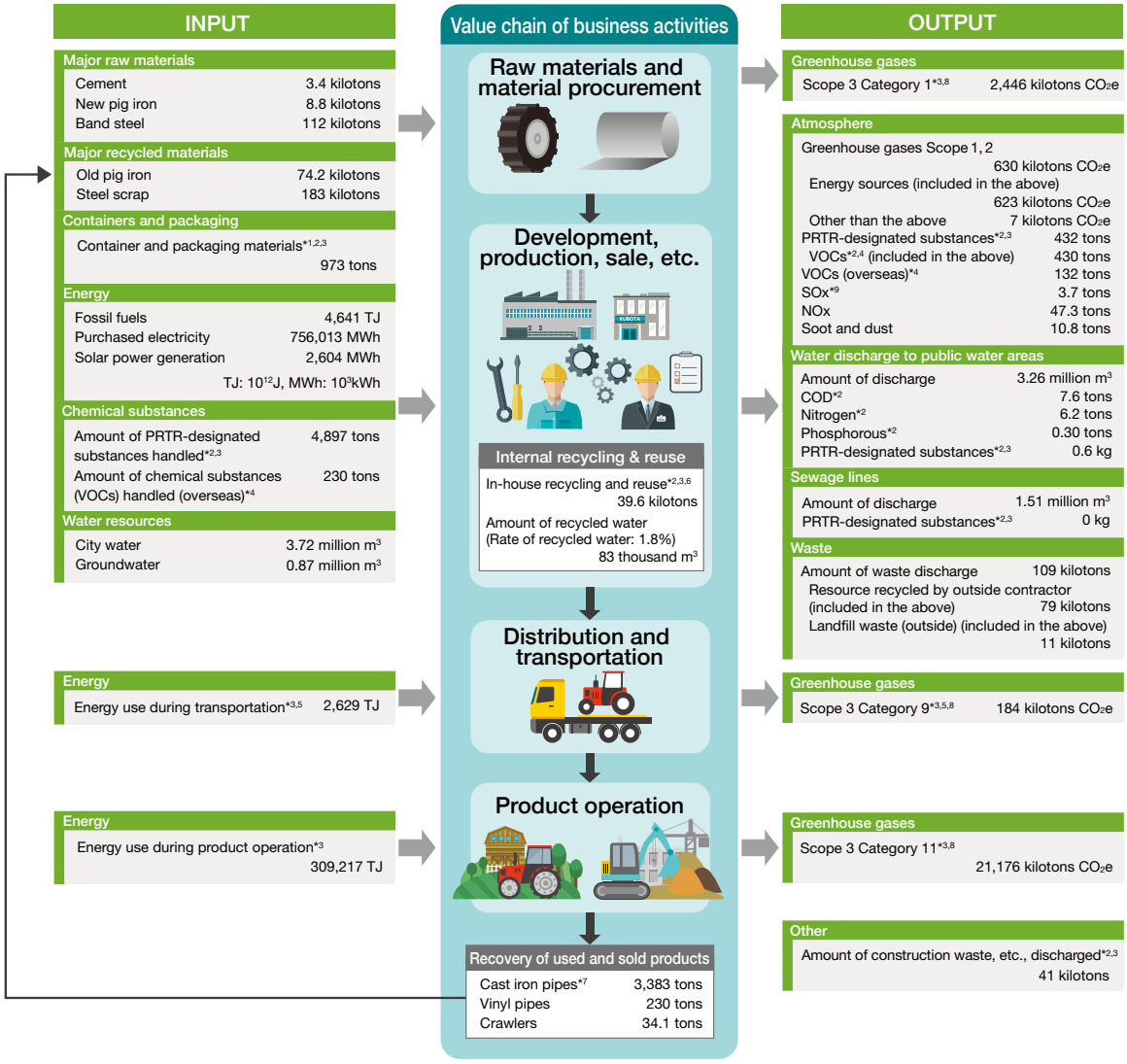
Environmental Data

Overview of the Environmental Load on the Value Chain

This is an overall summary of the Kubota Group's environmental loads associated with its diverse business activities in Japan and overseas in RY2019. The results of the measurement of the overall environmental loads on the entire value chain, from the procurement of raw materials, to manufacturing, distribution, sales, consumption, and the recycling of waste are used for the reduction of greenhouse gas emissions and the effective utilization of resources.

Overview of the Environmental Loads on the Value Chain (Results in RY2019)



*1 Packaging materials subject to the Act on the Promotion of Sorted Collection and Recycling of Containers and Packaging
*2 Data for Japan
*3 Not subject to the third-party assurance
*4 VOCs (volatile organic compounds) comprise the six substances that are most prevalent in emissions from the Kubota Group: xylene, toluene, ethylbenzene, styrene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene.
*5 Data for Japan and data associated with the overseas shipping of certain products from Japan
*6 To reduce overall emissions to the outside of the Group, including valuable resources, metal scraps generated at machinery production and related sites are collected for recycling at cast iron production sites within the Group. From RY2019, as a way of evaluating the progress of these activities, calculation standards have been changed so that transfer of valuable resources between business sites within the Group is no longer included in the valuable resources figure, but is counted instead as in-house recycling and reuse. The in-house recycling and reuse figure for RY2019 calculated using the previous standard would be 34.0 thousand tons.
*7 Up to RY2018, the figure for cast iron pipes in some cases included a portion generated and reused within business sites. This portion is excluded from RY2019. Calculated using the previous method, the figure for cast iron pipes would be 8,993 tons.
*8 For Greenhouse gases Scope 3, only part of the categories are presented. For more details, see the CO_2 Emissions throughout the Value Chain (p.41).
*9 If sulfur contained in the slag managed onsite at end of year (December 31, 2019) by some sites in Japan is included, SOx emissions for RY2019 amounted to 5.2 tons.

For the calculation method of each item of environmental data, see the Calculation Standards of Environmental Performance Indicators (p.86).

Trends in Major Environmental Indicators

Energy

Environmental indicators				Unit	RY2015	RY2016	RY2017	RY2018	RY2019
Energy	Within business sites	Energy consumption*1		TJ	11,450	11,295	11,602	12,234	12,075
			Fossil fuels	TJ	4,575	4,434	4,399	4,687	4,641
			Natural gas included in the above*2	TJ	1,980	2,056	2,267	2,501	2,561
			Purchased electricity	MWh	700,015	698,370	732,508	767,255	756,013
		Power generation for own use	Cogeneration*2	MWh	1,715	1,977	416	1,805	2,274
			Solar power generation*3	MWh	1,217	1,732	1,855	2,412	2,604
	Energy use during transportation*2,4			TJ	634	606	643	2,741	2,629

CO_2 Emissions

Environmental indicators			Unit	RY2015	RY2016	RY2017	RY2018	RY2019
Greenhouse gases	Scope 1, 2		kilotons CO_2e	674	647	645	647	630
		Overseas included in the above*5	kilotons CO_2e	168	172	197	204	203
		Energy sources	kilotons CO_2e	666	639	638	640	623
		Other than the above*5	kilotons CO_2e	8	8	8	7	7
	Scope 3 Category 9 (Transportation of sold products)*2,6,7		kilotons CO_2e	44	42	44	180	184

Resources and Materials

Environmental indicators		Unit	RY2015	RY2016	RY2017	RY2018	RY2019
Major raw materials	Cement	kilotons	8.7	6.8	4.4	4.9	3.4
	New pig iron	kilotons	7.5	6.7	7.2	9.7	8.8
	Band steel	kilotons	99.6	106	132	121	112
Major recycled materials	Old pig iron	kilotons	62.9	58.6	64.0	71.8	74.2
	Steel scrap	kilotons	271	224	182	193	183
Containers and packaging	Container and packaging materials (Japan)*2,8	tons	—	—	988	922	973

Waste

Environmental indicators				Unit	RY2015	RY2016	RY2017	RY2018	RY2019
Waste, others	Amount of waste discharge			kilotons	116	106	108	113	109
			Overseas included in the above	kilotons	40	39	43	52	40
		Hazardous/non-hazardous waste	Hazardous waste	kilotons	—	—	6.0	5.3	5.5
			Non-hazardous waste*9	kilotons	—	—	102	108	103
		By treatment category	Resource recycled by outside contractor	kilotons	93	85	88	92	79
			Landfill waste (outside)	kilotons	12	11	9	10	11
	Amount of construction waste, etc., discharged (Japan)*2			kilotons	44	54	46	41	41

*1 Conventionally, energy use during transportation (Japan) was included in total energy consumption. But starting from RY2017, it is not retrospectively included.
*2 Not subject to the third-party assurance
*3 Values for RY2015 to RY2018 were corrected to improve accuracy.
*4 In addition to the data for Japan, energy use associated with the overseas shipping of certain products from Japan has been included from RY2018.
*5 Values for RY2016 and RY2017 were corrected to improve accuracy.
*6 For Greenhouse gases Scope 3, only part of the categories are presented. For more details, see the CO_2 Emissions throughout the Value Chain (p.41).
*7 In addition to the data for Japan, CO_2 emissions associated with the overseas shipping of certain products from Japan have been included from RY2018.
*8 Packaging materials subject to the Act on the Promotion of Sorted Collection and Recycling of Containers and Packaging.
*9 Non-hazardous waste = Amount of waste discharge - Amount of hazardous waste

For the calculation method of each item of environmental data, see the Calculation Standards of Environmental Performance Indicators (p.86).

Water resources

Environmental indicators			Unit	RY2015	RY2016	RY2017	RY2018	RY2019
Water resources	Water consumption		million m^3	5.05	4.86	4.51	4.88	4.59
		Overseas included in the above	million m^3	1.23	1.20	1.07	1.10	1.11
	City water*1		million m^3	4.08	3.99	3.60	3.89	3.72
	Groundwater		million m^3	0.97	0.87	0.91	0.99	0.87

Water system discharge

Environmental indicators		Unit	RY2015	RY2016	RY2017	RY2018	RY2019
Water discharge to public water areas	Wastewater discharge	million m^3	3.82	3.71	3.26	3.62	3.26
	COD (Japan)*2	tons	9.9	10.1	7.7	8.6	7.6
	Nitrogen discharge (Japan)*2	tons	9.6	9.2	9.1	6.9	6.2
	Phosphorous discharge (Japan)*2	tons	0.35	0.36	0.27	0.38	0.30
	Amount of PRTR-designated substances released (Japan)*3	kg	0	0	0.8	0.9	0.6
Sewage lines	Wastewater discharge	million m^3	1.58	1.54	1.42	1.50	1.51
	Amount of PRTR-designated substances transferred (Japan)*3	kg	23	22	17	0	0

Chemical Substances

Environmental indicators		Unit	RY2015	RY2016	RY2017	RY2018	RY2019
Chemical substances	Amount of PRTR-designated substances handled (Japan)*3	tons	5,143	4,875	4,457	5,309	4,897
	Amount of chemical substances (VOCs) handled (overseas)*4	tons	359	350	324	327	230

Atmospheric Discharge

Environmental indicators			Unit	RY2015	RY2016	RY2017	RY2018	RY2019
Atmosphere	Amount of PRTR-designated substances released (Japan)*3		tons	543	463	423	428	432
	VOC emissions*4		tons	798	703	641	597	562
		Overseas included in the above*4	tons	260	243	221	172	132
	SOx emissions		tons	24.7	31.5	17.5	9.4*6	3.7*6
	NOx emissions*5		tons	76.2	94.2	68.8	49.5	47.3
	Soot and dust emissions		tons	15.1	26.5	21.9	9.8	10.8

*1 City water includes service water and water for industrial use.
*2 Data for total discharge from business sites subject to total emission control.
*3 Not subject to the third-party assurance
*4 VOCs (volatile organic compounds) comprise the six substances that are most prevalent in emissions from the Kubota Group: xylene, toluene, ethylbenzene, styrene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene.
*5 Values for RY2018 were corrected to improve accuracy.
*6 If sulfur contained in the slag managed onsite by some sites in Japan is included, SOx emissions to 7.3 tons for RY2018 and 5.2 tons for RY2019.

For the calculation method of each item of environmental data, see the Calculation Standards of Environmental Performance Indicators (p.86).

Calculation Results of PRTR-designated Substances

RY2019 Results of PRTR Reporting (Japan)

Number specified in PRTR	Chemical substance	Releases				Transfers	
		Atmosphere	Public water areas	Soil	On-site landfills	Sewerage	Transfers to off-site
1	Zinc compounds (water-soluble)	0.0	0.0	0.0	0.0	0.0	876
53	Ethylbenzene	111,867	0.0	0.0	0.0	0.0	24,183
71	Ferric chloride	0.0	0.0	0.0	0.0	0.0	0.0
80	Xylene	198,661	0.0	0.0	0.0	0.0	34,355
87	Chromium and chromium (III) compounds	0.0	0.0	0.0	0.0	0.0	3,428
132	Cobalt and its compounds	0.0	0.0	0.0	0.0	0.0	2.1
239	Organic tin compounds	0.0	0.0	0.0	0.0	0.0	410
240	Styrene	21,155	0.0	0.0	0.0	0.0	0.0
277	Triethylamine	0.0	0.0	0.0	0.0	0.0	0.0
296	1,2,4-trimethylbenzene	16,750	0.0	0.0	0.0	0.0	4,803
297	1,3,5-trimethylbenzene	2,574	0.0	0.0	0.0	0.0	715
300	Toluene	78,600	0.0	0.0	0.0	0.0	15,029
302	Naphthalene	2,533	0.0	0.0	0.0	0.0	0.0
305	Lead compounds	41	0.60	0.0	0.0	0.20	6,834
308	Nickel	0.15	0.0	0.0	0.0	0.0	435
349	Phenol	0.0	0.0	0.0	0.0	0.0	0.0
352	Diallyl phthalate	92	0.0	0.0	0.0	0.0	0.0
354	Di-n-butyl phthalate	0.33	0.0	0.0	0.0	0.0	126
392	N-hexane	24	0.0	0.0	0.0	0.0	0.0
400	Benzene	3.4	0.0	0.0	0.0	0.0	0.0
405	Boron compounds	0.0	0.0	0.0	0.0	0.0	1,221
412	Manganese and its compounds	0.02	0.0	0.0	0.0	0.0	41,637
448	Methylenebis (4,1-phenylene) diisocyanate	0.0	0.0	0.0	0.0	0.0	0.0
453	Molybdenum and its compounds	0.0	0.0	0.0	0.0	0.0	0.0
Total		432,301	0.60	0.0	0.0	0.20	134,053

Scope: Total of substances with annual handling volume of one ton or more (0.5 ton or more for Specific Class 1 Designations) at each business site
Unit: kg/year (for dioxin: mg-TEQ/year)

Six VOCs substances targeted for reduction in Medium-Term Environmental Conservation Targets 2020

For the calculation method of each item of environmental data, see the Calculation Standards of Environmental Performance Indicators (p.86).

Environmental Accounting

The Kubota Group performs environmental accounting and publicizes data about the cost of investments in environmental conservation and the economic and environmental benefits of these investments.

Environmental Conservation Costs

(Yen in millions)

Classifications		Major activities	RY2018		RY2019	
			Investment	Expenses	Investment	Expenses
Within the business area cost			1,319	2,508	867	2,821
	Local environmental conservation cost	Prevention of air and water pollution, soil contamination, noise, vibration, etc.	200	425	180	436
	Global environmental conservation cost	Prevention of climate change, etc.	1,107	938	656	1,009
	Resource recycling cost	Minimizing waste production, reducing quantity of waste, and recycling	12	1,145	31	1,376
Upstream and downstream costs		Collection of used products and commercialization of recycled products	0	31	0	37
Management activities cost		Environmental management personnel, ISO maintenance and implementation, environmental information dissemination	2	1,599	18	1,613
R&D cost		R&D for reducing of product environmental load and developing environment conservation equipment	1,254	7,810	576	7,497
Social activities cost		Local cleanup activities, and membership fees and contributions to environmental groups, etc.	0	1.0	0	1
Environmental remediation cost		Contributions and impositions, etc.	0	212	0	224
Total			2,575	12,161	1,461	12,193

Total capital investment (including land) for the corresponding period (consolidated data)	86,700
Total R&D costs for the corresponding period	53,100

Environmental Conservation Effects

Effects	Items	RY2018	RY2019
Environmental effects related to resources input into business activities	Energy consumption (TJ)	7,670	7,615
	Water consumption (million m^3)	3.78	3.48
Environmental effect related to waste or environmental impact originating from business activities	CO_2 emissions (energy related CO_2) (kilotons CO_2e)	443	427
	SOx emissions (tons)	9.3	3.1
	NOx emissions (tons)*1	45.2	42.9
	Soot and dust emissions (tons)	2.8	2.7
	Releases and transfers of PRTR-designated substances (tons)	598	566
	Waste discharge (kilotons)	61.8	69.2
	Waste to external landfills (kilotons)	1.6	1.9

*1 The value for RY2018 was corrected to improve accuracy.

Economic effects

(Yen in millions)

Classifications	Details	Annual effects of the year ended December 31, 2019
Energy conservation measures	Improve the operations of production facilities and switch to more efficient lighting and air-conditioning systems	893
Zero-emissions measures	Reduce the amount of industrial waste; promote resource recycling	471
	Sales of valuable resources	1,024
Total		2,639

<Environmental accounting principles>

1) The period is from January 1, 2019 to December 31, 2019.
2) The data of business sites in Japan is considered in the calculation.
3) Data was calculated referring to the Environmental Accounting Guidelines 2005, published by Japan's Ministry of the Environment.
4) "Expenses" includes depreciation costs.
   Depreciation cost was calculated based on the standards applied to Kubota's financial accounting, and assets acquired in and after 1998 were considered in the calculation.
   "Management activities" and "R&D costs" include personnel expenses.
   "Resource recycling costs" does not include costs incurred during disposal of construction waste at construction sites.
   "R&D costs" represents that which was spent on environmental purposes, calculated on a pro-rata basis.
5) "Economic effects" is obtained only by adding up tangible results and does not include estimated effects.

Status of Environmental Management System Certification Acquisition

The Kubota Group requires all of its production sites to acquire ISO 14001 certification or other equivalent environmental certification (EMAS, etc.).

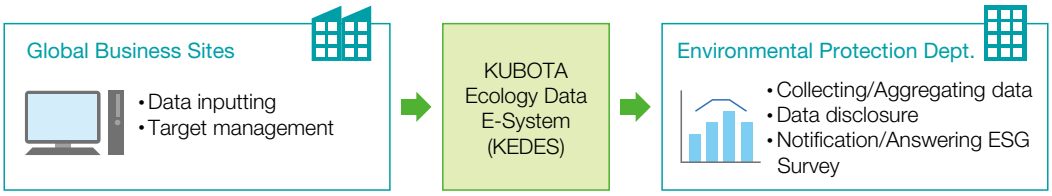
As of the end of RY2019, 41 of the Group's 55 production sites worldwide (acquisition rate of 75%) have acquired environmental management system certification. In Japan, 22 of its 23 production sites (acquisition rate of 96%) have acquired ISO 14001 certification. Of its 32 overseas production sites, 19 sites (acquisition rate of 59%) have acquired ISO 14001 certification or other certification for environmental management systems. The Kubota Group will make continuous efforts to raise the acquisition rate of the certification.

For details on the Kubota Group's Status of Environmental Management System Certification Acquisition, click here
www.kubota.com/company/environment/ems/

Calculation Standards of Environmental Performance Indicators

In order to practice environmental conservation activities on a global scale, the Kubota Group utilizes the "KUBOTA Ecology Data E-System" (KEDES) to collect environmental data, which includes information from our business sites on their energy usage, amounts of generated and discharged waste, water usage, and VOC emissions, etc.

"KEDES" is a system that collectively manages environmental data at global business sites. Staff at each business site register monthly environmental data, which is used for target management of their own site. The Environmental Protection Department aggregates and analyzes the data, and uses it for reporting inside and outside the group. The boundary of the environmental data aggregation covers Kubota Corporation and all (100%) of its consolidated subsidiaries.



Period and Organizations Covered by Environmental Data

RY	Period		Organizations covered (No. of companies)			
			Kubota/Consolidated subsidiaries*3			Affiliated companies accounted for under the equity method*4
	Data in Japan	Overseas data	Japan	Overseas	Total	
2015	April 2015 to March 2016*1	January 2015 to December 2015*1	52	102	154	13
2016	January 2016 to December 2016	January 2016 to December 2016*2	48	125	173	12
2017	January 2017 to December 2017	January 2017 to December 2017	49	125	174	9
2018	January 2018 to December 2018	January 2018 to December 2018	49	124	173	8
2019	January 2019 to December 2019	January 2019 to December 2019	49	126	175	8

*1 Although the accounting period of RY2015 is nine months (April 2015 to December 2015) due to the change of the account closing time, the period for the environmental data is set to be a year.
Consolidated net sales used to calculate the environmental load per unit of consolidated net sales (CO_2 emissions, energy use, CO_2 emissions during distribution, amount of waste discharged, water consumption, VOC emissions, amount of PRTR-designated substances released and transferred) for RY2015 are the total consolidated sales from April 2015 to March 2016.

*2 For RY2016, of the overseas consolidated subsidiaries, for Great Plains Manufacturing, Inc. (GP), which became a consolidated subsidiary in July 2016, the period of its environmental data is six months (July 2016 to December 2016), and the data except for its four major production sites (accounting for over 80% of sales of the GP Group in RY2016) and four major non-production sites (accounting for over 90% of the employees of non-production sites of the GP Group in RY2015) is estimated. Data of the amount of chemical substances (VOC) handled and VOC emissions is excluded from the calculation.
From RY2017, the data for all of the GP Group sites is calculated based on results.

*3 The coverage of consolidated subsidiaries is 100% for each year.

*4 Part of the affiliated companies accounted for under the equity method are covered by the data.

Energy and CO_2-related

Indicator (unit)	Calculation method
Energy use (J)	• Energy use = Amount of purchased electricity consumed at business sites × per-unit heat value + Σ [amount of each fuel consumed × per-unit heat value of each fuel] • Per-unit heat value is determined in accordance with the Enforcement Regulation for the Act on Rationalizing Energy Use, Japan.
CO_2 emissions (tons CO_2e)	• CO_2 emissions = CO_2 emissions from energy sources + non-energy source greenhouse gas emissions • CO_2 emissions from energy sources = Amount of purchased electricity consumed at business sites × CO_2 emission coefficient + Σ [amount of each fuel consumed at business sites × per-unit heat value of each fuel × CO_2 emission coefficient of each fuel] • Non-energy source greenhouse gas emissions = CO_2 emissions from non-energy sources + non-CO_2 greenhouse gas emissions • Per-unit heat value is determined in accordance with the Enforcement Regulation for the Act on Rationalizing Energy Use, Japan. • CO_2 emission coefficients [RY2014 to RY2015] <Fuel> Based on the Manual for Calculation and Report of Greenhouse Gas Emissions (Japan's Ministry of the Environment and Ministry of Economy, Trade and Industry) <Electricity> Data for Japan is basic emission coefficients for each electricity utility, and overseas data is according to the GHG emissions from purchased electricity (GHG Protocol). [RY2016 to RY2019] <Fuel> Based on the Manual for Calculation and Report of Greenhouse Gas Emissions (Japan's Ministry of the Environment and Ministry of Economy, Trade and Industry) <Electricity> • Data for Japan is effective emission coefficients for each electricity utility • Overseas data is according to effective emission coefficients for each electricity utility, CO_2 Emissions from Fuel Combustion (IEA) and The Emissions & Generation Resource Integrated Database (eGRID) (EPA). • The method for calculating non-energy source greenhouse gas emissions is based on the Manual for Calculation and Report of Greenhouse Gas Emissions (by Japan's Ministry of the Environment and Ministry of Economy, Trade and Industry)
Freight traffic (ton-km)	• Freight traffic = Σ [Freight transportation amount (tons) × distance traveled (km)] • Freight traffic refers to the volume of products and Kubota's industrial waste transported during domestic distribution
Energy use during transportation (J)	• Energy use during transportation = Σ [Freight traffic by truck × Fuel consumption per ton-kilometer × per-unit heat value] + Σ [Freight traffic by rail and water × energy use (heat value) per unit ton-kilometer] • Calculation method is from the Manual to Support Merchants regarding Revisions to Energy Conservation Laws, 3rd Edition (April 2006, Japan's Energy Conservation Center of the Agency of Natural Resources and Energy, Japanese Ministry of Economy, Trade and Industry) • In addition to the data for Japan, energy use associated with the overseas shipping of certain products from Japan has been included from RY2018.
CO_2 emissions during distribution (tons CO_2e)	• CO_2 emissions during distribution = Σ [Fuel consumption for freight shipment by truck × CO_2 emission per ton-kilometer by fuel of transportation] + Σ [Fuel consumption for freight shipment by rail and water × CO_2 emission per ton-kilometer by means of transportation] • Calculation method is based on the ton-kilometer method stipulated in the Manual for Calculation and Report of Greenhouse Gas Emission (Japan's Ministry of the Environment and Ministry of Economy, Trade and Industry)
Energy use during product operation (J)	• Energy use during product operation = Σ [Number of product units shipped × Fuel consumption per hour × Annual hours of use × Years of lifespan × Per-unit heat value of each fuel] • Products: agricultural machinery (tractors, rice transplanters, combine harvesters), riding mowers, utility vehicles, construction machinery (compact excavators, etc.) • Calculated by assuming the fuel consumption per hour, annual hours of use, and years of service life for each product. • Per-unit heat value is according to the Manual for Calculation and Report of Greenhouse Gas Emissions (Japan's Ministry of the Environment and Ministry of Economy, Trade and Industry)

Energy and CO_2-related

Indicator (unit)	Calculation method
Scope 3 emissions (tons CO_2e)	• The calculation method is based on the Basic Guidelines regarding the Calculation of Greenhouse Gas Emissions throughout the Supply Chain (Japan's Ministry of the Environment and Ministry of Economy, Trade and Industry) and the Emissions per Unit Database for the Purpose of Calculating the Greenhouse Gas and Other Emissions of Organizations throughout the Supply Chain (Ver2.6)
Resource extraction, manufacture and transportation related to purchased goods/ services	• Σ [Production volume × CO_2 emissions per unit] • Products: Agricultural machinery (tractors, rice transplanters, combine harvesters), construction machinery (compact excavators, etc.), and ductile iron pipe • Production volume: Number of units shipped for agricultural and construction machinery, and production weight for ductile iron pipes • CO_2 emissions per unit: Estimated from the CO_2 emissions per unit of production of the product
Manufacture and transportation of capital goods such as purchased equipment	• Equipment investment amount × CO_2 emissions per unit
Resource extraction, manufacture and transportation related to purchased fuels/ energy	• Purchased electricity consumed at business sites × CO_2 emissions per unit
Disposal of wastes discharged from business sites	• Σ [Amount of waste discharge by type × CO_2 emissions per unit]
Employee business travels	• Σ [Transportation expenses paid by method of transport × CO_2 emissions per unit] • Transportation expenses paid by method of transport are for airline tickets and railway tickets. • For a part of the overseas subsidiaries, estimate by multiplying the net sales of the subsidiaries in each of the regions and countries mentioned by the ratio of transportation expenses for each method of travel included in the net sales of major subsidiaries in Europe, America, Asia and China.
Employee commuting	• Σ [Transportation expenses paid by method of transport × CO_2 emissions per unit] • The amount of transportation expenses is for the amount paid for railway tickets and car travel. • From RY2019, CO_2 emissions from overseas subsidiaries have been included in addition to the data for Japan. For overseas subsidiaries, the data is partially estimated by multiplying the ratios of transportation expenses for each means of transportation among the number of employees at major subsidiaries by the number of employees at each subsidiary.
Transportation of sold products	• The calculation method is the same as that for CO_2 emissions during distribution. • In addition to the data for Japan, CO_2 emissions associated with the overseas shipping of certain products from Japan has been included from RY2018. Target products: Agricultural machinery (tractors, rice transplanters, combine harvesters), riding mowers, utility vehicles, construction machinery (compact excavators, etc.), engines • The scope of calculation includes CO_2 emissions associated with Kubota's transportation of waste.
Processing of intermediate products	• Σ [Sales volume of intermediate products × CO_2 emissions per unit] • Intermediate products: engines (external sales only) • CO_2 emissions per unit: CO_2 emissions per unit at Kubota Group's processing plants
Use of products sold	• Σ [Number of products sold × CO_2 emissions per unit] • Products: agricultural machinery (tractors, rice transplanters, combine harvesters), riding mowers, utility vehicles, construction machinery (compact excavators, etc.) • CO_2 emissions per unit: Fuel consumption per hour × Annual hours of use × Years of lifespan × per unit heat value of each fuel × CO_2 emission coefficient of each fuel (calculated by assuming the fuel consumption per hour, annual hours of use, and years of service life for each product) • Per-unit heat value is according to the Manual for Calculation and Report of Greenhouse Gas Emissions (Japan's Ministry of the Environment and Ministry of Economy, Trade and Industry)
End-of-life treatment of sold products	• Σ [Number of products shipped × CO_2 emissions per unit] • Products: Agricultural machinery (tractors, rice transplanters, combine harvesters) and construction machinery (compact excavators, etc.) • CO_2 emissions per unit: estimated CO_2 emissions per unit of product

Waste-related

Indicator (unit)	Calculation method
In-house recycling and reuse (tons)	• The amount of resources that are reused or recycled in-house at each Kubota Group business site, and the amount of resources transferred for the purpose of reuse and recycling among Kubota Group business sites
Amount of waste, etc., discharge (tons)	• Amount of waste, etc., discharge = sales amount of valuable resources + amount of waste discharge
Amount of valuable resources sold (tons)	• The amount of unneeded resources generated within the Kubota Group that are sold outside the Group
Amount of waste discharge (tons)	• Amount of waste discharge = Amount of industrial waste discharge + Amount of general waste discharge from business activities
Hazardous waste (tons)	• In Japan, specially controlled industrial waste as defined in the Waste Management and Public Cleansing Law; Overseas, industrial waste as defined in each country
Amount of resource recycling (tons) Amount of volume reduction (tons) Amount of landfill disposal (tons)	• Amount of resource recycling = Amount of waste directly recycled + Amount of resource recycling after external intermediate treatment • Amount of volume reduction = Volume of external intermediate treatment – Amount of resource recycling after external intermediate treatment – Final landfill following external intermediate treatment • Amount of landfill disposal = Direct landfill disposal + Final landfill disposal following external intermediate treatment • Amount of resource recycling after external intermediate treatment includes heat recovery • Amount of resource recycling after external intermediate treatment, amount of final landfill disposal, amount of volume reduction are calculated based on the results of surveys at the contractor.
Recycling ratio (%)	• Recycling ratio = (Sales amount of valuable resources + external recycling amount) / (Sales amount of valuable resources + external recycling amount + amount of landfill disposal) × 100 • External recycling amount includes heat recovery
Amount of construction waste, etc., discharged (tons)	• Amount of construction waste, etc., discharged = Amount of construction waste discharged + sales amount of valuable resources generated from construction • Targeting construction work in Japan • Amount of construction waste discharged includes construction waste other than specific construction materials • Sales amount of valuable resources covers valuable material operators with whom the Kubota Group is directly contracted
Amount of construction waste, etc., discharged Recycling ratio (%) Recycling and reduction ratio (%)	• In RY2016, a new calculation method was adopted in which the reduction volume is calculated in accordance with the Promotion Plan for Recycling of Construction Waste 2014 (Ministry of Land, Infrastructure, Transport and Tourism) and the recycling and reduction ratio is determined. [RY2015] Recycling ratio = {Sales amount of valuable resources + resource recycling + volume reduction (heat recovery)} ÷ amount of construction waste, etc., discharged × 100 [RY2016 to RY2019] Recycling and reduction ratio = {Sales amount of valuable resources + resource recycling (including heat recovery) + volume of reduction} ÷ amount of construction waste, etc., discharged × 100

Water-related

Indicator (unit)	Calculation method
Water consumption (m^3)	• Water consumption = City water consumption + groundwater consumption • City water includes service water and water for industrial use
Wastewater discharge (m^3)	• Wastewater discharge = Amount of wastewater discharge to public water areas + amount of discharge to sewage lines • Wastewater discharge includes rain and spring water at some business sites
Amount of recycled water (m^3)	• Amount of water purified in on-site effluent treatment facilities and recycled (excluding the circulating cooling water used)
Rate of recycled water (%)	• Rate of recycled water = Amount of recycled water / (Water consumption + Amount of recycled water) × 100
COD (tons) Nitrogen discharge (tons) Phosphorus discharge (tons)	• COD = COD per unit wastewater discharge amount × wastewater discharge to public water areas • Nitrogen discharge = nitrogen concentration × wastewater discharge to public water areas • Phosphorous discharge = Phosphorous concentration × wastewater discharge to public water areas • Targeting business sites subject to total emission control in Japan

Chemical Substance-related

Indicator (unit)	Calculation method
Amount of PRTR-designated substances handled (tons)	• Total amount of chemical substances handled at Japanese sites, which are designated as Class I under the Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof (the PRTR Law) whose amount handled by each business site is one ton or more (or 0.5 ton or more for Specific Class I Designated Chemical Substances) per year
Amount of PRTR-designated substances released and transferred (tons)	• Total release and transfer amount of the chemical substances which are designated as Class I under the PRTR Law at Japanese sites and whose annual total amount handled by each business site is one ton or more (or 0.5 ton or more in case of Specific Class I Designated Chemical Substances). • Amount released = amount discharged to the atmosphere + amount discharged to public water areas + amount discharged to soil + amount disposed of by landfill in the premises of the business site • Amount transferred = amount discharged to sewerage + amount transferred out of the business site as waste • The amount of each substance released and transferred is calculated in accordance with the Manual for PRTR Release Estimation Methods Ver. 4.2 (March 2018) of Japan's Ministry of the Environment and the Ministry of Economy, Trade and Industry, and the Manual for PRTR Release Estimation Methods in the Steel Industry Ver. 13 (March 2014) of the Japan Iron and Steel Federation.
Amount of chemical substances (VOC) handled (tons)	• The total amount handled at overseas sites of the six substances of xylene; toluene; ethylbenzene; styrene; 1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene that are at each site handled in amounts of one ton or more per year
VOC emissions (tons)	• The total emissions of the six substances of xylene; toluene; ethylbenzene; styrene; 1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene that are at each site handled in amounts of one ton or more per year
SOx emissions (tons) NOx emissions (tons) Soot and dust emissions (tons)	• SOx emissions = Amount of fuel consumed (kg) × sulfur content in the fuel × (1 – desulfurization efficiency) × 64/32 or SOx emissions = {(amount of coke consumed × sulfur content in coke) - (amount of molten metal × sulfur content in molten metal) – (volume of slag, dust, etc. × sulfur content in slag, dust, etc.)} × 64/32 or SOx emissions = SOx concentration × amount of gas emitted per hour × annual operation hours of the relevant facility • NOx emissions = NOx concentration × amount of gas emitted per hour × annual operation hours of the relevant facility • Soot and dust emissions = soot and dust concentration × amount of gas emitted per hour × annual operation hours of the relevant facility • Targeting the smoke and soot generating facilities at business sites in Japan as defined by the Air Pollution Control Act, and the facilities at overseas business sites subject to the application of measurement obligations stipulated in the statutory and regulatory requirements of those countries in which sites are located

Product-related

Indicator (unit)	Calculation method
Sales ratio of Eco-Products (%)	• Sales ratio of Eco-Products = Sales of Eco-Products/sales of products (excluding construction work, services, software, parts, and accessories) × 100
Usage ratio of recycled materials (%)	• Usage ratio of recycled materials = Σ {production volume of target products at each production site × usage ratio of recycled materials at each production site} / total production weight of target products • Usage ratio of recycled materials at each production site = Amount of recycled materials input in the melting process at each production site / total material input amount of materials at each production site × 100 • Target products: Cast metal products and parts manufactured by the Kubota Group (such as ductile iron pipes, fittings, machine cast products (engine crankcase, etc.)) • The amount of recycled materials input and the total material input amount does not include the indirect materials that are not the constituent materials of the casting products and parts. • The amount of recycled materials input does not include the amount of reusage of defective processed products and offcuts, etc., that arise in the manufacturing process on the site.