

# Tackling Climate Change

The Fifth Assessment Report by the Intergovernmental Panel on Climate Change (IPCC), states that the “warming of the climate system is unequivocal,” and that it is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century. Moreover, a new phase of the Paris Agreement—an international framework for tackling climate change—will kick off in 2020, which indicates that the initiatives of individual companies to reduce greenhouse gases are growing increasingly important.

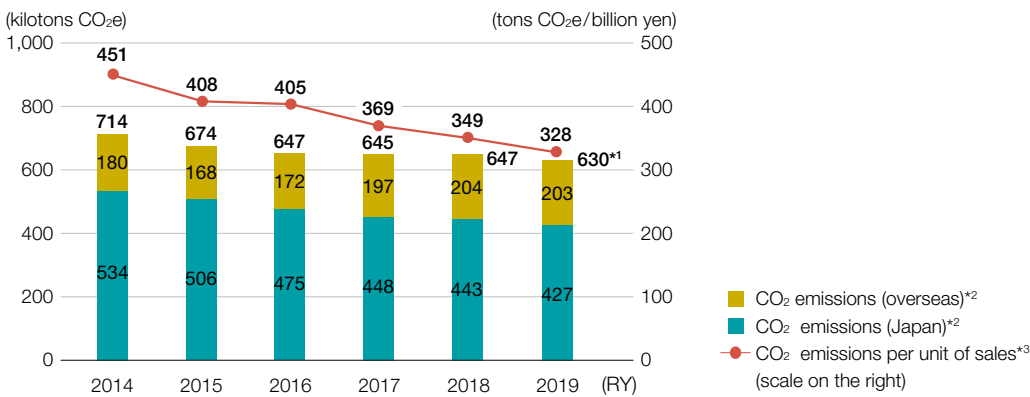
The Kubota Group sees tackling climate change as one item of materiality and has been advancing initiatives toward the “mitigation” of climate change by reducing greenhouse gas emissions mainly through energy-saving activities and the introduction of renewable energy sources and “adaptation” to be prepared for the impact of climate change.

## Mitigation of Climate Change

### CO<sub>2</sub> Emissions (Scope 1 and Scope 2)

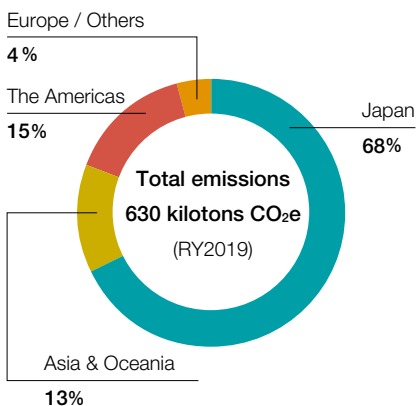
In RY2019, CO<sub>2</sub> emissions were 630 kilotons CO<sub>2</sub>e, a decrease of 2.6% compared to the previous reporting year. Additionally, CO<sub>2</sub> emissions per unit of sales improved by 6.1% compared to the previous reporting year. In addition to the implementation of reduction measures, these are mainly due to the improvement of the emission coefficients for each electricity utility and a reduction in production volume at cast iron production sites in Japan.

#### Trends in CO<sub>2</sub> Emissions and Emissions per Unit of Sales

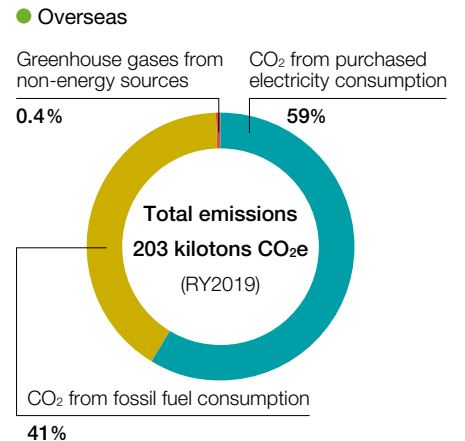
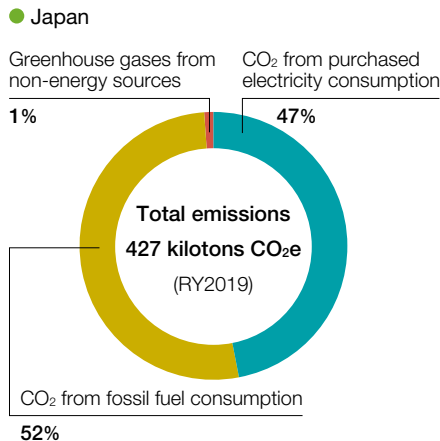


\*1 CO<sub>2</sub> emissions (630 kilotons CO<sub>2</sub>e) include portions of CO<sub>2</sub> that were not released into the atmosphere but absorbed as carbon into products such as iron pipe (19 kilotons CO<sub>2</sub>e).  
 \*2 CO<sub>2</sub> emissions include greenhouse gases from non-energy sources.  
 \*3 CO<sub>2</sub> emissions per unit of consolidated net sales. The Kubota Group adopted International Financial Reporting Standards (IFRS) instead of accounting principles generally accepted in the United States of America from RY2018.  
 \*4 CO<sub>2</sub> emissions for RY2016 and RY2017 and CO<sub>2</sub> emissions per unit of sales for RY2017 were corrected to improve accuracy.

#### CO<sub>2</sub> Emissions by Region

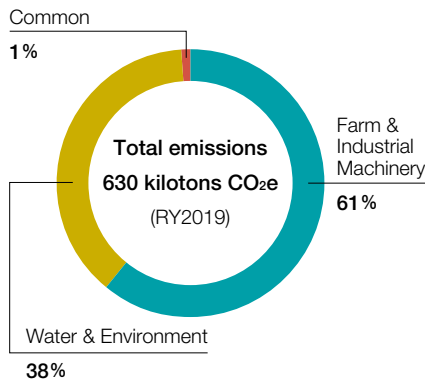


#### CO<sub>2</sub> Emissions by Emission Source

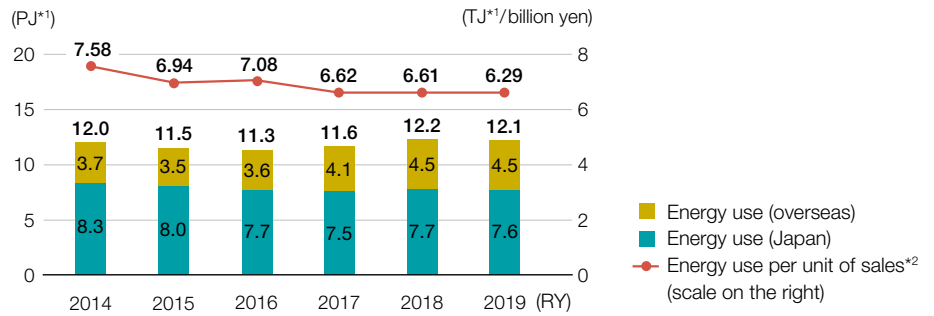


For the calculation method of each item of environmental data, see the Calculation Standards of Environmental Performance Indicators (p.86).

**CO<sub>2</sub> Emissions by Business**



**Trends in Energy Use at Business Sites and Energy Use per Unit of Sales**



\*1 PJ = 10<sup>15</sup>J, TJ = 10<sup>12</sup>J

\*2 Energy use per unit of consolidated net sales. The Kubota Group adopted International Financial Reporting Standards (IFRS) instead of accounting principles generally accepted in the United States of America from RY2018.

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

**Measures to Reduce CO<sub>2</sub> Emissions**

The Kubota Group has established its Medium- and Long-Term Environmental Conservation Targets (p.35-36) and is devoting efforts to reducing CO<sub>2</sub> emissions and energy use associated with its business activities.

We have also established medium-term reduction measure implementation plans, which are reviewed every year by each production site. When the plans are reviewed, Internal Carbon Pricing\* is introduced to calculate their effect on reducing CO<sub>2</sub> emissions and energy consumption, as well as the investment cost for the amount of CO<sub>2</sub> reduced, in the capital expenditure plans. The effectiveness and economical rationality of each project are identified from an environmental standpoint and used as resources for making investment decisions.

Some of the specific reduction measures that have been implemented include eliminating loss in energy consumption through a switch to equipment with higher energy efficiency and proper operation management, and promoting the visualization of power consumption in each process. At the same time, all global sites have been expanding their use of LED lighting. In RY2019, initiatives included a change in fuel for production equipment and heaters.



Installation of solar power generation system Kubota Sakai Rinkai Plant

We are also accelerating the introduction of renewable energy. In RY2019, a new solar power generation system came online at the Kubota Sakai Rinkai Plant. This brought the renewable energy consumption of the entire Group to 2,604 MWh, an increase of 8.0% compared to RY2018.

As a result of the efforts toward achieving the Medium-Term Environmental Conservation Targets 2020 for CO<sub>2</sub> reduction, global production sites achieved a reduction of 38.8 kilotons CO<sub>2</sub>e in RY2019 compared with the case where countermeasures were not implemented from the base year (RY2014). The economic effects of these measures reached 1.14 billion yen compared to RY2014. CO<sub>2</sub> emissions per unit of production in RY2019 improved by 17.1% compared to RY2014.

We will continue to implement measures to save energy on production equipment and air-conditioning/lighting, as well as promote measures to reduce waste and loss in the use of energy based on the concept of the Kubota Production System (KPS) and expand the use of renewable energy.

\* Refers to the placing of an internal monetary value on carbon by an organization



## Installing Mega Solar Power Systems to Reduce CO<sub>2</sub> Emissions

Kubota Agricultural Machinery (Suzhou) Co., Ltd. (KAMS) (China) installed a solar panel with an output of 3.59MW on the roof of its plant.

We manufactures tractors, combine harvesters, and rice transplanters. Energy consumption at KAMS rose sharply, along with CO<sub>2</sub> emissions, when the company's second plant commenced operations in November 2017. In order to significantly reduce its CO<sub>2</sub> emissions, KAMS installed a mega solar power generation system in 2019 and started generating its own electricity in January 2020.

The mega solar power system is expected to generate around 3,220 MWh annually, which corresponds to a reduction of approximately 2,463 tons of CO<sub>2</sub> emissions if the total amount of electricity is consumed.

We will continue working to further reduce our CO<sub>2</sub> emission.



Kubota Agricultural Machinery (Suzhou) Co., Ltd.  
Environmental Management Department  
Yan Peisong

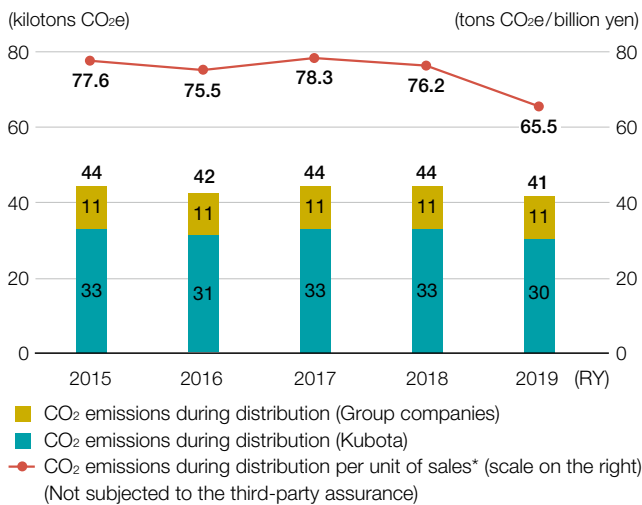


Solar panels installed

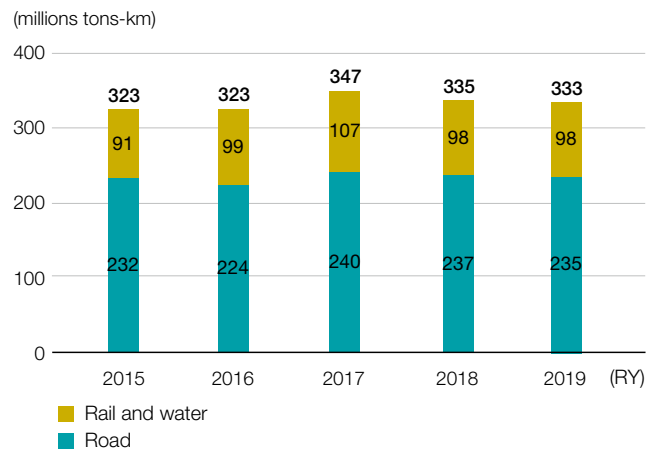
## CO<sub>2</sub> Emissions during Distribution

In RY2019, CO<sub>2</sub> emissions during distribution were 41 kilotons CO<sub>2</sub>e, a decrease of 6.9% compared to the previous reporting year. Additionally, CO<sub>2</sub> emissions during distribution per unit of sales improved by 14.1% compared to the previous reporting year. The Kubota Group continuously promotes various initiatives, including such as improving loading efficiency and realizing a modal shift through the use of ships.

### Trends in CO<sub>2</sub> Emissions during Distribution and Emissions per Unit of Sales (Japan)



### Trends in Freight Traffic (Japan)



\* CO<sub>2</sub> emissions during distribution per unit of consolidated net sales. The Kubota Group adopted International Financial Reporting Standards (IFRS) instead of accounting principles generally accepted in the United States of America from RY2018.

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## CO<sub>2</sub> Emissions throughout the Value Chain

The Kubota Group makes concerted efforts to figure out CO<sub>2</sub> emissions throughout the value chain in addition to its business sites. Following guidelines\*, we calculate CO<sub>2</sub> emissions based on Scope 3, and continue to expand the categories in the Scope of its calculation of CO<sub>2</sub> emissions.

\* Basic Guidelines on Accounting for Greenhouse Gas Emissions Throughout the Supply Chain issued by the Japanese Ministry of the Environment and Ministry of Economy, Trade and Industry

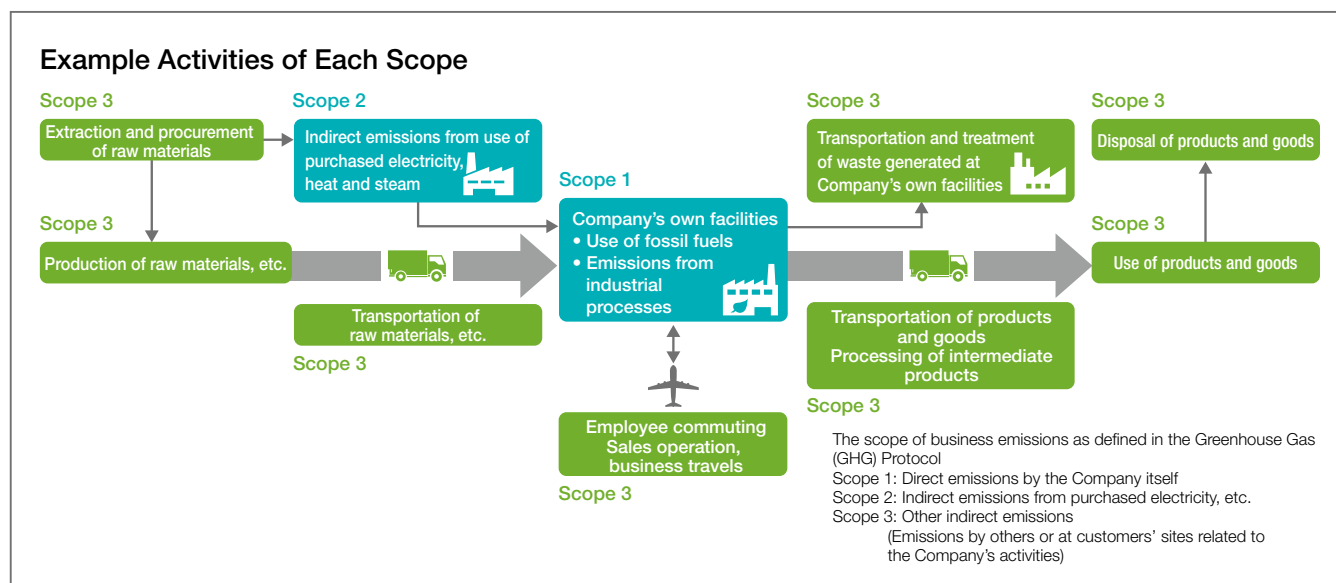
### CO<sub>2</sub> Emissions in Each Stage of Value Chain

Classification		Scope of calculation	CO <sub>2</sub> emissions (kilotons CO <sub>2</sub> e)			
			2017	2018	2019	
Emissions of the Kubota Group's business sites	Direct emissions (Scope 1)	Use of fossil fuels 🔍	292	309	303	
		Non-energy-derived greenhouse gas emissions*1 🔍	8	7	7	
	Indirect emissions (Scope 2)	Purchased electricity use 🔍	346	331	320	
Upstream and Downstream emissions	Other indirect emissions (Scope 3)	Category	1 Resource extraction, manufacturing and transportation related to purchased goods/services	2,412	2,391	2,446
			2 Manufacturing and transportation of capital goods such as purchased equipment	175	215	290
			3 Resource extraction, manufacturing and transportation related to purchased fuels/energy 🔍	26	27	27
			4 Transportation of purchased products, etc.	Not calculated	Not calculated	Not calculated
			5 Disposal of wastes discharged from business sites 🔍	18	20	26
			6 Employee business travels 🔍	9	10	10
			7 Employee commuting*2	3	3	6
			8 Operation of assets leased to the Kubota Group	Not applicable	Not applicable	Not applicable
			9 Transportation of sold products*3	44	180	184
			10 Processing of intermediate products	59	173	320
			11 Use of sold products	21,486	21,060	21,176
			12 End-of-life treatment of sold products	44	42	42
			13 Operation of assets leased to other entities	Not applicable	Not applicable	Not applicable
			14 Operation of franchises	Not applicable	Not applicable	Not applicable
			15 Investments	Not applicable	Not applicable	Not applicable

\*1 The value for RY2017 was corrected to improve accuracy.

\*2 In addition to the data for Japan, CO<sub>2</sub> emissions from overseas subsidiaries have been included from RY2019.

\*3 In addition to the data for Japan, CO<sub>2</sub> emissions associated with the overseas shipping of certain products from Japan have been included from RY2018.



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

## Adaptation to Climate Change

### Measures to Adapt to Climate Change

Various impacts are being felt by the progression of climate change, such as the frequent occurrence of weather disasters, changes in agricultural practices, and an increase in the number of heat stroke cases. The response to climate change needs to include measures to reduce greenhouse gas emissions, as well as to avoid or reduce damage brought on by climate change.

As part of its strategy to adapt to climate change, the Kubota Group is implementing a number of initiatives at its business sites and in its products and services.

#### Initiatives on Products and Services

Category		Major initiatives
	Food	<ul style="list-style-type: none"> <li>Provision of tractors that are capable of deep plowing necessary for growing rice in abnormally high temperatures without lowering the quality/yield, and the provision of information useful for soil cultivation, such as the proper distribution of fertilizers appropriate for high-temperature conditions</li> <li>Provision of the Kubota Smart Agri System (KSAS) which uses ICT and robot technology, and high-performance machinery that lightens the workload in fields such as agriculture, where workers often labor in scorching heat</li> <li>Provision of information for farmers on changes in temperature, precipitation, and the amount of solar radiation, as well as the impact thereof on crops</li> </ul>
Water	Flooding	<ul style="list-style-type: none"> <li>As a measure for floods or other disasters caused by abnormal climate, provision of disaster-relief pumper vehicles, ultra-light, emergency sump pump units, rainwater storage and filtration products, and piping systems for manhole toilets, and so on</li> <li>Provision of ductile iron pipes with tough tube body and excellent joint performance, which is highly effective during disasters such as typhoons and torrential rainfall</li> </ul>
	Drought	<ul style="list-style-type: none"> <li>To address water shortage, the provision of management systems using IoT, which contribute to the efficient operation of water supply and sewage treatment systems and treatment plants</li> <li>Provision of tank-submerged-type ceramic membrane filtering equipment and submerged membranes that purify wastewater for reuse</li> </ul>
	Management systems	<ul style="list-style-type: none"> <li>Provision of the Kubota Smart Infrastructure System (KSIS) that leverages IoT technology to manage a variety of facilities, from dams to drainage locations, using weather information in collaboration with the NTT Group</li> <li>Provision of the WATARAS farm water management system that allows accurate water management for remote rice paddies</li> </ul>
	Living environment	<ul style="list-style-type: none"> <li>Provision of diesel engines for use as generators for emergency power supply during disasters and power outages</li> <li>Provision of construction machinery to contribute to disaster prevention, as well as recovery and reconstruction</li> <li>Provision of highly efficient air-conditioning equipment that creates a clean and comfortable indoor environment, even amid abnormal weather conditions</li> </ul>

#### Provision of Water Pump Vehicle for Disaster Recovery

With all the equipment necessary for effective drainage, including a drainage hose, a control panel, and a generator, as well as a lightweight specialized submersible pump that a person can easily carry, the equipment can be dispatched immediately to sites where flooding is in progress due to torrential rains and rapidly drain water from the location.



Drainage Pump with Vehicle for Disaster Recovery

#### Initiatives taken at Business Sites

Efforts at our business sites include the formulation of BCPs and disaster response manuals. To be prepared for high tides and torrential rain, the sites have also installed sump pumps, hold emergency drills, and are equipped with water tanks for use during water shortages.

#### Installation of Weather-Resistant Roofing Material

Kubota Manufacturing of America Corporation (US) installed weather-resistant roofing material (thermoplastic olefin sheets) to improve resistance against torrential downpours and high temperatures.



Installation of weather-resistant roofing material (left) and the roof after installation (right)