Civil Engineering

Business Policies

- 1 Focus on growth areas and new business areas
- 2 Advance innovation of production systems that use ICT

Enhance construction capabilities and expand the scale of business in collaboration with Group companies and companies that have

specialized skills

Strengths

3

- A corporate culture willing to take on challenges in developing new technologies and fields
- Extensive track record of projects that use advanced technology
- Comprehensive organizational capabilities founded on diverse human resources

Opportunities and Risks

- Changes in social needs and the market environment
- Expansion of the renewable energy market and the increase in the demand for infrastructure maintenance and renewal
- Shortage of workers due to decreasing number entering the construction industry
- Development and implementation of labor-saving technologies using ICT

Although the business environment in fiscal 2020 was severe as a result of restrictions on on-site activities due to the effects of COVID-19, the civil engineering department performed well and contributed to the achievement of Company-wide business targets. We would like to extend our sincere gratitude to everyone involved.

We expect the civil engineering market in Japan to remain firm until around 2030, due to factors such as implementation of measures by the Japanese government to raise the country's resilience against increasingly severe and frequent natural disasters and to bolster aging infrastructure, and accelerated expansion of wind power generation facility construction market toward the achievement of a carbon neutral society. Within the new Medium-Term Business Plan, not only will we strive to solidify our core base in construction operations, but we will also step up expansion of our business into new domains.

1. Focus on Growth Areas

As a pioneer in the development of next-generation infrastructure, we will expand aggressively into growth areas such as renewable energy and infrastructure upgrade. The Akita Port & Noshiro Port Offshore Wind Farm Projects, which began in February 2020, are in full swing, with the start of construction of the wind turbine foundations in April 2021. By engaging in design and construction of Japan's first commercial offshore wind power generation facilities, we have been able to gain invaluable hands-on experience and knowledge. Meanwhile, the self-elevating platform (SEP) vessel that we are building in collaboration with

Masayasu Kayano

Representative Director, Executive Vice President, General Manager, Civil Engineering Management Division, Responsible for International Civil Engineering Operations



Revenues (¥ billion) 366.5 334 7 301.0 288.0 285.0 (FY) 2017 2018 2019 2020 2021 **Construction Project Gross Profit and Gross Profit Margin** 21.2% (¥ billion) 19.0% 77 8 **15.5%** 15.1% 14.0% -0 57.1 51.9

10.3

43.0

2021 (Forecast)

Business Overview

Penta-Ocean Construction Co., Ltd. and Yorigami Maritime Construction Co., Ltd. will be completed on schedule in fiscal 2022. Possessing a large vessel capable of installing the largest wind turbines currently envisaged, combined with the strength of many team members with valuable experience working on the Akita Port and Noshiro Port projects, we are ready to respond to

2017 2018 2019 2020

(FY)

any demand in the expanding market. In infrastructure renewal, we are preparing for the application of the Smart Deck Slab Renewal System to the Anogawa Bridge deck slab replacement project on the Kan-etsu Expressway. Having conducted numerous trials and demonstrations, we now expect to be able to shorten the construction time to roughly one-sixth that of the conventional method, thus reducing the impact of traffic restrictions on the public. The innovative measurement technology utilizing optical fibers is now being adopted at more project sites for application in infrastructure maintenance.

Furthermore, apart from road renewal projects, we have also extensive experience in public-private partnership (PPP) projects, mainly for upgrading water purification plants. In order to respond to the wide range of infrastructure renewal and upgrading projects, we established a new organization dedicated to this task in April 2021. The new department will work together with the relevant subsidiary and affiliated companies within the Group. 2. Venturing into New Business Areas

Linder the new Medium Term Pusiness Areas

Under the new Medium-Term Business Plan, we will accelerate our efforts to take on the challenge of seeking business

opportunities in areas providing solutions to issues affecting society at large, such as by expanding the scope of investment and provision of services including management of infrastructure and making the eco-friendly concrete CO₂-SUICOM commercially available in the market. We believe that owning and operating infrastructure enables us to provide services that feature our technical strengths by quickly introducing the latest technologies in maintenance, repair and environmental management, and that our track record of applying these technologies will serve as a stepping stone for the creation of new businesses and revenue sources in the era of carbon neutrality and maintenance/renewal.

Looking overseas, in anticipation of medium- to long-term growth after the COVID-19 pandemic, we will focus on obtaining new contracts in Taiwan, Indonesia and other countries and regions in Southeast Asia as our key target regions. We will also focus on hiring and training local human resources, business alliances and capital participation with leading local companies in order to develop businesses rooted in local communities.

3. Further Innovation of Production Systems and the Future of Kajima's Civil Engineering

Since August 2020, A⁴CSEL, developed with the aim of dramatically improving construction safety and productivity, has been put to use in constructing the embankment of the Naruse Dam in Akita Prefecture. Employing as many as 23 units of automated heavy machinery operated by only four persons, A⁴CSEL has proven that such work can be performed very efficiently. In fiscal 2021, the same system was used for disaster recovery work (Akadani No. 3 Check Dam) for the first time. Furthermore, we are working to expand its application to automated construction of mountain tunnels.

At Naruse Dam, we opened the KAJIMA DX LABO in October 2020, with the theme of the future of Kajima's civil engineering. Through presentation panels, dioramas, and augmented reality (AR) displays, visitors can experience our distinctive cutting-edge ICT, and go out on the observation deck to see unmanned heavy machinery constructing the dam embankment. We would like to make wide use of such public relations facilities to showcase the appeal of the construction industry for the younger generation.



Akita Port & Noshiro Port Offshore Wind Farm Projects (Above) SEP vessel in operation (Below) Panoramic view of the pre-assembly yard for wind turbine foundations

HIGHLIGHT

Joint Research with Japan Aerospace Exploration Agency (JAXA)

Since 2016, Kajima has been engaged in joint research with JAXA on the construction of a manned lunar base. There were concerns that a plan to remotely control heavy machinery on the Moon from the Earth would be difficult to implement because the communication delay caused by the distance between the two would significantly reduce work efficiency. As a solution to this problem, we introduced A⁴CSEL with the aim of improving efficiency, with the ultimate goal of constructing a base on the Moon by using both remote control and automated construction technologies. In March 2019, the basic operations of site grading, excavation, and soil covering under full automation were demonstrated, and in March 2021, the JAXA Sagamihara Campus was connected via public communication lines with the automated heavy machinery mobilized for land preparation works at the Tanegashima Space Center, located roughly 1,000 km away from the campus, to prove that efficient construction using remote control and automatic operation is achievable. A⁴CSEL technology will be brought into space.



Building Construction

Business Policies

- 1 Develop and advance next-generation construction systems
- 2 Provide valuable services that are trusted by society and customers
- 3 Build a management foundation capable of growth through collaboration among Group companies
- 4 Strengthening various efforts to achieve carbon neutrality

Strengths

- Collaboration with Group companies involved in upstream and downstream fields of the construction business
- A management foundation where domestic and overseas construction and real estate development businesses complement each other

Opportunities and Risks

- Changes in the market environment due to factors such as the COVID-19 pandemic and carbon neutrality
- Continued progress and diversification of social and customer needs for streamlining and improved efficiency
- Decrease in the number of skilled construction workers who will be the next-generation workforce
- Changes in the work environment due to the Act on the Arrangement of Related Acts to Promote Work Style Reform, to be applied to the construction industry from April 1, 2024

The market environment is expected to change drastically due to the impact of the COVID-19 pandemic and the Japanese government's declaration to achieve carbon neutrality by 2050. As a result, new and diverse social and customer needs are expected to emerge. We intend to respond to these needs based on our accumulated technological capabilities and expertise, while enhancing the sophistication of our proposals. To this end, we will further improve our productivity and promote a resilient organizational structure through collaboration with Group companies.

1. Results of the Previous Medium-Term Business Plan and Further Evolving Next-Generation Construction Systems

In the previous medium-term business plan, we aimed to improve business quality and productivity. We introduced our building construction total management system KTMS 2017, aimed at developing and applying smart construction, including the use of IT and robots for on-site work, and promoted Companywide reform of a series of project management methods. This was undertaken to strengthen front-loading before the start of construction and to thoroughly implement productivity improvement during construction. Our goal was to stabilize site operations and improve productivity through preventative management. By maintaining and visualizing the digital data from each project accumulated in the KTMS core system (PrePit,

Koichi Matsuzaki

Executive Vice President, General Manager, Building Construction Management Division





Business Overview



PitPat, PatCare and k-FAIB), information could be shared by the Head Office, branches and site offices. The basic framework was put in place during the previous medium-term business plan, and results have begun to emerge in business performance. We renamed the system KTMS 2020⁺¹ in fiscal 2021, with the aim of making more advanced use of the KTMS core system. This will enable us to provide services that more clearly respond to the diverse needs of customers. For example, in addition to the quantitative evaluation and analysis of projects based on accumulated data, the system will also enable virtual construction when construction is under way, as well as digital twins at the time of completion, using integrated BIM for design, construction, maintenance and management.

Three areas of smart construction technology are under development: robotics, remote management and digital technology. We are aiming for full-scale application of these technologies by fiscal 2024. They are already in operation at construction sites, and further improvements are being developed. We also continue to further develop technologies for skyscrapers and large-scale urban projects, and are applying our development results at construction sites, as well as implementing follow-up and improvements. In addition, we are promoting development and mutual use in cooperative areas through the establishment of consortiums within the industry.

2. Establishing Systems for New Growth Areas and Promising Fields

We will strengthen systems for proposing BCP solutions throughout the Group. In 2020, we started working to install our structural health monitoring system q-NAVIGATOR as standard equipment. Group company Engineering & Risk Services Corporation also develops and deploys disaster alert assessments (for events such as earthquakes and floods). In the future, we will build a system that facilitates upgrading of each Group company's BCP tools and propose solutions to address customer needs, and together with proposals for earthquake-resistant renovation work using our seismic damping and isolation technologies, we will provide new value and create long-term business opportunities.

In addition, we will actively participate in plans for the realization of smart cities and make proposals leveraging our relevant performance data to address the new needs of our customers.

3. Establishing a Management Foundation and Promoting ESG Measures

We will reduce CO₂ emissions from our construction sites to achieve carbon neutrality by 2050. This will involve analyzing the data collected by our Environmental Data Evaluation System (edes), which is now in operation at all sites, to promote activities that reduce CO₂ emissions.

Next, we will enhance our human resource development programs to balance productivity improvement and work-style reform. We have made the first 13 years of employment a priority training period, and in addition to conventional education programs, we have started construction of an education facility that utilizes practical experience to quickly train employees to make accurate judgments based on actual buildings and machinery. This facility is scheduled to begin operating in April 2023.

In addition, we will focus on efforts to solve the shortage of workers in the construction industry. We will begin with reform of the multilayer subcontracting structure, a long-standing issue in



(Above) Images of digital twin (left: virtual building; right: actual building) (Below) Otemachi One

the industry. We will share the issue with partner companies, with the goal of achieving a construction system that is limited in scope to secondary subcontractors, in principle. Actions to support partner companies will include the development of an incentive system for activities that enhance productivity, and the Kajima Partner College. Moreover, we have started introducing smartphones exclusively for use by workers on-site, in order to enhance efficiency and improve safety.

HIGHLIGHT

Digitalization of Design Based on Collaboration with Downstream Construction

In order to further improve productivity through the application of BIM to projects, we established a new Digital Design Department in the Architectural Design Division to oversee computational design and design BIM. Our goal is to enhance the sophistication of upstream design while promoting collaboration with downstream construction. By establishing design digitalization based on collaboration with construction, we provide consistent design-build capabilities.

In computational design, we are working to advance and optimize design through the use of programming and other methods, and by confirming various simulations. In design BIM, we are moving forward with integrated drawing production, which uses 3D and attribute data to combine information on architecture, structure, equipment and other components with conventional 2D drawings. Furthermore, we are working to achieve a precise and advanced linkage with construction BIM. By establishing digitalization at each stage of design, construction, operation and maintenance, we will enhance our ability to propose solutions that meet diversifying customer needs and issues.





Real Estate Development

Takahiko Tsukaguchi Executive Officer, General Manager, Real Estate Development Division



(Y billion)

Business Policies

- 1 Create quality assets that generate stable revenues
- Improve profitability by acquiring new real
 estate for sale and promoting short-term
- merchant development projects
- 3 Conduct business planning and diversify portfolio to address new social and customer needs
- 4 Expand profit opportunities by tapping the growth of private REITs

Strengths

- In-house businesses that focus on integrating construction technology from project inception to construction and commercialization
- Diverse business opportunities that leverage the Company's extensive information network
- Pursuit of investment efficiency through approaches integrating real estate and finance, including private REITs

Opportunities and Risks

- Take on the challenge of creating new sustainable communities designed to help resolve social issues
- Strengthening of operational management capabilities in cooperation with Group companies

Development Assets

Business Overview

Domestic Real Estate



Assets Breakdown (As of March 31, 2021)



Establish a Position as a Core Division and Help Improve Group Performance

The previous medium-term business plan called for expansion of the real estate development business as our third core business alongside civil engineering and building construction. The aim was to invest ¥160 billion over three years to grow earnings and increase domestic assets to approximately ¥300 billion.

In fiscal 2020, investment in projects in progress totaled approximately ¥90 billion. We completed and opened Haneda Innovation City (Phase I), Tokyo Portcity Takeshiba, and World Trade Center Building South Tower. We also began construction of the Hamamatsucho 2-Chome District Type 1 Urban Area Redevelopment Project and the Hilton Okinawa Miyakojima Resort. Furthermore, we acquired new projects including the Tokyo Institute of Technology Tamachi Campus Land Utilization Project, the Hakata-ku Nakasunakashima-machi Land Development Project and the Omiya Office Project. The regionally balanced portfolio of new projects includes six properties in Tokyo and five properties in major regional cities. The Real Estate Development Division invested a total of approximately ¥200 billion in the three years through 2020. As a result, division assets as of March 31, 2021 totaled approximately ¥310 billion, exceeding the previous mediumterm business plan target.

We launched the new Medium-Term Business Plan in fiscal 2021. We have a location strategy for business investment. In Tokyo, we will generate projects with a focus on locations with outstanding potential and locations that we expect to have enhanced potential in the future for reasons including urban renewal. We will also invest in central business districts in top-tier core regional cities to complement the Tokyo market.

Our marketing strategy involves generating projects in designated key strategic areas. These are areas where we can leverage Kajima's development expertise and customer network to resolve issues for customers or where we can aggressively participate in competitions for public real estate and redevelopment projects.

We will implement the following five business strategies. 1. Create quality assets that generate stable revenues We will steadily move existing projects forward and generate new projects to add approximately ¥110 billion in assets over three years. We will allocate investment in a mixture of real estate for lease, real estate for sale, and special purpose companies (SPCs) to balance asset growth and gain on sales.

2. Improve profitability by acquiring new real estate for sale and promoting short-term merchant development projects

We will complement stable earnings from lease assets with real estate sales involving short-term merchant development projects. Our goal is to establish an earnings structure for segment profit of ¥10 billion in three years. We will also pursue enhanced investment efficiency through capital-saving project schemes and appropriate asset replacement.

3. Expand profit opportunities by tapping the growth of private REITs

The private REIT that Kajima launched in fiscal 2018 had ¥48 billion in assets under management as of March 31, 2021, and is steadily growing toward its target of ¥80 billion in assets by fiscal 2023. We will expand profit opportunities for the Kajima Group from fee-based businesses by tapping the growth of private REITs.

4. Diversify portfolio

We will develop new profitable income-generating properties such as data centers and logistics facilities. Our goal is to start construction in fiscal 2023 after feasibility studies that include the use of our own land.

5. Conduct business planning that addresses new social and customer needs

We will also embrace user perspectives in product planning as follows:

- New office and housing plans that address the diversification
 of work styles brought on by COVID-19
- Development of smart buildings and cities in line with the progress of digitalization
- Development of environmentally responsible real estate guided by the SDGs and ESG



Upper left: World Trade Center Building South Tower Upper right: Hakata Connecta Middle right: Haneda Innovation City (Phase I) Bottom: Tokyo Institute of Technology Tamachi Campus Land Utilization Project (Bottom photo courtesy of the Group of NTT Urban Development Corporation, Kajima Corporation, East Japan Railway Company, and Tokyu Land Corporation)

Fiscal 2021 Fiscal 2022 Fiscal 2023 Project Name Hakata Connecta Office June 2021 September 2021 Hotel Grand Bach Tokyo Ginza Hotel Yokohama Gate Tower Office October 2021 Kudan Kaikan Reconstruction Office July 2022 Project Office and MM37 Tower (tentative name) January 2023 hotel Hilton Okinawa Miyakojima Hotel February 2023 Resort Haneda Innovation City (Phase II) Office June 2023 Park Tower Kachidoki South Residential August 2023 Yokohama City Hall District Office Fiscal 2025 Redevelopment Project Hamamatsucho 2-Chome Residential, District Type 1 Urban Area office and December 2026 Redevelopment Project commercial

Schedule for Development Projects in Japan

Note: Completion dates are subject to change.

Overseas **Operations**

Keisuke Koshijima

Representative Director, Executive Vice President, General Manager, Overseas Operations Division



Business Policies Strengths • Multi-dimensional global network based on organizations and businesses rooted in each country and region Real estate development business that leverages our Be the best in specific markets and 1 Group's comprehensive capabilities business domains **Opportunities and Risks** Create unique business opportunities 2 Diversifying revenue sources through Group collaboration · Capturing growth in Asia **Business Overview** Revenues **Ordinary Income Overseas Real Estate Development Business Assets** (¥ billion) (¥ billion) (¥ billion) 600 17.3 456.0 469.1 **489.1** 13.2 400 200

2018 2019 2020 2021 2022 2023

1. Multi-Dimensional Global Network

2018 2019 2020 2021 2022 2023

(FY)

(FY)

The Kajima Group currently has more than 100 overseas subsidiaries. They provide a wide range of services either independently or in collaboration with leading local partners in 18 countries and regions in North America, Asia, Europe and Oceania. Through these subsidiaries, we provide value-added services worldwide for our customers rolling out construction projects in multiple countries and regions. One characteristic of our overseas operations is that subsidiaries and local partners are not only intermittently connected when needed; they have expanded their spheres of business so that they overlap and interact with each other on a regular basis. The global network that we have today enables us to deploy our best resources and Group-wide expertise where needed, at any time.

In developed countries, we have been acquiring companies since the 2000s that have high market potential and corporate cultures, sizes and domains of business matching the needs of the Kajima Group. We welcome these companies to the Group as fellow members that share Kajima's corporate culture and values, which emphasize long-term trust and high-quality services. In newly industrializing countries, we have been building partnerships with local companies to expand our construction capabilities and roll out our real estate development business.

We will continue to expand our overseas business platforms. Our target for annual ordinary income from overseas Group companies is an increase of about ¥10 billion by fiscal 2023, the final year of the new Medium-Term Business Plan, compared

with fiscal 2020, the final year of the previous medium-term business plan.

(As of March 31) 2018 2019 2020 2021

2023 2026

Forecast) (Forecast) (Forec

2. Real Estate Development Business That Leverages Our Group's Comprehensive Capabilities

We operate construction and real estate development businesses with deep local roots as one of the few general contractordevelopers with integrated Group functions from design, construction, development and operation through to the sale of the projects. In the United States and Europe, we are developing distribution warehouses, demand for which is spurred by e-commerce, as well as rental housing and assisted senior housing, which are resilient to economic fluctuations. Meanwhile, in Southeast Asia, where urbanization is driving economic growth, we are building business platforms (business foundations) that will become established in each region, designed to fit the characteristics of each market. Projects here include hotel development and large-scale mixed-use redevelopment.

In fiscal 2020, the operation of hotels and commercial facilities in Southeast Asia was affected by stay-at-home orders and travel restrictions due to the COVID-19 pandemic. However, our performance was strong in distribution warehouse development business in Europe and the United States, which remained brisk due to the growing use of online shopping. The distribution warehouse development business creates synergies between the construction business and the real estate development business by reducing



Bourbon Logistics Center I (United States) CORE5 Industrial Partners LLC's distribution warehouse development project/Constructed by Kajima Building & Design Group, Inc.

construction risk with a highly competitive business model in which Group construction subsidiaries handle the construction work.

3. Capturing Growth in Asia

The key to success in both the construction and real estate development businesses in Asia is how best to capitalize on economic growth in the region. We expect growth to continue in the Asian market, where we plan to be a leading player by promoting the development of advanced technologies that benefit society. We have therefore begun construction of The GEAR (Kajima Lab for Global Engineering, Architecture and Real Estate), a strategic innovation center in Singapore that will be a hub for people, physical assets, money and information in Asia. Singapore is a market where the Group can deploy its technological capabilities, and we have built a good relationship with the Singaporean government through many years of dialogue. In addition to the Kajima Technical Research Institute Singapore Office (KaTRIS), which opened in Singapore in 2013, we will leverage our local advantage to promote open innovation in collaboration with the public and private sectors as well as academia. We plan to invest aggressively in startup ventures to establish innovative technologies that contribute to sustainability, a better quality of life and higher productivity. The results of these initiatives will become the basis for the business models we create to adapt to the mutually complementary relationships among the developed, emerging, and developing countries of Asia and to the characteristics of their supply chains, thereby identifying and developing new revenue sources.

Growth of the Distribution Warehouse Business in the United States (CORE5 Industrial Partners LLC)





Wink Hotel Saigon Centre (Vietnam)

HIGHLIGHT

The GEAR: Leveraging Technology to Further Penetrate the Asian Market

The Kajima Group is constructing The GEAR in Singapore as a hub for open innovation in Southeast Asia. This project involves the construction and operation of a building with a total floor area of approximately 13,000 m² that combines offices and research facilities in Changi Business Park. KaTRIS will have a laboratory at The GEAR to research and develop advanced technologies. It will further advance our existing collaborative relationships with the public and private sectors as well as academia, and will also function as an incubator for selected startup ventures, thus promoting open innovation. In addition, Group companies that had been scattered around Singapore will be consolidated at The GEAR, where we will increase synergies among the construction, real estate development and technology development divisions and incorporate external stimuli to create new businesses.



Engineering

Kajima's engineering business mainly targets production facilities in the manufacturing industry, such as pharmaceutical, foods and cosmetics. Under the end-to-end project execution team, we optimize functions of buildings, utilities, and production/logistics/IT facilities to propose and realize the best production systems for our customers.



2. Good Manufacturing Practice (international standards for the manufacturing and quality control of pharmaceuticals and quasi-drugs)

1. Engineering, Procurement, and Construction Management

The O&M business addresses needs for outsourced operation and management of pharmaceutical facilities. By combining our pharmaceutical facility engineering capabilities with the facility management capabilities of Kajima Tatemono Sogo Kanri Co., Ltd., the O&M business helps keep the facilities of Astellas Pharma Inc. and other pharmaceutical companies operating smoothly. The O&M business and the energy service business, which was launched in fiscal 2020, are examples of stock-model businesses through which Kajima is working to expand the scope of its services to include the post-construction operation of facilities. By gaining a deeper understanding of the operation of facilities and equipment and their energy use, we hope to improve our ability to make proposals at the facility planning stage. It will also lead to expansion of our EPC business.

Domestic Subsidiaries and Affiliates

As of March 31, 2021, the Kajima Group has 95 domestic subsidiaries and affiliates, consisting of 44 subsidiaries and 51 affiliates. These companies are involved in a wide range of upstream and downstream construction-related fields. Highly skilled experts throughout the Group collaborate to provide comprehensive capabilities at all stages from pre-planning, development, design, engineering and construction to post-completion operation and management, and maintenance and renovation.

1 Building Leasing

Kajima Leasing Corporation is engaged in the building leasing business, which involves constructing buildings according to specifications designated by the customer at the desired site and leasing the completed buildings to the customer, thereby reducing the initial burden of investment in construction. Up until now, Kajima Leasing Corporation has provided a variety of buildings including offices, data centers, warehouses and medical facilities under the building leasing scheme. The Kajima Group also has the capacity to provide back-to-back services, with Kajima Corporation responsible for construction and Kajima Tatemono Sogo Kanri Co., Ltd. responsible for building maintenance and management.



Project Scheme



2 Direct Hiring and Multi-Skill Development

In response to age-related turnover among experienced and skilled personnel and a decline in the number of new hires, which are medium- to longterm issues in the construction industry, the Kajima Group is working to improve productivity by promoting the direct hiring of skilled workers and developing multi-skilled workers in the following construction fields, where such individuals are expected to be in particularly short supply in the future.

Electrical, air conditioning, sanitation and plumbing equipment

Clima-Teq Co., Ltd.: Employing skilled workers at subsidiaries, promoting unitization and prefabrication of piping, etc.

Fireproof coating application and autoclaved lightweight concrete (ALC) work Kajima Fit Co., Ltd.: Training multi-skilled workers who can handle incidental tasks in addition to fireproof coating application and ALC work.

3 Seamless Collaboration from Design and Construction to Building Management

Kajima Tatemono Sogo Kanri Co., Ltd. is involved in projects from the initial stages of construction, transferring digital information on design and construction to Kajima Smart BM, which it operates, for use in the maintenance and operation of buildings.

Kajima Smart BM automatically collects operational management data from buildings and stores it in a cloud platform. The data is

analyzed and then utilized for the optimized operation of mechanical and electrical equipment, reduction of running costs through support for energy-saving, and early detection of equipment abnormalities and breakdown. As of March 31, 2021, the company had installed Kajima Smart BM in 101 of its buildings under management, and is moving to expand installations.

Advantages of Kajima Smart BM

Number of Buildings Installed with Kajima Smart BM



(Plan) (Plan)

Research and Development

The development of technologies that lead to improved productivity and increased production capacity, which was a priority in the previous medium-term business plan, has entered a new phase in the new Medium-Term Business Plan with the aim of building digital construction systems. The automated construction technology centered on A⁴CSEL that we have introduced in the civil engineering field (pages 30-31) has developed and introduced many fundamental technologies, including simulation and Al for process optimization and enhancement of autonomous functions, and the scope of application is being expanded to new types of construction, such as the Naruse Dam demonstration and tunnels. In addition, ICT-based technologies are being developed and deployed at many construction sites, such as the Yokohama Gate Tower Project, for smart construction centered on the robotization, remote control and digitalization we have introduced in the building construction field (pages 32-33).

With the increasing severity of typhoons and other disasters caused by climate change and the threat of pandemics such as COVID-19, it is important to assess not only the hazards of earthquakes and wind and flood damage, but to conduct multi-hazard assessments that cover fires, volcanic eruptions, landslides and other disasters that can occur simultaneously in buildings and on surrounding streets, and to develop countermeasures and technologies based on such assessments. To this end, we will promote development that will utilize vast amounts of data and advanced simulation technologies to lead to the provision of disaster prevention technologies and services that support safety and security.

New Value Created through Research and Development

Technologies for improving building comfort, energy conservation and zero energy buildings (ZEB) have enabled the construction of smart buildings with new value, such as wellness spaces and contributions to carbon neutrality. Furthermore, by integrating new technologies and concepts such as digital twins, we aim to create new value in the form of smart cities and a smart society, by providing safety and security using urban-scale risk assessment and area management using an urban operating system.

R&D Globalization and Open Innovation

In 2013, Kajima established a branch office of its Technical Research Institute in Singapore (KaTRIS) to collaborate with leading-edge universities, public institutions and startup ventures around the world. We also promote globalization and open innovation through collaboration with staff stationed in Silicon Valley to investigate technologies.

R&D Promotion Structure



HIGHLIGHT

Use of Fugaku's Indoor Environment Simulation for Droplet Infection Countermeasures

As the threat of COVID-19 continues, Kajima is conducting research and development to reduce the risk of viral infection, by using computer simulations to predict and visualize the movement of airborne droplets indoors, and by controlling airflow through air conditioning, ventilation and partitions. Furthermore, we offer consultations on sterilization to prevent contact infections through planning and advice tailored to room size, interior materials and furniture, as well as a variety of infection control measures such as layout diagnosis.

Kajima was quick to start research focusing on droplets in the wake of the outbreaks of severe acute respiratory syndrome (SARS) in 2002 and H1N1 influenza A in 2009. Aiming to make a greater contribution to resolving social issues, in April 2020 we became the only construction company to participate in a project led by RIKEN to contribute to COVID-19 countermeasures using the world's most powerful supercomputer, Fugaku.

> (Above) Effect of ceiling fans on droplet diffusion (blue: when stopped, red: when operating) (Below) Simulation of ventilation in a classroom of a private school (CO₂ concentration)



Digital Transformation (DX)

With the progress of the digital society, in which real space and cyber space are integrated, companies are expected to take the lead in utilizing digital technology to identify and resolve customer and social issues in order to create a world that is convenient, comfortable, secure and full of hope.

We will achieve "an attractive construction world utilizing digital technologies," "a digital and real integrated world with diversity" and "high productivity smart work in all Group companies" by responding in the three areas of the new Medium-Term Business Plan, "Further strengthen core businesses," "Strive to create new value" and "Establish a strong management foundation and promote ESG measures for growth and transformation."

Digitalization and DX Initiatives

Construction DX (DX1.0)

- Digital twins to further enhance productivity and provide optimal plans to customers at an early stage
- Productivity improvement and supply chain optimization as a result of building a digital construction system
- Passing on of construction technology and knowledge through data
- Data-driven construction site management

Further strengthen core businesse



New value and service creation through data, software and XaaS businesses

Strive to create new value

Operation DX (DX1.0) 3

Strengthening the digital infrastructure environment and cyber risk countermeasures that adopt a customer-model for relationships between business divisions

Establish a strong management foundation and promote ESG measures for growth and transformation

4 Digitalization Paperless operations with ICT tools
 Remote presence
 Adoption of RPA

Infrastructure for DX

Generating digital twins in all phases of planning, design, construction, maintenance and operation and circulating digital data will enable us to provide customers one-stop services from upstream to downstream. In addition to improving productivity through more sophisticated digital construction systems and the active use of digital technology, we will create a safe and secure work environment free from long working hours and physically intensive work for an appealing work style in the construction industry that is attractive to work in for many people.

We are also proactively entering the field of smart buildings and smart cities. Haneda Innovation City (HICity), which was selected as a Leading Model Project of the Smart City Model

Digitalization and DX Structure

Promoting our digitalization and DX strategy requires the creation of a framework for a smooth PDCA cycle. In that regard, we are stepping up initiatives such as establishing data collaboration within the Group, recruiting and training human resources with digital skills, and open innovation.

Project in 2020 by the Ministry of Land, Infrastructure, Transport and Tourism, is being developed through a publicprivate partnership between Haneda Mirai Kaihatsu Co., Ltd., of which we are the representative company, and Ota City in Tokyo. At HICity, we are collaborating with various universities and companies, including those in different industries, based on the concepts of "cutting-edge" and "culture." By making HICity widely accessible to external parties as a demonstration field for advanced technologies, we aim to provide opportunities for interaction among a wide range of industries, to implement services that solve various problems facing Ota City, and to create a sustainable city.



R&D and Digital Investment Plan

Investment Plan

¥55 billion over three years

Next-Generation Construction Systems

Kaiima Smart **Future Vision**

 Accelerating introduction at construction sites by promoting development and practical application of technologies such as robotization and remote management

Automated Building Construction Systems

- Deploying A⁴CSEL, which is already used in dam construction, for tunnel construction and land reclamation works
- · Promoting the development and introduction of Al

New Fields

Digital Twins and Smart Cities

- · Developing an organization for implementing urban operating systems
- · Promoting digital twins (virtual construction and operation) for civil engineering and building construction

Human Resources



Katsunori Ichihashi Managing Executive Officer, General Manager, Executive Office, Overseeing Human Resources Department, Affiliated Business Department and Center for Shared Administrative Services

The Kajima corporate philosophy advocates "as a group of individuals working together as one, we pursue creative progress and development founded on both rational, scientific principles and a humanitarian outlook." Our humanitarian and family-oriented tradition is a source of competitiveness, and we will continue to adhere to this philosophy as we move forward.

Nevertheless, our business environment is constantly changing. We need to continue to transform into an organization where employees and the Company take on challenges and push each other to greater heights in order to keep growing and increase our competitiveness, while also flexibly dealing with unforeseen circumstances such as the COVID-19 pandemic, now in its second year.

Last year, we introduced a talent management system and established a new training facility, KX-LAB. The system will help us gain a solid understanding of the diverse experience, motivating factors, aptitudes, abilities and other traits of employees, which, in turn, will help us establish an environment in which the right people are assigned to the right positions in a timely manner. KX-LAB will also provide opportunities for employees in different divisions to interact with and inspire each other. Together, the talent management system and KX-LAB will promote each employee's autonomous growth.

With all employees at the Kajima Group making use of their individual experience and aptitude to enhance their professional lives, we hope to set in motion a virtuous cycle in which the Group achieves sustainable growth that enables both our employees and the Group to prosper materially and spiritually.

Developing Human Resources

Expanding Our Business Domains

The Kajima Group actively cultivates highly skilled specialists who fully meet the expectations of customers and society, as well as management personnel capable of leading those specialists.

To accelerate creation of new value under the new Medium-Term Business Plan, it is important that each employee has the ability to apply business and management perspectives. We have begun updating our human resource development system so that employees can acquire a good balance of business and management skills in addition to a high level of specialization.

In fiscal 2021, we overhauled our annual training for junior administrative employees, switching to a hybrid model that combines group training with online lectures. For the online lectures, employees are allowed to choose which programs they take, so they can learn on their own initiative according to their proficiency levels and career goals.

Opening of KX-LAB, a Facility for Training the Next Generation of Leaders

KX-LAB, a new training facility mainly devoted to the development of the next generation of leaders, opened in Toshima-ku, Tokyo in November 2020. A place for

independent growth through new insights, learning and practice, KX-LAB not only provides group training, but also opportunities for gaining new insights through dialogue with management and experts and other means, opportunities for career development, co-creation ideathons within and outside the Kajima Group, and in-house competitions and other practical events.

In addition, we are increasing opportunities for discussions and workshops that encourage interaction. As a venue for employees in different divisions to interact with and inspire each other, the facility is expected to accelerate the Kajima Group's growth and transformation.

Initiatives for Self-Directed Career Development

In 2020, Kajima introduced a talent management system and established a medium- to long-term career goal system. Employees are able to receive advice from their supervisors through career interviews based on the career goals they have registered in the system. (Number of registrants in first year: about 7,000)

We also plan workshops and events to support employees' career development. Since March 2021, we have been regularly holding "KX CAREER TALKS," an online event that introduces the various careers employees are pursuing and the work done in different departments, topics that are difficult to share



KX-LAB concept

KX-LAB



Workshop

directly at each individual worksite. Roughly 100 employees from around the world participate each time. For example, in June 2021, the topic was overseas business, and employees working in Singapore contributed by sharing their own careerrelated experiences, including how they came to choose working overseas and how they improved their skills, and by giving advice for junior employees.

Diversity & Inclusion

Promoting Active Roles for Female Employees and Work-Life Balance

To drive innovation, Kajima believes it is essential to create an environment where people with diverse backgrounds and characteristics, such as gender, nationality, religion, ability or disability, can achieve their full potential.

In recent years, Kajima has enhanced and expanded workplace programs and systems to enable employees to continue working with peace of mind and playing an active role in the Company while dealing with various life events. Specifically, we have made systemic enhancements to help employees balance work and childcare, such as improving the system of flex-time hours for parents of young children, introducing a telecommuting program, and creating a new program for family support leave. As a result, while we had set the targets of doubling the number of female employees in managerial positions over a five-year period starting in fiscal 2014, and tripling it over the ten-year period starting in the same year, we achieved the latter target in fiscal 2020, three years early.

Number of Female Employees in Managerial Positions

FY	2014	2019	2021
Female employees in managerial positions	54	120	164

We have also been encouraging male employees to take childcare leave. Measures such as making childcare leave partially paid rather than unpaid have led to an increase in the number of men using it. In fiscal 2020, 16 male employees took childcare leave, 60% more than in the previous fiscal year. Eight took one month or longer, an indication that more employees are taking leave for extended periods of time.

Number of Male Employees Taking Childcare Leave

FY	2016	2017	2018	2019	2020
Male employees taking childcare leave	1	3	8	10	16

New Work Styles

In response to the COVID-19 pandemic, we have introduced staggered working hours, teleworking, and remote meetings, mainly for administrative divisions, to avoid the "three Cs" of closed spaces, crowded places and close-contact settings.

To increase productivity during teleworking, we have enhanced the network environment and are actively promoting digital transformation. We have converted over 150 document types from paper to digital formats in an effort to go paperless and eliminate the use of *hanko* seals to stamp documents.

To ensure that these measures to improve operations and

increase productivity are lasting, we have considered and are testing new work styles in departments and branches. Offices that employ unassigned workspaces and activity-based working have been introduced in the Civil Engineering Management Division and at the Kansai Branch and other branches. Currently, we are also reviewing the workspaces of approximately 1,600 employees at the Head Office in Minato-ku, Tokyo.

Each employee's circumstances and environment differ, with conditions that are constantly changing, so we are creating a work environment that flexibly improves productivity.



Office transformation initiatives (Kansai Branch)

Improving Employee Health

We understand that healthy employees are an important management resource, and are continuously implementing health and productivity management under the slogan "Promoting the health of employees creates healthier and livelier workplaces!" As a result, Kajima has been selected for four consecutive years since 2017 under the Certified Health & Productivity Management Outstanding Organizations Recognition Program. A clinic has been established within the Head Office to make it easier for employees to regularly receive medical examinations, as well as recommendations for follow-ups and treatment when relevant, and offers health guidance as part of a proactive approach to maintaining and improving employees' health. Furthermore, based on the guidance of occupational health physicians, our Central Safety and Health Committee investigates and deliberates on healthcare matters, and delivers its conclusions through safety and health committees at all domestic branches.

In October 2020, we established and announced the Kajima Group Health and Productivity Management Declaration, which formalizes our existing activities. The establishment of this declaration will add momentum to our efforts to promote health and productivity management.

Kajima Group Health and Productivity Management Declaration (Main Points)

- 1. We will create safe, supportive workplaces that are filled with energy.
- 2. We will support employees' efforts to take care of, maintain and improve their own health.
- 3. Health and productivity management will result in a virtuous cycle that contributes to the sustainable growth of the Kajima Group and greater well-being for employees and their families.

Environment

Taking on the Challenge of Achieving Carbon Neutrality by 2050



In May 2021, we revised the Kajima Environmental Vision: Triple Zero 2050 and set new CO₂ emission targets of a 50% decrease by fiscal 2030 and a 100% decrease (carbon neutrality) by fiscal 2050, both compared to fiscal 2013. Under our CO₂ emissions reduction plan, we aim to achieve carbon neutrality by 2050 while still expanding the scale of our business through two initiatives: reducing CO₂ emissions from our sites (Scope 1 and 2) and carbon offsetting. We also aim to obtain target validation from the Science Based Targets Initiative (SBT, an international validation protocol for greenhouse gas reduction targets) by the end of fiscal 2023.

In the supply chain (Scope 3), which encompasses the upstream phase of manufacturing building materials and the downstream phase of building operation after delivery, we will work actively to reduce CO₂ emissions through the development and use of low-carbon materials (page 45) and the design and construction of energy-saving buildings, including ZEB.



The "Scope" Concept in the Construction Industry

The Kajima Group's Investment in Reducing CO₂ and Carbon Offsets

Kajima Corporation has been using its proprietary Environmental Data Evaluation System (edes) (page 46) to monitor CO₂ emissions at all sites since fiscal 2020. Based on the results, we will implement further reduction activities such as energy conservation through productivity improvement, use of hybrid or electric-powered heavy machinery, and low-carbon (carbon-free) fuel use.

For carbon offsets, we will work to secure renewable energy sources, create and acquire carbon credits, and procure and use CO₂-free hydrogen.

CO₂ Emissions Reduction Plan



Triple Zero 2050 (Formulated in 2013; revised in 2018 and May 2021)

	Social Goals	Triple Zero 2050	Target 2030
Achieving a More Sustainable World	Carbon Neutrality A society that balances greenhouse gas emissions from human activities with the Earth's capacity for CO ₂ absorption	 Zero Carbon Aiming to achieve carbon neutrality for the Kajima Group's greenhouse gas emissions (Scope 1 and 2 emissions) Aiming to reduce Scope 3 emissions by at least 80%, compared to fiscal 2013 	[Group-wide] Reduce Group-wide greenhouse gas emissions (Scope 1 and 2 emissions) per unit of sales to 50% of fiscal 2013 level or lower (equivalent to a 50% reduction of total emissions with fixed construction amount); contribute to the reduction of Scope 3 emissions as well, through joint efforts in the supply chain [Architectural Design] Achieve a ratio of more than 50% ZEB for new buildings
	Recycle Resources A society that pursues zero emissions by employing state-of-the-art infrastructure maintained and operated using sustainable resources	 Zero Waste Aiming to eliminate waste from construction operations by ensuring zero final waste disposal during construction, utilizing sustainable materials, and making buildings last longer 	 Completely eliminate final waste disposal from construction operations Achieve a usage rate of recycled materials of at least 60% for principal construction materials" * Principal construction materials (steel, cement, ready-mixed concrete, crushed stone and asphalt)
	Harmoniously Co-Existing with Nature A society that values the continuous benefits of ecosystem services by minimizing the impact of human activities on the environment and living creatures	 Aiming to minimize the overall environmental impact of construction operations by limiting their effect on nature and living creatures while promoting the restoration of biodiversity and new ways to make use of its benefits 	 Promote biodiversity restoration projects Build a portfolio of effective projects and make them hubs for biodiversity-related networking Management of hazardous substances: Thoroughly implement preventative measures (especially for soil contamination and asbestos)
	Common Foundation Initiative Areas	 Conduct technology development Actively distribute information in and outside the Company 	

Reducing CO₂ Emissions Below Zero During Manufacturing

CO₂-SUICOM: CO₂-Absorbing Concrete

When considering CO₂ emissions over the entire lifecycle of a building, the amount of CO₂ released in the manufacturing of building materials is second only to that during the operation phase. This is a major issue not only for building material manufacturers, but also for construction companies.

Over the years, Kajima has been working to develop a variety of eco-friendly concretes, such as long-life concrete and mixtures that use residual and recycled materials. This has resulted in CO_2 -SUICOM,* the world's first concrete to have achieved a negative CO_2 emission level in its manufacturing process.

In mixing CO₂-SUICOM (an acronym of CO₂-Storage Utilization for Infrastructure by COncrete Materials) more than half of the cement content is substituted with a special admixture (γ -C₂S) and industrial by-products, so that a large amount of CO₂ is absorbed and fixed inside the concrete as it hardens. This also helps to significantly reduce the CO₂ emissions from cement production, making CO₂-SUICOM the ultimate eco-friendly concrete, with negative total CO₂ emissions.

* CO2-SUICOM is a technology developed by Kajima, The Chugoku Electric Power Company, Inc., Denka Company Limited and LANDES Co., Ltd.



Examples of Civil Engineering and Building Construction Applications and Efforts to Promote Use

The main feature of CO₂-SUICOM is its ability to withstand harsh external environments owing to the very dense surface preventing penetration of deterioration factors. In addition, the low alkalinity of CO₂-SUICOM with its nearly neutral pH characteristic makes it friendly to the natural environment and suitable for coexistence with living organisms.

Since 2011, CO₂-SUICOM has been applied in making concrete blocks and precast concrete panels for use in various civil engineering and building construction projects, including the Chugoku Electric Power Company Fukuyama Photovoltaic Power Station and Nakano Central Park.

Moreover, there has been increasing use of CO₂-SUICOM in making concrete formworks in factories because it is thin and absorbs CO₂ easily. It is expected that the costs of this CO₂-absorbing concrete, which is the only one of its kind practically available in Japan, will come down as more and more applications are realized.

In December 2020, CO₂-SUICOM was introduced as a model carbon recycling technology by the Ministry of Economy, Trade and Industry (METI) in its Green Growth Strategy Through Achieving Carbon Neutrality in 2050. Through this and other recognition, CO₂-SUICOM is attracting widespread attention both domestically and internationally.

The market for eco-friendly concrete is expected to grow to

a scale of ± 15 to ± 40 trillion worldwide by 2030. With a view toward bringing CO₂-SUICOM to the global market, Kajima will continue to promote the full-scale use of CO₂-SUICOM and work to reduce CO₂ emissions by accelerating further development of the concrete for more practical and advanced applications and building a supply chain to deliver the product.



Building using precast concrete panels

Size of Eco-Friendly Concrete Market



Source: Global CO2 Initiative (GCI)

Kajima's Environmental Management Systems

Kajima operates environmental management systems (EMS) that are compliant with ISO 14001. The Environment Committee is headed by the President and implements initiatives in each of five sectors: civil engineering, building construction, environmental engineering, engineering, and research and development. Four subcommittees address environmental management, construction environments, sustainable procurement, and biodiversity as cross-sector issues, and working groups are also organized for issues such as the Act on the Rational Use of Energy and plastics.

For domestic Group companies, we are surveying and gaining an understanding of the energy consumption of 14 construction-related companies and 2 development-related companies that have particularly high environmental impact.

Summary of Environmental Activities for Fiscal 2020

Activities in fiscal 2020, which was the final year of the previous three-year plan (FY2018-2020), generally proceeded smoothly. In the low-CO₂ emissions (carbon neutrallity) field, against a target of an 8% reduction compared to fiscal 2013, the reduction in CO₂ emissions per unit of sales was 37.3%, according to the total amount for all sites surveyed by our Environmental Data Evaluation System (edes), and a 22.2% reduction using the same sample sites survey method as until fiscal 2019.* In recycling resources, the final waste disposal rate including sludge was 2.5%, compared with the target of less than 3%. With regard to environmental problems, although there were no serious legal violations, there was one case in which we received a recommendation for correction.

Survey of CO₂ Emissions at All Construction Sites with edes

Because more than 90% of Kajima's CO₂ emissions come from on-site construction activities, an understanding of their actual status is necessary in order to reduce emissions. We have developed our own Environmental Data Evaluation System (edes), which assesses and analyzes the amount of energy consumed, including fuel and electricity, at all sites. After a trial run in fiscal 2019, we began operating this system at all sites above a certain scale (approximately 700 sites) in fiscal 2020.

An analysis of data from all sites showed significant differences in CO₂ emissions per unit of sales depending on both the type of construction, such as tunnels or dams, and the stage of construction, such as foundation work immediately after the start of construction or interior work just before completion. We also found that the main source of CO₂ emissions differs depending on the type of work, in terms of whether it was derived from fuel or electricity.

In addition, with the start of edes implementation, the method of calculating total CO₂ emissions changed from sample sites to all sites. The discrepancy in CO₂ emissions due to the change in the calculation method is presumably due to the bias in the period (from the two-month period of November and December to the whole year) and in the sites covered by the survey (from a sampling of roughly 10% to all sites).

Data on CO₂ emissions per unit of sales for each type of construction work and construction progress will be analyzed in more detail by administration departments and incorporated into the energy consumption forecasting system, which is currently in preparation, for use in management of on-site CO₂ emissions.



Launch of a Regional Smart Society Project

In October 2020, Kajima entered into a partnership agreement with Shikaoi-cho (Kato-gun, Hokkaido) for a Regional Smart Society Project. Shikaoi-cho is unique in that it utilizes energy from biogas produced from livestock extreta. Leveraging this feature, five themes have been selected for study to create a vision for the future through a public-private partnership: (1) a local energy supply business; (2) management of public facilities; (3) disaster prevention, disaster mitigation, and BCP measures; (4) ICT-based smart technology; and (5) promotion of local industry.

Kajima is also working with Kirishima Shuzo Co., Ltd. on an initiative that will lead to a smart society in Miyakonojo-shi, Miyazaki Prefecture, and on the creation of the smart city Haneda Innovation City (Ota-ku, Tokyo). However, this is the first time we have collaborated in such a way with a local government. Kajima's many years of experience in the design, construction, maintenance and management of biogas plants will be utilized in the formation of a regional smart society.

Since 2017, we have been working with Air Water Inc., Nippon Steel Pipeline & Engineering Co., Ltd., and Air Products Japan K.K. on the Shikaoi Hydrogen Farm, a Ministry of the Environment demonstration project that aims to create a supply chain for hydrogen fuel production, transportation, storage and supply, using biogas produced at the town's environmental conservation center.



(Above) Nakashikaoi Facility of the Hokkaido Shikaoi Environmental Preservation Center, where the Shikaoi Hydrogen Farm® is located (Below) Remote signing ceremony

		New Three-Year (FY2021–2023) Targets Targets in gray are for the previous three years (FY2018-2020)	FY2020 Results	FY2021 Targets
Lower CO ₂ Emissions (Carbon Neutrality)	Construction	 Reduce CO₂ emissions per unit of sales by 26% compared to fiscal 2013 Reduce CO₂ emissions per unit of sales by 8% compared to fiscal 2013 	Reduced CO ₂ emissions per unit of sales by 37.3% compared to fiscal 2013 (22.2% reduction if calculated using the same method as until fiscal 2019)	Reduce CO_2 emissions per unit of sales by 22% compared to fiscal 2013
	 Deepen ZEB technologies that contribute to the decarbonization of customer companies. Strengthen promotion of the use of labeling systems such as ZEB and BELS Deepen energy management technologies Secure conformance with SEODC mandatory standards in Building Energy Efficiency Act Become an industry leader in reducing CO₂ emissions 		 Mandatory standards in Building Energy Efficiency Act: Set and managed original issues in line with building use Industry-leading CO₂ emissions targets: Many projects for ZEB, BELS, and other labeling systems. The main building of the Kajima Technical Research Institute received the WELL Health-Safety Rating along with the WELL Platinum Certification. Obtained CASBEE-Smart Wellness Office Certification (S rank) for two high-rise offices, etc. 	 Strengthen promotion of ZEB, BELS, and other labeling systems (with a particular focus on ZEB Ready and ZEB Oriented) Achieve internal energy conservation standards (20% reduction) and promote internal targets (30% reduction in office buildings, 25% reduction in commercial buildings) Promote ZEB through technical proposals for energy management, use of IoT and other digital technologies, and work style proposals
s	Construction	Less than 3% final waste disposal including sludge	2.5% final waste disposal including sludge	Less than 3% final waste disposal including sludge
Recycle Resource	Design	Implement green procurement	Implement green procurement: Average of 5.7 items proposed	Propose more than four items for green procurement, indicate them on working drawings and verify whether or not the proposed items were ultimately adopted
ously 1g with re		Implement outstanding biodiversity projects	Selected six outstanding biodiversity projects (civil engineering: 1, building construction: 5)	Implement more than six outstanding biodiversity projects per year
Harmoni Co-Existin Natui		Reduce the impact of construction on the natural environment (particularly through management of hazardous materials and polluted water)	Hazardous material problems: 1	Reduce the impact of construction on the natural environment (particularly through management of hazardous materials and polluted water)
mmon Foundation Initiative Areas	Research and Development	 We will continue our activities with the following targets, in close cooperation with the entire company, in order to contribute to Triple Zero. Implement research and technology development that contributes to preservation and sustainable use of the environment Deployment of more than six specific results of basic research and development over three years 	 Environmental contribution technology development projects: 16 Environmental contribution technology project deployment: 7 	 Environmental contribution technology development projects: 10 or more per year (designated environmental topics) Environmental contribution technology project deployment: 2 or more per year (deployment of results)
	Engineering	 Respond to changes in social conditions and customer requirements Promote the prevention of environmental accidents involving various chemical substances 	 Confirmed Triple Zero support (7 cases) Confirmed response to chemical substances (3 cases) Project participation: 45 projects 	 Identify customer needs, and confirm and implement the policy for the Triple Zero initiative Thoroughly manage environmental risks by paying attention to the handling of various chemical substances Promote activities to obtain orders through the utilization of wastewater treatment technologies
0	Environmental Engineering	 Promote environmental management in concert with Group companies Make technical innovations and create projects based on Triple Zero 	 Steadily promoted renewable energy projects Obtained orders for environmental infrastructure (disposal facilities, water supply) Ongoing demonstration in the Hokkaido hydrogen supply chain 	 Expand projects with core environmental technologies and services Strengthen efforts in four priority fields Initiatives for next-generation technologies/projects

Material Flow

Input						
		FY2020				
	• Energy					
	 Electricity (10⁴ kWh) 	7,272				
	 Diesel oil (kℓ) 	44,554				
Construction	 Kerosene (kl) 	709				
sites	 Gasoline (kℓ) 	914				
	 Heavy oil (kl) 	868				
	• Tap water (10 ⁴ m ³)	87				
	• Main construction materials (10 ⁴ t)	195.1				
	• Energy					
	 Electricity (10⁴ kWh) 	2,627				
	 Diesel oil (kℓ) 	8				
Officer	 Kerosene (kℓ) 	10				
Onices	 Heavy oil (kl) 	7				
	• Gas (10 ⁴ m ³)	16.9				
	Heating/Steam/Cooling (GJ)	14,782				
	• Tap water (10 ⁴ m ³)	15				

Output

		FY2020
	• CO ₂ emissions (10 ⁴ t)	15.7
	• Wastewater (10 ⁴ m ³)	112
	• Construction surplus soil (10 ⁴ m ³)	108
	Hazardous materials collected	
Sites	Materials containing asbestos (t)	14,251
	CFCs and halon (t)	3.9
	Fluorescent tubes (t)	49.2
	• Construction waste (10 ⁴ t)	159.2
	• Final disposal volume (10 ⁴ t)	4.0
	 CO₂ emissions (10⁴ t) 	1.3
Offices	• Wastewater (10 ⁴ m ³)	15
	Volume of waste (t)	1,670

Disclosure of Climate Change-Related Information (Disclosure in line with the TCFD Recommendations)

Kajima recognizes that addressing environmental issues including climate change is a key management issue and includes "providing technologies and services for disaster preparedness that support safety and security" and "contributing to society's transition to a carbon-free footprint" among its material issues. In December 2019, Kajima expressed its support for the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).

While society and markets are increasingly committed to decarbonization, the world is already experiencing extreme weather events and floods that are becoming more severe. We will continue to contribute to the resolution of social issues related to climate change through our businesses. This includes contributing to the social mission of the construction industry in terms of disaster prevention and mitigation, BCP and disaster recovery.



1. Governance Measures

Kajima has established the Environment Committee as an organ to deliberate and decide on environmental issues. The committee is chaired by the President and comprises members from the management team and executives from domestic and overseas subsidiaries and affiliates. It deliberates and decides on important environmental policies and measures, including measures to address climate change. Important policies are then deliberated and decided on by the Board of Directors and the Management Committee. The policies and measures decided on are incorporated into each division's business plan and implemented. The next year, the Environment Committee follows up on progress and results, thereby leading to further



improvements and new initiatives. The carbon neutral policies discussed by the committee have been integrated as priority initiatives in Medium-Term Business Plan (FY2021–2023). The Board of Directors regularly follows up on the implementation of initiatives.

2. Strategy

The construction industry uses materials that conventionally emit a large amount of greenhouse gases during manufacture, such as cement and steel, and the long operating life of buildings and structures has a significant impact on the greenhouse gas emissions of customers. Accordingly, public policies related to carbon pricing and carbon emissions, zero energy buildings (ZEB) and renewable energy-related construction markets, and low-carbon construction technologies are identified as highly relevant transition risks and opportunities. Due to the social mission of the construction industry, which includes contributing to disaster prevention and mitigation, as well as the frequent outdoor work characteristic of the industry, the impact of changing weather patterns, the intensification of extreme weather events, the effect of rising temperatures on labor productivity, and corresponding labor legislation are identified as physical risks and opportunities.

In March 2021, Kajima revised the setting of the 2°C scenario to a 1.5°C scenario and estimated the impact on domestic construction projects in fiscal 2030.

Revision of 2°C Scenario to 1.5°C Scenario

Risks and opportunities	Impact of change from 2°C scenario to 1.5°C scenario	Description
Cost increase due to introduction of carbon price	Cost increase	Despite improvement in CO_2 emissions per unit of sales of material production in fiscal 2030, carbon price will increase in fiscal 2030
ZEB, energy- saving renewal market expansion	Slight increase in sales	Expansion of the scope of the ZEB market including ZEB Oriented, which is designed for large-scale buildings

1.5°C scenario

Scenario in which strict measures are taken against climate change, and the temperature increase in 2100 is limited to about 1.5°C above pre-industrial levels.

4°C scenario

Scenario in which strict measures are not taken against climate change, and the temperature increase in 2100 reaches about 4°C above pre-industrial levels.

The movement toward carbon neutrality by 2050 has become the global mainstream, including in Japan.

This trend is not expected to stop in the future, and the price of carbon currently traded in Europe is expected to rise. On the other hand, while CO₂ emissions per unit of sales for cement and steel production are improving, it is necessary to keep a close eye on domestic policies and international trends regarding decarbonization, to determine the impact.

In addition, as regulations tighten in the future, demand for ZEB and energy-saving renovations in large-scale buildings is

+: Positive impact on profits and losses -: Negative impact on profits and losses

Risks and Opportunities

Category		Diaka and annartunitian		Impact on FY2030 profits and losses		
		nisks and opportunities			1.5°C scenario	4°C scenario
		Increase in costs due to tax	Risk Opportunity	A carbon tax is levied on CO ₂ emissions during cement and steel manufacturing and CO ₂ emissions during construction, increasing construction costs. Low-carbon construction becomes price competitive.		
S	Policy	Construction market contraction due to higher taxes	Risks	Private sector construction investment declines due to higher taxes. A decline in private consumption is assumed, similar to the decline that occurred with the domestic consumption tax hike.	-	
Transition risk		Restrictions on business based on CO ₂ emission allowances	Risks	Governments cut down on construction investment to meet national emission targets. Costs of emission rights trading and purchasing certificates (credits) to meet the Company's emission targets increase.	-	
	Markets	Change in the energy mix (reduction in fossil fuels)	Risk	Demand for construction of fossil fuel power generation facilities declines.	-	
		Increase in demand for renewable energy	Opportunity	Investments in construction of wind power generation and other renewable energy-related facilities increase.	+ +	+ +
		Expansion of ZEB market	Opportunity	While the 4°C scenario assumes a certain level of ZEB adoption, under the 1.5°C scenario ZEB will become much more widespread, leading to higher added value.	+ +	+
Physical risks	Chronic	Effects of rising temperatures on working conditions	Risk	Heat stress reduces labor productivity and increases construction costs as more skilled workers are needed to sustain the same volume of work.	-	
	Acute	Disaster prevention and mitigation, and national resilience	Risk Opportunity	Extreme weather events cause damage to Group facilities. Intensification of torrential rains and extreme weather events creates demand for disaster prevention and mitigation measures including flood control and recovery measures.	+ +	+ +
	, iouto	Relocation from disaster risk areas	Risk Opportunity	Natural disaster risk areas expand, and factories and other facilities are relocated overseas. Demand for relocation from low elevation areas is created.		- +

Countermeasures

Responding to carbon tax and emission allowance regulations	 Increase in costs due to carbon tax Construction market contraction due to higher taxes Restrictions on business based on CO₂ emission allowances 	 Promotion of activities to reduce CO₂ emissions during construction → edes (page 46) Development and introduction of low-carbon construction materials → CO₂-SUICOM (page 45) Securing of renewable electricity supplies
Developing technologies for new markets and climate change	 Change in the energy mix (reduction in fossil fuels) Increase in demand for renewable energy Expansion of the ZEB market Effects of rising temperatures on working conditions 	 Selection of focus fields based on the energy mix Development of design and construction technologies for renewable energy facilities Pursuit of business feasibility and comfort for ZEBs Development of labor-saving construction technologies → A⁴CSEL (page 31)
Responding to intensification of extreme weather events	 Disaster prevention and mitigation, and national resilience Relocation from disaster risk areas 	 Promotion of technology development related to disaster prevention and mitigation, and BCP Development and application of hazard maps that leverage proprietary knowledge Construction work that contributes to national resilience and the resilience of buildings and structures

expected to increase, as of 2030.

As a result of our scenario analysis, we concluded that we are sufficiently resilient, due to business opportunities such as a growing demand for renewable energy and differentiation through low-carbon construction.

3. Risk Management

To address climate change-related risks, the Global Environment Office of the Environmental Engineering Division, which serves as the secretariat for the Environment Committee, leads cross-organizational assessments of the environmental impact of climate change-related risks by the Environmental Management Subcommittee and other relevant internal departments. Finally, the Environment Committee deliberates and decides on risks and opportunities each year.

All operational risks, including climate change-related risks, are assessed by the Compliance and Risk Management Committee, which is chaired by the President, and reported to the Board of Directors twice a year. In addition, Kajima is working to further improve its disaster preparedness and business continuity capabilities through means such as practical BCP drills for torrential rain and other scenarios.

4. Indicators and Targets

In 2013, Kajima formulated and announced the Kajima Environmental Vision: Triple Zero 2050 as the basis for environmental initiatives. At the same time, Kajima is implementing activities under Target 2030, which sets specific quantitative milestones for fiscal 2030.

In 2021, Kajima revised its CO₂ reduction targets and aims to reduce the amount of CO₂ emitted during construction (Scope 1 and 2) by 50% compared to fiscal 2013 by fiscal 2030, and to reduce CO₂ emitted during construction (Scope 1 and 2) to virtually zero and achieve carbon neutrality by fiscal 2050 (page 23).

Kajima manages its environmental activities by assessing climate change-related risks and opportunities and reviewing indicators and targets every three years based on this environmental vision. The period for environmental targets is synchronized with the medium-term business plan. Kajima thus aims to increase corporate value and solve environmental issues in an integrated manner.

Human Rights, Supply Chain and Framework for Ensuring Safety

Respect for Human Rights

The Kajima corporate philosophy advocates "as a group of individuals working together as one, we pursue creative progress and development founded on both rational, scientific principles and a humanitarian outlook," and thereby clarifies the social mission of our corporate activities. The Kajima Group Code of Conduct requires "respect for all people connect to the Kajima Group," and as such we are committed to implementing initiatives related to respect for human rights.

Over the past few years, companies everywhere have come under increasing pressure to respect human rights, and in response we have reorganized our existing frameworks. In March 2021, we established the Kajima Group Human Rights Policy to clarify our approach toward respect for human rights.

This policy applies to all officers and employees (including regular employees, contract employees and dispatched employees), as well as all business partners that make up our supply chains. The Kajima Group is fulfilling its responsibility toward respect for human rights by not infringing on any human rights, and also by minimizing all adverse impacts on human rights that may arise through its corporate activities.

In the future, we will plan and implement human rights due diligence after considering the best method of development, with the aim of strengthening the framework we have established thus far.

Supply Chain Management

In September 2020, we established the Kajima Group Conduct Guidelines for Business Partners, which are shared with business partners who make up our supply chain. They set forth those matters with respect to which we ask for compliance, respect, and strict adherence-in particular, compliance with laws and regulations, respect for human rights, consideration for the environment, ensuring quality, and other responsibilities. In addition to items related to compliance with laws and regulations, safety, eradication of involvement with antisocial forces, prevention of corruption, and restrictions on child labor, which are included in basic construction subcontracting agreements, and the basic labor health and safety pledges that we ask our partner companies to sign, the guidelines also incorporate the Kajima Group Code of Conduct. We have sent the guidelines to the 4,500 partner companies who are members of the Rokueikai, and require that they comply with ordering terms and conditions when we procure items from them.

We will work together with our suppliers to implement the Code of Conduct in order to meet demands from society, including compliance with laws and regulations, respect for human rights, consideration for the environment, and improving the working environment throughout our supply chain.

After carefully considering the guidelines, we will then plan and implement monitoring and educational activities regarding their implementation.

Working with Partner Companies

Kajima's partner companies formed the Kajima Business Partners' Association, which engages in various projects in the spirit of mutual aid, as well as Rokueikai, whose primary purpose is accident prevention activities. By coming together with partner companies through these organizations, Kajima forms strong partnerships that will ensure quality and safety, and provide other benefits.



Initiatives for Securing the Future Workforce

Kajima Partner College

Kajima Partner College, which was established for the purpose of developing human resources at partner companies, began offering courses in April 2021. The College aims to train future Kajima Meisters and executive management candidates in leadership skills, and to give them a broad perspective, not only in terms of their own job and the work they are in charge of, but also with respect to construction sites, the Company, and the construction industry as a whole.

Incentive System for Activities to Strengthen Productivity

The Incentive System for Activities to Strengthen Productivity* was established as a new measure to support our partner companies. The program encourages and supports efforts to improve productivity and secure human resources.

* A program that provides full or partial grants to members of the Kajima Business Partners' Association. It supports their participation in initiatives that help strengthen productivity.

Kajima Meister System and New E Award System

Registration and Direct Fi	Incentive System for	
for Outstand	Outstanding Skilled Workers	
(Kajima Meis	(New E Award System)	
Supermeister Approx. 100 Supermeisters certified from among Meisters (Fiscal 2021: 119 people) Per-day incentive of ¥4,000		Approx. 400 each year (Fiscal 2020: 613 people) Per-year incentive of ¥100,000

Implementing a Five-Day Work Week

Kajima is pushing forward with the implementation of a five-day work week at construction sites (closing sites for 104 days each year) in stages. As of the end of fiscal 2020, five-day work weeks have been implemented at 31% (target of 75%) of all sites. We will continue our efforts to achieve five-day work weeks at all construction sites.

Framework for Ensuring Safety

Kajima is responsible for the safety and health management of everyone involved in construction site operations. Our role as the prime contractor is to develop plans and manage risks so that foremen and workers from partner companies involved in operations at construction sites can perform their duties confident that their equipment and working environment are safe.

In fiscal 2020 at Kajima construction sites in Japan, there were 52 accidents with lost work time of four or more days, including two fatal accidents. The frequency rate of accidents resulting in lost work time of four or more days was 0.61, and the rate for accidents resulting in lost work time of one or more days was 1.13, resulting in a severity rate of 0.20. Under the slogan "Think safety! Make today accident free," we will continue to do our utmost to ensure a safety-first approach to work.

Safety Perf	ormance			(FY)
		2018	2019	2020
Accident	Lost work time of 4 or more days	0.68	0.69	0.61
frequency rate	Lost work time of 1 or more days	1.49	1.24	1.13
Accident severi	ty rate	0.11	0.18	0.20
No. of accidents	S	66	67	52
Cumulative wor (Millions of hou	king hours rs)	96.71	97.62	84.80
No. of fatalities	Non-consolidated (domestic)	1	2	2
	Non-consolidated (overseas)	0	1	0
	Domestic Group companies ²	0	0	0
	Overseas Group companies ²	0	0 (2)1	0 (1) ¹

Frequency rate: The number of fatalities and injuries at worksites per one million cumulative working hours

Severity rate: The severity of illnesses and injuries represented by the number of workdays lost per one thousand cumulative working hours

Note: Calculations include partner company workers.

1. Figures in parentheses indicate the number of fatal accidents for which the local authorities did not hold the Group responsible

2. "Domestic Group companies" and "Overseas Group companies" refer to subsidiaries involved in construction

Management System

Kajima implements safety and health management in conformance with the Construction Occupational Health and Safety Management System (COHSMS). We follow a PDCA cycle of reviewing our safety and health policies as necessary based on the performance and circumstances of the previous fiscal year, and then formulating Company-wide safety and health targets and plans for the current fiscal year. Starting from the Company-wide policies formulated through this cycle, we narrow down the range of issues to determine the priority items to be implemented at individual construction project offices as well as those for the Head Office, branches and partner companies supporting them.

We then use these items as a foundation for establishing construction safety and health policies, targets, and plans for each construction site, to be shared with partner companies in carrying out construction work. In addition, by focusing on actual workplaces, equipment, and site conditions we will keep improving safety and health levels.

Restructure Multilayered Subcontracting

In Japan, the construction industry's subcontracting structure, which has been in place for many years, is a multilayered structure consisting of primary subcontractors, secondary subcontractors, and lower-tier subcontractors who are responsible for intermediate construction management, provision of labor, and other direct construction functions under the main contractor, which in turn is responsible for the overall management and supervision of the entire construction project.

This multilayered subcontracting structure not only hinders construction facilitation and productivity improvements, but is also responsible for preventing advancements in safety and quality guidance and management, and for keeping the wages of skilled workers low.

In response, Kajima intends to take on the challenge of restructuring multilayered subcontracting (while complying with all laws and regulations) by clarifying where responsibility lies in the construction process to ensure rigorous safety management, etc., and to improve compensation for construction workers and raise productivity.

Having reviewed the existing standards for multilayered subcontracting, we have decided that from April 2021, multilayered subcontracting below the third layer will require branch manager permission. We are working to establish a construction system that is limited to secondary subcontracting as soon as possible by working together with partner companies at branches and worksites nationwide to identify issues. Kajima will work to realize a construction system that is limited to secondary subcontracting, in principle, after clarifying exceptions, at all construction sites from April 2023.

Achieving a construction system that is limited to secondary subcontracting, in principle will lead to an improvement in compensation (raising wages for skilled workers) and make the construction industry more attractive to work in, and by extension, is expected to increase the number of young workers who will lead the next generation. In addition, we believe that creating a management system where the main contractor can keep an eye on the entire project will lead to appropriately focused safety management that enables a competent primary foreman to properly supervise multiple secondary foremen, and provide appropriate instruction and guidance.

Restructure Multilayered Subcontracting

