

KAJIMA CORPORATION

# ENVIRONMENTAL DATA

2022

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## Environmental Policy

Kajima, as the company “Building for the Next 100 Years,” pursues a unique long-term environmental vision, doing its part in the broader social efforts to preserve the environment and ensure economic sustainability.

1

We work to reduce the environmental impact of our business and take into consideration the entire lifecycle of the structures we construct. We thereby seek to help build societies which use materials responsibly, have a low carbon footprint, and harmonize with nature.

2

### As a standard for achieving these goals, Kajima:

- Creates innovative technologies that help safeguard the environment and use resources sustainably;
- Engages in construction management processes to prevent environmental damage caused by hazardous materials used in construction projects; and
- Cooperates with the public, including by proactively disclosing information.





# Kajima Environmental Vision

## ● Background of Kajima Environmental Vision

Kajima assess environmental risks and opportunities in the construction business as follows.

<b>Carbon Neutral Society</b>	<ul style="list-style-type: none"> <li>To achieve the 2050 carbon neutrality goal, both adopting renewable energy and making society more energy efficient are urgent tasks.</li> <li>High expectation is observed to construction industry like initiatives to zero energy building (ZEB) since it is a high-priority measures from the standpoint that energy efficiency of buildings is in particular cost and reduction effectiveness together with adaptable easily.</li> <li>Resource usage has been largely utilized as well as CO<sub>2</sub> emissions related to the production, processing and transportation of materials.</li> </ul>
<b>Recycling Resources Society</b>	<ul style="list-style-type: none"> <li>There is a room for more efficient resource utilization since construction industry has a large amount of resource and waste consumption.</li> <li>Potential to take advantage of recycled materials (including derived from other industries), therefore, an important role in resource recycling.</li> <li>By leveraging the long-life of the building, the large role in the creation of stock society.</li> </ul>
<b>Natural Symbiosis Society</b>	<ul style="list-style-type: none"> <li>In the construction business, a role in modifying the direct natural environment through construction projects which has been involved in the local eco-system, as well as the potential of biodiversity restoration in the urban redevelopment.</li> <li>Since the urban concentration of the population progresses, the growing importance of biodiversity restoration in the city.</li> <li>Through wood procurement and resource procurement, biodiversity can be addressed in logged spots.</li> </ul>

## ● The Kajima Environmental Vision: Triple Zero 2050

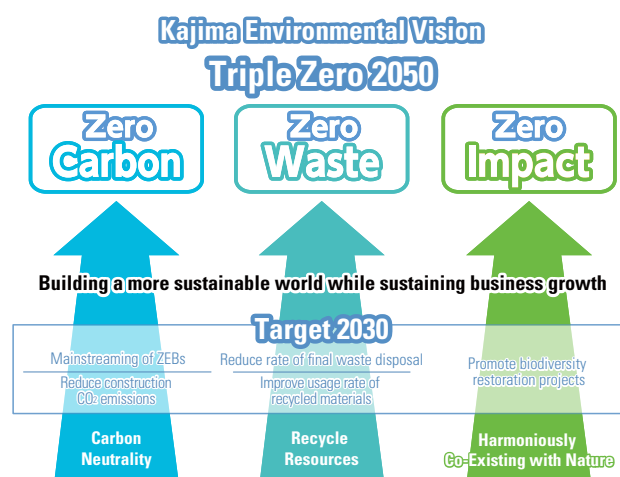
The Kajima Environmental Vision: Triple Zero 2050 recognizes carbon neutrality, resource recycling and harmoniously co-existing with nature as the key aspects of a sustainable society, and sets Zero Carbon, Zero Waste, and Zero Impact to be the future goals for Kajima to achieve by 2050.

Each of the three Zero goals has been set from two perspectives: risks (reducing the environmental impact of business activities will achieve the Zero goals) and opportunities (the Zero goals will be achieved through business/product proposals made to society and our customers).

Triple Zero 2050 was formulated in May 2013, but to match it to the state of society, it was reviewed in May 2018, May 2021, and September 2022, each time resulting in the revision of the carbon neutrality goal.

## ● Target 2030

Target 2030 identifies the core activities for achieving Triple Zero 2050 and sets the 2030 target for the design and construction phases as quantitatively as possible.



## Triple Zero 2050 (Formulated in 2013; revised in 2018, May 2021 and September 2022)

	Social Goals	Triple Zero 2050	Target 2030
<b>Achieving a More Sustainable World</b>	<b>Carbon Neutrality</b> A society that balances greenhouse gas emissions from human activities with the Earth's capacity for CO <sub>2</sub> absorption	<b>Zero Carbon</b> Aiming to achieve carbon neutrality for the Kajima Group's greenhouse gas emissions (Scope 1,2,3 emissions)	[Group-wide] Reduce Group-wide greenhouse gas emissions (Scope 1 and 2 emissions) per unit of sales by 40% or more compared to fiscal 2021 (equivalent to a 40% reduction of total emissions with fixed construction amount). Reduce Scope 3 emissions (classified as Category 1 during construction material production and Category 11 during building operation) by 25%. [Architectural Design] Implement ZEB/ZEH levels for all building construction projects starting in or after fiscal 2030. Note: The target for contract awards for construction projects starting in or after fiscal 2025 is for at least 50% to meet ZEB/ZEH levels.
	<b>Recycle Resources</b> A society that pursues zero emissions by employing state-of-the-art infrastructure maintained and operated using sustainable resources	<b>Zero Waste</b> Aiming to eliminate waste from construction operations by ensuring zero final waste disposal during construction, utilizing sustainable materials, and making buildings last longer	<ul style="list-style-type: none"> <li>Completely eliminate final waste disposal from construction operations</li> <li>Achieve a usage rate of recycled materials of at least 60% for principal construction materials (steel, cement, ready-mixed concrete, crushed stone and asphalt)</li> </ul>
	<b>Harmoniously Co-Existing with Nature</b> A society that values the continuous benefits of ecosystem services by minimizing the impact of human activities on the environment and living creatures	<b>Zero Impact</b> 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	<ul style="list-style-type: none"> <li>Promote biodiversity restoration projects</li> <li>Build a portfolio of effective projects and make them hubs for biodiversity-related networking</li> </ul>
	<b>Common Foundation Initiative Areas</b>	<ul style="list-style-type: none"> <li>Conduct technology development</li> <li>Actively distribute information in and outside the Company</li> </ul>	Management of hazardous substances: Thoroughly implement preventative measures (especially for soil contamination and asbestos)

## Environmental Targets (FY2021-2023) and FY2021 Actual Figures

		Three-Year (FY2021–2023) Targets	FY2020 Targets	FY2020 Results
Carbon Neutrality	Construction	<ul style="list-style-type: none"> <li>Reduce CO<sub>2</sub> emissions per unit of sales by 26% compared to FY2013 →7% compared to FY 2021</li> </ul>	<ul style="list-style-type: none"> <li>Reduce by 22% compared to FY2013</li> </ul>	<ul style="list-style-type: none"> <li>Reduced by 36.4% compared to FY2013</li> </ul>
	Design	<ul style="list-style-type: none"> <li>Deepen ZEB technologies that contribute to the decarbonization of customer companies. Strengthen promotion of the use of labeling systems such as ZEB and Building-Housing Energy-efficiency Labeling System (BELS)</li> <li>Deepen energy management technologies</li> </ul>	<ul style="list-style-type: none"> <li>Strengthen promotion of ZEB, BELS, and other labeling systems (with a particular focus on ZEB Ready and ZEB Oriented)</li> <li>Achieve internal energy conservation standards (20% reduction) and promote internal targets (30% reduction in office buildings, 25% reduction in commercial buildings)</li> <li>Promote ZEB through technical proposals for energy management, use of IoT and other digital technologies, and work style proposals</li> </ul>	<ul style="list-style-type: none"> <li>Engaged in 20 ZEB projects (7 certified; 13 in progress)</li> <li>Conducted numerous R&amp;D activities and activities to solicit work proposals</li> </ul>
Recycle Resources	Construction	<ul style="list-style-type: none"> <li>Less than 3% final waste disposal including sludge</li> </ul>	<ul style="list-style-type: none"> <li>Less than 3% final waste disposal including sludge</li> </ul>	<ul style="list-style-type: none"> <li>2.4% final waste disposal including sludge</li> </ul>
	Design	<ul style="list-style-type: none"> <li>Implement green procurement</li> </ul>	<ul style="list-style-type: none"> <li>Propose more than four items for green procurement, indicate them on working drawings and verify whether or not the proposed items were ultimately adopted</li> </ul>	<ul style="list-style-type: none"> <li>Implement green procurement: Average of 5.2 items proposed</li> </ul>
Harmoniously Co-Existing with Nature		<ul style="list-style-type: none"> <li>Implement outstanding biodiversity projects</li> </ul>	<ul style="list-style-type: none"> <li>Implement more than six outstanding biodiversity projects per year</li> </ul>	<ul style="list-style-type: none"> <li>Selected six outstanding biodiversity projects (building construction: 5, frontier: 1)</li> </ul>
		<ul style="list-style-type: none"> <li>Reduce the impact of construction on the natural environment (particularly through management of hazardous materials and polluted water)</li> </ul>	<ul style="list-style-type: none"> <li>Reduce the impact of construction on the natural environment (particularly through management of hazardous materials and polluted water)</li> </ul>	<ul style="list-style-type: none"> <li>Hazardous material problems: 1</li> </ul>
Common Foundation Initiative Areas	Research and Development	<p>We will work in close cooperation with the entire company to continue our activities with the following target in order to contribute to Triple Zero 2050:</p> <ul style="list-style-type: none"> <li>Deployment of more than six specific results of basic research and development over three years</li> </ul>	<ul style="list-style-type: none"> <li>Environmental contribution technology development projects: 10 or more per year (designated environmental topics)</li> <li>Environmental contribution technology project deployment: 2 or more per year (deployment of results)</li> </ul>	<p>Environmental contribution technology development</p> <ul style="list-style-type: none"> <li>Designated environmental topics: 16</li> <li>Deployment of results: 7</li> </ul>
	Engineering	<ul style="list-style-type: none"> <li>Respond to changes in social conditions and customer requirements</li> <li>Promote the prevention of environmental accidents involving various chemical substances</li> </ul>	<ul style="list-style-type: none"> <li>Identify customer needs, and confirm and implement the policy for the Triple Zero 2050 initiative</li> <li>Thoroughly manage environmental risks by paying attention to the handling of various chemical substances</li> <li>Promote activities to win contract awards through the utilization of wastewater treatment technologies</li> </ul>	<ul style="list-style-type: none"> <li>Confirmed Triple Zero 2050 support: 4</li> <li>Confirmed response to chemical substances: 4</li> <li>Project participation: 51 projects</li> </ul>
	Environmental Engineering	<ul style="list-style-type: none"> <li>Promote environmental management in concert with Group companies</li> <li>Make technical innovations and create projects based on Triple Zero 2050</li> </ul>	<p>Expand projects with core environmental technologies and services</p> <ul style="list-style-type: none"> <li>Strengthen efforts in four priority fields</li> <li>Initiatives for next-generation technologies/projects</li> </ul>	<ul style="list-style-type: none"> <li>Won 36 contract awards in four priority fields (new energy: 4, water environment facilities: 1, soil : 29, green infrastructure: 2)</li> <li>Completed the Hokkaido Hydrogen Utilization Project Demonstration</li> <li>Continued consideration of a Regional Smart Society Project</li> </ul>

# Material Flow

## Construction Sites

INPUT	
● Energy	
Electricity	6,634 ×10 <sup>4</sup> kWh <input checked="" type="checkbox"/>
Diesel oil	55,478 kℓ <input checked="" type="checkbox"/>
Kerosene	367 kℓ <input checked="" type="checkbox"/>
Gasoline	518 kℓ <input checked="" type="checkbox"/>
Heavy oil	159 kℓ <input checked="" type="checkbox"/>
● Tap water	92 ×10 <sup>4</sup> m <sup>3</sup> <input checked="" type="checkbox"/>
● Construction materials	807 ×10 <sup>4</sup> t <input checked="" type="checkbox"/>

OUTPUT	
● CO <sub>2</sub> emissions	17.7 ×10 <sup>4</sup> t <input checked="" type="checkbox"/>
● Wastewater	98 ×10 <sup>4</sup> m <sup>3</sup> <input checked="" type="checkbox"/>
● Construction surplus soil	90.3 ×10 <sup>4</sup> m <sup>3</sup> <input checked="" type="checkbox"/>
● Hazardous materials collected	
Materials containing asbestos	12,305 t <input checked="" type="checkbox"/>
CFCs and halon	1.9 t <input checked="" type="checkbox"/>
Fluorescent tubes	66.4 t <input checked="" type="checkbox"/>
● Construction waste	228.6 ×10 <sup>4</sup> t <input checked="" type="checkbox"/>
● Final disposal volume	5.4 ×10 <sup>4</sup> t <input checked="" type="checkbox"/>

Changes in CO <sub>2</sub> emissions attributable to construction	
Total emissions	17.7 ×10 <sup>4</sup> t-CO <sub>2</sub> <input checked="" type="checkbox"/>
Basic unit	14.0 t-CO <sub>2</sub> /10 <sup>2</sup> million <input checked="" type="checkbox"/>
Reduction rate	36.4% <input checked="" type="checkbox"/>

Volume of construction waste and final disposal volume	
Volume	228.6 ×10 <sup>4</sup> t <input checked="" type="checkbox"/>
Volume (excluding sludge)	151.5 ×10 <sup>4</sup> t <input checked="" type="checkbox"/>
Final disposal volume	5.4 ×10 <sup>4</sup> t <input checked="" type="checkbox"/>
Final disposal volume (excluding sludge)	3.7 ×10 <sup>4</sup> t <input checked="" type="checkbox"/>
Final disposal rate	2.4% <input checked="" type="checkbox"/>
Final disposal rate (excluding sludge)	2.4% <input checked="" type="checkbox"/>

## Office

INPUT	
● Energy	
Electricity	2,759 ×10 <sup>4</sup> kWh <input checked="" type="checkbox"/>
Diesel oil	6 kℓ <input checked="" type="checkbox"/>
Kerosene	10 kℓ <input checked="" type="checkbox"/>
Heavy oil	13 kℓ <input checked="" type="checkbox"/>
Gas	18 ×10 <sup>4</sup> m <sup>3</sup> <input checked="" type="checkbox"/>
Heating, Steam, Cooling	15,672 GJ <input checked="" type="checkbox"/>
● Tap water	16 ×10 <sup>4</sup> m <sup>3</sup> <input checked="" type="checkbox"/>

OUTPUT	
CO <sub>2</sub> emissions	1.4 ×10 <sup>4</sup> t <input checked="" type="checkbox"/>
Wastewater	16.2 ×10 <sup>4</sup> m <sup>3</sup> <input checked="" type="checkbox"/>
Volume of waste	2,129 t <input checked="" type="checkbox"/>

## Kajima Group CO<sub>2</sub> Emissions

Kajima (non-consolidated)	19.1 ×10 <sup>4</sup> t-CO <sub>2</sub>
Domestic Group companies	10.9 ×10 <sup>4</sup> t-CO <sub>2</sub>
Overseas Group companies	12.2 ×10 <sup>4</sup> t-CO <sub>2</sub>
Consolidated Kajima Group	42.1 ×10 <sup>4</sup> t-CO <sub>2</sub>

The Kajima Group's CO<sub>2</sub> emissions are subject to error due to rounding of individual data and total.

### ■ Scope: Kajima Corporation only

- Construction sites: all domestic and overseas sites (excluding domestic affiliate companies and overseas subsidiaries)
- Offices: offices of Kajima corporation and overseas offices (excluding domestic affiliate companies and overseas subsidiaries)

### ■ Regarding third party verification

- Environmental performance data for FY2021, including greenhouse gas emissions (Scope 1, 2, 3), energy use, tap water use, hazardous materials, and waste emissions were verified by Japan Quality Assurance Organization (JQA). Items indicated with  were verified by the third party. (Verification document attached to the end page)

# Zero Carbon

CO <sub>2</sub> emissions (construction sites, office sector) (FY)		
		2021
Emissions	×10 <sup>4</sup> t-CO <sub>2</sub>	19.1
Basic unit	t-CO <sub>2</sub> /10 <sup>2</sup> million ¥	15.3

CO <sub>2</sub> emissions from construction sites (FY)						
		2013 (base year)	2018	2019	2020	2021
Emissions	×10 <sup>4</sup> t-CO <sub>2</sub>	22.8	25.1	22.7	15.7	17.7 <input checked="" type="checkbox"/>
Basic unit	t-CO <sub>2</sub> /10 <sup>2</sup> million ¥	22.0	20.0	17.6	13.8	14.0 <input checked="" type="checkbox"/>
Reduction rate	%	14.8	9.0	20.0	37.3	36.4 <input checked="" type="checkbox"/>

\* For FY2018 and later results, the benchmark year for reduction rates was changed from FY1990 to FY2013.

\* The emissions calculation method was changed in FY2020 from making estimates based on sample data to obtaining the actual data from all construction sites

Scope type CO <sub>2</sub> emissions (FY)						
		2017	2018	2019	2020	2021
Scope-1	×10 <sup>4</sup> t-CO <sub>2</sub>	19.0	20.5	17.0	12.4	14.9 <input checked="" type="checkbox"/>
Scope-2	×10 <sup>4</sup> t-CO <sub>2</sub>	9.8	6.0	7.0	4.7	4.2 <input checked="" type="checkbox"/>
Scope-3	×10 <sup>4</sup> t-CO <sub>2</sub>		235.1	413.1	230.1	674.9 <input checked="" type="checkbox"/>
Category1*1 (purchased goods and services)	×10 <sup>4</sup> t-CO <sub>2</sub>		117.9	126.1	127.2	405.6 <input checked="" type="checkbox"/>
Category11*2 (use of sold products)	×10 <sup>4</sup> t-CO <sub>2</sub>		103.6	257.9	79.1	204.9 <input checked="" type="checkbox"/>
Scope-1,2,3 total	×10 <sup>4</sup> t-CO <sub>2</sub>		261.6	437.1	247.1	694.0 <input checked="" type="checkbox"/>
Kajima Group-wide Scope-1, -2, and -3	×10 <sup>4</sup> t-CO <sub>2</sub>					1,074.9

\*1: Up to and including FY2020, calculations of CO<sub>2</sub> emissions only covered the main construction materials, namely crushed stone, asphalt, cement, and ready-mixed concrete. Since FY2021, such calculations cover all materials.

\*2: The calculation includes CO<sub>2</sub> emissions from the use stage of the lifecycle (set to 30 years) of buildings completed during the subject fiscal year.

Energy Consumption (FY)						
		2017	2018	2019	2020	2021
Total amount of energy consumption*	×10 <sup>4</sup> kWh	113.6	115.4	109.1	77.9	86.6 <input checked="" type="checkbox"/>
Fossil fuels consumption	×10 <sup>4</sup> kWh	75.9	81.8	68.0	49.9	60.0 <input checked="" type="checkbox"/>
Construction sites	×10 <sup>4</sup> kWh	75.6	81.6	67.8	49.7	59.7 <input checked="" type="checkbox"/>
Offices	×10 <sup>4</sup> kWh	0.3	0.2	0.2	0.2	0.2 <input checked="" type="checkbox"/>
Purchased electricity	×10 <sup>4</sup> kWh	13.5	11.9	14.6	9.9	9.4 <input checked="" type="checkbox"/>
Construction sites	×10 <sup>4</sup> kWh	10.8	9.4	12.1	7.3	6.6 <input checked="" type="checkbox"/>
Offices	×10 <sup>4</sup> kWh	2.7	2.5	2.5	2.6	2.8 <input checked="" type="checkbox"/>
Steam/Heating/Cooling consumption (only office)	×10 <sup>4</sup> kWh	0.6	0.6	0.6	0.6	0.6 <input checked="" type="checkbox"/>

\* The total amount of energy consumption is different from the simple total value of each energy consumption, since it sums up the value obtained by converting the purchased electric energy into the primary energy.

Contribution amount of indirect CO <sub>2</sub> emissions reduction (FY)						
		2017	2018	2019	2020	2021
Contribution amount of CO <sub>2</sub> emissions reduction attributable to energy-saving design of buildings*	×10 <sup>4</sup> t-CO <sub>2</sub>	39.0	31.3	48.8	31.7	30.8

\* From FY2017, the CO<sub>2</sub> emission amount is calculated by multiplying annual contribution of CO<sub>2</sub> reduction attributable to energy-saving design of buildings, which are designed internally and completed in the FY, by the life-cycle of buildings (30years).

# Zero Waste

Overseas construction sites are excluded from the calculation because standards and treatment methods for waste are greatly different from country to country.

## Usage of materials

(FY)

Material			2017	2018	2019	2020	2021
<b>Steel</b>	Total usage	t					867,860
<b>Cement</b>	Total usage	t	1,270,000	1,460,063	1,558,339	1,569,311	4,338,657
<b>Aggregate</b>	Total usage	t	909,000	674,733	691,046	361,439	1,663,110
<b>Asphalt</b>	Total usage	t	54,000	53,947	26,378	20,039	3,040
<b>Others</b>	Total usage	t					1,200,113
<b>Total</b>	Total usage	t	2,233,000	2,188,743	2,275,763	1,950,789	8,072,781

\* Until FY2020, only main construction materials were aggregated; since FY2021, all construction materials have been aggregated.

## Volume of construction waste and final disposal volume

(FY)

		2017	2018	2019	2020	2021
<b>Volume</b>	×10 <sup>4</sup> t <sup>3</sup>	198.8	199.4	145.5	159.2	228.6 <input checked="" type="checkbox"/>
<b>Volume (excluding sludge)</b>	×10 <sup>4</sup> t <sup>3</sup>	123.4	130.2	88.4	102.1	151.5 <input checked="" type="checkbox"/>
<b>Final disposal Volume</b>	×10 <sup>4</sup> t <sup>3</sup>	4.8	8.5	5.7	4.0	5.4* <input checked="" type="checkbox"/>
<b>Final disposal Volume (excluding sludge)</b>	×10 <sup>4</sup> t <sup>3</sup>	2.6	5.8	2.9	3.3	3.7 <input checked="" type="checkbox"/>
<b>Final disposal rate</b>	%	2.4	4.3	3.9	2.5	2.4 <input checked="" type="checkbox"/>
<b>Final disposal rate (excluding sludge)</b>	%	2.1	4.5	3.3	3.2	2.4 <input checked="" type="checkbox"/>

\* The final disposal volume from construction sites and offices was 56,484t.

## Emissions by waste category (FY2021)

Construction waste	Volume (t)	Percentage of waste volume
<b>Concrete remnants</b>	855,138 <input checked="" type="checkbox"/>	37% <input checked="" type="checkbox"/>
<b>Asphalt Concrete remnants</b>	255,535 <input checked="" type="checkbox"/>	11% <input checked="" type="checkbox"/>
<b>Wood scrap</b>	72,309 <input checked="" type="checkbox"/>	3% <input checked="" type="checkbox"/>
<b>Construction sludge</b>	770,977 <input checked="" type="checkbox"/>	34% <input checked="" type="checkbox"/>
<b>Mixed waste</b>	30,635 <input checked="" type="checkbox"/>	1% <input checked="" type="checkbox"/>
<b>Waste plastic</b>	8,823 <input checked="" type="checkbox"/>	0% <input checked="" type="checkbox"/>
<b>Others</b>	292,789 <input checked="" type="checkbox"/>	13% <input checked="" type="checkbox"/>
<b>Total</b>	2,286,204 <input checked="" type="checkbox"/>	100% <input checked="" type="checkbox"/>

(FY)

## Volume of offices waste

		2017	2018	2019	2020	2021
<b>Waste</b>	t	1,942.4	2,036.4	2,096.5	1,670.0	2,129.4 <input checked="" type="checkbox"/>

\* FY2021 saw an increase due to the headquarters and branch office relocation.

### Plastic reduction

The Plastic Resource Recycling Promotion Act came into effect in April 2022. At Kajima, as a mass producer that generates industrial plastic product waste, we are working to reduce and recycle such waste. Specifically, we are making efforts to continuously collect and recycle used products such as helmets, work clothes, and badges as well as to increase construction sites' recycle rates by promoting waste separation.

# Zero Waste

Waste treatment by category (FY)											
Construction waste		Concrete remnants			Asphalt Concrete remnants			Wood scrap			
		2019	2020	2021	2019	2020	2021	2019	2020	2021	
Processing Category	Recycled volume	t	559,495	541,836	853,921 <input checked="" type="checkbox"/>	117,001	108,294	253,363 <input checked="" type="checkbox"/>	25,178	43,887	61,198 <input checked="" type="checkbox"/>
	Reduction volume	t	49	93	18 <input checked="" type="checkbox"/>	35	13	33 <input checked="" type="checkbox"/>	412	401	686 <input checked="" type="checkbox"/>
	Final disposal volume	t	1,069	1,075	1,199 <input checked="" type="checkbox"/>	9	168	2,140 <input checked="" type="checkbox"/>	506	249	709 <input checked="" type="checkbox"/>
<b>Total volume</b>		t	560,612	543,004	855,138 <input checked="" type="checkbox"/>	117,044	108,476	255,535 <input checked="" type="checkbox"/>	26,096	44,537	62,593 <input checked="" type="checkbox"/>
Construction waste		Construction sludge			Waste plastic*			Mixed waste			
		2019	2020	2021	2019	2020	2021	2019	2020	2021	
Processing Category	Recycled volume	t	435,015	496,016	507,470 <input checked="" type="checkbox"/>	5,555	4,521	5,615 <input checked="" type="checkbox"/>	25,374	20,914	20,077 <input checked="" type="checkbox"/>
	Reduction volume	t	50,535	46,915	47,787 <input checked="" type="checkbox"/>	908	719	805 <input checked="" type="checkbox"/>	2,716	1,986	2,643 <input checked="" type="checkbox"/>
	Final disposal volume	t	27,127	6,708	17,581 <input checked="" type="checkbox"/>	1,829	1,891	2,403 <input checked="" type="checkbox"/>	9,372	11,397	7,915 <input checked="" type="checkbox"/>
<b>Total volume</b>		t	512,676	549,638	572,838 <input checked="" type="checkbox"/>	8,291	7,131	8,823 <input checked="" type="checkbox"/>	37,462	34,297	30,635 <input checked="" type="checkbox"/>

\* Only plastics separated as waste are counted. This volume does not include plastics found in mixed waste.

Recycle rate by waste category (FY)											
Construction waste		Concrete remnants			Asphalt Concrete remnants			Wood scrap			
		2019	2020	2021	2019	2020	2021	2019	2020	2021	
Processing Category	Recycled rate	%	99.8	99.8	99.9 <input checked="" type="checkbox"/>	99.8	99.8	99.1 <input checked="" type="checkbox"/>	94.1	98.5	98.1 <input checked="" type="checkbox"/>
	Reduction rate	%	0.0	0.0	0.0 <input checked="" type="checkbox"/>	0.0	0.0	0.0 <input checked="" type="checkbox"/>	4.0	0.9	0.9 <input checked="" type="checkbox"/>
	Final disposal rate	%	0.2	0.2	0.1 <input checked="" type="checkbox"/>	0.0	0.2	0.8 <input checked="" type="checkbox"/>	1.9	0.6	1.0 <input checked="" type="checkbox"/>
<b>Total</b>		%	100	100	100 <input checked="" type="checkbox"/>	100	100	100 <input checked="" type="checkbox"/>	100	100	100 <input checked="" type="checkbox"/>
Construction waste		Construction sludge			Waste plastic*			Mixed waste			
		2019	2020	2021	2019	2020	2021	2019	2020	2021	
Processing Category	Recycled rate	%	86.2	90.4	69.4 <input checked="" type="checkbox"/>	67.0	63.4	63.6 <input checked="" type="checkbox"/>	67.7	61.0	65.5 <input checked="" type="checkbox"/>
	Reduction rate	%	9.0	8.5	28.3 <input checked="" type="checkbox"/>	10.9	9.1	9.1 <input checked="" type="checkbox"/>	7.2	5.8	8.6 <input checked="" type="checkbox"/>
	Final disposal rate	%	4.7	1.2	2.3 <input checked="" type="checkbox"/>	22.1	27.2	27.2 <input checked="" type="checkbox"/>	25.0	33.2	25.8 <input checked="" type="checkbox"/>
<b>Total</b>		%	100	100	100 <input checked="" type="checkbox"/>	100	100	100 <input checked="" type="checkbox"/>	100	100	100 <input checked="" type="checkbox"/>

Amount of tap water consumption (FY)						
		2017	2018	2019	2020	2021
Construction sites	×10 <sup>4</sup> m <sup>3</sup>	86	71	61	87	92 <input checked="" type="checkbox"/>
Offices	×10 <sup>4</sup> m <sup>3</sup>	15	16	15	15	16 <input checked="" type="checkbox"/>
<b>Total</b>	×10 <sup>4</sup> m <sup>3</sup>	101	87	76	102	108 <input checked="" type="checkbox"/>

Amount of wastewater (FY)			
		2020	2021
Construction sites	×10 <sup>4</sup> m <sup>3</sup>	112	98 <input checked="" type="checkbox"/>
Offices	×10 <sup>4</sup> m <sup>3</sup>	15	16 <input checked="" type="checkbox"/>
<b>Total</b>	×10 <sup>4</sup> m <sup>3</sup>	127	115 <input checked="" type="checkbox"/>

Note: At construction sites, more sewage is drained than tap water is used because rain and spring water are treated as sewage.

# Zero Impact

## ■ Management of hazardous substances

Recover amount of CFCs & halons 2016 <span style="float: right;">(FY)</span>						
		2017	2018	2019	2020	2021
Recover amount	t	5.3	1.5	0.2	3.9	1.9 <input checked="" type="checkbox"/>

Recover amount of used florescent lamp <span style="float: right;">(FY)</span>						
		2017	2018	2019	2020	2021
Recover amount	t	42.2	77.9	43.3	49.2	66.4 <input checked="" type="checkbox"/>

Disposal volume of PCB include equipment <span style="float: right;">(FY)</span>						
		2017	2018	2019	2020	2021
Number of items		8	22	105	0	0 <input checked="" type="checkbox"/>

Disposal volume of hazardous materials (disclosed from FY2017) <span style="float: right;">(FY)</span>						
		2017	2018	2019	2020	2021
CFCs/ halon, fluorescent lamps (mercury), asbestos and other hazardous materials	t	162,442	523,009	216,398	104,127	62,867 <input checked="" type="checkbox"/>

Recover amount of materials containing asbestos <span style="float: right;">(FY)</span>						
		2017	2018	2019	2020	2021
Recover amount	t	17,490	56,926	6,197	14,251	8,916 <input checked="" type="checkbox"/>

Number of soil contamination surveys <span style="float: right;">(FY)</span>						
		2017	2018	2019	2020	2021
Number of surveys as a designated institution		17	14	9	9	25
Number of law investigation included in above number		5	7	4	4	8

Air pollutant emissions <span style="float: right;">(FY)</span>						
		2017	2018	2019	2020	2021
NOX	t	1,250	1,346	1,120	821	987 <input checked="" type="checkbox"/>
SOX	t	185	200	167	122	147 <input checked="" type="checkbox"/>

## ■ Harmoniously Co-Existing with Nature

Outstanding biodiversity projects (FY2021)	
Area	Project name
Building construction	(Tentative)Tsurumi training center
Building construction	Tamachi M-SQUARE Garden
Building construction	MITSUI FUDOSAN Logistics park Ichikawa Shiohama
Building construction	And 1 other
Building construction (Overseas)	The GEAR
Frontier	Development of an effective seagrass bed creation technique for fishing ground formation



# 2021 Environmental accounting report

## 1. Overview

Kajima limits environmental accounting to construction waste for the following reasons.

- Construction waste is managed by manifest system, together with high accuracy of numerical value (product category of emissions and disposal amount).
- Construction waste revealed to be the largest cost factor, which accounts for half of the total environmental cost based on the survey results of environmental accounting.
- Waste disposal is evaluated from both aspects of cost and environmental impact, and use it as an incentive for zero emissions.

## 2. Result on major construction waste

Construction waste	Volume of waste (228.6×10 <sup>4</sup> t)	Processing cost (144×10 <sup>2</sup> million ¥)	CO <sub>2</sub> emissions (0.2×10 <sup>4</sup> t)
Construction sludge	569,180t	7,088 x 10 <sup>2</sup> million ¥	127t
Concrete remnants	880,534t	3,771 x 10 <sup>2</sup> million ¥	922t
Asphalt concrete remnants	255,531t	1,057 x 10 <sup>2</sup> million ¥	287t
Mixed waste (organic)	24,877t	894 x 10 <sup>2</sup> million ¥	58t
Mixed waste (inorganic)	3,738t	116 x 10 <sup>2</sup> million ¥	20t
Wood scrap	62,591t	1,513 x 10 <sup>2</sup> million ¥	633t
Total	1,796,452t	14,440 x 10 <sup>2</sup> million ¥	2,047t
reference: All construction waste	2,286,204t	-	10,140t
Percentages of major wastes	79%		20%

Characteristics of the construction industry include the following.

- Wood scrap & mixed waste have large impact on treatment costs compared to emissions.
- Concrete remnants & asphalt concrete remnants are easily recycled, and, the impact on CO<sub>2</sub> emissions and the cost are small compared to the emissions.

## 3. Evaluation

- CO<sub>2</sub> emission of 0.2×10<sup>4</sup>t caused by waste disposal in general is equivalent to over 1% of 19.1×10<sup>4</sup> tons, the CO<sub>2</sub> emissions from the construction work. (FY2020: 5%)
- Waste disposal cost accounts for 1.1% of value of construction work. (FY2020: 1.1%)

## 4. R&D investment on addressing environmental issues

- R&D investment for addressing environmental issues in fiscal 2021 amounted to 7,100 million yen.

### Calculation method

#### [Quantity]

- All quantity data of waste manifests are aggregated at Kajima's environmental information system.

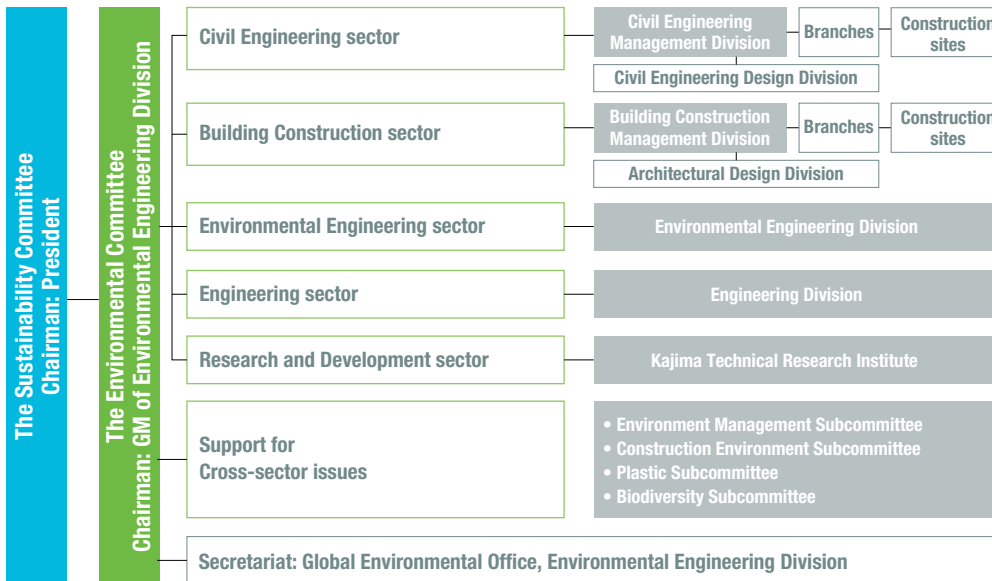
#### [Cost]

- The processing unit price of each project was aggregated and set the average unit cost for each branch by-item.

#### [CO<sub>2</sub> emission]

- It is obtained by multiplying the amount of waste per category by the basic unit of CO<sub>2</sub> emissions for waste transportation and disposal (based on a Ministry of the Environment database).
- The boundary is set to intermediary processing facilities and disposal sites which are first delivered from construction sites. Subsequent facilities are excluded.
- Project sites outside of Japan are excluded since applicable standards and treatment methods of construction waste vary widely from country to country.

# Environmental Management System



Kajima operates environmental management systems (EMS) that are ISO 14001 compliant. The Environment Committee (a special-purpose committee under the Sustainability Committee) implements initiatives in five sectors: civil engineering, building construction, environmental engineering, engineering, and research and development. Four subcommittees address environmental management, construction environments, plastics, and biodiversity as cross-sector issues, and working groups are also organized for matters such as addressing requirements under the Act on Rationalizing Energy Use.

Kajima surveys the energy usage of domestic and overseas Group companies and holds discussions regarding reduction measures with those companies that have the highest emissions.

# Environmental Management System Certification





# Independent Verification Report

**JQA** No.1811094379

**Independent Verification Report**

**To: Kajima Corporation**

**1. Objective and Scope**

JQA Quality Assurance Organization (hereafter "JQA") was engaged by Kajima Corporation (hereafter "the Company") to provide an independent verification on "Kajima Corporation - Calculation Results for FY2021\* environmental performance data, revised July 8, 2022" (hereafter "the Report"). The content of our verification was to express our conclusion, based on our verification procedures, on whether the statement of information regarding greenhouse gas (hereafter "GHG") emissions, energy consumption (incl. data converted into carbon dioxide equivalent) (hereafter "energy consumption"), tap water consumption, wastewater discharge, waste volume, final disposal volume and final disposal method (hereafter "waste volume"), disposal and transfer volume of the 18 hazardous substances associated with construction work, disposal volume of PCB (hereafter "hazardous substances volume"), and NOx and SOx emissions in the Report was correctly measured and calculated, in accordance with the "Kajima Corporation - Calculation rule for environmental performance data July 2022" (hereafter "the Rule"). The purpose of the verification is to evaluate the Report objectively and to enhance the credibility of the Report.

\*The fiscal year 2021 of the Company ended on March 31, 2022.

**2. Procedures Performed**

JQA conducted verification in accordance with "ISO 14064-3" for GHG emissions for Scope 1, 2, and 3 and energy consumption, and with "ISO 14000" for tap water consumption, wastewater discharge, waste volume, hazardous substances volume, and NOx and SOx emissions, respectively. The scope of this verification assignment covers energy-derived CO2 emissions (over Scope 1 & 2, and 3 (1) categories) as GHG emissions, energy consumption, tap water consumption, wastewater discharge, waste volume, hazardous substances volume, and NOx and SOx emissions. The verification was conducted to a limited level of assurance and guarantee materiality was set at 5 percent each of the total emissions, total amount of energy consumption, tap water consumption and wastewater discharge, waste volume, hazardous substances volume in the Report. The organizational boundaries of this verification covers domestic construction sites and civil engineering sites, overseas civil engineering sites, 75 domestic offices and 6 overseas offices of the Company.

Our verification procedures included:

- Visiting the Company's head office to perform validation to check the Rule and conduct verifications: verifying to check monitoring and calculation system, calculation scenario, and cross-check activity data against evidence.
- Cross-checking activity amount data of 3 offices on the basis of sampling, to evaluate accuracy of calculated results for GHG emissions (Scope 1 and 2), energy consumption, tap water consumption, wastewater discharge, waste volume.
- On-site assessment to check the report scope and boundaries, calculation scenario and allocation method for CO2 emissions of Scope 3, emissions, hazardous substances volume, NOx and SOx emissions and monitoring and calculation system and its controls for overall.

**3. Conclusion**

Based on the procedures described above, nothing has come to our attention that caused us to believe that the statement of the information regarding the Company's FY2021 GHG emissions (Scope 1, 2 and 3), energy consumption, tap water consumption, wastewater discharge, waste volume, hazardous substances volume and NOx and SOx emissions in the Report is not materially correct, or has not been prepared in accordance with the Rule.

\*Please refer to the next page.

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**JQA** No.1811094379

**Table 1: Environmental data reported by Kajima Corporation for the FY2021**

GHG emissions (CO2)	
Scope 1	148,651
Scope 2	42,282
Scope 3	6,749,275
Water consumption (m <sup>3</sup> )	1,040,587
Wastewater discharge (m <sup>3</sup> )	1,145,104
Waste volume(t)	2,268,333
Hazardous substances volume(t)	62,467
NOx emissions(t)	98.7
SOx emissions(t)	147

**4. Consideration**

The Company was responsible for preparing the Report, and JQA responsibility was to conduct verification of GHG emissions (Scope 1, 2 and 3), energy consumption, tap water consumption, wastewater discharge, waste disposal volume, hazardous substances volume, and NOx and SOx emissions in the Report only. There is no conflict of interest between the Company and JQA.

  
 Kazuo Anzai, Board Director  
 For and on behalf of Japan Quality Assurance Organization  
 1-23, Kashiwanishicho, Chiyoda-ku, Tokyo, Japan  
 July 15, 2022

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