waste intensity. In terms of environmental risk management, we are targeting increased environmental site visits.

In addition to these targets to implement the Environmental Policy, we are promoting environmentally oriented management across the Group. We hold events during Environment Month and engage in other activities to raise environmental awareness, and set goals for actions that contribute to the environment and society.

### Three-Year Environmental Objectives and Targets (Fiscal 2022–Fiscal 2024)

1. Actions to prevent global warming						
Area	Objective, target	Unit	Fiscal 2022	Fiscal 2023	Fiscal 2024	
<b>1.1 Reduce greenhouse gas emissions</b>						
Shared	Procure electric power from renewable energy	(%)	15	25	40	
Shared	Reduction of total CO <sub>2</sub> emissions (SBT reduction target) (Reduction rate versus FY2017 [Scope 1 and 2])	(%)	12.7	15.3	17.8	
Civil Engineering	CO <sub>2</sub> emissions per completed construction at the construction stage	(tons of CO <sub>2</sub> /100 million yen)	45.0	43.0	41.0	
Building Construction	CO <sub>2</sub> emissions per completed construction at the construction stage	(tons of CO <sub>2</sub> /100 million yen)	9.7	9.4	9.1	
Civil Engineering and Building Construction	Supply energy through a next-generation CO <sub>2</sub> cogeneration plant	(tons of CO <sub>2</sub> )	150	160	170	
Offices	Reduce CO <sub>2</sub> emissions at head office, branches, and sales offices Total reduction compared to fiscal 2017 (SBT reduction basis)	Emissions (tons of CO <sub>2</sub> ) Reduction rate (%)	3,033 22.5	2,722 30.4	2,425 38.0	
<b>1.2 Promote environmentally friendly design and technology</b>						
Building Construction	Enhance overall environmental performance by applying simplified CASBEE rating (Comprehensive Assessment System for Built Environment Efficiency)	(%)	Proportion: 100 A rank or higher: 60	Proportion: 100 A rank or higher: 60	Proportion: 100 A rank or higher: 70	
Building Construction	Shift to net zero-energy building (ZEB) standards	(projects)	Verified: 4 (cumulative) Proposed: 5	Verified: 5 (cumulative) Proposed: 5	Verified: 6 (cumulative) Proposed: 5	
Civil Engineering	Environmental technologies developed Environmental technology design and construction projects adopted	(projects)	1 2	1 2	1 2	
Construction Technology	Environmental technologies developed Environmental technology design and construction projects adopted	(projects)	1 2	1 2	1 2	
2. Actions to conserve biodiversity						
Area	Objective, target	Unit	Fiscal 2022	Fiscal 2023	Fiscal 2024	
<b>2.1 Steadily pursue biodiversity-friendly initiatives related to construction projects</b>						
Shared	Instill understanding of biodiversity conservation, take definitive actions at spotlighted work sites, make new proposals, conduct internal and external PR	(cases)	30	30	30	
Technology	Technologies related to biodiversity: a: examinations, b: development, c: trials, d: application to projects	(cases)	a: 2, b: 1, c: 1, d: 1	a: 2, b: 1, c: 1, d: 1	a: 2, b: 1, c: 1, d: 1	
3. Actions to build a circular society						
Area	Objective, target	Unit	Fiscal 2022	Fiscal 2023	Fiscal 2024	
<b>3.1 Recycle construction waste</b>						
Civil Engineering	Reduce total mixed waste per completed construction by containing waste generation on site and strengthening sorting processes	(tons/100 million yen)	0.95	0.85	0.8	
Building Construction	Reduce mixed waste intensity per total floor area at new construction projects	(kilograms/square meter)	6.8	6.7	6.5	
4. Actions to manage environmental risk (protecting water and air environments, comprehensive chemical substance measures)						
Area	Objective, target	Unit	Fiscal 2022	Fiscal 2023	Fiscal 2024	
<b>4.1 Actions to prevent environmental accidents</b>						
Civil Engineering and Building Construction	Augment environmental site visits * Patrols by branch civil engineering and building construction departments	(%)	Civil Engineering: 75 Building Construction: 75	Civil Engineering: 90 Building Construction: 90	Civil Engineering: 100 Building Construction: 100	
5. Actions to promote environmental awareness, actions to contribute to the environment and society						
Area	Objective, target	Unit	Fiscal 2022	Fiscal 2023	Fiscal 2024	
<b>5.1 Promoting environmental awareness and disclosure</b>						
Shared	Promote Environment Month activities * Participation rate for all eligible sites Indicates participation in events held during June Environment Month	(%)	100	100	100	
Shared	Promote environmental initiatives through environmental and eco-site visits	(activities)	30 or more	30 or more	30 or more	
Shared	Promote more robust actions that contribute to the environment and society Take actions to contribute to the environment and society	(actions)	Civil Engineering: 3 per work site Building Construction: 3 per work site Offices: 80 per year	Civil Engineering: 3 per work site Building Construction: 3 per work site Offices: 80 per year	Civil Engineering: 3 per work site Building Construction: 3 per work site Offices: 80 per year	

Shared: Indicates entire Group (Civil Engineering, Building Construction, technology R&D, and offices)

\* Targets for electric power from renewable energy do not include amounts procured by non-fossil fuel certificates.



Pillars Supporting Our Initiatives

- 1. Reducing Environmental Impact and Risks
- 2. Taking Steps to Achieve Biodiversity

## Pillars Supporting Our Initiatives 1: Reducing Environmental Impact and Risks

### CO<sub>2</sub> Reductions in Initial Trial Year of Hazama Ando Next-Generation Energy Project

The Group launched a trial of the Hazama Ando Next-Generation Energy Project in April 2020 as part of our efforts to address energy-related issues in Japan.

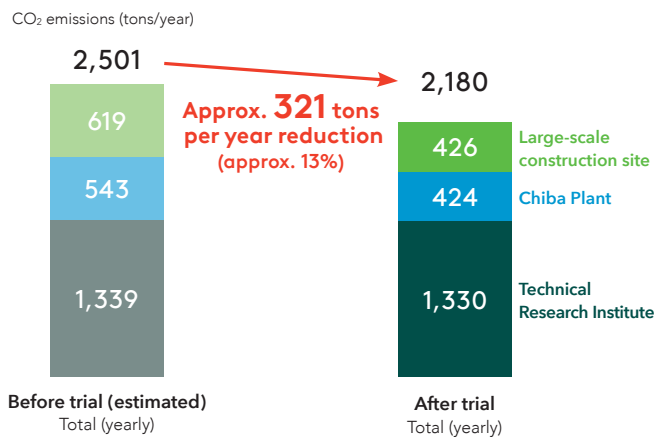
The trial entails three types of experiments at multiple energy demand sites in remote locations, including at the Technical Research Institute. (1) We installed a power generation plant that combines a fuel cell capable of using CO<sub>2</sub>-free hydrogen\* as fuel with a gas engine generator-based cogeneration system. Heat generated is supplied to accommodation facilities on the same site. (2) In the main building of the Technical Research Institute, we reduced electricity demand by drawing on existing energy-saving technologies, and distribute the amount of power saved across a wide area. (3) The low-CO<sub>2</sub> electric power generated by the above-mentioned plant is distributed to multiple wide-area demand sites using a self-consignment system. In this way, we are comprehensively managing electricity and heat used at three facilities and establishing demand forecasts for different building applications—a laboratory, a plant, and a construction site. We are also accurately adjusting power supplied by the cogeneration plant.

The trial, which has been running for two years, has reduced total CO<sub>2</sub> emissions at the three facilities by roughly 13% (against the estimated value before the trial started). By

continuing to verify and improve outcomes, we are aiming to establish even more optimal low-CO<sub>2</sub> energy management. This project better positions the Group to help bring about a carbon-free, sustainable society.

- \* CO<sub>2</sub>-free hydrogen:
- Hydrogen with low greenhouse gas emissions during manufacturing
  - Hydrogen produced in a way that significantly reduces CO<sub>2</sub> emissions
  - Hydrogen considered to have higher environmental performance, with a focus on CO<sub>2</sub> emissions at the manufacturing stage

#### CO<sub>2</sub> Emissions at Three Facilities



### Shifting to ZEB Standards and Building a Green Track Record

Another approach toward bringing about a sustainable society is our shift to net zero-energy building (ZEB) standards\*<sup>1</sup>. We have been steadily gaining technological prowess and establishing a track record in this area.

For an office building completed in February 2021, we obtained ZEB Ready certification under the Building-Housing Energy-Efficiency Labeling System (BELS) for large buildings with a total floor space of more than 10,000 square meters. This construction segment is seen as crucial for the transition to ZEB building. We are realizing offices that combine both comfort and health and energy saving, obtaining the top S ranking under the CASBEE Smart Wellness Office\*<sup>2</sup> system, a tool for evaluating office comfort and health.

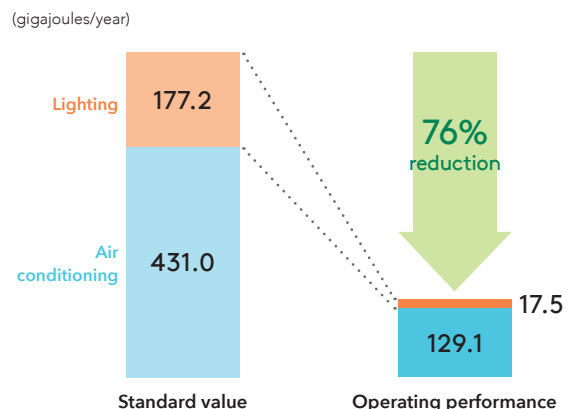
Demand for Nearly ZEB or ZEB-qualified buildings will continue to rise. To address this demand, we renovated a section of the main building of the Technical Research Institute and have been carrying out ZEB trials since July 2020. We are gaining expertise in emerging technologies such as heating and cooling air conditioning systems that utilize exhaust heat generated by energy plants, panel heating and cooling systems, lighting control based on perceptions of brightness, and IoT-based environmental control systems.

Going forward, we will further accelerate the shift to ZEB construction by incorporating these technologies into actual projects.

\*1 ZEB (Net Zero Energy Building) is a building that has targeted a net-zero balance of annual primary energy consumption.

\*2 A power purchase agreement (PPA) is a contract in which one party generates electricity, through solar power or other means, and sells it to a buyer.

#### Primary energy consumption



## Pillars Supporting Our Initiatives 2: Taking Steps to Achieve Biodiversity

### Biodiversity Greening Initiatives at the Technical Research Institute

The Technical Research Institute, located in the city of Tsukuba in Ibaraki Prefecture, is taking steps to preserve the rich surrounding natural landscape and local ecosystem. We are setting aside a green space which is home to 32 species of plants, including the white oak (*Quercus myrsinifolia*), a species native to Tsukuba.

Having identified index species among the birds that inhabit the area around the Institute, we are carrying out monitoring to confirm connections between the plants and animals active in the green space. In consultation with experts in plant and animal life, we will also revise our green space management approach as needed based on the results of monitoring. In this way, we are working to sustain and enhance the natural environment to be hospitable to a

wide variety of living creatures.

Also, to help our employees gain a deeper understanding of the importance of ecologically aware green space maintenance, we are carrying out environmental education and providing other learning opportunities in-house.

ABINC, a foundation supporting business innovation and biodiversity-friendly efforts, recognized these activities, granting the Technical Research Institute its Ikimono Symbiosis Business Office® certification in March 2022. Going forward, along with initiatives of the Institute, we will continue to provide our customers with technical support for the planning, design, construction, and management of green spaces so that their business sites remain lush green environments thriving with living creatures.

### Biodiversity Greening Initiatives at the Technical Research Institute

We identified vegetation native to the city of Tsukuba in Ibaraki Prefecture and incorporated it into our green space design.

**Green space planning and maintenance that are attuned to the surrounding environment**

Japanese beautyberry    East Asian eurya    Japanese privet    Trial biodiversity greening field

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**Monitoring of index species**

Dusky thrush    Siberian meadow bunting    Green pheasant  
White wagtail    Eurasian skylark    Little egret

We identified the species of trees these birds prefer and reflected this in the green space renovation plan.

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**Collaboration with experts**

Progress of decay

Diagnosis of Japanese elm disease by an arborist

We analyzed the results with experts and reflected this in the green space maintenance plan.

Removal of decayed areas, application of protective agent

### Biodiversity Initiatives for Goal 15 of the SDGs: Active Use of Ikimono Plus and Ikimono Info

Ikimono Plus (ikimono means “living thing” in Japanese) is a building greening design tool used to support the planning of green projects that take biodiversity into consideration. The tool helps to enhance functionality of CASBEE (Comprehensive Assessment System for Built Environment Efficiency) evaluations. After jointly developing the tool in the fiscal year ended March 2014, we are using it in our design-build projects, as well as extending its in-house implementation, such as through seminars for newcomers to various design departments.

Ikimono Info is an in-house biodiversity database that got up and running in the fiscal year ended March 2016. It contains examples of internal and external initiatives at construction sites and related external information. We use the database when making technical proposals to customers or exploring construction methods that allow the preservation of rare organisms at construction sites.



Ikimono Plus

Ikimono Info

# Environmental Factsheet

Hazama Ando continues to collect and verify a range of quantitative data on environmental activities, which informs our consideration of environmental goals from a longer-term perspective. Key data from activities in the fiscal year ended March 2022 are shown below.

## 1. Environmental Management System

Hazama Ando acquired ISO 9001 and ISO 14001 certification on April 1, 2013. We are continuously working to improve our quality and environmental management systems (QMS and EMS).

In line with the September 2015 revision of the ISO standards, we reviewed and completely overhauled our quality and environmental management systems in the fiscal year ended March 2017, and the systems started operation in April.

### Results of QMS and EMS Internal Audit

Audit period	Number of divisions audited				Total
	Head office management divisions	Branch office management divisions	Civil engineering work sites	Building construction work sites	
September–November 2021	11	42	18	24	95

Notes: The audit sampling rate was 23.5% (11 of 78 head office departments [14.1%], 42 of 105 branch offices [40.0%], 18 of 100 civil engineering work sites [18%], 24 of 121 building construction work sites [19.8%])  
A combined QMS and EMS audit was performed.

### Results of External Review

In the fiscal year ended March 2022, we underwent surveillance by the Japan Testing Center for Construction Materials, a review and registration organization. This was the eighth QMS review (second phase) and seventh EMS review (second phase) for the Group.

Date of review	Sites reviewed	Review results	
		ISO 9001	ISO 14001
Surveillance November 16–26, 2021	Head office, Technical Research Institute, Building Management Division, Hokuriku Branch, Nagoya Branch, Hiroshima Branch	Major nonconformities: 0 Minor nonconformities: 0 Observations: 0	Major nonconformities: 0 Minor nonconformities: 0 Observations: 0

### Results of Management Review

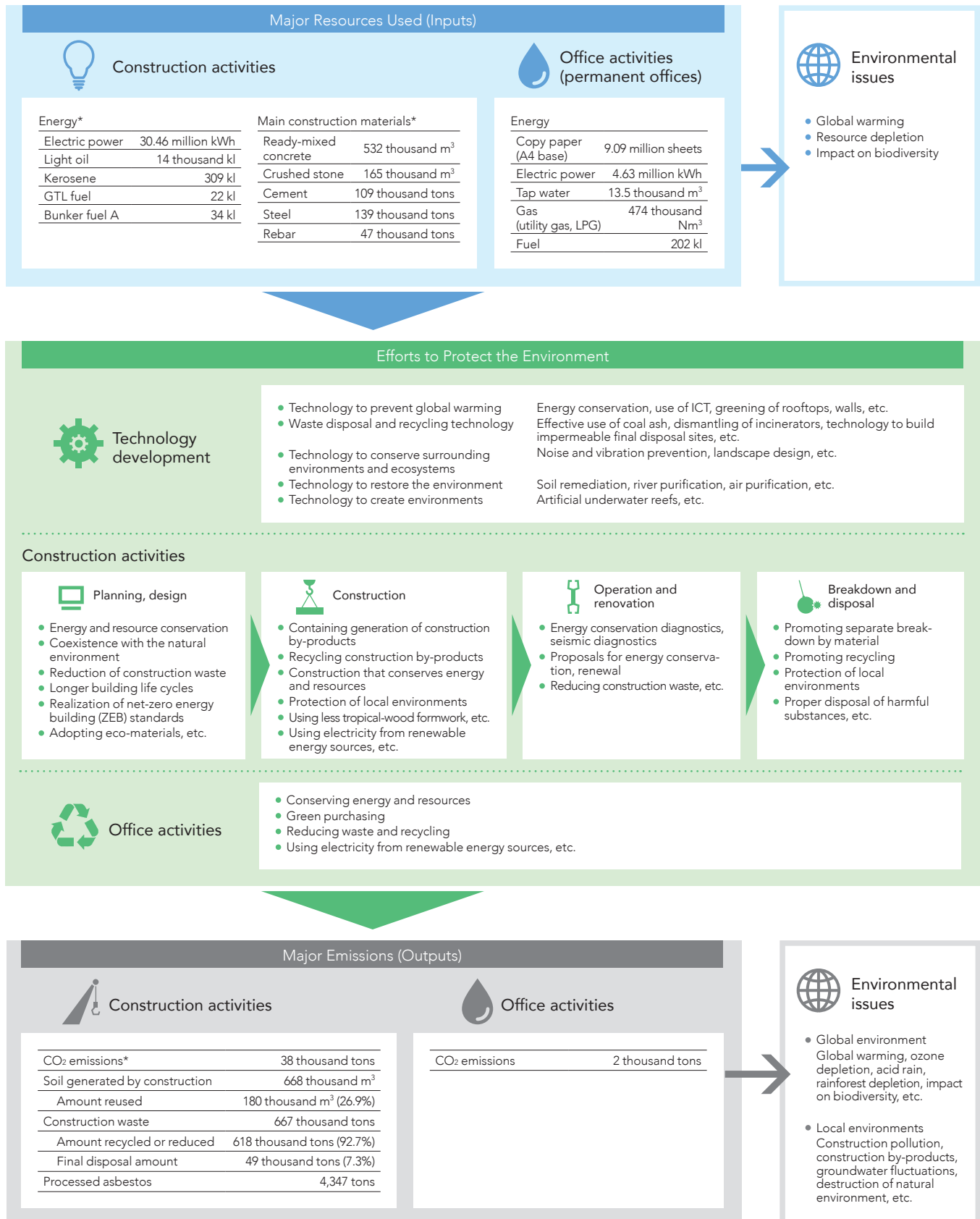
Top management of the Group carried out a management review in July 2021 and March 2022. The President in March 2022 issued directives from the management review applicable to the fiscal year ending March 2023.

### Compliance with Environmental Laws and Regulations

By means of interim and fiscal year-end reports, environmental site visits, and internal QMS and EMS audits, we confirmed that the Group is compliant with environmental laws and regulations. (In the fiscal year ended March 2022, there were no reports of serious violations of laws or regulations that materially affect the environment.)

## 2. Relationship with the Environment (Material Balance)

The following outlines the environmental impact of Hazama Ando's business activities in the fiscal year ended March 2022 in terms of the use of resources and emissions, as well as our efforts to protect the environment.



Efforts to Protect the Environment

**Technology development**

- Technology to prevent global warming
- Waste disposal and recycling technology
- Technology to conserve surrounding environments and ecosystems
- Technology to restore the environment
- Technology to create environments

Energy conservation, use of ICT, greening of rooftops, walls, etc.  
Effective use of coal ash, dismantling of incinerators, technology to build impermeable final disposal sites, etc.  
Noise and vibration prevention, landscape design, etc.  
Soil remediation, river purification, air purification, etc.  
Artificial underwater reefs, etc.

Construction activities

**Planning, design**

- Energy and resource conservation
- Coexistence with the natural environment
- Reduction of construction waste
- Longer building life cycles
- Realization of net-zero energy building (ZEB) standards
- Adopting eco-materials, etc.

**Construction**

- Containing generation of construction by-products
- Recycling construction by-products
- Construction that conserves energy and resources
- Protection of local environments
- Using less tropical-wood formwork, etc.
- Using electricity from renewable energy sources, etc.

**Operation and renovation**

- Energy conservation diagnostics, seismic diagnostics
- Proposals for energy conservation, renewal
- Reducing construction waste, etc.

**Breakdown and disposal**

- Promoting separate breakdown by material
- Promoting recycling
- Protection of local environments
- Proper disposal of harmful substances, etc.

**Office activities**

- Conserving energy and resources
- Green purchasing
- Reducing waste and recycling
- Using electricity from renewable energy sources, etc.

Major Emissions (Outputs)

**Construction activities**

CO <sub>2</sub> emissions*	38 thousand tons
Soil generated by construction	668 thousand m <sup>3</sup>
Amount reused	180 thousand m <sup>3</sup> (26.9%)
Construction waste	667 thousand tons
Amount recycled or reduced	618 thousand tons (92.7%)
Final disposal amount	49 thousand tons (7.3%)
Processed asbestos	4,347 tons

**Office activities**

CO <sub>2</sub> emissions	2 thousand tons
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**Environmental issues**

- Global environment  
Global warming, ozone depletion, acid rain, rainforest depletion, impact on biodiversity, etc.
- Local environments  
Construction pollution, construction by-products, groundwater fluctuations, destruction of natural environment, etc.

\* Estimated value calculated by sampling



### 3. Greenhouse Gas Emissions and Use of Electric Power from Renewable Energy Sources in Fiscal 2021 (Group total for the period from April 2021 to March 2022)

The table below shows the Group’s greenhouse gas emissions and the ratio of electric power from renewable energy sources in the fiscal year ended March 2022, based on SBT and RE100 standards. We will continue to pursue measures to meet our targets in helping address global warming issues.

SBT Targets		RE100 Targets	
Greenhouse gas emissions		Ratio of electric power from renewable energy sources	
Scope 1 + 2	Fiscal 2030 <b>33%</b> reduction (compared to fiscal 2017)	Fiscal 2030	<b>80%</b>
Scope 3	Fiscal 2030 <b>22%</b> reduction* <sup>1</sup> (compared to fiscal 2017)	Fiscal 2050	<b>100%</b>

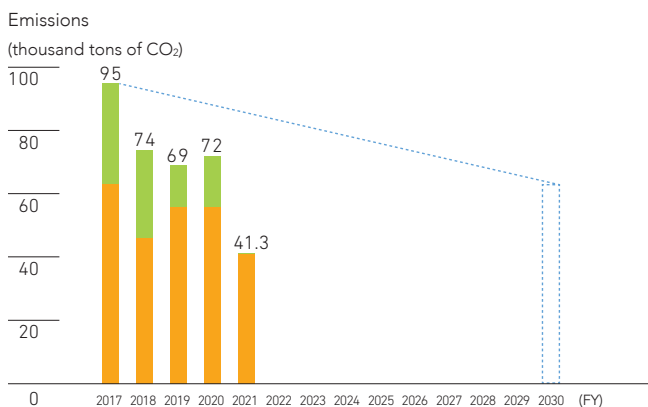
\*1 Only applicable to (1)-1: Main materials such as ready-mixed concrete, office supplies and (11): Use of sold products.

Category		Unit	Fiscal 2017 (base year)	Fiscal 2020 (previous year)	Fiscal 2021
SBT	Scope 1	Thousand tons of CO <sub>2</sub>	63	56	41
	Scope 2	Thousand tons of CO <sub>2</sub>	32	16	0.3
	Scope 1 + 2	Thousand tons of CO <sub>2</sub>	95	72	41.3
	Scope 3* <sup>2</sup>	Thousand tons of CO <sub>2</sub>	2,940	2,722	1,855
	(1) Purchased goods and services	Thousand tons of CO <sub>2</sub>	810	905	905
	(1)-1: Main materials such as ready-mixed concrete, office supplies	Thousand tons of CO <sub>2</sub>	541	660	684
	(1)-2: Purchased civil engineering and construction services	Thousand tons of CO <sub>2</sub>	270	244	221
	(2) Capital goods	Thousand tons of CO <sub>2</sub>	14	5	7
	(3) Fuel- and energy-related activities (not included in Scope 1 or Scope 2)	Thousand tons of CO <sub>2</sub>	6	11	9
	(4) Upstream transportation and distribution	Thousand tons of CO <sub>2</sub>	34	23	24
	(5) Waste generated in operations	Thousand tons of CO <sub>2</sub>	50	7	10
	(6) Business travel	Thousand tons of CO <sub>2</sub>	1	1	0
	(7) Employee commuting	Thousand tons of CO <sub>2</sub>	1	1	1
	(11) Use of sold products	Thousand tons of CO <sub>2</sub>	1,932	1,734	895
(12) End-of-life treatment of sold products	Thousand tons of CO <sub>2</sub>	91	37	4	
(13) Downstream leased assets	Thousand tons of CO <sub>2</sub>	0	0	0	
RE100	Electricity usage	MWh	60,707	37,772	38,659
	Electric power from renewable energy* <sup>3</sup>	MWh	–	1,252	34,630
	Ratio of electric power from renewable energy	%	–	3	90

\*2 (8) Upstream leased assets, (9) Downstream transportation and distribution, (10) Processing of sold products, (14) Franchises, and (15) Investments are not applicable and are not included in the above calculations.

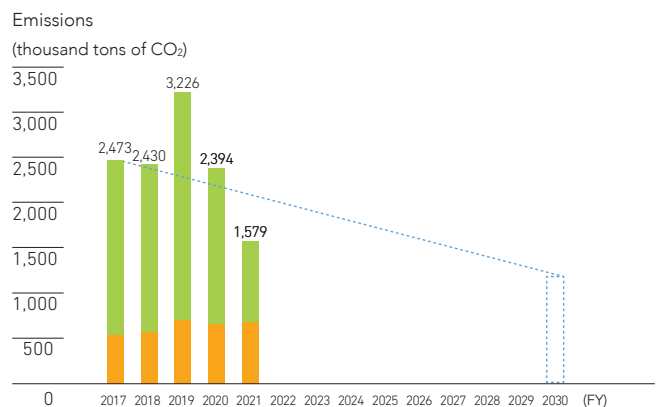
\*3 Includes only renewable energy electricity that meets RE100 standards. Began use of non-fossil fuel certificates in the fiscal year ended March 2022.

#### Progress in Scope 1 + 2 targets



SBT forecast Scope 1 results Scope 2 results RE100 forecast RE100 results

#### Progress in Scope 3 targets



Scope 3 forecast (1)-1: Main materials such as ready-mixed concrete, office supplies (11) Use of sold products

## 4. Progress toward Environmental Objectives and Targets in Fiscal 2021

(April 2021–March 2022)

Outcomes of activities for the fiscal year ended March 2022 toward achieving the environmental objectives and targets the Group has set over a three-year period are shown below. We will continue acting to reach the targets, guided by the Group's environmental management system.

Area	Objective, target	Unit	Group targets for fiscal 2021	Year-end Group results for fiscal 2021	Assessment
<b>1. Actions to prevent global warming</b>					
<b>1.1 Reduce greenhouse gas emissions</b>					
Shared	Procure electric power from renewable energy	(%)	30	90 (non-fossil fuel certificates)	○
Civil Engineering	As an initiative to cut CO <sub>2</sub> emissions at the construction stage, introduce LEDs for temporary underground lighting at new tunneling or shield work sites	(%)	Rate of introduction: 100%	Rate of introduction: 100%	○
Civil Engineering	CO <sub>2</sub> emissions per completed construction at the construction stage	(tons of CO <sub>2</sub> /100 million yen)	52.5	22.0 (non-fossil fuel certificates)	○
Building Construction	As an initiative to cut CO <sub>2</sub> emissions at the construction stage, introduce LEDs for temporary lighting at new work sites	(%)	Rate of introduction: 100%	Rate of introduction: 100%	○
Building Construction	CO <sub>2</sub> emissions per completed construction at the construction stage	(tons of CO <sub>2</sub> /100 million yen)	10.0	6.41 (non-fossil fuel certificates)	○
Civil Engineering and Building Construction	Supply energy through a next-generation CO <sub>2</sub> cogeneration plant	—	Model work site Start monitoring to adjust output based on demand forecast	Monitoring started	○
Offices	Reduce CO <sub>2</sub> emissions at head office, branches, and sales offices Total reduction compared to fiscal 2013 Note: Excludes Technical Research Institute and Group companies.	(%)	1.0	5.4 (Excludes experimental wing of the Technical Research Institute)	○
<b>1.2 Promote environmentally friendly design and technology</b>					
Building Construction	Enhance overall environmental performance by applying simplified CASBEE rating (Comprehensive Assessment System for Built Environment Efficiency)	(%)	Proportion: 100% A rank: 60% S rank: 7%	Proportion: 100% A rank: 60% S rank: 0%	△
Building Construction	Shift to net zero-energy building (ZEB) standards	(projects)	Verified: 3 (cumulative) Proposed: 5	Verified: 5 (cumulative) Proposed: 2	△
Civil Engineering	Develop, implement environmentally friendly technology	—	Deployment at model work sites	2 sites, 1 new theme, 2 study group themes	○
Construction Technology	Develop, implement environmentally friendly technology	—	Detailed exploration by theme	2 new themes, 1 study group theme	○
<b>2. Actions to conserve biodiversity</b>					
<b>2.1 Steadily pursue biodiversity-friendly initiatives related to construction projects</b>					
Shared	Instill understanding of biodiversity conservation, take definitive actions at spotlighted work sites, make new proposals, conduct internal and external PR	(cases)	30	35	○
Technology	Examine, develop technology related to biodiversity	—	Application to projects	1 application	○
<b>3. Actions to build a circular society</b>					
<b>3.1 Recycle construction waste</b>					
Civil Engineering	Reduce total mixed waste per completed construction by containing waste generation on site and strengthening sorting processes	(tons/100 million yen)	1.00	0.62	○
Building Construction	Reduce mixed waste intensity per total floor area at new construction projects	(kilograms/square meter)	7.0	4.06	○
<b>4. Actions to manage environmental risk (protecting water and air environments, comprehensive chemical substance measures)</b>					
<b>4.1 Actions to prevent environmental accidents</b>					
Civil Engineering and Building Construction	Augment environmental site visits Note: Visits to the civil engineering and building construction departments of branch offices	(%)	Civil Engineering: 60% Building Construction: 60% Proportion of visits compared to total sites in operation	Civil Engineering: 73% Building Construction: 65%	○ ○
<b>5. Actions to promote environmental awareness, actions to contribute to the environment and society</b>					
<b>5.1 Promote environmental awareness</b>					
Shared	Establish and promote Environment Month activities (participation rate)	(%)	Work sites: 85%	Work sites: 80%	△
Shared	Promote environmental initiatives through environmental and eco-site visits	(activities)	30 or more	40	○
<b>5.2 Enhance actions to contribute to the environment and society</b>					
Shared	Promote more robust actions that contribute to the environment and society Take actions to contribute to the environment and society	(activities)	Civil Engineering: 3 per work site Building Construction: 3 per work site Offices: 80 per year	Civil Engineering: 4.0 per work site Building Construction: 3.5 per work site Offices: 96 per year	○

(Assessment) ○: met or exceeded target. △: somewhat below target. ×: far below target (less than 70% achievement).

## 5. Environmental Protection Activity Data

Hazama Ando collects and analyzes environmental protection activity data with the objective of efficiently pursuing actions to protect the environment and disclose information externally.

### Data Framework

Collection period ▶ April 1, 2021–March 31, 2022      Scope of data ▶ Head office, all domestic branches, three Group companies

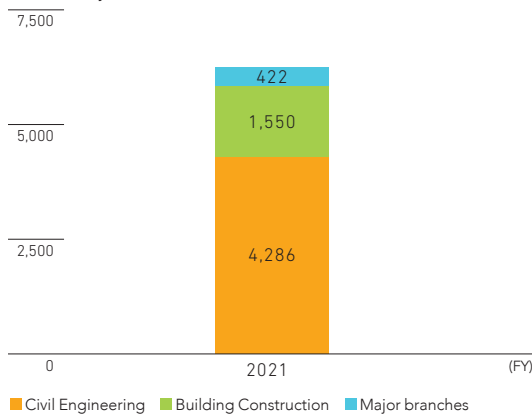
### Environmental Protection Costs

(Millions of yen)

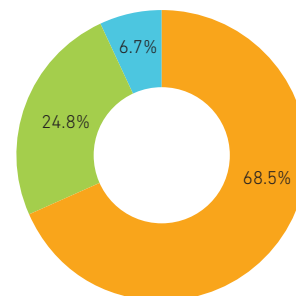
Cost category	Main activity	Fiscal 2021
Costs within business areas		5,716
① Pollution prevention costs	Pollution prevention measures at work sites (air, water, and soil pollution; prevention of noise, vibrations, etc.)	1,988
② Global environmental protection costs	Global warming prevention measures, energy conservation, alternative materials for tropical-wood formworks, etc.	59
③ Resource recycling costs	Containing generation of construction by-products, reuse, proper disposal, etc.	3,669
Upstream, downstream costs	Environmentally friendly designs and technical proposals, green purchasing (amount of increase)	43
Management activity costs	Regular EMS review fees; review personnel costs; environmental disclosure; environmental PR: environmental impact monitoring (survey, measurement costs); environmental education, study groups; cleanup and greening around work sites	208
R&D costs	R&D of environmental technologies	259
Social activity costs	Cooperation with community environmental protection activities, etc.	2
Environmental damage costs	Soil remediation, repair of environs, emergency response preparedness, etc.	30
<b>Total environmental protection costs</b>		<b>6,258</b>
Completed construction	Completed construction in Japan	296,056
	Ratio of Civil Engineering to Building Construction	42:58
Ratio to completed construction	Environmental protection costs/completed construction	2.11%

Environmental protection costs (by type of construction work, major branches) (fiscal 2021)

(Millions of yen)

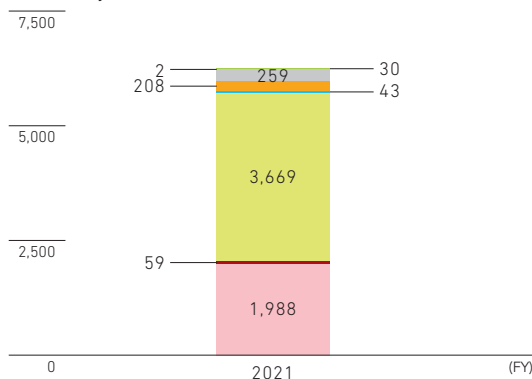


Breakdown of environmental protection costs by type of construction work, major branches (fiscal 2021)

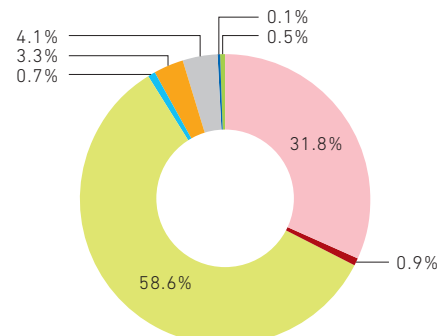


Environmental protection costs (by cost category) (fiscal 2021)

(Millions of yen)



Breakdown of environmental protection costs by cost category (fiscal 2021)



■ Pollution prevention costs
 ■ Global environmental protection costs
 ■ Resource recycling costs
 ■ Upstream, downstream costs
 ■ Management activity costs
 ■ R&D costs
 ■ Social activity costs
 ■ Environmental damage costs

### Environmental Protection Impacts

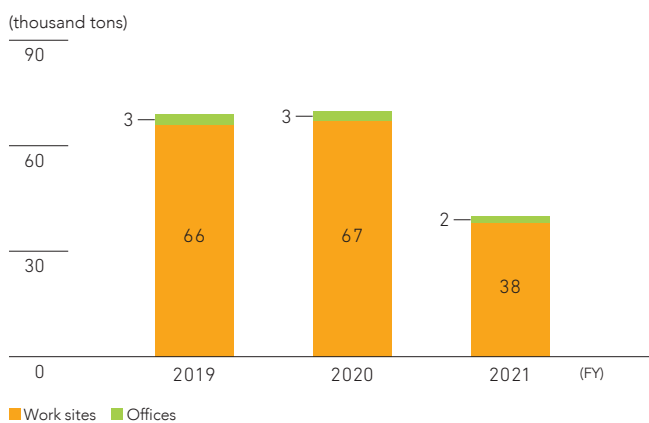
Category	Impact	Unit	Fiscal 2021	
Resources used (inputs)	Electric power consumption (work sites)	million kWh	30.46	
	Light oil usage (work sites)	thousand kl	14	
	Kerosene usage (work sites)	kl	309	
	GTL fuel usage* <sup>1</sup>	kl	22	
	Bunker fuel A usage (work sites)	kl	34	
	Copy paper purchased (offices, A4 base)	million sheets	9.09	
	Electric power consumption (offices)* <sup>2</sup>	million kWh	4.63	
	Tap water usage (offices)	thousand m <sup>3</sup>	13.5	
	Gas (utility gas, LPG) usage (offices)	thousand Nm <sup>3</sup>	474	
	Fuel (gasoline, light oil, kerosene, bunker oil) usage (offices)	kl	202	
	Steam, cold water usage (offices)	GJ	5,290	
Emissions	CO <sub>2</sub> emissions* <sup>3</sup>	Work sites	thousand tons	38
		Offices	thousand tons	2
		Total	thousand tons	40
	Soil generated by construction	thousand m <sup>3</sup>	668	
	Amount reused (rate)	thousand m <sup>3</sup>	180 (26.9%)	
	Construction waste	thousand tons	667	
	Amount recycled or reduced (rate)	thousand tons	618 (92.7%)	
	Final disposal amount (rate)	thousand tons	49 (7.3%)	
	Properly processed asbestos	tons	4,347	
Amount of valuable materials sold	tons	56,010		

\*1 GTL fuel is a diesel alternative fuel derived from natural gas.

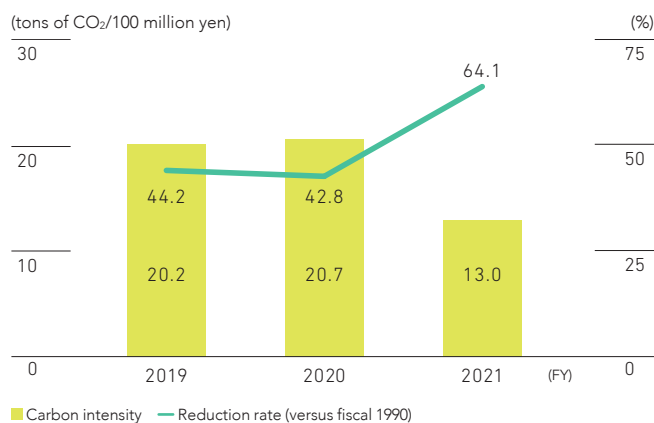
\*2 Includes experimental section of the Technical Research Institute

\*3 Calculated in accordance with the Act on Rationalizing Energy Use, the Act on Promotion of Global Warming Countermeasures, the Greenhouse Gas Protocol, etc.

#### CO<sub>2</sub> emissions



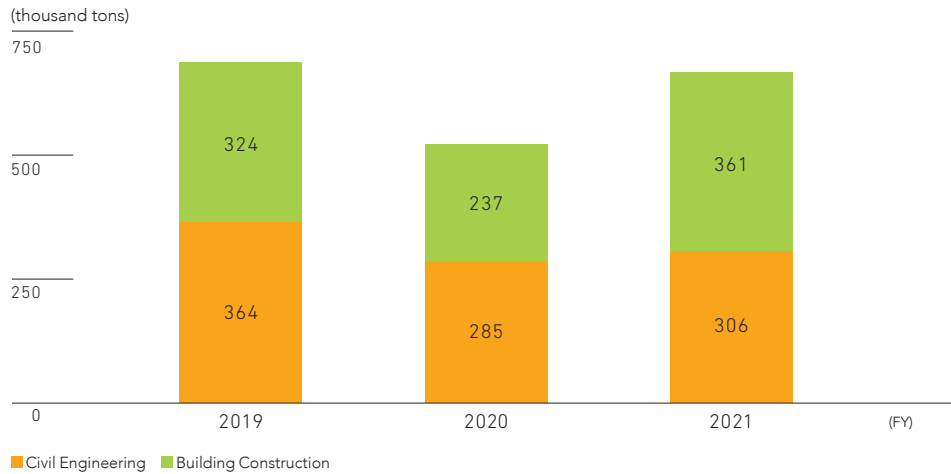
#### Carbon intensity



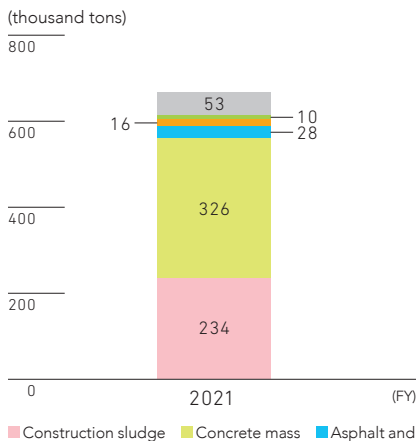
## 6. Construction Waste Disposal

The volume of construction waste generated varies depending on the scale, type, and amount of construction work. The Hazama Ando Group rigorously controls and appropriately manages waste by keeping clear track of the type and volume of waste generated at construction sites.

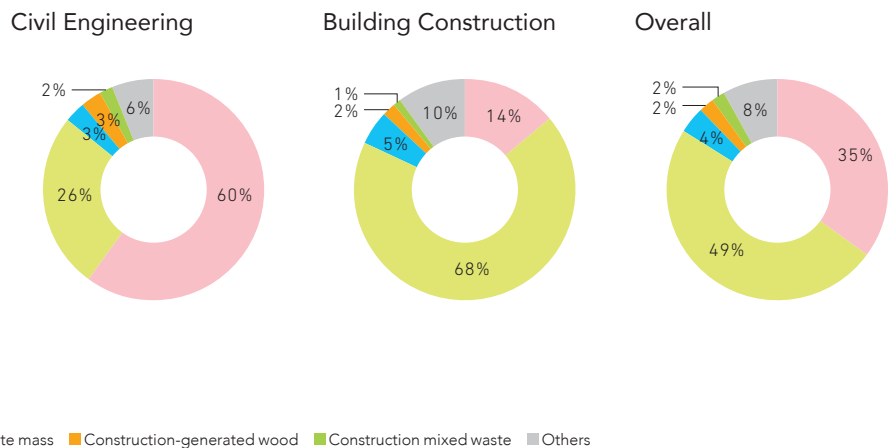
Total construction waste



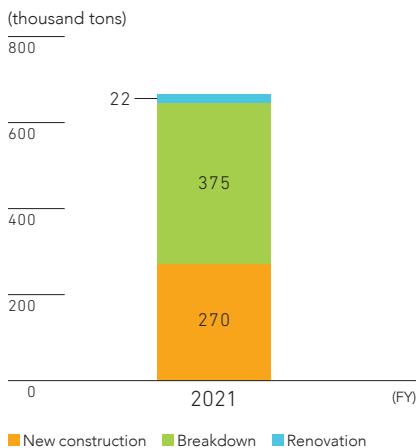
Emissions by type of waste (fiscal 2021)



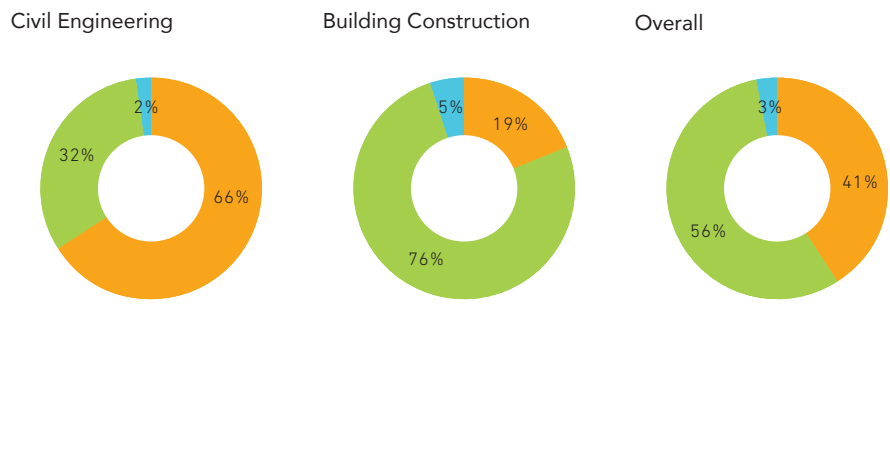
Breakdown of emissions by type of waste (fiscal 2021)



Emissions by type of construction (fiscal 2021)



Breakdown of emissions by type of construction (fiscal 2021)

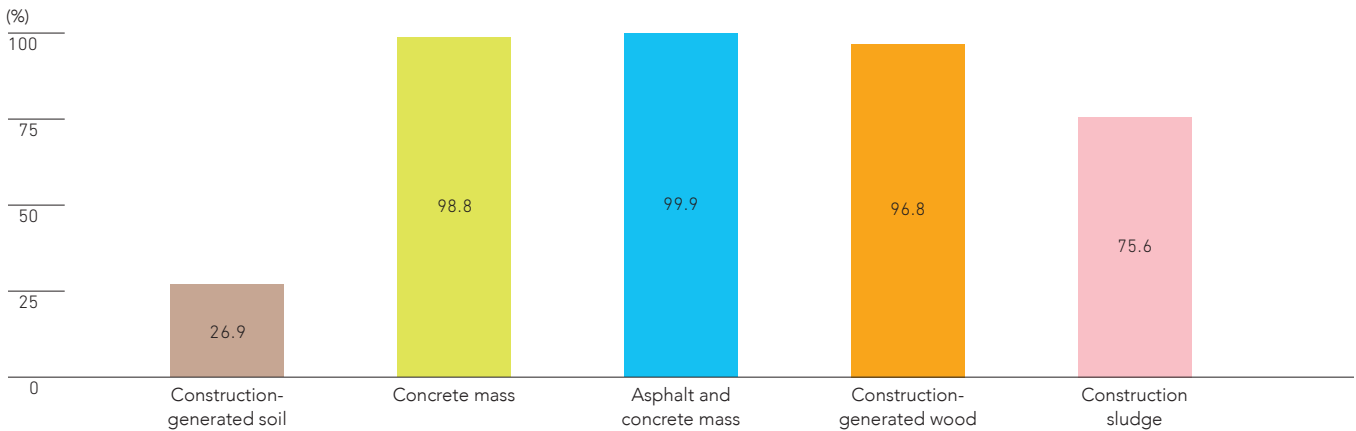




## 7. Using, Promoting the Use of Recycled Resources

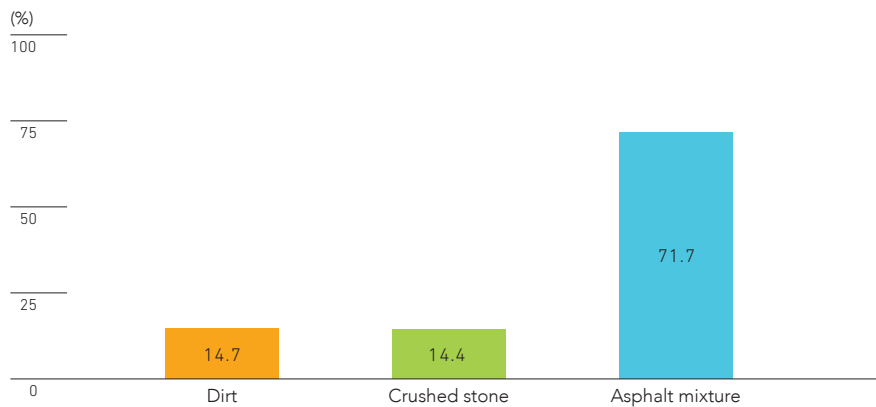
The Group is promoting the use of recycled resources in cooperation with partner companies to further broaden the effective use of resources.

Promotion of recycled resource use (fiscal 2021)



Note: Promotion of recycled resource use indicates reusing construction by-products on-site or transporting them to recycling facilities for use as recycled resources.

Recycled resource utilization rate (fiscal 2021)



### Recycling Under Wide-Area Recycling Designation System, etc.

The Group has formed tie-ups with various manufacturers and is recycling waste materials such as gypsum board and autoclaved lightweight aerated concrete (ALC) products generated at new construction sites. In the fiscal year ended March 2022, we consigned 119 tons of waste gypsum board directly to wide-area recycling designated contractors for recycling. We also turned over 55,894 tons of metal scrap, 50 tons of cardboard, and 65 tons of other materials to specialist recycling companies as valuable materials or exclusive recycling materials.

## 8. Green Procurement

Having established green procurement categories, the Group is procuring materials, equipment, and products and sourcing construction methods that have lower environmental impact.

### Green Procurement Results (Construction Divisions)

Category	Classification	Unit	Amount procured
			Fiscal 2021
Construction-generated soil		thousand m <sup>3</sup>	180.0
Processed soil recycled from construction sludge	●	thousand m <sup>3</sup>	33.0
Recycled hot asphalt mixture	●	thousand tons	10.0
Recycled aggregate, etc.	●	thousand m <sup>3</sup>	58.3
Recycled steel (electric arc furnace steel)		thousand tons	26.5
Recycled steel (electric arc furnace rebar)*		thousand tons	10.8
Blast furnace cement*	●	thousand tons	0.8
Coal ash cement*	●	thousand tons	0.0
Particle board, fiber board	●	thousand m <sup>2</sup>	21.2
Wood cement board	●	thousand m <sup>2</sup>	1.0
Tropical-wood alternative formwork (metal)		thousand m <sup>2</sup>	1.3
Tropical-wood alternative formwork (concrete)		thousand m <sup>2</sup>	0.0
Tropical-wood alternative formwork (other)		thousand m <sup>2</sup>	2.4
Effective low-quality soil utilization method	●	thousand m <sup>3</sup>	0.0
Construction sludge recycling method	●	thousand m <sup>3</sup>	0.0
Concrete mass recycling method	●	thousand m <sup>3</sup>	0.0
Slope greening method using logging timber or construction-generated soil	●	thousand m <sup>2</sup>	0.0
Permeable pavement	●	thousand m <sup>2</sup>	10.2
Rooftop greening*	●	thousand m <sup>2</sup>	0.8

\* Items included in Group-wide survey.

(Classification) ● : Government-designated procurement item Blank: Item recommended by Hazama Ando

### Green Purchased Office Supplies (Fiscal 2021)

	Copy paper (million sheets)	Business card blanks (thousand sheets)	Printed envelopes (thousand sheets)	Ring binders	Flat files
Total amount purchased	9.09	329	56	690	410
Green products	8.94	328	56	690	410
Green purchasing rate	98.3%	99.6%	100%	100%	100%

## Promoting sustainable management and taking full responsibility for corporate actions

### Overview of Fiscal 2021 Results

Our response to the material issue of promoting sustainable management and taking full responsibility for corporate actions entails PDCA activities based on three key CSR themes.

First, under the key theme of conducting fair and honest corporate activities, we are pursuing ongoing measures to enhance governance and ensure rigorous compliance, the unchanging premises upon which a company is built. In the fiscal year ended March 2022, we reviewed the social and environmental risks facing the Group and continued to reinforce business continuity planning, while working to fortify the framework in line with Japan's revised Corporate Governance Code. Under the theme of creating safe, comfortable working environments, in addition to continuously upgrading our safety framework in light of a 2018 fire accident, we are pursuing health management initiatives that take a post-pandemic context into account. Our efforts to respect diversity and human rights, including empowering women in the workplace and drawing on international human resources, are also bearing steady fruit.

A robust response to this material issue necessitates collaboration with everyone associated with our business. Under the key theme of engaging in dialogue with stakeholders, we are reaching out to all of our stakeholders and continue to step up efforts to engage and collaborate with them to achieve Goals 3, 5, and 8 of the SDGs, the core SDGs linked with this material issue.





**1 Activity Highlights**

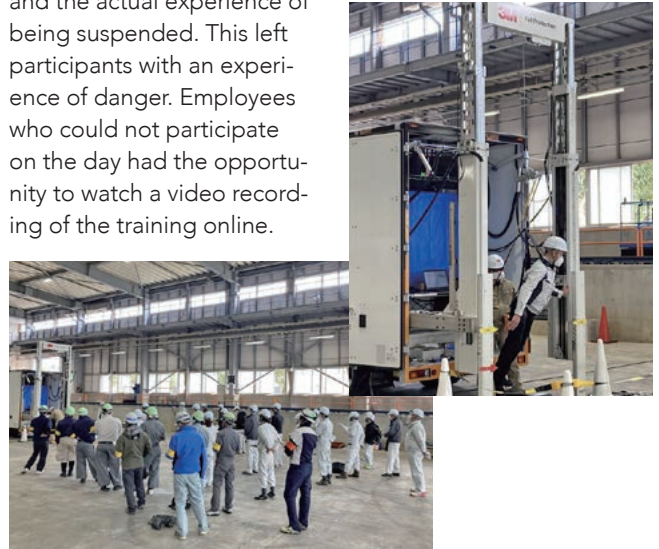
**Standardized Nationwide Safety and Quality Training for Young Employees in the First Five Years**

We carried out standardized nationwide safety and quality training for young employees up to their fifth year in the Group. To bolster cooperation with the Hazama Ando Cooperative Association, every year we typically invite the participation of employees from major partner companies in joint training sessions. In the fiscal year ended March 2022, though, given the resurgence of COVID-19 cases throughout the year, younger employees of Hazama Ando underwent online training from their computers while staff at partner companies underwent separate training using video recordings of the online training. Since only younger employees of Hazama Ando received training in fiscal 2020 due to the pandemic, this was the first time in two years that employees of partner companies could also participate.

In addition to classroom lectures to convey the latest health and safety management initiatives implemented every year by the Group, training focused on explanations and drills based on the manual that the Group drafted in January 2020 to prevent falls involving pile drivers and cranes. We also carried out thorough instruction for younger employees and employees of partner companies on measures to prevent heavy machinery falls, which could lead to public disasters or other incidents.

Taking advantage of a lull in COVID-19 cases at the end of the fiscal year ended March 2022, with the cooperation of

3M Japan Ltd., we carried out safety training in a hybrid face-to-face and online format. The program included hands-on safety education on the proper use of fall-stopping equipment using full harnesses, required in principle for “work at height” under revised industrial safety and health regulations in Japan, as well as fall testing using a dummy and the actual experience of being suspended. This left participants with an experience of danger. Employees who could not participate on the day had the opportunity to watch a video recording of the training online.



Hands-on safety education.

**2 Activity Highlights**

**Health Management Initiatives**

Recognizing that maintaining and improving the health of employees are indispensable to the Group’s sustainable growth, in July 2019 we issued a Health Declaration and launched numerous health management initiatives.

In the fiscal year ended March 2022, under the banner of establishing health management initiatives and sharing information inside and outside the company, we drafted a strategy map to graphically illustrate the management issues to be addressed in health management and the series of solutions required, and set related key performance indicators. These resources are guiding our measures to address health issues in the Group.

Specifically, we are working to develop a health management promotion framework and improve employee lifestyle habits, including exercise, diet, and smoking. We also took actions aimed at preventing the progression of illness, including actively reaching out to employees eligible for specific health guidance and conducting manager training

based on the results of group analysis of stress checks. We also took measures to prevent the spread of COVID-19, such as hosting workplace vaccination programs and allowing leave for employees to get vaccinated. Every fiscal year end, we also carry out a questionnaire to ascertain the extent to which health management initiatives are taking root. Employee assessments of the year’s measures inform the implementation plan for the following fiscal year.

As a result of our efforts, the Group’s ranking in the government-administered Health Management Survey has risen steadily, from the top 60%–70% in the fiscal year ended March 2019, before the Health Declaration, to the top 30% in the fiscal year ended March 2022. As we pursue health management initiatives going forward, we will target further improvements through measures already in place while putting our energy into actions focused on improving mental and physical health literacy and boosting employee productivity.

A workforce comprised of a growing number of physically and mentally fit employees capable of working energetically naturally revitalizes the entire organization as well as leading to the sustainable growth of the Group and enhanced corporate value. Therefore, we will foster an environment for health promotion so that employees can derive a greater sense of fulfillment from their work and enjoy well-being. We will focus in particular on the following three points.

- 1 Supporting improved lifestyle habits related to diet and exercise to mitigate health risks arising from metabolic syndrome and obesity.**
- 2 Supporting smoking awareness and encouraging employees to stop smoking to mitigate health risks associated with smoking.**
- 3 Reducing working hours, improving mental health, and supporting the creation of a comfortable workplace.**

Background of the health management strategy map.



# Conducting fair and honest corporate activities

## Policies and Approach

### Approach to Corporate Governance

The Group’s business activities are based on safe, secure, high-quality “good building operations.” Through these operations, we aim to contribute to the advancement of society and our customers and fulfill our mission and duty to society. To achieve this, we believe it is critical to maintain and improve a management system capable of responding swiftly to changes in the business environment, ensure the transparency and fairness of management supervision, and ensure rigorous compliance. To this end, we are working continuously to enhance our corporate governance.

**Pillars Supporting Our Initiatives**

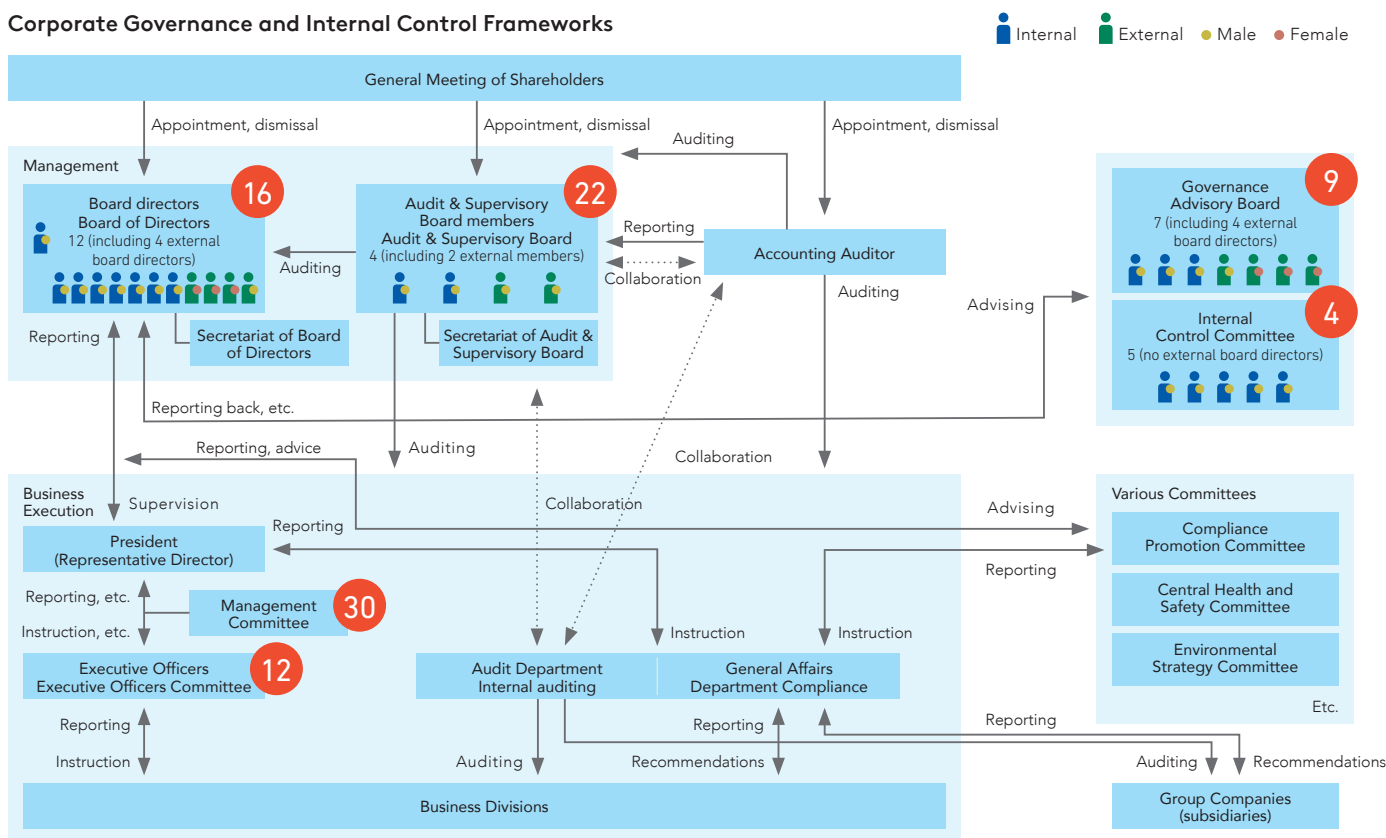
1. Corporate Governance      2. Compliance      3. Internal Control and Risk Management

## Pillars Supporting Our Initiatives 1: Corporate Governance

To ensure more robust corporate governance, the Group makes a clear distinction between the Board of Directors and board directors as having decision-making and business execution supervisory functions, and the Management Com-

mittee, executive officers, and Executive Officers Committee as having a business execution function. We also established the Governance Advisory Board and the Internal Control Committee as advisory bodies to the Board of Directors.

### Corporate Governance and Internal Control Frameworks



Note: ● The red circles show the number of meetings held in the fiscal year ended March 2022

## Management independence, diversity and transparency

As of June 29, 2022, the Board of Directors had 12 members (including four external board directors, three of whom were women), consisting of executive and non-executive directors. External board directors, who are non-executive directors, play roles such as supervising and giving advice to manage-

ment based on their experience and insight. The Board of Directors meets monthly to make decisions on important business matters and supervise business execution.

The Group established the Governance Advisory Board, a voluntary advisory board, to ensure the fairness, transpar-



ency, and objectivity of decisions made by the Board of Directors regarding the nomination and compensation of directors and other matters. The committee is chaired by an external board director, with a majority of members also external board directors. Its role is to advise the Board, resolve matters stipulated by the bylaws, and report the

### Management Efficiency

The Group makes a clear distinction between the Board of Directors and board directors as having decision-making and business execution supervisory functions, and the Management Committee, executive officers, and Executive Officers Committee as having a business execution function. At the same time, we have put in place Regulations on Job Responsibilities and Authority and Regulations on Decision-Making, to clarify the responsibilities and scope of authority

### Audit Framework

As of June 29, 2022, the Audit & Supervisory Board consisted of four members, including two external members. Audit & Supervisory Board members work closely with the internal Audit Department, attend meetings of the Board of Directors

results of deliberations to the Board as necessary. Nine committee meetings were held throughout the fiscal year ended March 2022, taking up matters including the appointment and dismissal of board directors as well as executive personnel decisions and compensation related to the new operating framework, and reporting the results to the Board.

of personnel in charge of business execution and achieve faster decision-making and more efficient management.

The Management Committee deliberates on management policies and key matters related to business execution, and strives to facilitate livelier, more efficient deliberations at meetings of the Board of Directors. The committee held 30 meetings in the fiscal year ended March 2022.

and other important meetings, receive reports and explanations on the execution of job functions from directors and employees, and review key documents, as well as auditing the head office and other main offices and Group companies.

## Pillars Supporting Our Initiatives 2: Compliance

### Internal Compliance Promotion Framework

We established the Compliance Promotion Committee, chaired by an external board director, to act as a deliberative and advisory body to ensure fair and transparent business operations based on the consistent policies of the Hazama Ando Group. We are also setting up a Compliance Promotion Office, made up of division directors and others, whose chief responsibility will be promotion planning. We are also assigning compliance officers and staff to each division and major Group company to effectively implement

various promotion activities.

Overseas, we have set up and are operating a system to specifically address bribery risk, and are working to raise awareness through educational activities in various regions. We continually check whether activities are being properly carried out. In the fiscal year ended March 2022, we offered an e-learning program for employees and local staff at all overseas offices to increase awareness of these risks.

### Implementation of Compliance Activities

The Group is continuously taking actions with the objective of ensuring that a range of compliance activities are carried out in all aspects of the workplace.

#### Compliance Education

Our efforts to educate employees are based on an annual plan designed to further increase compliance awareness among officers and employees. In the fiscal year ended March 2022, we continued to confirm and evaluate compliance points relevant to each workplace, and augmented measures such as asking each workplace to devise new ways of ensuring awareness of compliance points in their day-to-day operations. We also distributed e-mail newsletters, conducted video-based training and online testing, assessed compliance awareness, and conducted group education based on job position. During Compliance Promotion Month in November, we carried out a series of measures, including a message from top management, lectures by outside speakers, renewed confirmation of the code of conduct, group reading of the completely revised compli-

ance manual, and poster displays. In these ways, we are working to further boost compliance awareness.

#### Compliance Audit

We conduct compliance audits at the head office, all branches, and at Group companies. Audit results are reported to the President, the Board of Directors, the Compliance Promotion Committee, and the Audit & Supervisory Board. We are making the Group's compliance framework more effective through various measures, revising, adjusting, and improving the framework as needed.

#### Compliance Helpline

We have set up a Compliance Helpline for reporting and consultation across the entire Group, for the purpose of early identification and correction of compliance violations. In the fiscal year ended March 2022, there were no reports that would have a material impact on management. We actively ensure awareness of the reporting system, while placing top priority on protecting those who report violations.

## Pillars Supporting Our Initiatives 3: Internal Control and Risk Management

### Internal Control and Risk Management

We strive to maintain and operate relevant systems based on our internal control system policy.

We established the Internal Control Committee, an advisory body to the Board of Directors tasked with realizing a more effective, continually improving overall internal control system. The committee deliberates on the effectiveness and management status of the internal control system as a whole and measures to improve it, as well as the implementation, management, and revision of the risk management framework, and reports to the Board. We have also set up a Risk Management Subcommittee under the Internal Control

Committee. Based on the Group's risk management bylaws, this subcommittee identifies and evaluates key risks that require action by the whole Group and monitors the response of each division. The Internal Control Committee regularly verifies the subcommittee's findings.

In the fiscal year ended March 2022, the Internal Control Committee deliberated on evaluations of both the management of the internal control system and the effectiveness of the risk management system, and on priority risks considered by the Risk Management Subcommittee, reporting the results to the Board of Directors.

### Rigorous Information Security

Information security risks are increasing daily, as advances in ICT technology broaden the scope of application and cyberattacks grow more frequent and more sophisticated.

Because the Group's medium-term management plan calls for the greater use of ICT, we regard information security as a critical management issue and are bolstering measures to mitigate risk.

#### 1 Collecting and Sharing Information

Our information security measures are informed by external information, such as the Cybersecurity Management Guidelines of the Ministry of Economy, Trade and Industry. We also actively participate in various conferences related to information security.

In addition, twice a year we hold study sessions for all related divisions, bringing in outside specialists. In this way, we analyze the risks facing the Group and explore and implement response measures.

In particular, it is vital to consider the distinctive environment of the construction industry, including fixed-term projects and the need to conduct business at customer sites and interact with numerous partner companies and workers.

#### 2 Four Pillars Supporting Our Response Measures

##### Establishing rules

We establish information security rules pertaining to actions to be taken with regard to the framework, roles, and employees, and convey these to employees.

##### Centralizing asset management

We centrally manage assets related to information systems, and are steadily implementing response measures and laying the groundwork to respond swiftly in the event of an accident.

##### Physical response measures

We are systematically rolling out and updating various tools, seeking to reduce risks automatically.

##### Personnel response measures

We carry out ongoing education, check inventory, and conduct audits to reduce risks that are not capable of being stopped physically.

#### 3 Examples of Specific Initiatives

##### Supply chain response measures

Recognizing the importance of response measures that encompass partner companies, we conduct ongoing educational activities, including for new onsite workers and education across the Group and partner companies during Japan's cybersecurity month.

##### Employee education

Using e-learning and educational videos, we revise content depending on the risk context. We also conduct regular, ongoing education for all employees.

##### Training for information security staff

We encourage staff to acquire IPA (Japanese information security agency) certification and train certified staff.

#### 4 Other Measures (Supporting Working from Home)

In particular, we view the threat of cyberattacks as a priority risk, and are working to reinforce physical and operational response measures.

### Business Continuity Plan Recertification and Ongoing Training

The Group has formulated a business continuity plan which assumes a Tokyo inland earthquake or massive Nankai Trough earthquake. The plan is based on four objectives: (1) ensuring the safety of life, (2) preventing secondary disasters, (3) supporting recovery of customers, and (4) helping the community. We obtained construction company disaster-ready business continuity certification from the Kanto Regional Development Bureau of the Ministry of Land, Infra-

structure, Transport and Tourism in October 2013 and from the Kinki Regional Development Bureau in April 2017. We have since continued to obtain recertification.

Japan has seen frequent natural disasters nationwide in recent years, which have grown more intense and more wide-ranging. We carried out training at all Group branches in Japan in November 2021, which assumed the occurrence of a large-scale local earthquake. Training included setting

up a response center, confirming the safety of personnel and construction sites, and ascertaining the extent of damage at important related entities. The business continuity plan proved effective. Going forward, we will continue to revise and improve the plan, anticipating large storms, floods, and epidemics, striving to reinforce the Group's comprehensive resilience.



Group training in fiscal 2021.

## Formulation of a Procurement Policy

The Group's business activities depend on collaboration with partners. We recognize that engaging in procurement activities that align with our corporate social responsibility (CSR) necessitates actions up and down the supply chain. We have formulated a Procurement Policy and are working with partners to promote CSR procurement.

### Procurement Policy

#### 1. Compliance with laws, prevention of corruption, elimination of antisocial forces

We will comply with all relevant laws and regulations, international rules, internal rules, and social norms, and conduct sound procurement. We will eliminate all forms of bribery and corruption, while taking a resolute stance against antisocial forces that threaten the order and security of civil society, and will sever all relationships with such forces.

#### 2. Implementation of fair and honest procurement

When choosing business partners, we will evaluate each candidate comprehensively and fairly and make honest choices, considering factors such as quality, safety, price, delivery date, and technical capabilities.

#### 3. Respect for basic human rights and consideration for occupational health and safety

We will respect basic human rights, including eliminating child labor, forced labor, and other unfair labor practices as well as various types of discrimination and harassment. We will conduct procurement that is sensitive to working environments and health and safety.

#### 4. Consideration for the environment

In accordance with the Environmental Policy of Hazama Ando, we will procure materials that contribute to conservation of the environment and reduction of environmental impact.

#### 5. Maintaining, improving quality and ensuring safety

To realize safe, secure, high-quality "good building operations," which are the basis of the Group's business activities, we will engage in procurement based on the ability to maintain and improve the quality of the buildings, services, and other products we provide and ensure safety.

#### 6. Contribution to local communities

Fully aware that companies are members of society, we will pursue procurement activities that contribute to the development of local communities and local economies together with our partners.

#### 7. Appropriate management of information and intellectual property

We will appropriately manage and protect confidential information, personal information, and customer information obtained through our procurement activities. We will also appropriately manage and use intellectual property held by the Group, without illegally obtaining, using, or infringing the intellectual property of third parties, including patents, utility models, designs, or trademarks.

#### 8. Building good relationships with business partners and mutual flourishing

Through our procurement activities, we will deepen mutual understanding with our business partners and strive to build good relationships. We will work together with partners to hone technical capabilities and develop human resources, aiming for the sustainable enhancement of corporate value.

# Creating safe, comfortable working environments



Our top priority is on ensuring the health and safety of our employees. In addition to complying with all relevant laws and regulations, we strive to cultivate working environments that ensure the safety and health of our employees as well as maintain their comfort.

## Policies and Approach

### Health and Safety Policy and Promotion Measures

The Group’s health and safety policy of “putting safety above all” values every human life. Based on this policy, we are taking ongoing actions to ensure that all of our people, including employees and workers on site, understand the significance of this policy and work together to build an accident-free Hazama Ando.

#### Health and Safety Policy

Putting safety above all

#### Health and Safety Slogan

Point-out and call-out safety confirmation  
Follow the rules and work safely  
“Check”

#### Health and Safety Promotion Measures in Fiscal 2021

- 1 Better safety management through an occupational health and safety management system
- 2 Rigorous safety education
- 3 Prevention of public disasters
- 4 Addressing frequently occurring accidents
- 5 Thorough health management
- 6 Greater cooperation with the Hazama Ando Cooperative Association
- 7 Measures in the event of disaster

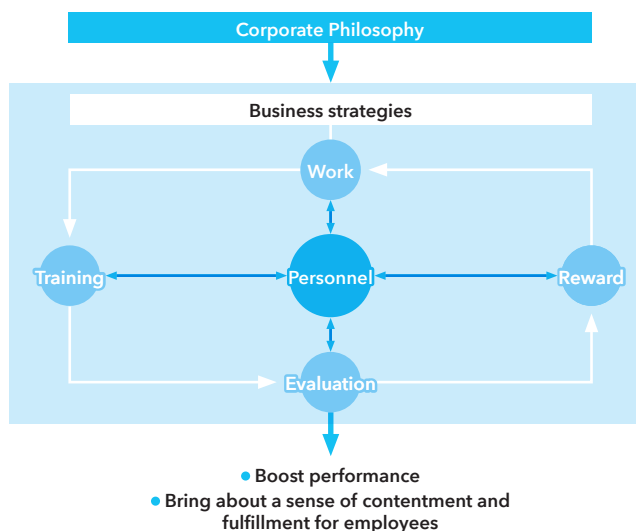
### Approach to Human Rights Awareness

In the course of respecting the basic human rights guaranteed to all people and fulfilling our corporate

social responsibilities, we are engaged in concrete activities to address a range of human rights issues, including social discrimination.

### Approach to Personnel

Grounded in the Corporate Philosophy, the guiding concept behind our HR systems is a personnel-centered cycle extending from work to training, evaluation, and reward. Through this cycle, we aim to foster employee fulfillment and motivation, boost performance, and bring about a sense of contentment for employees.



### Pillars Supporting Our Initiatives and Promotion Framework

#### 1. Occupational Health and Safety

The Group has built a framework to ensure that our health and safety policies are carried out. Under the supervision of the Safety, Quality and Environment Division and the Construction Division, we have formulated 10 Safety Steps to Avoid Repetitive Accidents as well as Hazama Ando Safety Rules, for all employees to observe. In line with these guidelines, we are working to make health and safety a part of the daily routine at all branches and work sites, as well as pursuing educational activities and other measures to further instill a safety culture.

#### 2. Utilization and Training of Human Resources

Hazama Ando’s human resources ideal is grounded in the concept that “building operations also build up people.” We have developed personnel training programs based on this concept. In addition to daily on-the-job training at each workplace, we offer employees an array of training options, such as group training based on managerial level and occupation. Participation in these programs is also reflected in the personnel evaluation system, and informs the appropriate use of human resources.

#### 3. Respect for Human Rights

We strive to ensure that the human rights of all officers and employees and everyone we come into contact with through our business are thoroughly respected. Supported administratively by the Personnel Affairs Department, the Human Rights Awareness Committee, an organization that spans the Group, maintains a harassment consultation desk and carries out various human rights awareness activities. Should a human rights violation be suspected, we will respond promptly while protecting the rights of the person seeking consultation.

## Pillars Supporting Our Initiatives 1: Occupational Health and Safety

### Efforts to Eliminate Repetitive Accidents

In the construction industry, many work-related accidents are repetitive in nature. The Group has compiled case studies of past accidents and established 10 Safety Steps to Avoid Repetitive Accidents, which we update every year. We are implementing these measures in construction projects both in Japan and overseas.

We are offering broader opportunities for safety training. In addition to conventional training where employees gather in a conference room, we offer web conferencing-based

#### 10 Safety Steps to Avoid Repetitive Accidents

1. Prevention of accidents due to falls
2. Prevention of accidents involving floor and wall openings
3. Prevention of accidents due to dropping of suspended loads or toppling during lifting
4. Prevention of accidents caused by contact with heavy machinery
5. Prevention of accidents due to fire use
6. Prevention of accidents through appropriate worker assignments based on sound health management
7. Prevention of accidents due to handling of high-pressure, high-output equipment or general equipment
8. Prevention of third-party or public disasters
9. Prevention of accidents due to slope collapse or shaft wall collapse
10. Prevention of accidents involving scaffolding platforms

training remotely. Also, aside from video training materials, we use the large-scale digital signage screens at work sites to show cloud-based materials on Group safety rules and heat stroke prevention videos. Furthermore, we have introduced virtual reality-based learning that draws on actual dangerous experiences. By having workers, wearing virtual reality goggles, undergo simulations of various accidents, we help them to know the fear of the dangers involved to sharpen their ability to foresee potential accidents.



Virtual reality scene of a fall experienced while dismantling scaffolding.



Virtual reality goggles.

### Measures to Prevent Recurrence of Fire Accidents

Following a large fire accident which resulted in numerous casualties at a construction site in Tama, western Tokyo, in July 2018, we renewed our commitment to the principle of the Group's health and safety policy—"putting safety above all"—and our conviction that safety that protects human life and health must take precedence over processes, costs, or any other consideration. To thoroughly instill this commitment afresh throughout the Group, we have directed all officers and employees to ensure that recurrence prevention measures are implemented. In terms of specific prevention measures, we are working to eliminate any situation at work sites where a fire could break out and revising a range of safety rules, such as prohibiting the use of fire around combustible materials.

Moreover, to ensure that no officer or employee ever forgets the fire accident that occurred and to inculcate a strong resolve to never cause another accident or fire, as well as to pass on the vivid memory of the accident, in the fiscal year ended March 2022 we produced training videos and took steps to ensure that all officers and employees watched them. This will be an ongoing initiative.

We will take measures to prevent recurrence and thoroughly implement safety rules. We will also pursue ongoing improvements, steadily implementing a PDCA (Plan, Do, Check, Act) cycle for occupational health and safety management, and working with partner companies to further raise occupational health and safety standards, taking action to eliminate all accidents, not only fires.

## Pillars Supporting Our Initiatives 2: Utilization and Development of Human Resources

### Hazama Ando's HR Development: People and the Group Growing Together

Developing human resources is a key focus for the Group. In addition to core on-the-job training in the workplace, we also offer off-the-job training by means of group education depending on managerial level and specialty for each occupation, as well as "on-the-chance training," which means offering a wide range of job opportunities, including workplace rotations. We have for many years conducted training for new employees at the Technical Research Institute under the guidance of experienced in-house instructors. In the program, new employees themselves perform nearly all

construction tasks, such as raising scaffolding, ordering materials and equipment, and placing concrete.

In the fiscal year ended March 2022, we expanded the scope of employees and programs eligible for the career development support training introduced in the previous fiscal year as part of our job position-based training. We are taking other steps to further enhance HR development, including training for all Group officers and employees on the concept and importance of integrity, the most important quality and value the Hazama Ando Group can have.



### Major HR Development Measures in Fiscal 2021 (Group Training by Job Position)

Type of training	Objectives	Participants
New employee training	Learning basic business manners and attitudes toward work	New employees
Leadership training	Fostering leadership and subordinate guidance skills and learning time management	Young employees (third year)
Basic management training	Learning the basic theory and actions of managerial roles	Group leaders (from ninth year)
Career development support training	Supporting career advancement of female employees and networking among female employees	Female employees
Intermediate management training	Learning the theory of management that can harness organizational strength, time management as a leader, and diversity management	Assistant managers
Advanced management training	Developing individual management styles and learning organizational reform processes	Assistant directors

Note: The above excludes technical training.

### Taking Advantage of Diverse Human Resources

We are creating working environments where diverse human resources can draw on their individuality and enjoy their work regardless of nationality, gender, age, disability, or other difference.

In addition to realizing fair and open hiring practices, we have established a promotion system to reward employees who demonstrate stronger performance on the job.

For the foreign nationals we employ in Japan, we support their Japanese language learning and encourage networking with other foreign employees to help them demonstrate their full potential.

We also support a balance between work and home life.

We have introduced our own work-life balance support system and put out a child-rearing support guidebook and long-term care handbook to gain greater understanding of Group initiatives. Also, before maternity leave or before childcare leave for male employees, as well as before returning from leave, supervisors and HR staff meet with employees to coach them on the importance of balancing work and home life. At the same time, by gaining the buy-in of supervisors, we are not only making it easier for staff to take advantage of support systems but also helping to cultivate a workplace where employees can feel motivated and capable of growing after returning to work.

	Fiscal 2018	Fiscal 2019	Fiscal 2020	Fiscal 2021
Male employees taking childcare leave	6	9	8	17
Female employees taking childcare leave (percentage)	24 (100%)	32 (100%)	13 (100%)	15 (100%)
Returnees after childcare leave	9	19	9	16
Users of reduced working hour system	33	36	33	26
Job return applications	0	3	0	0
Employees rehired after retirement (percentage)	50 (90.9%)	60 (84.5%)	58 (90.6%)	52 (83.8%)
Foreign employees (excluding overseas hires)	33	51	54	50
Employees with disabilities (including special disabilities)	42 (24)	45 (23)	45 (22)	50 (22)
Average length of employment: male	19.2	19.4	18.9	18.8
Average length of employment: female	10.9	10.9	11.1	11.5
Percentage of full-time female employees (to all employees)	12.0%	12.7%	12.9%	13.3%
Percentage of women among new graduate hires (full-time)	17.0%	22.0%	9.6%	18.7%
Percentage of female managers	1.5%	1.5%	1.6%	1.7%

## Efforts to Promote Diversity

We are promoting diversity and inclusion, including the empowerment of women.

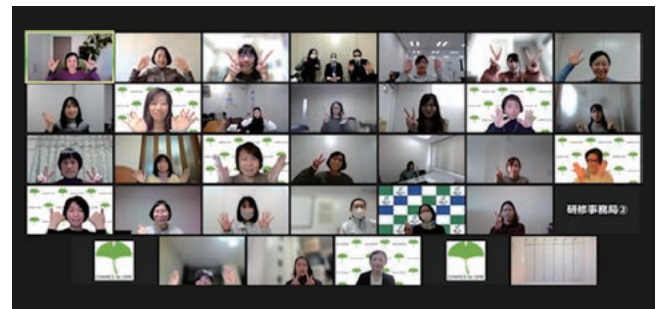
The Group began holding diversity management training in the fiscal year ended March 2018, targeting employees in management positions. The training teaches that people have “unconscious bias” and that it is important to be mindful of this. Training addresses not only the empowerment of women in the workplace but also content related to male employees taking childcare leave and ways of relating to younger employees. Participants learn that employee demands are growing increasingly diverse, and gain a greater understanding of how to manage a diverse staff. There is also a program to experience communication in a role-play format, which has received a great deal of positive feedback from participants.

In the fiscal year ended March 2022, we carried out an e-learning program for all employees on unconscious bias analysis, to give insight into gender bias tendencies in the workplace and encourage further diversity and inclusion. Going forward, we will continue to draw on analytical data seeking to know, recognize, and control unconscious bias.

We also revised the scope of the career development support training initiative, which had been limited to female career-track employees. Starting in the fiscal year ended March 2022, we opened the program to female employees

working in regional positions as well. While female employees account for a growing percentage of Group employees every year, they still make up less than 20% of the workforce. Through this program, the Group seeks to support women in overcoming the difficulties unique to being a minority. We will continue to refine the program going forward.

Recognizing their immense potential to flourish amid globalization, we are actively employing foreign personnel, including locally appointing staff in overseas operations. Our goal is to realize workplaces where every individual can leverage their abilities regardless of nationality. As part of this effort, we are conducting long-term training in Japan for the staff of overseas subsidiaries.



Career training session for female employees.

## Pillars Supporting Our Initiatives 3: Respect for Human Rights

### Thorough Respect for Human Rights

We have set up a Human Rights Awareness Committee to explore and determine annual action plans. We have put in place a framework that encompasses group companies, such as setting up a consultation desk to enable prompt action should a human rights issue arise.

Harassment prevention has been a priority issue in recent years. We are conducting ongoing education by means of group training based on job position, video e-learning for all officers and employees including those of group companies, and online tests.

Furthermore, in the fiscal year ended March 2021, the

Group formulated a Harassment Prevention Declaration based on the recognition that harassment in the workplace is a violation of human rights which degrades the workplace environment. When the Declaration was released, the president sent a message to all Group officers and employees expressing his strong determination to eliminate all forms of harassment.

We have also taken steps to ensure completely fair hiring practices and called for employees to submit human rights slogans (441 slogans were submitted in fiscal 2020), and are active in various organizations.

#### Harassment Prevention Declaration

- The Hazama Ando Group will never tolerate harassment in the workplace.
- We have a harassment consultation desk. We will protect privacy and deal with matters promptly and fairly.
- We will not treat disadvantageously persons seeking consultation about harassment or persons who cooperate with fact-finding.



# Engaging in dialogue with stakeholders

## Disclosure to Investors

The Group holds results briefings for analysts and institutional investors twice a year, following second quarter results and full-year results. Explanations directly from top management cover Group performance, the current situation, and forward-looking management strategies. Briefings materials can be viewed on the Group's website. In the fiscal year ended 2022, to prevent COVID-19 infection, both briefings were held by online video conference, but these included as many participants as prior years.

At the same time, based on the disclosure standards of the Tokyo Stock Exchange, we file disclosure information on the Timely Disclosure Information Transmission System (TDnet) and post it on the IR Library page of the corporate website.

We are working to enhance our English-language disclosure to provide overseas investors with information in a timely manner. In the fiscal year ended March 2022, in addition to the timely disclosure of financial results in English, we proactively disclosed non-financial information in forums such as our Corporate Report, Sustainability Report, and climate change-related disclosures based on the TCFD Recommendations.

With the objective of contributing to the fairness and soundness of the financial instruments market, to disclose material company information to all stakeholders promptly, accurately, and fairly, we have established internal guidelines concerning timely disclosure and the management of insider information, establishing and disseminating rules throughout the Group.



Results briefing (online).

## Sharing Technology and R&D Achievements: Taking Part in Exhibitions Nationwide

Hazama Ando actively participates in exhibitions throughout the country to showcase a range of technologies in both the civil engineering and building construction fields. Our exhibits feature technologies incorporating ICT and AI that improve productivity, safety, and the quality of buildings through the digital transformation of construction techniques; technologies for responding to heavy rains, earthquakes, and other natural disasters that have become increasingly frequent in recent years; and technologies to

boost energy efficiency in buildings.

As in previous years, we set up booths mainly at exhibitions held by various regional development bureaus in Japan. We also took part in events that drew exhibitors and visitors from outside the construction sector, such as the Renewable Energy 2022 exhibition and various Earthquake Technology Expos. In this way, we are actively gaining greater understanding of our initiatives while exchanging technological knowledge with people in a range of fields.

Date	Exhibition	Organizer	Venue
June 2021	Engineering Exhibition Tohoku '21	Engineering Exhibition Tohoku Planning Committee	Miyagi
June 2021	2021 Tohoku Region Development Bureau Business Presentation	Ministry of Land, Infrastructure, Transport and Tourism Tohoku Region Development Bureau	Miyagi
August 2021	8th Earthquake Technology Expo Osaka	Earthquake Technology Expo Osaka Planning Committee	Osaka
September 2021	Construction Technology Workshop 2021	Japan Federation of Construction Contractors Chubu Branch	Aichi
September 2021	Earthquake Technology Expo in Sendai	Earthquake Technology Expo Planning Committee	Online
October 2021	Highway Technology Fair 2021	Express Highway Research Foundation of Japan	Tokyo
October 2021	WOODRISE 2021 KYOTO	Japan International Association for the Industry of Building and Housing	Kyoto
October 2021	Construction Fair Hokuriku	Hokuriku Regional Construction Business Promotion Council	Niigata
October 2021	Kyushu Construction Technology Forum 2021	Kyushu Construction Technology Forum Planning Committee	Fukuoka
October 2021	Construction Technology Exhibition 2021 Kinki	Nikkan Kensetsu Kogyo Shimbun, Kinki Construction Association	Osaka
November 2021	2021 Chugoku Regional Construction Technology Development Exchange	Chugoku Regional Construction Technology Development Exchange Planning Committee	Online
November 2021	Construction Technology Forum 2021 in Chugoku	Construction Technology Forum Planning Committee	Online
November 2021	Construction Technology Expo 2021 Kanto	The Nikkan Kensetsu Kogyo Shinbun, Ltd. (Daily Engineering & Construction News)	Tokyo
November 2021	Construction Fair Shikoku 2021 in Tokushima	Shikoku Construction Public Relations Council	Tokushima
November 2021	Construction Technology Pavilion Exhibition and Technology Presentation	Kanto Technical and Engineering Office, Ministry of Land, Infrastructure, Transport and Tourism Kanto Region Development Bureau	Online
December 2021	JAPAN BUILD 2021 Tokyo	RX Japan Ltd.	Tokyo
December 2021	Construction Technology Fair 2021 in Chubu	Construction Technology Fair in Chubu Branch Steering Committee	Nagoya
January 2022	Renewable Energy 2022	Japan Council for Renewable Energy	Tokyo
February 2022	26th Earthquake Technology Expo Yokohama	Earthquake Technology Expo Planning Committee	Kanagawa

### Hazama Ando Foundation Initiatives

Desiring to offer ongoing encouragement for ambitious activities related to securing and training workers for specialist contractors, we established the Hazama Ando Foundation in April 2020. In its second year, the Foundation continued to subsidize recruitment and training activities, having set up a fund to support the PR activities of specialist contractors and a fund to support training of young construction technicians and skilled workers.

At one company that received a subsidy, after launching a review of training for new and younger employees, the president decided to appoint a new full-time education and recruitment manager and develop a robust follow-up framework. This has led to better retention and growth of new and younger employees there. Starting in the fiscal year ended March 2022, the Foundation is posting case studies on its website showcasing outstanding activities that serve as a model for other companies.

To contribute to advancement in the construction industry and the sustainable growth of the Group, we will seek through the Foundation's activities to support the human

resource development needed to carry the future of the construction industry.



Subsidy case study: Younger employees give a presentation on their training results.

### Collaboration with Hazama Ando Cooperative Association

The goals of the Hazama Ando Cooperative Association are to strive to put health and safety actions at the heart of construction, improve construction quality and technology, and, at the same time, pursue the mutual flourishing of the Group and association members. In addition to its head office, the association has 11 branches nationwide. Its roughly 1,400 member companies, who make up the core of the Group's construction operations, are engaged in various activities.

Particularly with regard to safety, under Hazama Ando's health and safety policy of "putting safety above all," the Group and the association together carry out safety activities on a daily basis. Every June, we also jointly sponsor a nationwide Safety Promotion Rally, to renew our efforts to further improve health and safety management standards and eliminate accidents.

The entire construction industry in Japan is working to support the career advancement of construction workers. Together with the association, the Group is pursuing initiatives such as supporting registration of business operators and skilled workers. In addition, we regularly exchange

information and opinions with each association branch to implement a system of eight or more closures in four weeks, a key part of working style reforms. In this way, we are further advancing and gaining understanding of Group initiatives while reflecting the viewpoints of association members in Group measures.



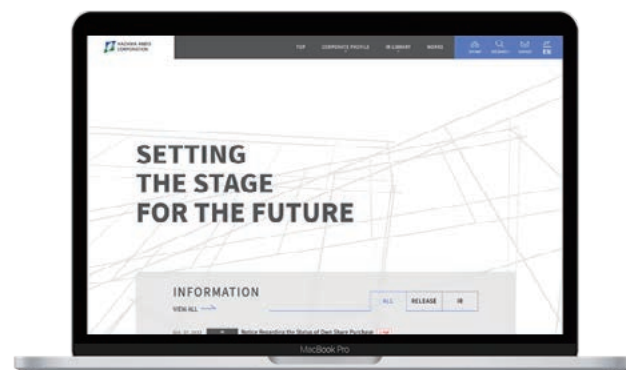
Nationwide Safety Promotion Rally (June 2022).

### Website Renewal

We completely overhauled the corporate website in December 2021.

The new website's slogan is "Setting the Stage for the Future." Our goal was to make the site easier for stakeholders to use. Changes included renewing the top page, redesigning the site navigation and improving accessibility, and updating the technology and solutions page (in Japanese) and the works page.

We will continue to deliver the latest useful information to stakeholders through enhanced content and the ongoing renewal of the site.



Hazama Ando website.

<https://www.ad-hzm.co.jp/english/>