Environmental Report

Environmental Management Basic Policy

<SDGs related to this section>

Today we face various environmental problems. Many environmental problems, from those unique to each region to those on a global scale, exist around the world. As they are complexly intertwined and continuing to deteriorate, achieving a sustainable society is a global common challenge. Companies are expected to play an increasingly larger role in tackling this challenge.

Since the time of its foundation, the Kubota Group has pursued a mission of solving social problems in developing its businesses. Toward the realization of "For Earth, For Life," the Kubota Group will contribute to the realization of a sustainable society through its environmental management initiatives.

Environmental Charter / Action Guidelines

The Kubota Group Environmental Charter

- The Kubota Group aspires to create a society where sustainable development is possible on a global scale.
- The Kubota Group contributes to the conservation of global and local environments through its environmentally friendly operations, products, technologies, services, and corporate activities.

The Kubota Group Environmental Action Guidelines

1. Environmental Conservation Efforts in All Business Activities
   (1) We promote environmental conservation measures in all stages of our corporate activities, including product development, production, sales, physical distribution, and service.
   (2) We also request that our suppliers understand the importance of environmental conservation efforts and cooperate in this regard.

2. Global Environmental Conservation
   (1) We promote global environmental conservation measures intended for dealing with climate change, creating a recycling-based society, conserving water resources, and controlling chemical substances.
   (2) We promote global environmental conservation by providing products, technologies, and services that contribute to solving environmental problems.
   (3) We strive to ensure our corporate activities are friendly to the natural environment and biodiversity.

3. Environmental Protection to Create a Symbiotic Relationship with Local Societies
   (1) We make efforts in the reduction of environmental risks and promote our business activities with proper consideration for the protection of local environments, including pollution prevention.
   (2) We actively participate in environmental beautification/education activities in local communities.

4. Our Voluntary and Organized Efforts in Environmental Conservation
   (1) By introducing the environmental management system and establishing voluntary targets and action plans, we work on our daily business operations.
   (2) We endeavor to enhance environmental awareness through active environmental education/enlightenment activities.
   (3) We actively provide stakeholders with environment-related information.
   (4) We collect stakeholders' opinions broadly through environmental communication, and reflect the findings in our environmental activities.

Message from the Environmental Conservation Control Officer

Amid concerns about climate change and increasing consumption of resources, the world is accelerating its efforts to build a society that will enable decarbonization and a circular economy. In this situation, promoting ESG management for the solution of social issues faced by communities around the world (contribution to SDGs) is recognized as an essential priority for corporate management.

The Kubota Group has positioned ESG as a cornerstone of its corporate management, and has formulated its "Environmental Vision" as a long-term vision with an environmental perspective. The vision states: "While challenging to achieve zero environmental impact, we will contribute to realizing a carbon neutral and resilient society in the field of 'food, water, and environment.'" This shows the direction for the Kubota Group from an environmental perspective moving towards 2050. We have also formulated a new Medium-Term Environmental Conservation Targets 2025 scheme to run from 2021 to 2025.

The Company is making a global effort to strengthen the manufacturing structure and productivity of "Made by Kubota," centered on the Kubota Production system (KPS). Our environmental conservation activities take a KPS-based approach toward thoroughly reducing resource waste and loss and strengthening environmental risk management. Moreover, in addition to our existing line of Eco-Products, Kubota will further expand the range of the environment-friendly products and services we offer in response to the shift toward a carbon-free society, such as improving operating fuel efficiency and exploring the use of next-generation energy sources.

By steadily promoting these efforts on a global basis, we are seeking to make our environmental vision a reality.

Koichi Yamamoto
Executive Officer
General Manager of Manufacturing Engineering Headquarters
(Environmental Conservation Control Officer)

Environmental Management Approach

Concepts of Environmental Management

The Kubota Group has established the "For Earth, For Life" Brand Statement as its concept for environmental management. It expresses the Group's aspiration to balance its business growth and contribution to environmental conservation through its environment-friendly products, technologies, services and corporate activities, as it aims for ongoing synergistic development with society in order to continue supporting the prosperous life of humans while protecting the environment of this beautiful earth.

The Group has set five basic items for its environmental conservation, namely, "Tackling Climate Change," "Working towards a Recycling-based Society," "Conserving Water Resources," "Controlling Chemical Substances," and "Conserving Biodiversity." Based on these items, the Group is committed to the development of society and the conservation of the global environment through the delivery of products, technologies and services that help solve the social problems in the fields of food, water, and the living environment and through the reduction of the environmental loads and environmental risks of its corporate activities.

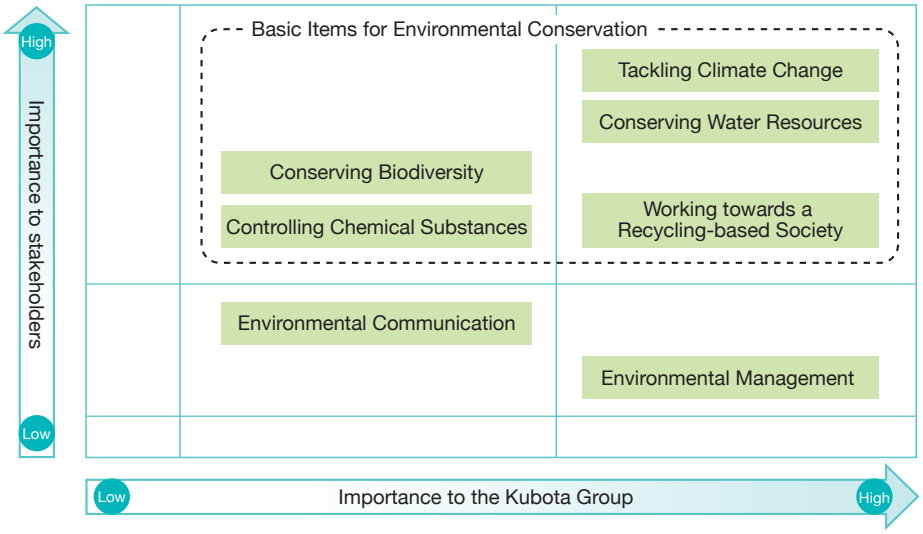
Materiality

The Kubota Group has identified material issues (priority issues) in its environmental conservation activities, taking into consideration their importance in business, requests and expectations from stakeholders, and social trends.

Process for Identifying Materiality

Step 1	**Gathering and analyzing information** We gathered and analyzed information on international frameworks and policy trends, key external evaluation indicators, global trends in the Kubota Group's business fields, etc.
Step 2	**Listing material issues** Through discussions at the Environmental Management Strategy Committee and interviews with relevant internal departments, and dialogues with ESG (environment, society, governance) investment institutions and external experts, we listed issues relating to environmental conservation.
Step 3	**Identifying materiality** We examined the identified issues from the perspectives of both the importance to stakeholders and the importance to the Kubota Group, and plotted the identified priority issues on a matrix.
Step 4	**Formulating and implementing key measures** After identifying the impacts (risks and opportunities) related to issues with a high degree of importance for both stakeholders and the Kubota Group, we formulate key measures and promote the steady implementation thereof.

Materiality Matrix



Materiality Awareness

Tackling Climate Change	Against a backdrop of more frequently occurring natural disasters caused by abnormal weather and other factors believed to be linked to climate change, tackling this challenge has become an issue of global proportions. As a corporate group that conducts business activities throughout the globe, the Kubota Group believes in the importance of working to reduce the emissions of greenhouse gases in the corporate value chain as well as undertaking adaptive measures designed to reduce the impact of climate change.
Conserving Water Resources	Access to safe drinking water is a critical part of life-supporting infrastructure. Despite this, there are many people throughout the world that cannot access safe drinking water. The Kubota Group has defined "Water" as one of its business areas, and believes in the importance of becoming more deeply committed to the supply of safe, secure water through the construction of water infrastructure, as well as conserving local water resources, which includes saving water, recycling wastewater, and applying water quality-related risk management at its business sites.
Working towards a Recycling-based Society	Mineral resources are used widely throughout modern society, but there is a limit to the amount existing on the planet. More recently, increasing amounts of waste and marine plastic pollution have become global issues. Likewise, the Kubota Group believes in the importance of providing waste processing services and related equipment, for example, as solutions for issues related to the wasted material from human lifestyles and economic activities, as well as effectively utilizing resources and reducing waste in the business value chain.
Conserving Biodiversity	As part of agriculture, living things are the resource that is subject to harvest, where ecosystems denote the interrelation between the environments that produce living resources and other living things. Meanwhile, biodiversity is an essential factor for abundant, stable food production. The Kubota Group defines "Food" as one of its business areas, and in addition to addressing greater efficiency in agriculture and a diverse range of needs, we believe in the importance of delivering products and services that contribute to the conservation of biodiversity, as well as undertaking business activities that consider biodiversity and protecting the natural environment around its business sites.
Controlling Chemical Substances	Chemical substances have become an essential part of our lifestyles. On the other hand, chemical substances hold the potential to significantly impact humans and ecosystems, a fact that has led to stringent laws and regulations related to their appropriate use and control. The Kubota Group believes in the importance of appropriately controlling the chemical substances contained in its products and handled at its business sites in order to minimize the impact on customers, those who live and work near its business sites, employees, and ecosystems.

Risks and Opportunities

The Task Force on Climate-related Financial Disclosures (TCFD) set up by the Financial Stability Board (FSB) released its final report in June 2017 to provide companies with recommendations for assessing and disclosing the financial implications of climate change.

In light of the climate change-related risks (transitional risk, physical risk) and opportunities recommended for disclosure by the TCFD and other organizations, the Kubota Group endeavors to continuously assess the implications related to materiality (basic items for environmental conservation) considered to have a high degree of importance for stakeholders and the Kubota Group from the perspective of risks and opportunities. Moreover, we make efforts towards reducing risks and creating value from opportunities.

		Envisaged scenario	Impact on the Company	Time horizon*		
				Short term	Medium term	Long term
Tackling Climate Change	Risks	• Stricter regulations for companies related to energy saving and controls on the emissions of greenhouse gases, etc.	Increase in regulatory compliance cost	→	→	→
		• High energy prices due to structural changes in energy driven by accelerating moves towards decarbonization and expanded use of renewable energy, etc.	Increase in product development and manufacturing costs	→	→	→
		• Increasing frequency and severity of weather disasters such as typhoons and torrential rains driven by climate change	Negative impact on the Company and its suppliers	→	→	→
		• More pests, lower crop yields • Changes in agricultural style due to relocation of suitable farming land, etc.	Loss of selling opportunities			→
		• Adopting electrification and discontinuing energy-inefficient products in line with growing interest in climate change among our markets and customer base	Increase in product development cost Loss of selling opportunities			→
	Opportunities	• Launch of products and services, etc., that enable energy savings and energy creation	Expansion of selling opportunities	→	→	→
		• Accelerate energy-saving measures, such as upgrading to high-efficiency equipment at business sites	Increase in productivity	→	→	→
		• Expansion in needs for agricultural solutions that correspond to changes in agricultural styles	Expansion in business related to adapting to climate change		→	→
Working towards a Recycling-based Society	Risks	• Expansion of regulations on import, export and use of discarded plastic and stricter waste-related regulations, etc.	Increase in regulatory compliance cost	→	→	→
		• Resource depletion and soaring resource prices	Increase in manufacturing costs	→	→	→
		• Expanded use of recycled materials towards the transition to a recycling-based economy	Increase in product development and manufacturing costs		→	→
	Opportunities	• Launch of products that consider resource recycling, including the use of recycled materials • Contribution to the effective use of resources through the deployment of environmental and waste-disposal services • Promotion of easier product maintenance and used product recycling	Expansion of selling opportunities	→	→	→
		• Acceleration of resource conservation measures at business sites	Improvement of resource efficiency	→	→	→
Conserving Water Resources	Risks	• Non-compliance with wastewater standards, etc. • Stricter water-related regulations, etc.	Fines and shutdowns Lower social credibility Increase in regulatory compliance cost	→	→	→
		• High water prices due to aging water infrastructure and shortage of available water for industrial use	Increase in manufacturing costs	→	→	→
		• Increasing frequency and severity of weather disasters such as flooding and drought driven by climate change • Water use restrictions in areas of high water risk	Negative impact on the Company and its suppliers	→	→	→
		• Lower crop yields due to shortage of water resources • Changes in agricultural styles due to relocation of suitable farming land, etc.	Loss of selling opportunities		→	→
		• Changes in needs for products and services in regions with high water risk	Increase in product development and manufacturing costs		→	→
	Opportunities	• Expansion in need for solutions for Water & the Environment-related products that ensure access to safe and secure water and wastewater treatment and recycling treatment facilities that comply with stricter regulations	Expansion of selling opportunities	→	→	→
		• Expansion in water conservation and wastewater reuse at business sites	Increase in productivity	→	→	→
		• Expansion in need for water infrastructure that is highly resistant to flooding, droughts, and other disasters	Expansion in business related to adapting to climate change	→	→	→
Controlling Chemical Substances	Risks	• Non-compliance with chemical substance-related environmental standards • Stricter chemical substance-related regulations, etc.	Fines and shutdowns Lower social credibility Increase in regulatory compliance cost	→	→	→
	Opportunities	• Launch of products compliant with emissions gas regulation and toxic substance use regulation	Expansion of selling opportunities	→	→	→
		• Decreased use of potentially toxic substances at business sites	Improvement in working environment	→	→	→
		• Decreased use of paints and improved yields at business sites	Increase in productivity	→	→	→
Conserving Biodiversity	Risks	• Violation of biodiversity-related regulations	Fines and litigation			→
		• Decline in natural capital	Shortages of raw materials Increase in procurement costs	→	→	→
		• Inappropriate land use, pollutant emissions, and excessive resource consumption, etc.	Litigation raised by local communities Lower social credibility	→	→	→
	Opportunities	• Launch of products that assist soil and water area conservation and products that control gas emissions, noise and vibration, etc.	Expansion of selling opportunities		→	→
		• Promotion of activities that consider biodiversity and environmental communication with local communities	Improve brand image Improvement of employees' environmental awareness	→	→	→

* Timing of manifestation is presented as short term (within three years), medium term (between three and five years), and long term (more than five years).

Key Measures

In order to address the issues identified as materiality, the Kubota Group promotes the following key measures from the perspective of the value chain.

	Value chain of business (Expanding Environment-friendly Products and Services P74-82)		
	Design and development, procurement	Manufacturing and distribution	Use and disposal
Tackling Climate Change (P52-60)	• Optimal regional procurement	• Reduce waste and loss in the use of energy based on the Kubota Production System concept • Recover and reuse waste energy • Expand use of renewable energy • Improve distribution efficiency • Promote modal shift	• Lower fuel consumption • Improve efficiency and save labor for work and management • Conserve energy during construction
Working towards a Recycling-based Society (P61-64)	• Use recycled materials • Reduce the number of parts • Reduce packing material	• Conserve resources • Promote the 3Rs for waste and convert waste into functional materials • Reduce plastic • Reduce packing material • Ensure proper waste management • Strengthen waste management using systems	• Extend product life • Improve ease of maintenance • Promote product recycling • Ensure proper disposal
Conserving Water Resources (P65-67)	• Assess water risks	• Promote the 3Rs for water resources • Ensure proper wastewater management • Promote BCP measures	• Save water consumption • Promote purification or recycling of wastewater
Controlling Chemical Substances (P68-70)	• Reduce the use of substances of concern	• Reduce VOC emissions • Substitute for organic solvents • Ensure proper chemical substance management	• Make exhaust gas cleaner • Reduce environmental loads on soil and water areas
Conserving Biodiversity (P71-73)	• Assess the impact on natural capital	• Promote environmental conservation activities and reduce the environmental impact • Beautification and greening of business sites and neighborhoods	• Conserve soil and water areas • Reduce noise and vibration
Environmental Management (P83-87)	• Promote global environmental management led by the members at the management class level • Systematically reduce environmental loads toward achieving the Medium- and Long-Term Environmental Conservation Targets • Reduce environmental risks through environmental risk assessment • Ensure environment-friendly design through product environmental assessment • Promote green procurement • Develop products that contribute to global environmental protection and solving social problems • Enforce compliance in accordance with globally systemized environmental conservation rules • Promote environmental training and environmental awareness-raising activities		
Environmental Communication (P88-92)	• Strengthen information dissemination through the environmental report and website • Promote environmental communication tailored to each target • Enhance two-way communication with stakeholders • Participate in regional environmental conservation activities		

Relationships Between Environmental Conservation Activities and the SDGs

The Kubota Group environmental conservation activities are deeply related to the SDGs. In order to illustrate the relationship between our environmental conservation activities and the SDGs, we have organized their connections with the SDG targets.

View the list of related SDGs and targets
www.kubota.com/sustainability/environment/sdgs/data/SDGs_target_list.pdf

Environmental Vision

In a situation with an increased uncertainty about the future due to social problems in a global scale, such as food issues and global warming, long-term, world-common goals have been set such as SDGs, the Paris Agreement, and others. For the climate change problem, the shift to a "decarbonized" society has been accelerated, with each country declaring substantially zero emissions of CO_2 and carbon neutrality. Also, the move from the conventional economy that has led to mass production, mass consumption, and mass waste disposal toward a circular economy has progressed, which aims for an economy with minimized waste generation by preserving and maintaining the values of products and resources as long as possible.

With "For Earth, For Life" as its concept for environmental management, the Kubota Group aims to contribute to the realization of a sustainable society, regarding environmental conservation, including climate change countermeasures, as a priority issue in its corporate activities. The Kubota Group formulated its "Environmental Vision," which, together with our Long-term Vision "GMB2030," shows the direction of our business activities toward 2050 from an environmental perspective and will promote initiatives to realize this vision.

Environmental Vision
— Target Situation toward 2050 from an Environmental Perspective —

While challenging to achieve zero environmental impact, we will contribute to realizing a carbon neutral and resilient society in the fields of "food, water, and the environment."

Toward the Realization of the Environmental Vision

Challenge to Achieve Zero Environmental Impact

Procuring raw materials and components, and processing them into products, our company provides our customers with its various products. In this process, and in the use of the products by customers, a large volume of resources, including energy, is consumed. To continue our business globally, we need to use limited resources in an efficient and sustainable way.

Toward the realization of zero environmental impact, we will promote the reduction of greenhouse gas emissions in our business activities, a thorough reduction of waste or loss of energy based on the Kubota Production System (KPS), the expansion of the recovery and reuse of waste energy and of the use of renewable energy, water-saving in areas under high water stress, and maximizing the utilization efficiency of resources in the product lifecycle. In addition, we will develop our efforts toward zero environmental impact in our entire business value chain.

However, it is not easy to achieve zero environmental impact. To steadily approach zero environmental impact, we will systematically promote the reduction of greenhouse gases, implementation of energy-saving, reduction of waste, water-saving, and reduction of Volatile Organic Compounds (VOCs). We will also take up a challenge of sustainable business activities that can maintain the Earth's self-purification capability and carrying capacity.

Toward the Realization of a Carbon Neutral and Resilient Society

In addition to the mitigation of climate change (controlling greenhouse gas emissions), Kubota also engages in environmental conservation activities and provides environmentally-friendly products and solutions to adapt to the effects of climate change (avoiding or minimizing damage brought about by climate change) and to address water and waste issues. In these ways, we are contributing to the realization of a sustainable, especially carbon neutral and resilient society.

Greenhouse gas emissions from the food sector, including land use in the agricultural field, are said to account for about 24% of the world's total emissions. It is believed that without efficient food production, greenhouse gas emissions will increase. Also, climate change influences the reduction and relocation of arable land and agricultural style. With a decrease in the number of workers under the influence of urbanization in rural districts, efficient food production in limited cultivation areas will be sought in the future.

In the "food" sector, which is one of our business areas, we believe that our company can contribute to the reduction of greenhouse gas emissions and efficient food production in the agricultural field by further evolving smart agriculture, the automatic operation of farm machinery, and agricultural solutions. By increasing the productivity of agriculture we will help reduce greenhouse gas emissions in the agricultural sector by improving the efficiency of agriculture, reducing the energy used in food production, and curbing deforestation intended to expand agricultural land.

Under the influence of climate change, the frequent occurrence and intensified damage of weather disasters have become remarkable. In addition, with available water resources unevenly distributed depending on the regions, the population who cannot access safe water has risen to 1.6 billion people. Even if we succeed in controlling the global rise of temperature due to climate change to less than 2°C, the population who has to face water shortages is expected to increase. Also, population increase and improved living standards are assumed to further aggravate the resource and waste problems and agricultural water shortages due to mass production, mass consumption, and mass waste disposal.

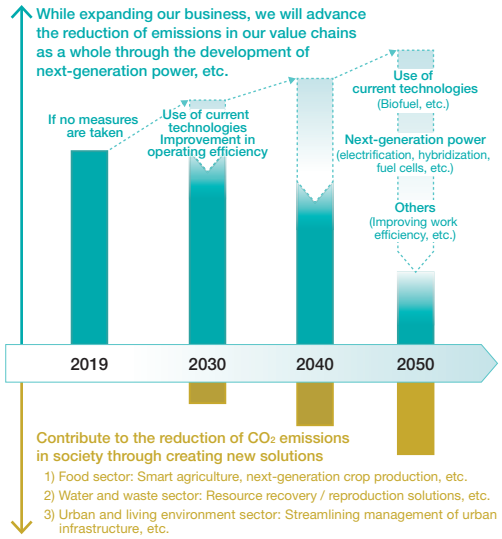
In the "water and the environmental" fields, we will provide products, services, and solutions, such as products to contribute to disaster prevention and disaster recovery, and efficient water monitoring and management systems that utilize AI / IoT, which are designed to avoid and mitigate damage due to the influences of climate change, including frequent occurrence of climate disasters, changes in agricultural styles, and increase in the frequency of work-related heatstroke. We will further expand our products, services, and solutions intended to realize advanced recycling of water resources and waste and control water pollution and air pollution, contributing to natural disaster-resistant community-building and the realization of a resilient society.

Taking on the Challenge of Carbon Neutrality

Based on the situation of CO_2 emissions in the product life cycle as a whole, we believe that it is important to tackle reducing CO_2 emissions when manufacturing and using products.

Toward the realization of a carbon neutral society, we will promote reduction of greenhouse gas emissions and energy-saving, improvement of fuel consumption of products, motorized products, and reduction of CO_2 emissions in the products' life cycles as a whole. At the same time, through the provision of products and solutions, we will help reduce CO_2 emissions generated from social activities and join forces to take on the challenge of realizing substantially zero CO_2 emissions by the year 2050.

In-house CO_2 emission control



Contribution to reducing CO_2 emissions in society

Kubota's Initiatives

Future projections for population increase and economic development represent a significant opportunity for our business. However, if the world continues with the same kinds of economic activities as now, they could place a burden on the Earth that exceeds its capability for self-purification and its carrying capacity. This is a risk for the continuity of business activities. We will contribute to the realization of a sustainable society through our business activities and the provision of products and service solutions.

In-house CO_2 Emission Control

Reducing Scope 1 and 2*1 Emissions

The Kubota Group is continuing to implement energy-saving countermeasures and productivity improvement activities to reduce CO_2 emissions from its own sites, with a focus on production sites. While we continue to focus on these efforts, going forward we will proceed with changes to fuels that have low CO_2 emissions, such as discontinuing the use of coking coal in the melting process at our casting plants and switching to electric furnaces. In addition, we will expand our use of renewable energy by installing solar power generation systems and purchasing green power and so forth. At the same time, as we reorganize and transfer our production sites, we will adopt production methods that have a low environmental impact and make other efforts to save energy and resources through production innovation. We will also explore ways of reducing logistics-related CO_2 emissions, such as shortening product transportation distances by reorganizing production sites and promoting the shift to new modes of transportation.

Controlling Scope 3*2 Emissions

Over 80% of the Kubota Group's Scope 3 emissions are generated during the use of sold products. Therefore, our efforts to develop products that can perform more work more precisely using less energy by improving the operational fuel consumption of our agricultural and construction machinery tie-in directly to emissions reductions.

Moreover, through the robotization of agricultural machinery and the use of ICT, we are promoting smart agriculture. This is not only saving labor in agricultural operations; it is also contributing to energy- and resource-saving. Currently, fossil fuels such as diesel and gasoline are the main sources of energy, but we are striving to utilize fuels that have lower CO_2 emissions, such as biofuels (e-fuel) and synthetic fuels. Going forward, we will actively pursue R&D aimed at the decarbonization of motive power, such as electrification, hybrid systems, and fuel cells.

*1 Scope 1: Direct emissions by the Company itself
Scope 2: Indirect emissions from purchased electricity, etc.
*2 Scope 3: Other indirect emissions (Emissions by others or at customers' sites related to the Company's activities)

Solar power generation system installed on the rooftop of a plant in China

Full-scale model of the 130th anniversary concept tractor

Electric construction machinery and tractor

Contribution to CO_2 Reduction in Society and the Realization of a Resilient Society

Environmental Contribution in the Field of Food

In the field of food, including agriculture, the Kubota Group is working to increase harvest yields per area and the quality of crops by further promoting smart agriculture. The goal is to increase crop yields to meet rising food demand without increasing cultivated area. On the environmental front we will help to save energy and resources by improving operational efficiency, while controlling deforestation and environmental destruction for the expansion of farming land, and so forth.

In addition, we are investing in a start-up that operates artificially lighted plant factories with the goal of increasing the efficiency of food production through next-generation crop production. Because such facilities make plant cultivation possible in urban areas close to where many consumers live, they are expected to help reduce logistics-related energy consumption by means of shorter transportation distances and contribute to the reduction of food loss by means of demand-based production planning.

In other initiatives, we provide the WATARAS farm water management system, which allows users to remotely and automatically control water flowing in and out of rice paddies while monitoring the water level of the paddies themselves. We are conducting trials of a “smart rice paddy dam” that temporarily retains rainwater in a rice paddy by enabling users to remotely increase the water level setting for draining water from the rice paddy when there is a danger of river flooding due to heavy rain. This is expected to serve as a way of preventing flooding and increasing the resilience of local areas to water damage.

For the future, we are looking at building a food value chain data linking platform from crop production, food distribution to consumption and supplying an automatic management system that uses AI. This would show a visual representation of demand trends, promoting a shift to “market-in” agriculture where production and sales are conducted in response to demand. At the same time, it would deliver safe, secure crops with a high level of freshness to consumers, thereby helping to reduce food losses.

Environmental Contribution in the Field of Water and Waste

The Kubota Group supports water infrastructure as a comprehensive manufacturer of water-related items from pipe materials used for water supply and sewage to engineering of water treatment plants. We use these technologies to provide resource recovery solutions, such as fermenting sewage sludge generated in sewage treatment plants and waste such as food residue generated by agriculture and food plants to extract biogas for reuse as an energy resource, generating electricity using the recovered biogas. We also contribute to the building of a circular economy by providing equipment for crushing and sorting to recover resources such as metal and plastics from waste products in a process known as urban mining.

Environmental Contribution in the Field of Urban and Living Environments

The Kubota Group is saving energy and improving operational efficiency on construction sites by leveraging our strengths in the water environment infrastructure business and construction machinery business. One way we do this is by supplying a smart water pipe installation system, that conducts optimal installation based on pipeline information.

In the area of construction machinery, we use a fault diagnosis app to reduce downtime of machinery that has a fault, helping to increase the efficiency of maintenance work.

Going forward, we will look at building a platform that aggregates underground pipe data to help in reducing construction time and labor for urban construction projects and so forth and providing a solution for extending the life and renewing underground infrastructure. These initiatives will also help to save energy in the construction field.

We will enhance the disaster resilience of urban infrastructure such as water supply and sewage systems by upgrading water supply and sewage facilities and river flooding monitoring and management platforms using plant information and sensors. Moreover, by appropriately operating these plants and facilities under optimal conditions, we will also contribute to energy saving.

Tractors hard at work in global markets

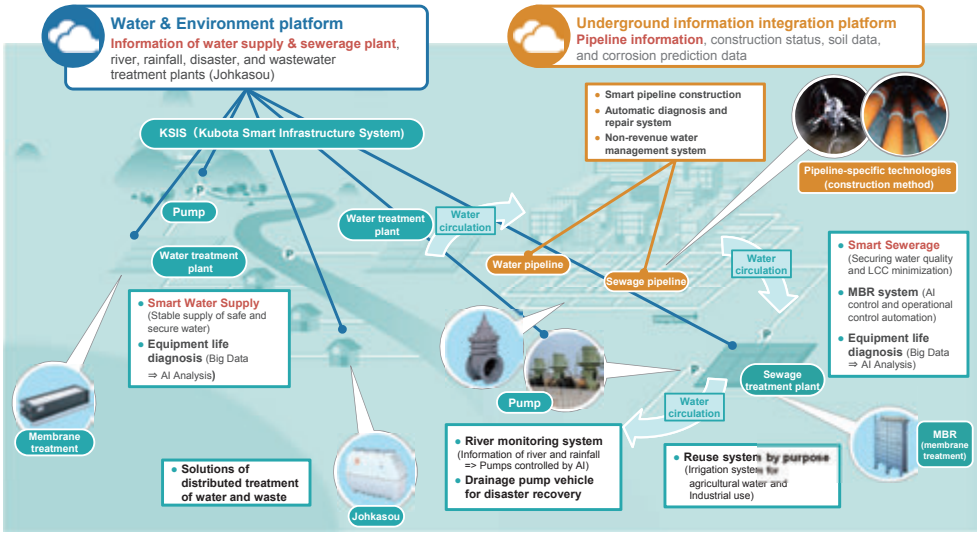
Control screen of Kubota Smart Agri System

Artificial light plant factory

Farm Water Management System WATARAS

Plastic crushing and sorting facility

Construction machinery fault diagnosis app



Background in establishing the Environmental Vision

World Around Kubota's Business in 2050

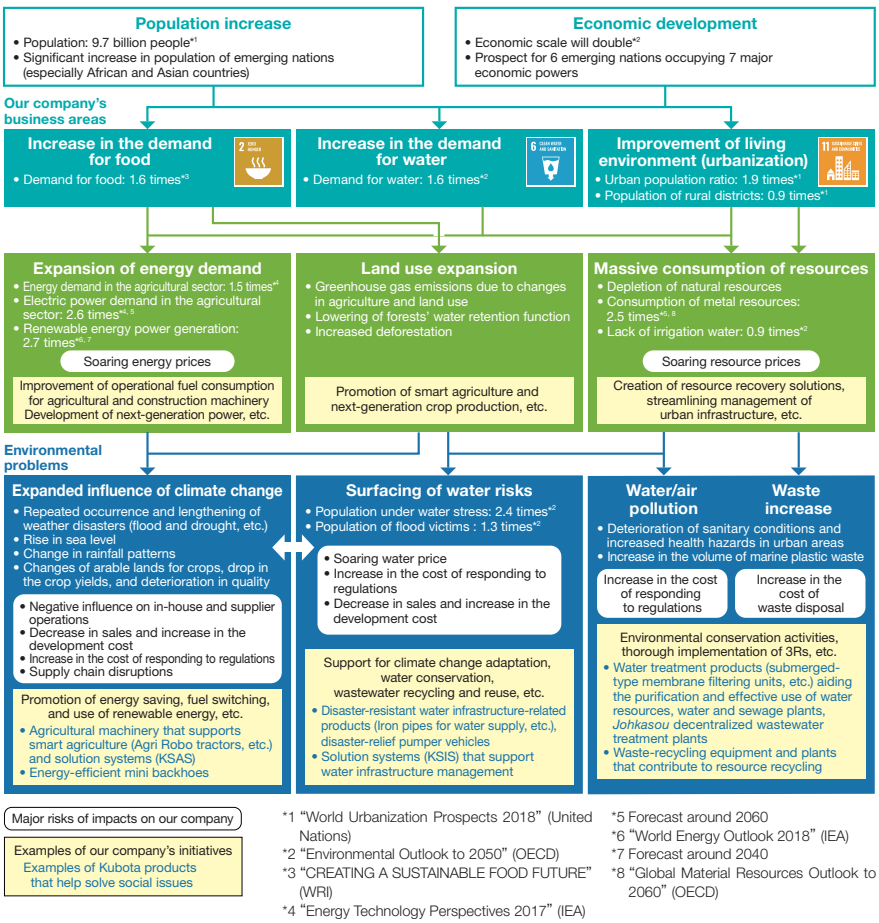
Based on the scenarios of the Intergovernmental Panel on Climate Change (IPCC) and the World Resources Institute (WRI), we analyzed a social image in 2050 when the temperature rises by 2°C and 4°C. Global environmental problems, including climate change and water risks, may not only have negative effects on our company's operation in the future, such as soaring energy and water prices and frequent occurrence of natural disasters, but also further aggravate social problems in the "food, water and the environment" fields, which are part of our company's business areas. Also, the delayed responses to these environmental problems may pose a risk to our company's business activities. To continue our global business, we believe it is essential to strike a balance between business development that can contribute to solving social problems toward the achievement of SDGs and ESG management that includes responses to the environmental problems.

▶World in 2050

The world population is expected to approach 10 billion people by 2050, mainly in emerging countries such as Africa and Asia, and the food demand along with the population increase is also expected to increase about 1.6 times. Also, economic development can enhance the need to improve people's living environment, and can result in an increase in global demand for energy and consumption of many resources. The same will be applied to water demand. Water demand will increase, especially in the manufacturing industry and for the use for power generation and for domestic use, and is expected to be about 1.6 times the current demand by 2050.

Increase in food demand and water demand, expansion of energy demand due to urbanization, etc., and cultivation of new land for food production may aggravate the climate change problem. Climate change can have a huge negative impact on people's lives. If rainfall patterns are altered, conventional crop production may become impossible as arid or high-precipitation belts shift geographically. Weather anomalies may also cause populations to be affected by more frequent flooding and other water damage.

If we continue our current economic activities and social activities without efficiently utilizing our limited resources, such as energy, people's current lifestyles themselves may no longer be feasible.



▶A World Where Temperature Rise Is Less Than 2°C

We believe that to achieve the goals stipulated in the Paris Agreement, each country will accelerate their moves for energy-saving and the reduction of CO_2 emissions, and strengthen related laws and regulations, which should result in a growing concern about climate change among markets and customers. This is why we have assumed that the needs for energy-saving, decarbonization, and electrification will be enhanced.

For example, tractors, combine harvesters, rice-transplanters, construction machinery, and diesel engines, which are our company's major products, are under application of the exhaust gas regulations of Japan, European countries, and the U.S., etc. Our diesel engines are also used for construction machinery, which plays an active role in the development of urban areas. In the future, since regulations for each country's engines may be tightened, we believe that we need to invest in the development of diesel engines that conform to new exhaust gas regulations. Also, if each country's efforts toward the mitigation of climate change are advanced, while the ratio of fossil-fuel power generation decreases due to strengthened carbon taxes, energy prices are expected to soar with an increase in the ratio of renewable energy power generation.

As calls for the environmentally sound performance of products grow around the world in connection with climate change, the needs for high-energy-efficiency products and solutions that enable the same effects should be enhanced also in the fields related to water treatment as well as the agricultural machinery and construction machinery that Kubota offers. In our business activities, we also believe that with a risk of increase in the energy procurement cost, energy-saving and expansion of the use of renewable energy will become important issues.

▶A World Where the Temperature Has Risen by 4°C

If the world's average temperature rises by 4°C, with the changes in the rainfall and climate patterns, weather disasters are expected to further increase, such as with the typhoons and torrential rains that have been observed around the world recently. Depending on the areas, it may be difficult for people to access the safe water required for business activities and livelihood due to drought. These weather disasters may cause a suspension of business activities, affect agricultural produce, and increase damage on the basic needs of people's livelihood such as water infrastructure.

For instance, in coastal regions and rainy regions, heavy rain or flooding may cause inundation of plants, blackouts, logistic suspension, and delayed shipping. Also, with increased frequency and length of these weather disasters, there are concerns over further expansion of damage. Even in the production of farm products, climate change is expected to have negative influences such as causing changes of arable land and a reduction in the amount of harvested crops, and may further affect the sales of agricultural machinery. Climate change may cause the occurrence of drought, which may cause the occurrence of risks for business activities, such as water shortages and restrictions on the amount of water in the relevant regions.

While climate change is expected to affect the changes of arable land and crop production, we believe that the necessity of agricultural solutions for continuing farming even under a range of climate conditions, and of smart agriculture capable of realizing efficient production in limited land, will increase. Likewise, we believe that contributing to the building of a natural disaster-ready city that can maintain people's living environment even after the occurrence of a natural disaster will be our important task.

The above statements are the outline of the results of scenario analysis based on the proposals of TCFD for the examination of the Kubota Group's Environmental Vision. The world in 2050 may be different from each scenario. We will continue to improve our information disclosure based on the proposals of TCFD.

Expected Image of Society

As people's lives become more and more enriched, new environmental problems to be solved will occur in the future. However, we do not wish to have a new society at the price of the global environment. As a result of analyzing a future society image based on the impact of climate change, the Kubota Group believes that what society expects for us in order to make the world sustainable in or after 2050 is as follows:

◇ Realization of carbon neutral society aimed at mitigating climate change by curbing greenhouse gas emissions from the agricultural sector
◇ Realization of resilient society capable of adapting to climate change, such as by preparing for natural disasters and dealing with water / air pollution and waste issues

Medium- and Long-Term Environmental Conservation Targets and Results

As extreme weather events and other impacts of climate change continue to materialize, the global movement aimed at reducing greenhouse gases is growing increasingly active. Global environmental issues pose a significant threat to "ensuring food security," as well as "ensuring a safe and secure water supply."

In order to promote environmental management in light of various recent social developments, such as SDGs and the Paris Agreement, as a sustainable company, the Kubota Group has been promoting environmental activities by formulating its medium- and long-term targets for environmental conservation. In 2016, the Kubota Group formulated its Long-Term Environmental Conservation Targets 2030 and Medium-Term Environmental Conservation Targets 2020. We have also newly formulated the Medium-Term Environmental Conservation Targets 2025. Toward achieving these targets, the Kubota Group is advancing systematic initiatives in both the production and product development stages. Moreover, the Kubota Group checks its target items against the SDG goals and targets, thereby identifying the areas in which the Group can contribute to solving issues.

Formulation of Medium-Term Environmental Conservation Targets 2025

At our global production sites, in addition to the indicators set out in our Medium-Term Environmental Conservation Targets 2020, we have added the target of increasing the renewable energy usage ratio towards realizing a carbon-free society. Furthermore, in view of the growing global issue of ocean pollution by disposable plastics, we have added a qualitative target of improving resource efficiency. We have also set a qualitative target for systematically advancing efforts on wastewater management and conserving biodiversity.

In the product segment, we set a new target relating to displaying the materials of new parts with a view to promoting recycling.

Scope	Issue	Action item	Management indicator	Base FY	Target for FY2025*9
Global Production Sites	Tackling Climate Change	Reduce CO_2*1	CO_2 emissions per unit of production*2	2014	▲25%
			[New] Ratio of renewable energy usage	—	1% or more
		Save energy	Energy consumption per unit of production*2	2014	▲18%
	Working towards a Recycling-based Society	Reduce waste	Waste discharge per unit of production*2	2014	▲33%
			[New] Hazardous waste discharge per unit of production*2,3	2019	▲3%
			Recycling ratio (Japan)	—	Maintain 99.5% or more
			Recycling ratio (Overseas)	—	Maintain 90.0% or more
		Improve resource efficiency	[New] Work on the following three points to promote the effective use of resources (1) Reduce disposable plastics at business sites (2) Work with suppliers to conserve resources and make packaging materials returnable (3) Implement paperless operation		
	Conserving Water Resources	Conserve water resources	Water consumption per unit of production*2	2014	▲23%
		Control wastewater	[New] Manage wastewater appropriately in accordance with the standards of the water discharge by operating wastewater treatment facilities and water recycling facilities, etc.		
	Controlling Chemical Substances	Reduce VOCs	VOC emissions per unit of production*2,4	2014	▲42%
	Conserving Biodiversity (Including non-production sites)	Conserve biodiversity at business sites	[New] Promote the protection of the natural environment by greening our establishments and creating biotopes		
		Promote social contribution activities	[New] Promote conservation of the local natural environment and biodiversity as social contribution activities		
Products	Improving Products' Environmental Performance	Expand Eco-Products	Sales ratio of Eco-Products	—	70% or more
		Promote recycling	Usage ratio of recycled materials*5	—	Maintain 70% or more
			[New] Display the material of new parts and provide material information*6		
		Develop vehicles compliant with exhaust gas regulations	Development of industrial diesel engines that comply with the latest emissions regulations (Stage V), and launch onto the market of products with such engines*7		
			[New] Launch the vehicles that comply with the latest emissions regulations onto the market*8		

*1 CO_2 emissions are for Scopes 1 and 2.
*2 The figures per unit of production represent the intensity of the environmental load per unit of money amount of production. The exchange rate of the base year is used when translating the money amount of production of overseas sites into Japanese yen.
*3 Industrial waste defined as hazardous by legislation in each country.
*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 Usage ratio of recycled materials (%) in the cast metal products and parts manufactured by the Kubota Group (ductile iron pipes, fittings, machine cast products (engine crankcase, etc.))
*6 Targeted parts are defined by the in-house display standards.
*7 Targeting tractors and combine harvesters (output range: 56 kW ≤ P < 560 kW) equipped with engines compliant with the European emissions regulations (Europe Stage V) level, shipped to Europe, North America, Japan, and Korea
*8 Targeting utility vehicles equipped with engines compliant with the EPA Exhaust Emission regulation and the EPA Permeation Emission regulation level.
*9 ▲ indicates a negative figure.

Long-Term Environmental Conservation Targets 2030 and Performance Record

In order to achieve its Long-Term Environmental Conservation Targets 2030, the Kubota Group formulates its Medium-Term Environmental Conservation Targets every five years as an approach for deploying highly effective activities.

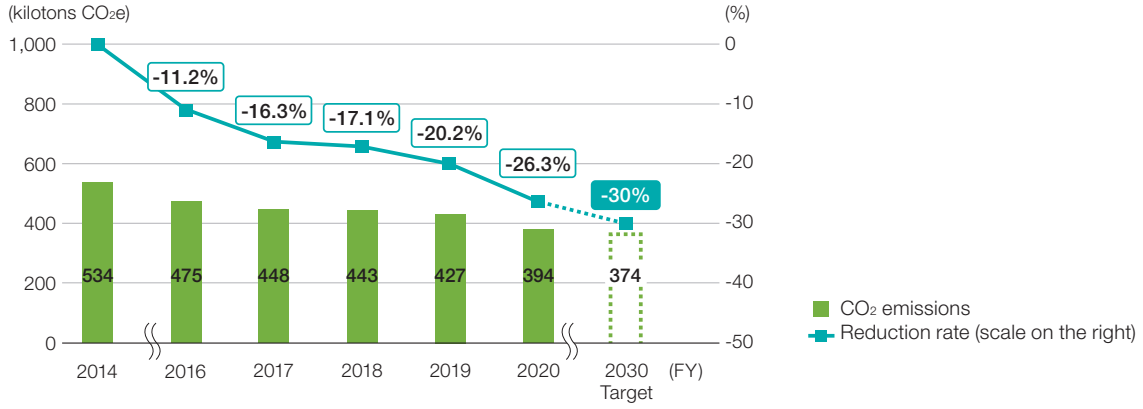
Promoting activities for achieving the medium- to long-term targets → Medium-Term Environmental Conservation Targets 2020 (Formulated in 2016) → Medium-Term Environmental Conservation Targets 2025 (Formulated in 2021) → Long-Term Environmental Conservation Targets 2030

Tackling Climate Change

Goal	**Reduce** CO_2 emissions from the Kubota Group in Japan* by **30%** compared to the base year FY2014.
Result	In FY2020, CO_2 emissions of the Kubota Group in Japan* were **reduced** by **26.3%** compared to the base year FY2014.

* CO_2 emissions indicate Scope 1 and 2 emissions and include greenhouse gases from non-energy sources

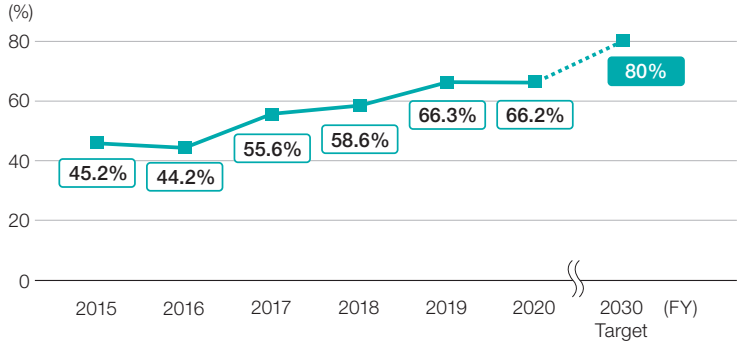
Trends in CO_2 Emissions of the Kubota Group in Japan



Efforts to Develop Environment-friendly Products

Goal	**Increase** the sales ratio of Eco-Products-certified products* to **80%** by 2030. Aim to put all new products which are certified as Eco-Products in the market in 2030 and later.
Result	The sales ratio of Eco-Products-certified products* was **66.2%** in FY2020.

Trends in Sales Ratio of Eco-Products-certified Products



* The sales ratio of products that have fulfilled the internal requirements in our own Eco-Products Certification System
Sales ratio of Eco-Products (%) = Sales of Eco-Products / Sales of products (excluding construction work, services, software, parts and accessories) × 100

For the calculation method of each item of environmental data, see the Calculation Standards of Environmental Performance Indicators (p.98).

The environmental information provided in the KUBOTA REPORT 2021 Full Version has received the third-party assurance by KPMG AZSA Sustainability Co., Ltd. The indicators subject to assurance are marked with the "🔍" symbols.

Medium-Term Environmental Conservation Targets 2020

Starting in 2016, the Kubota Group advanced initiatives toward achieving the Medium-Term Environmental Conservation Targets 2020. Each business site and division determined the measures to take, formulated an implementation plan, taking into consideration fluctuations in the volume and contents of business, and has implemented the plan. 2020 was the final year for these medium-term targets. At our global production sites, production decreased due to the COVID-19 pandemic, but our reduction measures also had an effect, and our 2020 results achieved the targets across all indicators. In the product segment, we also achieved all of the targets. 40 products were newly certified as Eco-Products, including 2 Super Eco-Products, bringing their sales ratio to 66.2%.

Targets for Global Production Sites

SDGs	Issue	Action item	Management indicator*3	Base FY	Target for FY2020*5	Result of FY2020*5	Achievement Status
13, 7	Tackling Climate Change	Reduce CO_2*1	CO_2 emissions per unit of production	2014	▲14%	▲18.6%	We are promoting energy-saving for production equipment, lighting, air conditioning; fuel conversion; introduction of renewable energies; and measures for heat insulation of buildings, etc.
		Save energy	Energy consumption per unit of production	2014	▲10%	▲15.7%	
12	Working towards a Recycling-based Society	Reduce waste	Waste discharge per unit of production	2014	▲10%	▲28.7%	We are promoting thorough sorting of wastes and converting waste into valuable materials.
			Recycling ratio*4 (Japan)	—	Maintain 99.5% or more	99.5%	We are maintaining the existing level through continuous efforts.
			Recycling ratio*4 (Overseas)	—	Maintain 90.0% or more	91.8%	We are promoting the reduction of the amount of waste sent to landfills by changing contractors.
6	Conserving Water Resources	Conserve water resources	Water consumption per unit of production	2014	▲10%	▲20.8%	We are promoting recycling of wastewater and saving of water use.
12	Controlling Chemical Substances	Reduce VOCs*2	VOC emissions per unit of production	2014	▲10%	▲37.7%	We are promoting the elimination or reduction of VOC-contained paint and thinner.

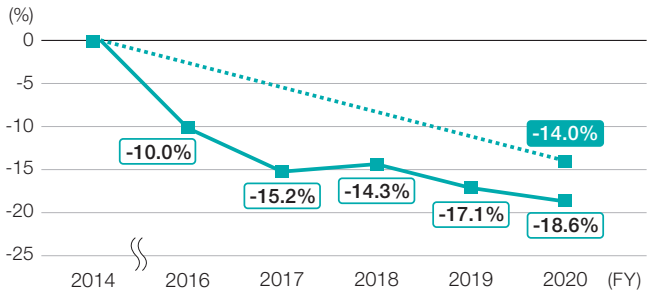
Targets for Products

SDGs	Issue	Action item	Management indicator	Target for FY2020	Result of FY2020	Achievement Status
12	Improving Products' Environmental Performance	Expand Eco-Products	Sales ratio of Eco-Products*6	60% or more	66.2%	In FY2020, 40 items were newly certified as Eco-Products.
		Promote recycling	Usage ratio of recycled materials*7	Maintain 70% or more	72.5%	We are maintaining the usage ratio of recycled materials higher than the target.
		Develop vehicles compliant with exhaust gas regulations	Development of industrial diesel engines that comply with the latest emissions regulations, and launch onto the market of products with such engines*8		Kubota launched the following products*9 equipped with the engines that comply with the emissions regulations. Tractor M7003 Series M7153 Conforming to European Union Regulations (56 kW and above, lower than 130 kW, Stage V) Agri Robo Tractor MR1000A Conforming to Japan Regulations on Emissions from Non-Road Special Motor Vehicles (75 kW and above, lower than 130 kW, Regulation 2014)	

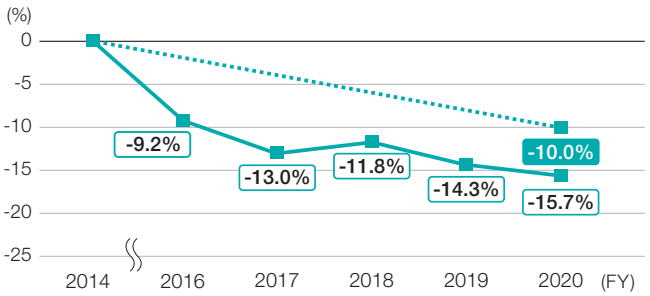
*1 CO_2 emissions indicate Scope 1 and 2 emissions and include greenhouse gases from energy sources. We use the emissions coefficient for electric power of the base year in our calculation of CO_2 emissions from energy sources.
*2 VOCs (volatile organic compounds) comprise the six substances that are most prevalent in emissions from the Kubota Group: xylene, toluene, ethylbenzene, styrene, 1, 2, 4-trimethylbenzene, and 1, 3, 5-trimethylbenzene.
*3 The figures per unit of production represent the intensity of the environmental load per unit of money amount of production. The exchange rate of the base year is used when translating the money amount of production of overseas sites into Japanese yen.
*4 Recycling ratio (%) = (Sales amount of valuable resources + External recycling amount) / (Sales amount of valuable resources + External recycling amount + Landfill disposal) × 100. Heat recovery is included in the external recycling amount.
*5 ▲ indicates a negative figure.
*6 The sales ratio of products that have fulfilled the internal requirements in our own Eco-Products Certification System
Sales ratio of Eco-Products (%) = Sales of Eco-Products / Sales of products (excluding construction work, services, software, parts and accessories) × 100
*7 Usage ratio of recycled materials (%) in the cast metal products and parts manufactured by the Kubota Group (ductile iron pipes, fittings, machine cast products (engine crankcase, etc.))
*8 Targeting tractors and combine harvesters (output range: 56 kW ≤ P < 560 kW) equipped with engines compliant with the European emissions regulations (Europe Stages IV and V) level, shipped to Europe, North America, Japan, and Korea
*9 Some of the products launched in 2020 are listed.

The results for Medium-Term Environmental Conservation Targets 2020

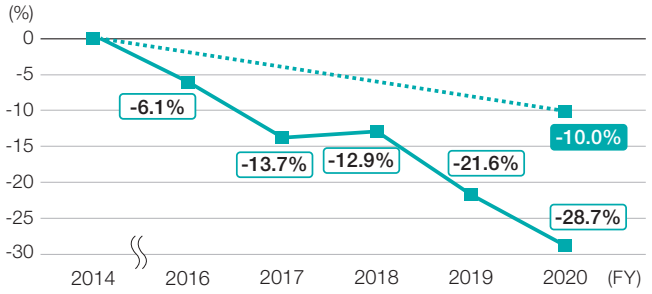
Trends in Reduction Ratio of CO_2 Emissions per Unit of Production



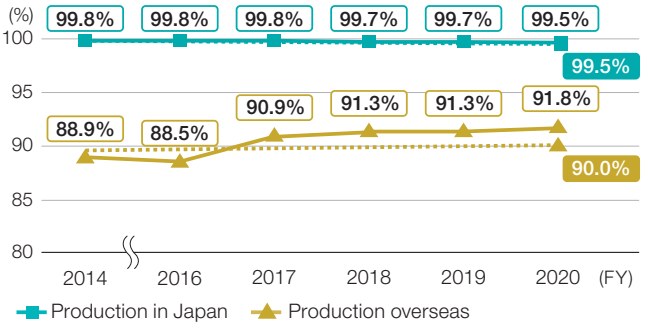
Trends in Reduction Ratio of Energy Use per Unit of Production



Trends in Reduction Ratio of Waste Discharge per Unit of Production*1

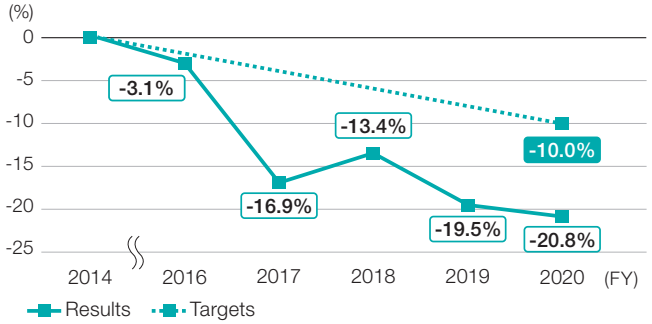


Trends in Recycling Ratio*1

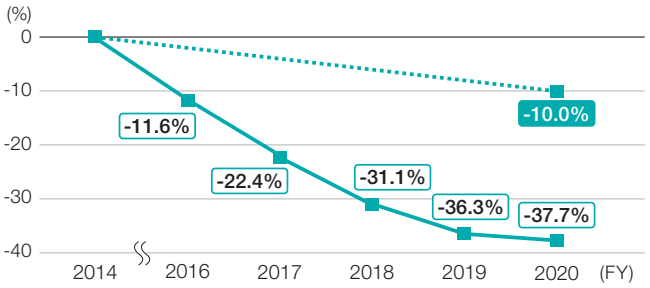


* 1 In FY2020, in consideration of the actual cleaning process, some overseas site reclassified water remaining after product cleaning as waste rather than wastewater. This change has been reflected retrospectively for previous reporting years in the reduction ratio of waste discharge per unit of production and the overseas recycling ratio.

Trends in Reduction Ratio of Water Consumption per Unit of Production



Trends in Reduction Ratio of VOC Emissions per Unit of Production*2



* 2 Calculation of the volume of VOC emissions was adjusted starting in FY2014 to improve accuracy. This change has been reflected retrospectively for previous reporting years in the reduction ratio of VOC emissions per unit of production.

Products with Engines Compliant with the Latest Exhaust Gas Regulations (Examples of Products Launched onto Markets in 2020)

Agri Robo tractor MR1000A (Driverless specification)

Tractor M7003 Series M7153 (Europe)

As an “Eco-First Company”

In May 2010, the Kubota Group was certified by the Japanese Minister of the Environment as an “Eco-First Company” due to its commitment to environmental conservation. According to the Medium- and Long-Term Environmental Conservation Targets, the Group has renewed its Eco-First Commitment and was recertified as an Eco-First Company in October 2017.

See here for details on Eco-First Company certification
www.kubota.com/sustainability/environment/ecofirst/

Eco-First Mark

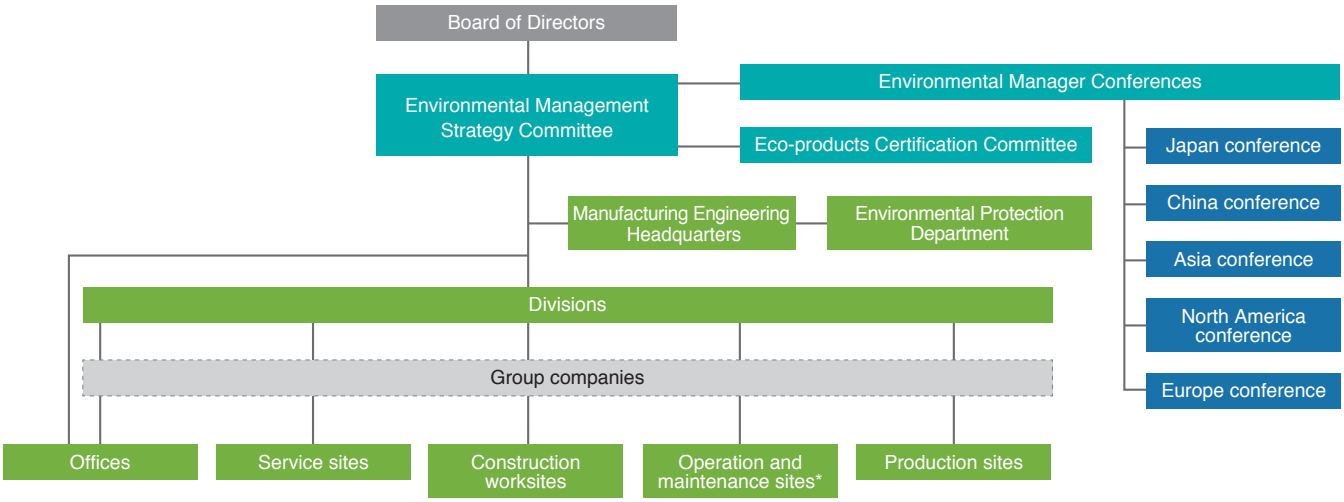
Environmental Management Promotion System

As a consequence of economic development, numerous environmental problems are occurring all around us, for example, climate change, water risks, and marine plastic waste. As initiatives for transitioning to a carbon-free society and a circular economy gain momentum around the world, corporations are expected to do their part in helping to solve such environmental issues.

While anticipating changes in society, the Kubota Group must formulate strategies for determining the course of action for environmental management so that targets can be achieved. The implementation of a PDCA cycle on a global scale is also essential. Going forward, we will continue to strengthen the framework that underpins our environmental management of contributing to the development of society and conservation of the global environment.

Organization Structure

In 2014, the Environmental Management Strategy Committee was newly established to take a more strategic and innovative approach to environmental management by management-led promotion. In addition, Environmental Manager Conferences are held for each region—Japan, China, Asia, North America and Europe—to globally advance environmental management across the Kubota Group.



* Sites engaged in the business of operation or maintenance of environmental plants

Environmental Management Strategy Committee

The Environmental Management Strategy Committee is comprised of the President and all inside Directors, the General Manager of Planning and Control Headquarters, the General Manager of Manufacturing Engineering Headquarters, the General Manager of Research and Development Headquarters, the General Manager of Procurement Headquarters, and the General Manager of Corporate Compliance and Risk Management Headquarters.* The Committee discusses the medium- and long-term direction of the Kubota Group's environmental management, such as medium- and long-term targets and key measures in light of global environmental issues such as climate change and the business environment. It determines priority items and plans that should be carried out in order to reduce environmental impacts and risks, and to enhance the lineup of environment-friendly products. In 2020, the Environmental Management Strategy Committee was held three times in July, September and November.


Environmental Management Strategy Committee

The results of the committee meetings are reported to the Board of Directors and the Executive Officers' Meeting, and are distributed throughout the Group. It also promotes management based on the plan-do-check-action (PDCA) cycle by assessing and analyzing the progress of the entire Group's environmental conservation activities and reflecting the results when formulating new plans and policies. We will continue to promote swift environmental management led by members at the management level.

* General managers are either directors or executive officers.

Environmental Manager Conferences

The Kubota Group holds Environmental Manager Conferences for each region aimed at strengthening the environment management system and reducing environmental loads and environmental risks on a global basis.

In 2020, due to the COVID-19 pandemic, local study sessions (for identifying issues and considering countermeasures) and problem-solving discussions were unable to be held as usual, so online meetings were organized instead. One session was held for China, and two each for North America and Japan. Local company presidents, environmental managers, and staff members participated in the overseas conferences, while the Japan conference brought together environmental managers and staff members from 24 sites across Japan, including Group companies. The focus of the conferences was on communicating the Kubota Group's policies and initiatives, as well as sharing progress on the Medium-Term Environmental Conservation Targets. Participants also presented case studies on mainly energy-saving measures and environment risk countermeasures.

As for conferences held overseas, since 2017 the Kubota Group has encouraged local business sites to host their own conferences in order to efficiently promote governance, strengthen collaboration, and raise the level of activities within their own region. A conference of five companies in Thailand was launched in December 2017, another with three companies in China's Jiangsu Province in December 2018, and another with six companies in North America in August 2019. Each of these conferences is addressing regional-specific topics by setting targets, regularly inspecting each other's plants, strengthening legal and regulatory compliance, and sharing good practices.

The Group will continue to work diligently to further raise its level of environmental conservation activities across the entire Group by drawing on the contributions of the Environmental Manager Conferences.

North America Conference
Kubota Manufacturing of America Corporation (US)
Held online in 2020

Japan Conference
Kubota Head Office Hanshin Office
(Held on February 3, 2020)

Please refer to page 83 (Environmental Management) for information about business operations based on our environmental management system.

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—kicked off in 2020. With countries declaring their intentions to achieve net-zero CO_2 emissions and carbon neutrality, the movement driving society's transition to a carbon-free society is gaining momentum, which certainly indicates that the initiatives of individual companies to reduce greenhouse gases are growing increasingly important.

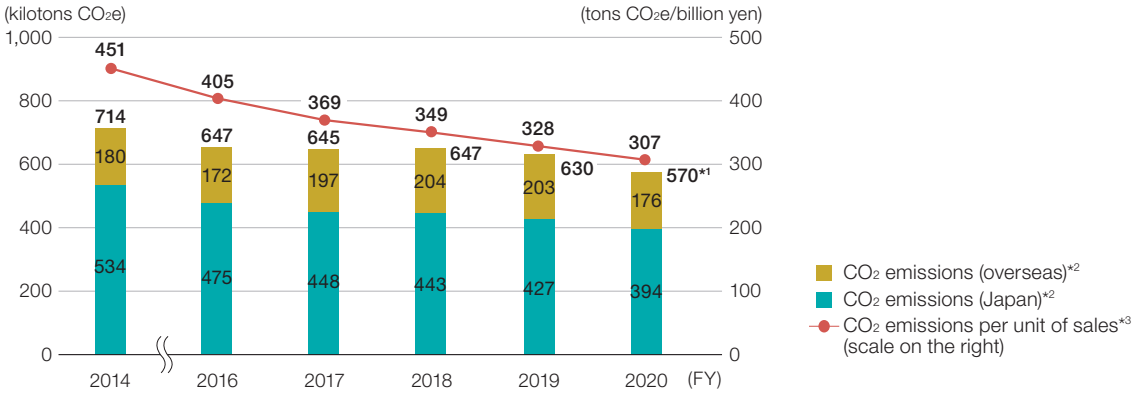
The Kubota Group sees tackling climate change as one item of materiality and has been advancing initiatives toward the "mitigation" of climate change by reducing greenhouse gas emissions mainly through energy-saving activities and the introduction of renewable energy sources and "adaptation" to be prepared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

Mitigation of Climate Change

CO_2 Emissions (Scope 1 and Scope 2)

In FY2020, CO_2 emissions were 570 kilotons CO_2e, a decrease of 9.5% compared to the previous year. Additionally, CO_2 emissions per unit of sales improved by 6.3% compared to the previous year. These results mainly reflect suspended production due to the COVID-19 pandemic, lower production volume at cast iron production sites, the implementation of emission reduction measures such as switching to LED lighting and fuel conversion, and improvements in emission coefficients for each electricity utility.

Trends in CO_2 Emissions and Emissions per Unit of Sales



*1 CO_2 emissions (570 kilotons CO_2e) include portions of CO_2 that were not released into the atmosphere but absorbed as carbon into products such as iron pipe (18 kilotons CO_2e).
*2 CO_2 emissions include greenhouse gases from non-energy sources.
*3 CO_2 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 FY2018.

Measures to Reduce CO_2 Emissions

The Kubota Group has established its Medium- and Long-Term Environmental Conservation Targets (p.46-49) and is devoting efforts to reducing CO_2 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_2 emissions and energy consumption, as well as the investment cost for the amount of CO_2 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, we have expanded the use of LED lighting at all our global sites—as of end-FY2020 the ratio of LEDs as a percentage of all lights at production sites had increased to 85%. In FY2020, initiatives included a change in fuel for production equipment and compressed air energy-saving measures.

We are also accelerating the introduction of renewable energy. In FY2020, a new large-scale solar power generation system came online at Kubota Agricultural Machinery (Suzhou) Co., Ltd. (China). This brought the renewable energy consumption of the entire Group to 5,683 MWh (roughly equivalent to a 3,280-ton reduction in CO_2 emissions), a more than two-fold increase compared to FY2019.

As a result of the efforts toward achieving the Medium-Term Environmental Conservation Targets 2020 for CO_2 reduction, global production sites achieved a reduction of 42.2 kilotons CO_2e in FY2020 compared with the case where countermeasures were not implemented from the base year (FY2014). The economic effects of these measures reached 0.91 billion yen compared to FY2014. CO_2 emissions per unit of production in FY2020 improved by 18.6% compared to FY2014.

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

At the Kubota Sakai Plant, a gas cogeneration system has been installed to effectively utilize the waste heat generated during in-house power generation and to reduce the consumption of steam boiler fuel on production lines. This initiative reduced CO_2 emissions by some 370 t-CO_2 in FY2020.

Kubota Agricultural Machinery (Suzhou) Co., Ltd. (China) has installed solar panels with an output of 3.59 MW on the roof of its plant. In FY2020 they generated an amount of electricity equivalent to approximately 2,400 t-CO_2.

VOICE

Making Energy Efficiency Part of Tractor Casing Processing Line Upgrade

Kubota Tsukuba Plant made the reduction of energy consumption part of the upgrade of its tractor casing processing line, undertaken to maintain and enhance production capacity.

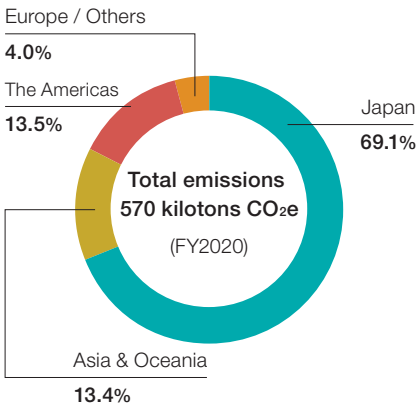
Our plant makes tractors and industrial engines. We manufactured roughly 68,000 tractors in 2020, and anticipate a similar manufacturing and shipping volume going forward. After several years of operation, the plant was facing issues such as dwindling production capacity due to aging facilities. To address this, we upgraded the processing line for casing components, which is part of the tractor manufacturing process.

Kubota Tsukuba Plant
From the left: Daisuke Kaneko
Yuji Ueno
Keita Fukasawa
Hiroshi Ichikawa (foreman)
Tomoya Okada (foreman)

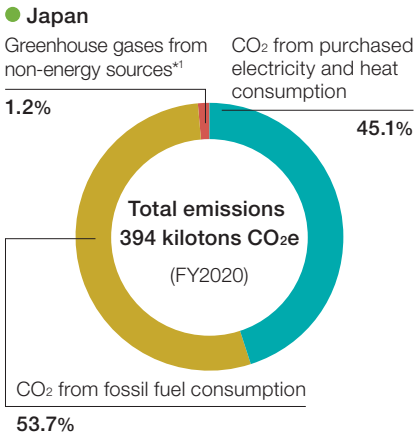
In the upgrade, we deployed sensing technology and other new technology and equipment to boost equipment utilization rates, and reorganized the plant layout to enable more efficient production. The upgrade also cut energy consumption by installing the latest energy-saving equipment, such as inverter-type processing machines and energy-efficient mist collectors, in addition to adding the capacity to reduce air supply volume. The revamped processing line started up full-scale production in August 2020, achieving a roughly 9% decrease in energy costs.

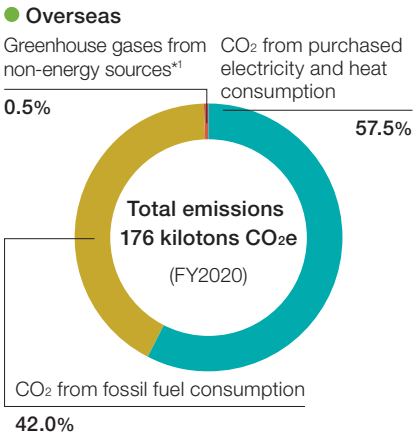
We will continue efforts to reduce energy use and costs.

CO_2 Emissions by Region



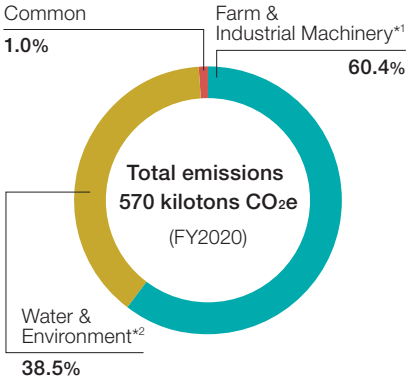
CO_2 Emissions by Emission Source





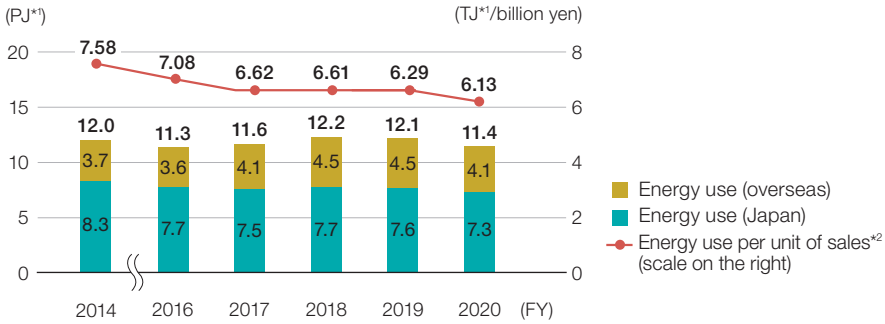
*1 Greenhouse gases from non-energy sources include the following: CO_2 4.1 kilotons CO_2e, CH_4 0.8 kilotons CO_2e, N_2O 0.4 kilotons CO_2e, HFC 0.4 kilotons CO_2e, PFC 0 kilotons CO_2e, SF_6 0.03 kilotons CO_2e, and NF_3 0 kilotons CO_2e

CO_2 Emissions by Business



*1 CO_2 emissions generated from the production of products such as agricultural machinery, construction machinery, and engines.
*2 CO_2 emissions generated from the production of products such as ductile iron pipes and cast steel.

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

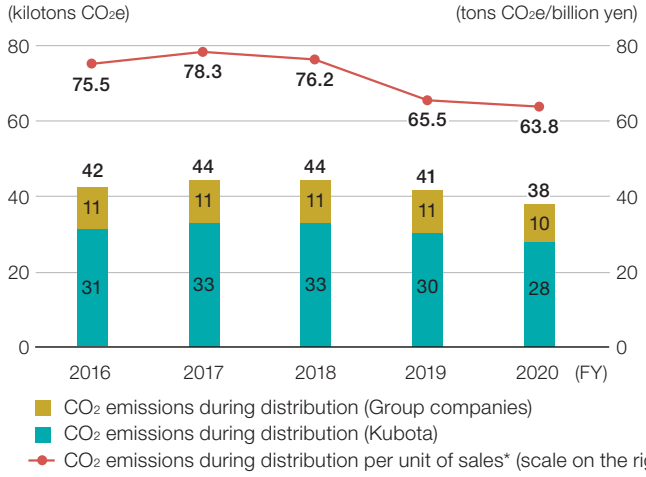


*1 PJ = 10^{15}J, TJ = 10^{12}J
*2 Energy use per unit of consolidated net sales. The Kubota Group adopted International Financial Reporting Standards (IFRS) instead of accounting principles generally accepted in the United States of America from FY2018.

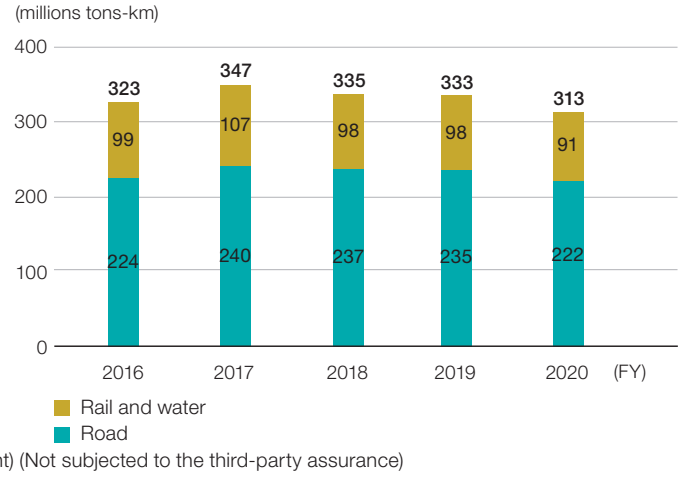
CO_2 Emissions during Distribution

In FY2020, CO_2 emissions during distribution were 38 kilotons CO_2e, a decrease of 7.3% compared to the previous year. Additionally, CO_2 emissions during distribution per unit of sales improved by 2.6% compared to the previous 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_2 Emissions during Distribution and Emissions per Unit of Sales (Japan)



Trends in Freight Traffic (Japan)



CO_2 emissions during distribution (Group companies)
CO_2 emissions during distribution (Kubota)
CO_2 emissions during distribution per unit of sales* (scale on the right) (Not subjected to the third-party assurance)
Rail and water
Road

* CO_2 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 FY2018.

For the calculation method of each item of environmental data, see the Calculation Standards of Environmental Performance Indicators (p.98).

CO_2 Emissions throughout the Value Chain

The Kubota Group makes concerted efforts to figure out CO_2 emissions throughout the value chain in addition to its business sites. Following guidelines*, we calculate CO_2 emissions based on Scope 3, and continue to expand the categories in the Scope of its calculation of CO_2 emissions.

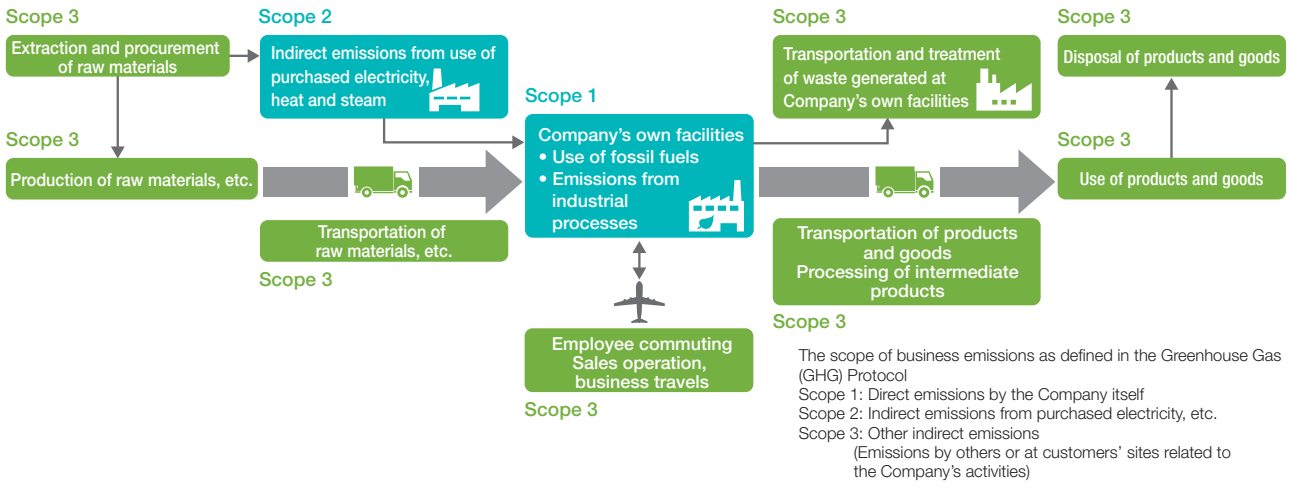
* Basic Guidelines on Accounting for Greenhouse Gas Emissions Throughout the Supply Chain issued by the Japanese Ministry of the Environment and Ministry of Economy, Trade and Industry

CO_2 Emissions in Each Stage of Value Chain

Classification				Scope of calculation	CO_2 emissions (kilotons CO_2e)*4		
					2018	2019	2020
Emissions of the Kubota Group's business sites	Direct emissions (Scope 1)			Use of fossil fuels	309	303	285
				Non-energy-derived greenhouse gas emissions	7	7	6
	Indirect emissions (Scope 2)			Purchased electricity and heat use	331	320	279
Upstream and Downstream emissions	Other indirect emissions (Scope 3)	Category	1	Resource extraction, manufacturing and transportation related to purchased goods/services	2,391	2,446	2,322
			2	Manufacturing and transportation of capital goods such as purchased equipment	215	290	292
			3	Resource extraction, manufacturing and transportation related to purchased fuels/energy*1	27	27	105
			4	Transportation of purchased products, etc.	Not calculated	Not calculated	Not calculated
			5	Disposal of wastes discharged from business sites	20	26	28
			6	Employee business travels	10	10	11*7
			7	Employee commuting*2	3	6	10*7
			8	Operation of assets leased to the Kubota Group	Not applicable*5	Not applicable*5	Not applicable*5
			9	Transportation of sold products*3	192*6	184	199
			10	Processing of intermediate products	173	320	148
			11	Use of sold products	21,060	21,176	20,590
			12	End-of-life treatment of sold products	42	42	41
			13	Operation of assets leased to other entities	Not applicable*5	Not applicable*5	Not applicable*5
			14	Operation of franchises	Not applicable*5	Not applicable*5	Not applicable*5
			15	Investments	Not applicable*5	Not applicable*5	Not applicable*5
		Total of Scope 3			24,133	24,526	23,745
Total of Scopes 1, 2, and 3					24,780	25,156	24,315

*1 From FY2020, fuel is included along with purchased electricity in the scope of calculation.
*2 In addition to the data for Japan, CO_2 emissions from overseas subsidiaries have been included from FY2019.
*3 In addition to the data for Japan, CO_2 emissions associated with the overseas shipping of certain products from Japan have been included from FY2018.
*4 Totals shown may differ from the simple sum of values shown due to rounding.
*5 CO_2 emissions shown as "not applicable" correspond to zero.
*6 Calculation of CO_2 emissions associated with the transportation of sold products in FY2018 was revised to improve accuracy.
*7 The increase in CO_2 emissions is due to an increase from the previous year in the CO_2 emission unit per monetary value used in the calculation.

Example Activities of Each Scope



For the calculation method of each item of environmental data, see the Calculation Standards of Environmental Performance Indicators (p.98).

Adaptation to Climate Change

Measures to Adapt to Climate Change

It is likely that the progression of climate change will have a negative impact on our lives. For example, the frequent occurrence of weather disasters, changes in agricultural practices, and an increase in the number of heat stroke cases. Our response to climate change needs to include ongoing measures aimed at reducing greenhouse gas emissions, as well as policies for avoiding or reducing 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

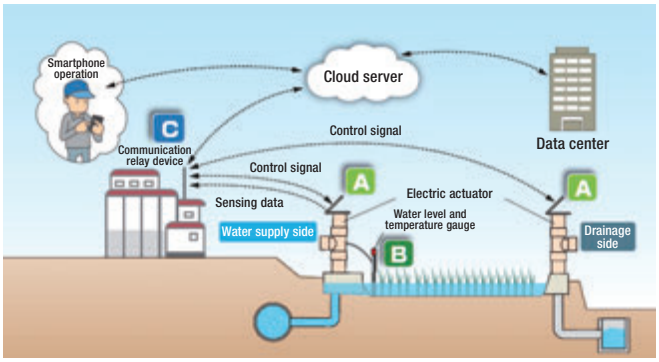
Category		Major initiatives
Food		• Provision of tractors that are capable of deep plowing necessary for growing rice in abnormally high temperatures without lowering the quality/yield, and the provision of information useful for soil cultivation, such as the proper distribution of fertilizers appropriate for high-temperature conditions • 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 • Provision of information for farmers on changes in temperature, precipitation, and the amount of solar radiation, as well as the impact thereof on crops
Water	Flooding	• 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 • Provision of ductile iron pipes with tough tube body and excellent joint performance, which are highly effective during disasters such as typhoons and torrential rainfall
	Drought	• 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 • Provision of tank-submerged-type ceramic membrane filtering equipment and submerged membranes that purify wastewater for reuse
	Management systems	• 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 • Provision of the WATARAS farm water management system that allows accurate water management for remote rice paddies
Living environment		• Provision of diesel engines for use as generators for emergency power supply during disasters and power outages • Provision of construction machinery to contribute to disaster prevention, as well as recovery and reconstruction • Provision of highly efficient air-conditioning equipment that creates a clean and comfortable indoor environment, even amid abnormal weather conditions

Provision of Farm Water Management System WATARAS

WATARAS is a farm water management system that allows users to remotely and automatically control water flowing in and out of rice paddies while monitoring water levels on a smartphone or PC.

So-called “smart rice paddy dam” demonstrations are underway in which rice paddies are temporarily made to fill up with rainwater by remotely raising the drainage level setting when rivers are at risk of flooding during heavy rainfall. These “rice paddy dams” have the potential to help prevent flooding.

agriculture.kubota.co.jp/product/kanren/wataras/
(only in Japanese)



WATARAS system overview

▶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

As a measure against from heavy rainfall and rising daytime temperatures on rooftops, Kubota Manufacturing of America Corporation (US) installed roofing materials (polyisocyanurate insulation material and thermoplastic olefin sheets) on its Building No.2 (following installation on Building No.1) to bolster long-term weather resistance and conserve air-conditioning energy use.


Installation on Building No.1 (2019)


Installation on Building No.2 (2020)

Disclosure in Accordance with the TCFD Recommendations

The Kubota Group expressed its support for the TCFD* recommendations in January 2020.

* The Task Force on Climate-related Financial Disclosures established by the Financial Stability Board (FSB).

TCFD Recommendations

The various risks and opportunities arising from climate change could have a significant impact on companies' financial statuses. The TCFD recommendations released in 2017 present a framework for corporations to disclose climate-related information to the financial markets. They recommend disclosure of information about the status of the company's response to climate change, which could have a damaging effect on stabilization of financial systems, and about the impact on business and so forth. The recommendations call for companies to autonomously ascertain and disclose information related to Governance, Strategy, Risk Management, and Metrics and Targets, such as the financial impact of risks and opportunities engendered by climate change and the status of the company's response.

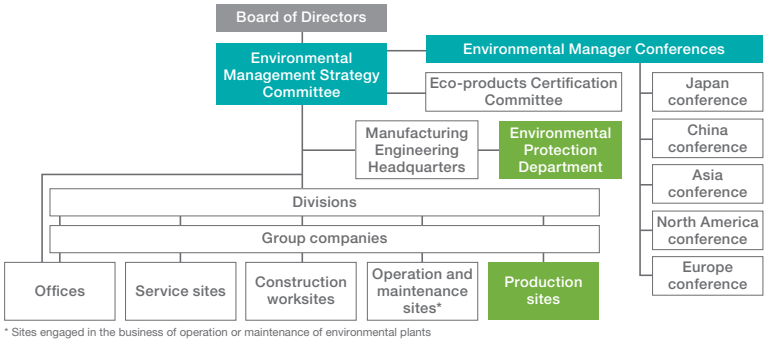
The status of the Company's disclosures related to the TCFD recommendations is as follows.

Disclosure Items in the TCFD Recommendations	Relevant Section	Page
Governance		
a. Describe the board's oversight of climate-related risks and opportunities.	Environmental Management Promotion System, Corporate Governance Structure	P50 P156
b. Describe management's role in assessing and managing risks and opportunities.	Environmental Management Promotion System	P50
Strategy		
a. Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	Environmental Management Approach—Materiality, Environmental Management Approach —Risks and Opportunities	P38 P39
b. Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	Environmental Management Approach —Risks and Opportunities, Environmental Management Approach—Key Measures	P39 P40
c. Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	Environmental Vision, Tackling Climate Change, Expanding Environment-friendly Products and Services	P41 P52 P74
Risk Management		
a. Describe the organization's processes for identifying and assessing climate-related risks.	Environmental Management Approach—Materiality	P38
b. Describe the organization's processes for managing climate-related risks.	Environmental Management Approach—Materiality, Environmental Management Promotion System, Expanding Environment-friendly Products and Services, Internal Control—Internal Control System, Internal Control—Internal Control System Operation Activities (Risk Management Activities)	P38 P50 P74 P162 P162
c. Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	Environmental Management Promotion System, Corporate Governance Structure, Internal Control—Internal Control System	P50 P156 P162
Metrics and Targets		
a. Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	Medium- and Long-Term Environmental Conservation Targets and Results, Tackling Climate Change —Measures to Reduce CO_2 Emissions	P46 P52
b. Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	Tackling Climate Change —CO_2 Emissions throughout the Value Chain, Environmental Data	P55 P93
c. Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	Medium- and Long-Term Environmental Conservation Targets and Results	P46

Governance

The Kubota Group considers conservation of the earth's environment to be a material issue. The Company has established the Environmental Management Strategy Committee to realize strategic, speedy environmental management under a promotion framework led by management. In addition, Environmental Manager Conferences are held in each of five regions—Japan, China, Asia, North America, and Europe—to promote environmental management of the entire Group globally.

Environmental Management Promotion System



* Sites engaged in the business of operation or maintenance of environmental plants

The Environmental Management Strategy Committee is comprised of the President and all inside Directors, the General Manager of Planning and Control Headquarters, the General Manager of Manufacturing Engineering Headquarters, the General Manager of Research and Development Headquarters, the General Manager of Procurement Headquarters, and the General Manager of Corporate Compliance and Risk Management Headquarters. The Committee discusses the medium- and long-term direction of the Company's environmental management, such as medium- and long-term targets and key measures in light of global environmental issues such as climate change and the business environment. It determines priority items and plans that should be carried out in order to reduce environmental impacts and risks, and to enhance the lineup of environment-friendly products. The results of the committee meetings are reported to the Board of Directors and the Executive Officers' Meeting, and are distributed throughout the Group. It also promotes management based on the plan-do-check-action (PDCA) cycle by assessing and analyzing the progress of the entire Group's environmental conservation activities and reflecting the results when formulating new plans and policies.

At the Environmental Manager Conferences, the Kubota Group policy and promotion items are communicated and the status of progress on medium-term environmental conservation targets is shared, along with case studies of energy-conservation measures, environmental risk countermeasures, and so forth. The conferences discuss matters such as how to solve issues related to environmental conservation activities.

Moreover, the Company has set out environmental conservation targets taking medium-term (five-year activity period) and long-term (15-year activity period) perspectives, based on social trends and regulations in each country related to the environmental issues. Medium-term environmental conservation targets are revised every five years. Medium-term plans are made individually by each site among all of the production sites globally. The Environmental Protection Department checks the status of progress on targets twice a year. In the same way, medium- to long-term targets for Eco products are set in proportion with net sales, and the department checks the status of progress once a year. The details of the plan and the status of progress are reported at the Environmental Management Strategy Committee, which discusses issues and measures for achieving the targets.

Related pages "Environmental Management Promotion System" (p.50), "Corporate Governance Structure" (p.156)

Strategy

The Group has formulated its "Environmental Vision," which presents the direction for its business activities from an environmental perspective towards 2050, having made an analysis of future society based on the scenarios for 2°C and 4°C temperature rises by the Intergovernmental Panel on Climate Change (IPCC), the International Energy Agency (IEA), and others. The Environmental Vision calls on us to challenge to achieve zero environmental impact through efforts to reduce CO_2 emissions in production activities. It also aims to contribute to solving various social problems such as controlling greenhouse gas emissions in the fields of food, water, and living environments through the provision of environment-friendly products and solutions. In doing so, we will help to realize a carbon-neutral and resilient society. In 2021, the Company established the Carbon Neutral Promotion Department, which will propose and implement strategies for realizing carbon neutrality from a long-term perspective.

▶Scenario Analysis

The scenario analysis in the TCFD recommendations will be used to examine the financial impact on business due to long-term, highly uncertain climate change problems and the impact on future business strategy. The Company's businesses may be heavily impacted by climate change. We have conducted analysis using scenarios published by the IPCC and the IEA, based on forecasts for population growth and economic development.

Looking ahead, we will proceed to discuss analysis of risks and opportunities due to climate change using each scenario, along with the expected impacts on business activities and the methods of evaluating financial evaluations. We will work to further enhance our disclosure.

Setting scenario		Reference scenario
Transition aspect	2°C scenario	The IEA's 2°C scenario (2DS)*1 and the Sustainable Development Scenario (SDS)*2
	4°C scenario	The IEA's Reference Technology Scenario (RTS)*1 and New Policy Scenario (NPS)*2
Physical aspect	2°C/4°C scenario	IPCC's Representative Concentration Pathways scenario*3 RCP2.6, RCP8.5

*1 Source: IEA "Energy Technology Perspective 2017" *2 Source: IEA "World Energy Outlook 2018" *3 Source: IPCC "Fifth Evaluation Report"

Related page "Environmental Vision" (p.41)

▶Risks and Opportunities from Climate Change

		Envisaged scenario	Impact on the Company	Time horizon*		
				Short term	Medium term	Long term
Risks	Policy and regulation risk	Stricter regulations for companies related to energy saving and controls on the emissions of greenhouse gases, etc.	Increase in regulatory compliance cost			→
	Market and technology change risk	High energy prices due to structural changes in energy driven by accelerating moves towards decarbonization and expanded use of renewable energy, etc.	Increase in product development and manufacturing costs			→
		Adoption of electrification along with removal of low energy-saving products as a result of greater interest in climate change among the market and customers	Increase in product development cost Loss of selling opportunities			→
		Changes in agricultural style due to more pests, lower crop yields, and relocation of suitable farming land, etc.	Loss of selling opportunities			→
	Physical risk	Increasing frequency and severity of weather disasters such as typhoons and torrential rains driven by climate change	Negative impact on the Company and its suppliers			→
Opportunities	Sales opportunity increase, competition increase	Launch of products and services, etc., that enable energy savings and energy creation	Expansion of selling opportunities			→
		Expansion in needs for agricultural solutions that correspond to changes in agricultural styles	Expansion in business related to adapting to climate change		→	→
	Efficiency gains and cost reductions	Acceleration of resource conservation measures at business sites	Increase in productivity			→

* The time horizon is as follows.
Short term: Within three years.
Medium term: Between three and five years. The activity period for medium-term environmental conservation targets.
Long term: Over five years. The activity period for long-term environmental conservation targets and the future beyond that.

Related page “Environmental Management Approach” (p.37)

▶Response to Climate-related Issues

The Company’s Environmental Vision is stated as “While challenging to achieve zero environmental impact, we will contribute to realizing a carbon neutral and resilient society in the fields of ‘food, water, and the environment.’” This shows our intention to contribute to realizing a sustainable society by controlling society’s CO_2 emissions through the reduction of greenhouse gas emissions in our business activities and the provision of environment-friendly products and solutions. Looking ahead, we will continue to promote the following activities, while proposing strategies to counter climate change based on the impacts on individual businesses.

Action item	Summary of initiative
Promoting the reduction of CO_2 emissions at business sites (p.52)	The strengthening of energy saving-related regulations and the increase in energy procurement costs due to the expansion of renewable energy may have an impact on our business activities. In its medium- and long-term environmental conservation targets, the Kubota Group has set improvement targets for reduction of Scope 1 and 2 CO_2 emissions, CO_2 emissions per unit of production, and energy use per unit of production. At our production sites, we are promoting strategies to mitigate climate change, such as reducing waste or loss of energy based on the Kubota Production System (KPS), expanding the use of renewable energy, and introducing LED lighting.
Adaptation to climate change (p.56)	There are concerns of an increase in damage caused by weather disasters as climate change progresses. At the Kubota Group’s business sites, we have established business continuity plans (BCPs) and disaster response manuals. We conduct disaster response drills, and we have established wastewater pumps and so forth in an effort to mitigate the damage due to natural disasters. Furthermore, Kubota supplies products and services including ductile iron pipe that is resilient to typhoons and torrential rains and water pump vehicles that can be rapidly deployed for disaster recovery to remove water in the event of a flood. We will also focus on strategies for adapting to climate change so that we can support people’s lives and contribute to the creation of disaster-resilient towns.
Environment-friendly products and services (p.74)	Following the launch of the Paris Agreement in 2020, we expect to see an acceleration in efforts to save energy and reduce CO_2 emissions, along with increasing interest in climate change among markets and customers. As a result, needs related to energy saving, decarbonization, and electrification are expected to expand. In the market, products that do not respond to society’s needs are weeded out, and this could lead to the loss of selling opportunities. The Kubota Group is expanding its products that offer a high level of environmental performance, such as climate change response. Looking ahead, we will continue to work to control Scope 3 CO_2 emissions by advancing the development of products and services that have strong environmental performance.

Risk Management

The Kubota Group conducts periodic revision of climate change risks and opportunities. We constantly evaluate the status of our response to risks and opportunities, primarily based on our progress on medium- and long-term environmental conservation targets. We formulated our Long-Term Environmental Conservation Targets 2030 in 2016. We formulate medium-term environmental conservation targets every five years, and in 2021 we formulated the Medium-Term Environmental Conservation Targets 2025. We have formulated plans for reduction targets at all global production sites based on the medium-term environmental conservation targets, and these are revised each year. The performance of our initiatives is evaluated and managed for each site. For environment-friendly products and services, we also conduct product assessments at the design and development stage, during which time we evaluate their environmental performance. Products whose environmental performance is recognized in terms of saving energy and so forth are recognized as "Eco products," under the Company's proprietary standard and the sales ratio of these products is evaluated and managed.

Evaluation results are collected by the Environmental Protection Department, and where particularly important risks and opportunities are recognized, these are discussed by the Environmental Management Strategy Committee, and reported to the Board of Directors and the Executive Officers' Meeting. Proper countermeasures are taken afterwards.

Related pages "Environmental Management Approach" (p.37), Environmental Management Promotion System" (p.50), "Expanding Environment-friendly Products and Services" (p.74), "Corporate Governance Structure" (p.156), "Internal Control" (p.162)

Metrics and Targets

The Kubota Group has set medium and long-term environmental conservation targets aiming to reduce the risks and expand the opportunities due to climate change and is working to achieve these targets. Furthermore, we collected performance data on CO_2 emissions (Scopes 1 and 2) at the Group's global sites (production and non-production sites) and upstream and downstream CO_2 emissions (Scope 3) and disclose our results for the past years. We have obtained third-party verification for our main disclosure items and we are working to improve our accuracy.

Looking ahead, we will promote initiatives that lead to solutions for the issues of climate change by promoting environmental conservation activities and expanding our environment-friendly products and services globally.

▶Climate Change-related Metrics and Targets

	Action item	Metric	Base FY	Target
Long-Term Environmental Conservation Targets 2030	Reduce CO_2 emissions	CO_2 emissions for the Kubota Group in Japan	2014	30% reduction
	Expand Eco-Products	Sales ratio of Eco-Products	—	More than 80%
Medium-Term Environmental Conservation Targets 2025	Reduce CO_2 emissions	CO_2 emissions per unit of production*	2014	25% improvement
		[New] Ratio of renewable energy usage*	—	More than 1%
	Save energy	Energy consumption per unit of production*	2014	18% improvement
	Expand Eco-Products	Sales ratio of Eco-Products	—	More than 70%

* For global production sites

Related pages "Medium- and Long-Term Environmental Conservation Targets and Results" (p.46), "Tackling Climate Change" (p.52), "Environmental Data" (p.93)

Working towards a Recycling-based Society

As a result of being a mass-production, mass-consumption, and mass-disposal society, we now face many problems such as the depletion of resources and increasing waste. The increase in plastic waste has led to marine plastic pollution in the world's oceans—now a serious problem for society.

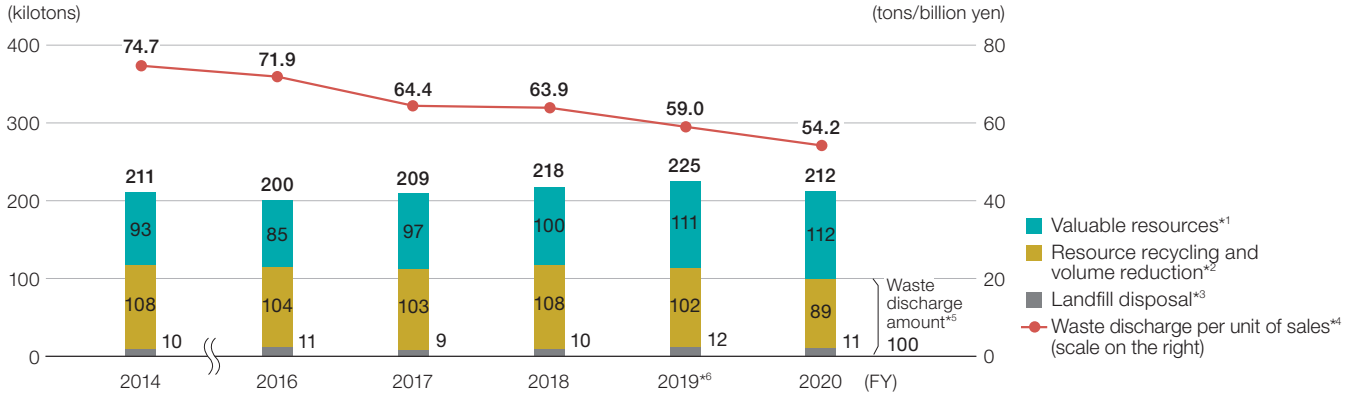
The Kubota Group sees working towards a recycling-based society as one item of its materiality, and has been advancing initiatives to promote "reduce" (reducing the amount generated), "reuse" (internal recycling and reuse), and "recycle" (improving the recycling ratio) of waste, in addition to initiatives to promote the effective use of resources and resource saving.

Waste, etc. from Business Sites

In FY2020, the waste discharge amount was 100 kilotons, a decrease of 11.4% compared to the previous reporting year. Additionally, waste discharge per unit of sales improved by 8.2%. These results mainly reflect suspended production due to the COVID-19 pandemic and lower production volume at cast iron production sites, as well as the conversion of waste casting sand into valuable materials and the overall reduction of such waste.

Of the waste discharge amount in FY2020, the amount of hazardous waste discharge was 2.9 kilotons in Japan and 3.2 kilotons overseas.

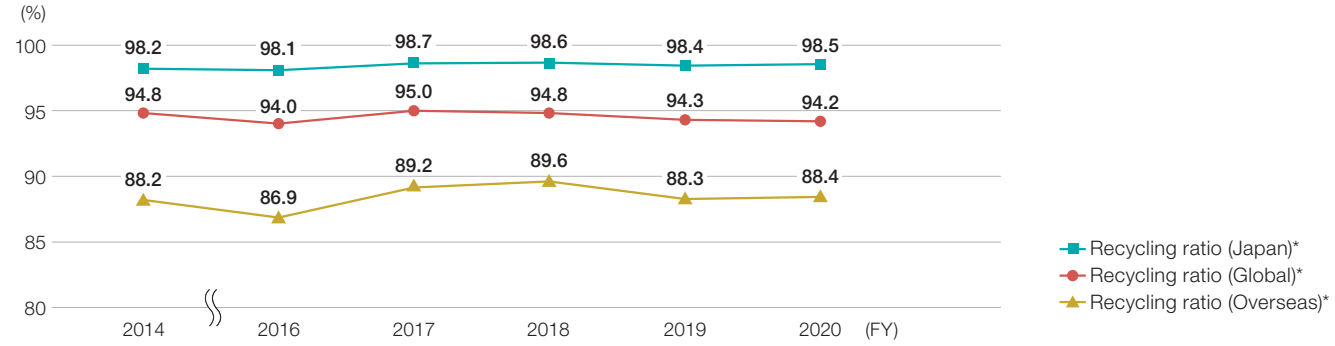
Trends in Waste, Etc. (including valuable resources) and Waste Discharge per Unit of Sales



*1 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 FY2019, 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.
*2 In FY2020, in consideration of the actual cleaning process, some overseas site reclassified water remaining after product cleaning as waste (included in resource recycling and volume reduction values) rather than wastewater. This change has been reflected retrospectively for previous years.
*3 Landfill disposal = Direct landfill disposal + Final landfill disposal following external intermediate treatment
*4 Waste discharge 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 FY2018.
*5 Waste discharge = Resource recycling and Volume reduction + Landfill disposal
*6 Values for FY2019 were corrected to improve accuracy.

The recycling ratio in FY2020 was 98.5% in Japan and 88.4% overseas, roughly on a par with previous years. We will make continuous efforts to improve the resource recycling ratio.

Trends in Recycling Ratio



* Recycling ratio (%) = (Sales amount of valuable resources + External recycling amount) / (Sales amount of valuable resources + External recycling amount + Landfill disposal) × 100.

For the calculation method of each item of environmental data, see the Calculation Standards of Environmental Performance Indicators (p.98).

Measures to Reduce Waste

The Kubota Group has established Medium-Term Environmental Conservation Targets (p.48). We have also established medium-term reduction measure implementation plans, which are reviewed every year by all production sites (100%), and we are working on the reduction of waste discharge from business sites and the improvement of the recycling ratio. The Group has been promoting various measures, such as the thorough separation of waste according to the type and disposal method of waste, the introduction of returnable packaging materials, and shared waste recycling between sites. The Group is also committed to the reduction of hazardous waste through ensuring thorough monitoring and management thereof.

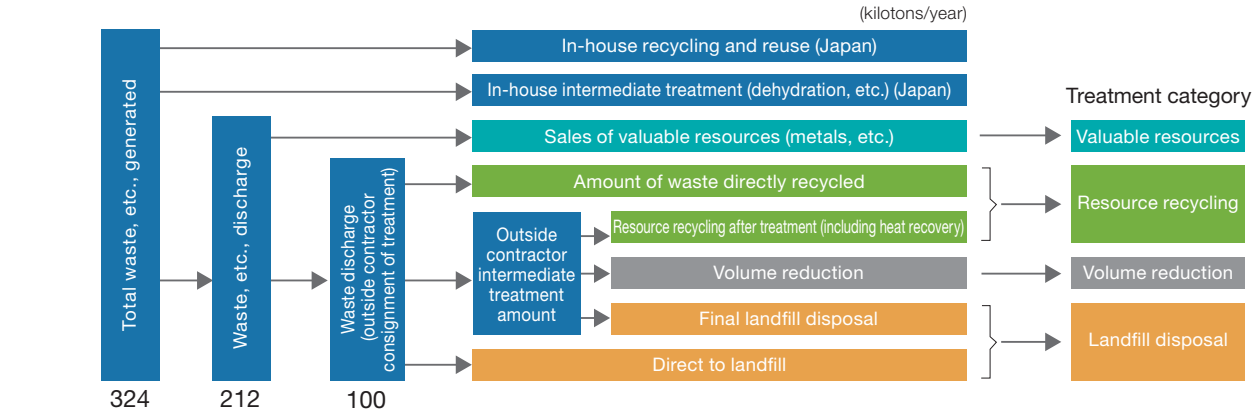
By converting casting sand into valuable materials at cast iron production sites, which generate a large amount of waste, the Kubota Group achieved a reduction of approximately 5,200 tons of waste in FY2020. Machinery production sites continued working to reduce the amount of sludge, waste oil, and oil-containing wastewater generated in painting booths. Meanwhile, as measures to reduce disposable plastics, we introduced initiatives at certain worksites to withdraw the use of disposable tableware in the employee cafeteria and reduce the issue of plastic carrier bags in on-site stores.

As a result of the efforts toward achieving the Medium-Term Environmental Conservation Targets 2020 for waste reduction, global production sites achieved a reduction of 23,800 tons of waste in FY2020 compared with the case where countermeasures were not implemented from the base year (FY2014). The economic effects of these measures reached 140 million yen compared to FY2014. Waste discharge per unit of production in FY2020 improved by 28.7% compared to FY2014. The recycling ratio was 99.5% at production sites in Japan and 91.8% at production sites overseas, both achieved the targets of the Medium-Term Environmental Conservation Targets 2020.

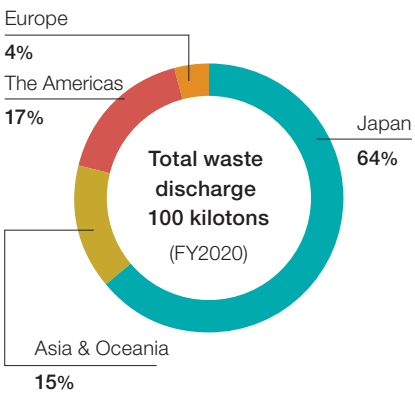
Moreover, production sites in Japan have raised the utilization rate of electronic manifests to 96.7%, enabling real-time assessment of the reduction effects. We will continue to promote the reduction of waste through encouraging sharing of good reduction practices and visualization of waste by utilizing electronic manifests.

At the Kubota Okajima Business Center, we are working to reduce waste by improving the utilization rate of collection facilities for recycling waste casting sand generated in the product manufacturing process (in the red frame). This initiative reduced waste emissions by some 1,550 tons in FY2020.

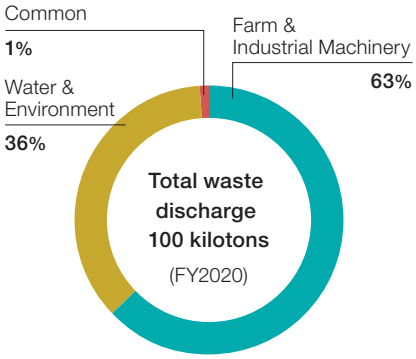
Waste Recycling and Treatment Flow (FY2020 results)



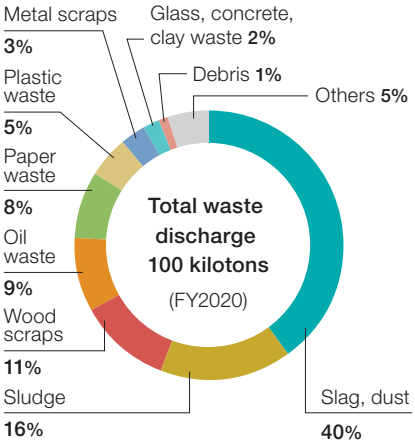
Waste Discharge by Region



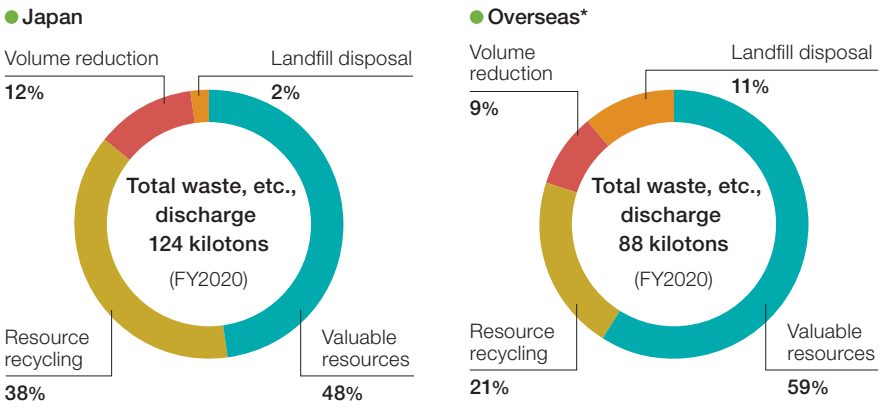
Waste Discharge by Business



Waste Discharge by Type



Waste, Etc., Discharge by Treatment Category



* In FY2020, in consideration of the actual cleaning process, some overseas site reclassified water remaining after product cleaning as waste (included in resource recycling and volume reduction values) rather than wastewater.

For the calculation method of each item of environmental data, see the Calculation Standards of Environmental Performance Indicators (p.98).

Reducing Plastic

Marine plastic pollution caused by used plastic that flows down rivers and waterways to be discharged along coasts and oceans has become a global issue. The Kubota Group's business sites promote the 3Rs and efforts to convert the plastic waste generated through their business activities into valuable resources. We have set a new target of reducing single-use plastics at business sites in the Medium-Term Environmental Conservation Targets 2025.

Kubota ChemiX Co., Ltd., involved in the manufacture and sale of plastic pipes and fittings, manufactures and sells recycled rigid PVC pipes made from recycled waste material (PVC made by reusing discarded PVC pipe collected in cities) as a way of promoting the effective use of resources. Kubota Environmental Service Co., Ltd., involved in business activities related to the construction, maintenance, and operational management of water and environmental facilities, provides engineering services to facilities that pulverize and sort plastic waste for use as fuel or material. Meanwhile, logistics services provider KBS Kubota Co., Ltd. is promoting the reduction of plastic usage in logistics services, including the reduction of stretch-film usage through the introduction of returnable packaging materials.

The Kubota Group works to reduce the plastic emissions through initiatives including the effective use of resources and reducing waste throughout the business value chain.

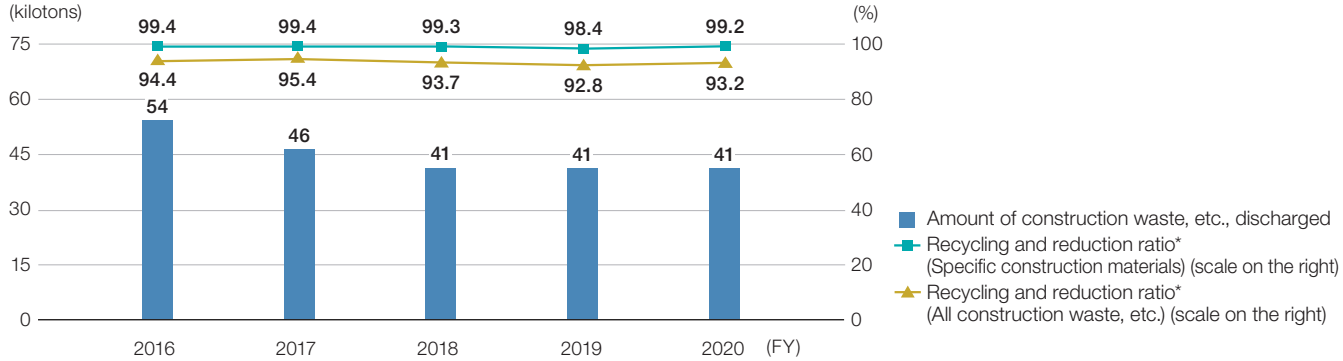
Returnable packaging materials
(left: environmentally friendly strapping; right: environmentally friendly cover)
KBS Kubota Co., Ltd.

Kverneland Group Nieuw-Vennep BV (Netherlands) is taking steps to reduce plastic waste by replacing the plastic cutlery (spoons, forks, straws, etc.) hitherto used in its cafeteria and encouraging its employees to bring their own drinking bottles to work.

Waste, etc., Generated from Construction Work

The type and the amount of waste generated from construction work vary depending on the type of work being done, resulting in fluctuation in the amount of discharge, and the recycling and reduction ratio. However, the Kubota Group has maintained its existing recycling and reduction ratio.

Trends in Discharge, and Recycling and Reduction Ratio of Construction Waste, Etc. (Japan)



* Recycling and reduction ratio = [Sales of valuable resources + Resource recycling (including heat recovery) + Volume of reduction] /Amount of construction waste, etc. discharged (including sales amount of valuable resources) x 100 (%)

For the calculation method of each item of environmental data, see the Calculation Standards of Environmental Performance Indicators (p.98).

Handling and Storage of Equipment Containing PCB (in Japan)

Transformers, capacitors and other equipment containing polychlorinated biphenyls (PCB) are properly reported, stored and handled based on the Japanese Act on Special Measures concerning Act on Special Measures concerning Promotion of Proper Treatment of PCB Wastes, and the Japanese Waste Management and Public Cleansing Act. Waste with a high concentration of PCB is being disposed of steadily, beginning with sites where PCB-treatment facilities are available. Waste with a low concentration of PCB will be properly disposed of by the disposal deadline of March 2027.

PCB-containing equipment in storage is thoroughly managed by multiple means, such as the locking of storage cabinets, periodic inspection, and environmental audits.

Conserving Water Resources

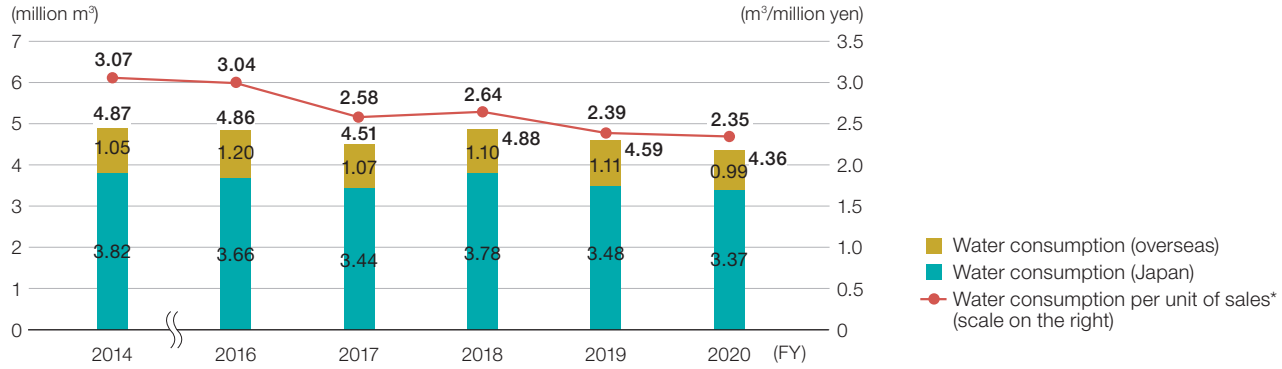
The OECD's 2012 report entitled Environmental Outlook to 2050 states that during the period between 2000 and 2050, global demand for water will increase by approximately 55% owing to economic development and population increase, while more than 40% of the world's population will be living in river basins that suffer from severe water shortages.

The Kubota Group sees conserving water resources as one of its materiality issues, and has been advancing initiatives to promote the effective utilization of water resources and to address water risks, such as the reduction of water consumption by promoting water saving and wastewater recycling, and the proper management of wastewater treatment and wastewater quality. Production sites promote measures not to cause adverse effects on local ecosystems and the lives of local residents, taking into consideration the status of water stress in the respective regions.

Water Consumption

In FY2020, water consumption was 4.36 million m^3, a decrease of 4.9% compared to the previous year. Additionally, water consumption per unit of sales was improved by 1.5% compared to the reporting year. These are mainly due to lower production volume at cast iron production sites and lower office water usage due to the COVID-19 pandemic, as well as the adjustment of cooling water usage to match lower production volumes as well as water conservation activities undertaken by the Group.

Trends in Total Water Consumption and Consumption per Unit of Sales



* Water consumption 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 FY2018.

Measures to Reduce Water Consumption

The Kubota Group has established its Medium-Term Environmental Conservation Targets (p.48). We have formulated plans for implementing measures to reduce water use over the medium term at all production sites (100%), and we revise these each year. Our production sites, such as those in China, Thailand, Indonesia and the United States, have introduced wastewater treatment facilities or wastewater recycling systems utilizing technologies of the Kubota Group.

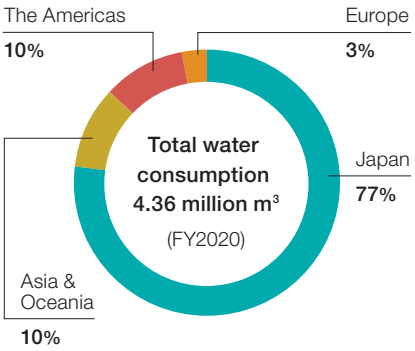
In FY2020, in addition to routine activities such as raising employee awareness of water conservation and conducting patrols to check for water leakage, the Kubota Group continued its program of upgrading to water-saving bathroom facilities and improved watering methods for green areas, etc. We reduced water usage in the production process by more accurately controlling the amount of cooling water used. As a result of the efforts toward achieving the Medium-Term Environmental Conservation Targets 2020 for water consumption reduction, global production sites achieved a reduction of 337,000 m^3 in FY2020 compared with the case where countermeasures were not implemented from the base year (FY2014). The economic effects of these measures reached 49 million yen compared to FY2014. Water consumption per unit of production in FY2020 improved by 20.8% compared to FY2014.

We will continue to promote the reduction of water consumption through initiatives to promote the 3Rs of water, such as conducting water-saving activities and promoting water recycling by using the Kubota Group's technologies.

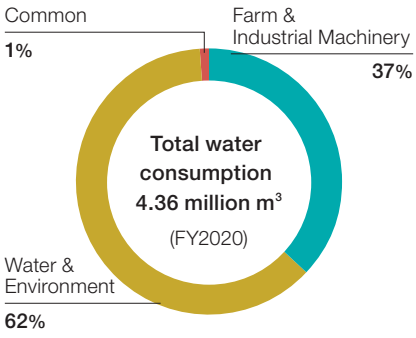
At Kubota Agricultural Machinery (Suzhou) Co., Ltd. (China), we installed recycling treatment equipment for reusing wastewater from processes throughout the entire plant, and this has realized zero emissions of process wastewater. In 2020, we reduced the amount of water usage by 140,000 m^3.

For the calculation method of each item of environmental data, see the Calculation Standards of Environmental Performance Indicators (p.98).

Water Consumption by Region

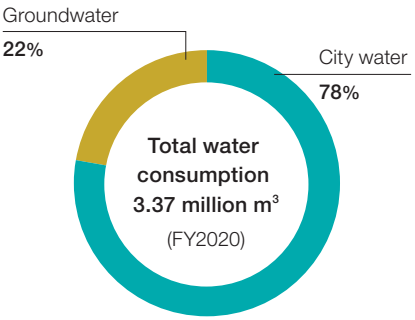


Water Consumption by Business

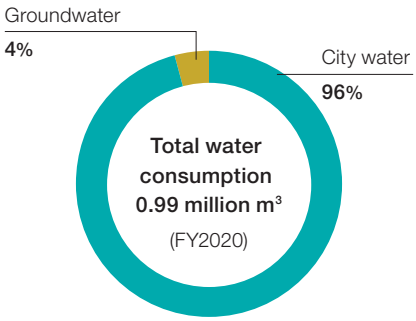


Water Consumption by Type

● Japan



● Overseas



Controlling Wastewater

The Kubota Group has set its own control values that are stricter than the emission standards of relevant laws and regulations. To ensure that the standard values are not exceeded, the Kubota Group carries out regular measurement of designated monitoring items. Under the Medium-Term Environmental Conservation Targets 2025, the Group has established a new target of managing wastewater appropriately in line with standards for the areas where wastewater is released by operating wastewater treatment and water recycling facilities.

At our sites, continuing measures to restrict water consumption have resulted in reduced wastewater discharge. In FY2020, the amount of wastewater discharge* was 4.37 million m^3 (3.01 million m^3 into public water areas, 1.36 million m^3 into sewage lines), a decrease of 8.3% compared to the previous reporting year.

We will continue to reduce load on the local water environment through activities to manage water discharge and reduce water consumption.

* The amount of wastewater discharge includes rain and spring water at some business sites.
In FY2020, we changed the method of accounting for water remaining after washing products at certain overseas sites. This water was previously included in the volume of wastewater, but after considering the actual washing process, we now include it in waste material (recycled resources and amount of resource reduction).

Survey on Regional Water Stress

In order to identify the risks related to the use of water resources and find effective responses to such water risks, the Kubota Group conducts surveys concerning water stress* for all of its production sites.

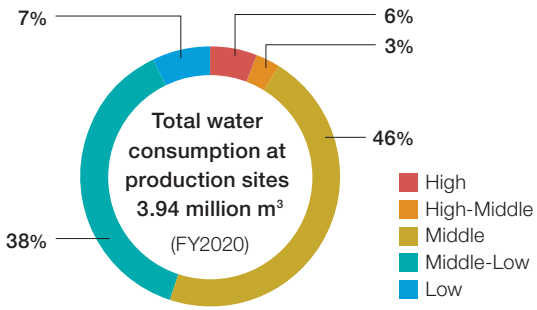
The results of a survey on water stress of a total of 52 sites in 15 countries using Aqueduct (water risk assessment tool developed by the World Resource Institute (WRI)) are as follows:

Results of the Survey on Water Stress of Production Sites (FY2020)

Region, country		Water stress level / Water consumption (thousand m³) <number of sites>				
		High	High-Middle	Middle	Middle-Low	Low
Asia	Japan	0	0	1,638 <8>	1,448 <11>	19 <2>
	China	0.3 <1>	97 <1>	0	0	12 <2>
	Indonesia	0	0	9 <1>	0	0
	Thailand	203 <3>	25 <1>	7 <1>	0	0
	Saudi Arabia	17 <1>	0	0	0	0
	India	12 <1>	0	0	0	0
Europe	Russia	0	0.4 <1>	0	0	0
	Norway	0	0	0	0	23 <1>
	Denmark	0	0	36 <1>	0	0
	Netherlands	0	0	0	0	11 <1>
	Germany	0	0	8 <1>	0	4 <1>
	France	0	0	4 <1>	0	1 <1>
	Italy	13 <1>	0	0	0	0
North America	Canada	0	0	0	0	210 <1>
	United States	0	0	114 <2>	26 <7>	0
Total		246 <7>	122 <3>	1,816 <15>	1,473 <18>	281 <9>

The survey results showed that “High” or “High-Middle” levels of water stress applied to 10 production sites, located in the Chinese cities of Daqing and Suzhou, central Thailand, Saudi Arabia, India, Russia and Italy, which account for approximately 9% of the Group’s total water consumption. In the next “Middle” level category were 15 production sites situated in Japan’s Kanto region and Aichi Prefecture, Indonesia, coastal regions of Thailand, the southeast United States and a number of locations in Europe, which together account for approximately 46% of total water consumption. Production sites in the “Middle-Low” and “Low” categories accounted for approximately 45% of total water consumption.

Water Consumption by Water Stress Level



Although the majority of the water used in the Kubota Group’s production activities is sourced in areas with stress levels in the “Middle” or lower categories, the survey showed that some of the main sites in Thailand and China are located in areas of high water stress. At these production sites, the Kubota Group is now promoting the horizontal rollout of regional examples of good practice in areas including the reduction of water consumption and appropriate management of wastewater.

The Group will also conduct water stress surveys in each case for the water areas around new sites that are scheduled for construction as part of the Group’s more globally oriented business growth.

* Water stress refers to the state where the annual water availability per capita is less than 1,700 tons and people feel inconvenience in their daily life. Water stress in this survey is the water stress for each river basin, which is calculated based on the ratio of water intake to the amount of available water resources. (World Resources Institute (WRI))

Controlling Chemical Substances

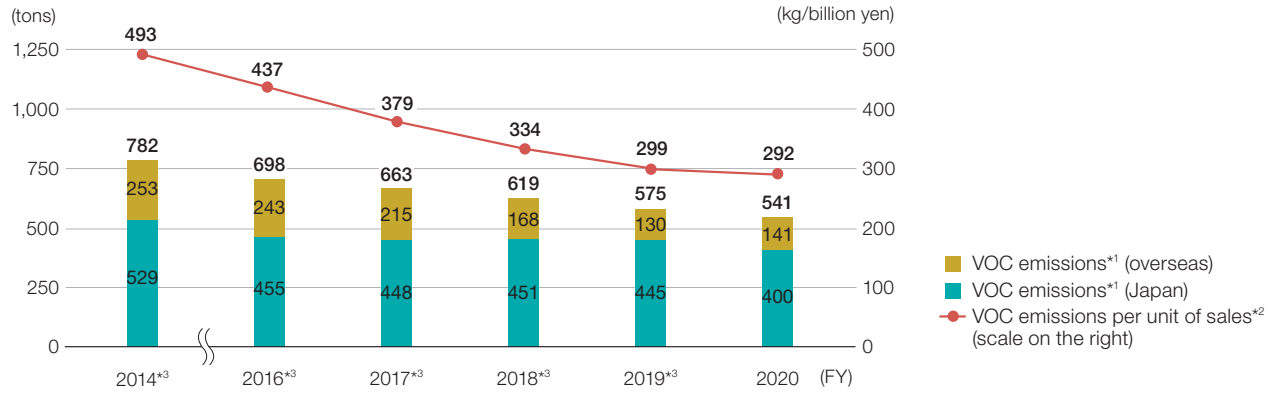
Chemical substances have become an essential part of our lifestyles. On the other hand, to control the impact of chemical substances on humans and ecosystems, countries are strengthening laws and regulations related to their use and management.

The Kubota Group sees controlling chemical substances as one of its materiality issues, and has been advancing initiatives toward reducing the burden on the environment from chemical substances, including the reduction of VOCs (volatile organic compounds) generated in coating processes at production sites, as well as the replacement of fluorocarbons and the prevention of leakage.

VOC Emissions

In FY2020, VOC emissions were 541 tons, a decrease of 5.9% compared to the previous reporting year. Additionally, VOC emissions per unit of sales improved by 2.5%. These results mainly reflect the suspension or decrease of production amid the COVID-19 pandemic, as well as an increase in products that use less paint, the curbing of VOC emissions due to conversion to different fuel types, and greater efficiency in the coating process.

Trends in VOC Emissions and Emissions per Unit of Sales



*1 VOCs 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.
*2 VOC 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 FY2018.
*3 The VOC emissions and VOC emissions per unit of sales for FY2014 and FY2016-2019 (Japan, overseas and total) have been revised to improve accuracy.

Measures to Reduce VOCs

The Kubota Group has established its Medium-Term Environmental Conservation Targets (p.48). We have formulated plans for implementing measures to reduce VOCs over the medium term at all production sites (100%), and we revise these each year. The Group has been promoting the risk management of chemical substances handled at production sites and the reduction of VOC-containing materials, such as paint and thinner.

In FY2020, the Kubota Group worked to switch to VOC-free paints and expand the use of VOC removal devices. Additionally, by promoting the introduction of paint robots, the Group achieved not only a reduction in VOC, but also improved productivity.

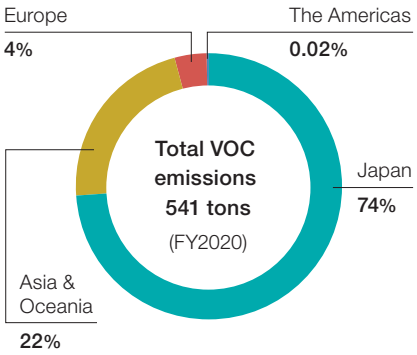
As a result of the efforts toward achieving the Medium-Term Environmental Conservation Targets 2020 for VOC reduction, global production sites achieved a reduction of 50 tons in FY2020 compared with the case where countermeasures were not implemented from the base year (FY2014). The economic effects of these measures reached 110 million yen compared to FY2014. VOC emissions per unit of production in FY2020 improved by 37.7% compared to FY2014.

We will continue to promote the reduction of VOC emissions by introducing exhaust treatment equipment that is conscious of compliance with laws and the reduction of impacts on neighborhoods, in addition to the efforts to stop the use of VOC-containing paint and thinner or replace them with substitutes.

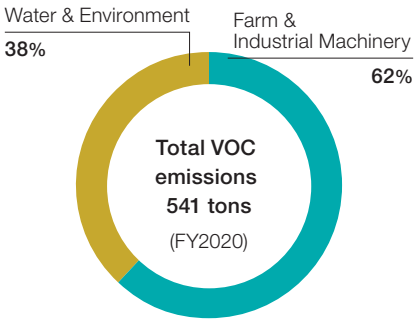
Kubota Construction Machinery (WUXI) Co., Ltd. (China) has increased quality and productivity while reducing revision of painting work by introducing painting robots. This has led to a reduction in the amount of paint used, and the amount of VOC emissions.

For the calculation method of each item of environmental data, see the Calculation Standards of Environmental Performance Indicators (p.98).

VOC Emissions by Region

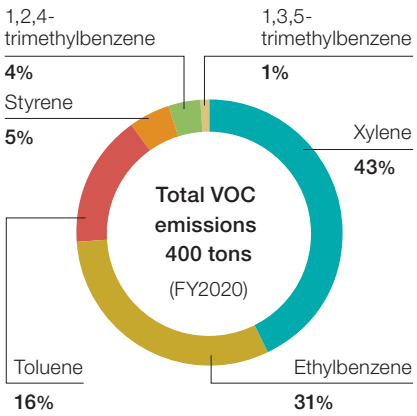


VOC Emissions by Business

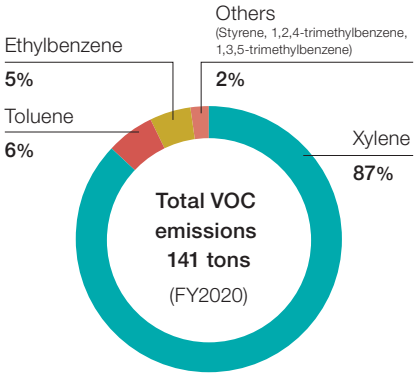


VOC Emissions by Substance

● Japan



● Overseas

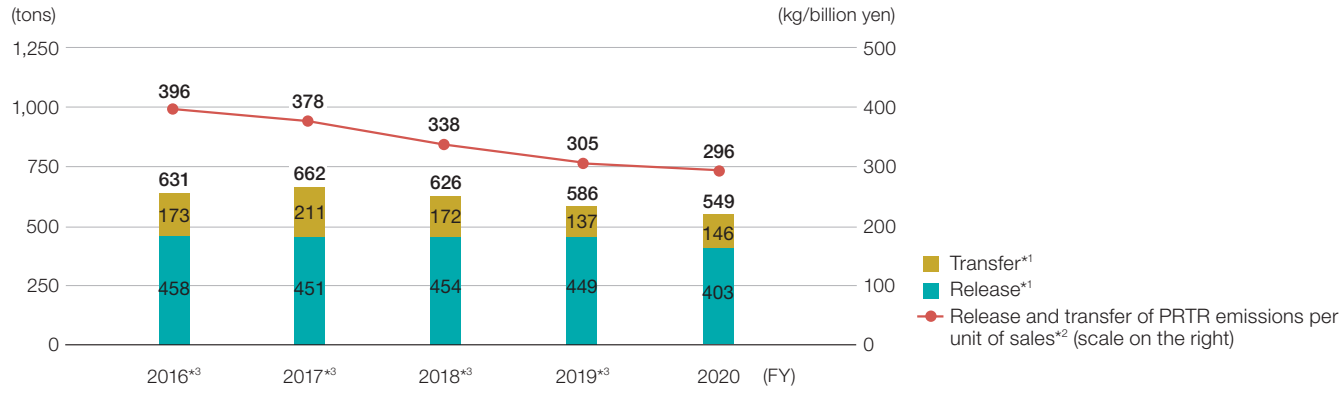


Release and Transfer of PRTR-designated Substances

In FY2020, a total of 549 tons of substances stipulated in the PRTR Law* were released and transferred, a reduction of 6.3% compared to the previous year. Additionally, the release and transfer per unit of sales reduced by 2.9% compared to the previous year. Similar to reduction of VOC emissions, the Group is promoting the ongoing measures to reduce the PRTR-designated substances.

* Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof

Trends in Release and Transfer of PRTR-designated Substances, and Release and Transfer per Unit of Sales (Japan)



*1 Total amount of reported substances that are handled at each site (annual volume of 1 ton or more (or 0.5 tons for Specific Class I designations))
*2 Release and transfer of PRTR-designated substances 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 FY2018.
*3 The values for Trends in Release and Transfer of PRTR-designated Substances and for the Release and Transfer per Unit of Sales have been adjusted from FY2016 to FY2019 to improve accuracy.

For the calculation method of each item of environmental data, see the Calculation Standards of Environmental Performance Indicators (p.98).

Control of Ozone-depleting Substances

The Kubota Group prohibits specified CFCs, which are ozone-depleting substances, from being contained in products or added*1 in manufacturing processes of products. In Japan, replacement of materials containing dichloropentafluoropropane with substitute materials was completed during FY2016, and no ozone-depleting substances subject to notification under the PRTR Law*2 are handled and released at present.

In Japan, CFCs that are used in air-conditioners and refrigerating or freezing equipment as refrigerant, are thoroughly managed to control leakage, in accordance with the standards specified by the Fluorocarbons Emission Control Law*3. However, in FY2020, there was an instance in which specified fluorocarbon gas used in the external unit of an air-conditioner was released into the atmosphere. The Group took measures to prevent a recurrence and has been working to control emissions of fluorocarbons.

*1 For HCFC, intentional adding in products as refrigerant or heat insulator is prohibited.
*2 Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements in the Management Thereof
*3 Act on the Rational Use and Proper Management of Fluorocarbons

Control of Air Pollutants

The Kubota Group has set its own control values that are stricter than the emission standards of relevant laws and regulations. In order not to allow the exceeding of standard values, the Group implements thorough daily management activities, such as monitoring operation of the smoke and soot-generating facilities and inspecting the dust-collecting equipment. However, in FY2020, there was an instance in which a defective dust collector caused emissions of dust exceeding the regulation level in exhaust gas from a cupola furnace. The Group took measures to prevent a recurrence and has been working to control emissions of atmospheric pollutants.

The amounts of emissions of air pollutants in FY2020 were 6.6* tons for SOx (increased by 76.3% from the previous year), 49.7 tons for NOx (increased by 5.0%), and 12.2 tons for soot and dust (increased by 13.0%). We will continue to reduce emissions of air pollutants through initiatives such as controlling sources by fuel conversion and maintaining dust-collecting equipment.

* At some sites in Japan, sulfur emissions are calculated, not from actual measurements of exhaust gas concentrations and amounts, but by making estimates based on the sulfur weights of raw materials, materials produced, and waste.
(Atmospheric emissions = coal input - iron produced - waste slag - waste dust)
SOx emissions in FY2020 show an increase because some of the sulfur-containing slag generated at the above sites was managed onsite and not disposed of, and was not included in calculations of atmospheric emissions. If sulfur contained in the slag managed onsite at end of year (December 31, 2020) by these sites were included, SOx emissions for FY2020 amounted to 3.0 tons.

For the calculation method of each item of environmental data, see the Calculation Standards of Environmental Performance Indicators (p.98).

Monitoring Groundwater

Results of groundwater measurements conducted on the premises of the business sites that used organic chlorine-based compounds in the past are as shown below.

Groundwater monitoring (FY2020)

Business site	Substance	Measured groundwater value	Environmental standard
Tsukuba Plant	Trichloroethylene	Non-detected (less than 0.0001 mg/L)	Less than 0.01 mg/L
Utsunomiya Plant	Trichloroethylene	Non-detected (less than 0.001mg/L)	Less than 0.01 mg/L

Reduction of Chemical Substances Contained in Products

The Kubota Group has set rules for identifying and properly managing chemical substances in products in order to comply with REACH Regulations* in Europe and other chemical substance regulations.

Since 2010, chemical substances in products have been classified as one of the three following categories and managed appropriately. With cooperation from our suppliers, we investigate chemical substances in products on a global basis.

* The European Union (EU) Regulations for Registration, Evaluation, Authorization and Restriction of Chemicals

▶ Three Control Levels

1. Substances to be Prohibited: Should not be contained in products
2. Substances to be Restricted: Should not be contained in products under certain conditions and applications
3. Substances to be Controlled: Presence in products should be recognized

Conserving Biodiversity

Our corporate activities rely on various ecosystem services, which are provided by natural capital comprising soil, air, water, animals and plants, and other elements. Meanwhile, biodiversity is facing various crises in different locations worldwide, therefore corporations are required to do their part in protecting biodiversity and making sustainable use of ecosystem services so that goals 14 and 15 of the SDGs can be achieved.

The Kubota Group sees conserving biodiversity as one of its materiality issues. In its corporate activities, provision of products and services, and social contribution initiatives, in view of its impact on natural capital, the Group is endeavoring to ensure that care is taken to conserve biodiversity and protect the natural environment.

Taking this into account and beginning with our Medium-Term Environmental Conservation Targets 2025, we have started establishing targets for biodiversity conservation activities in accordance with the characteristics and business operations of each site. We are currently monitoring the progress of these activities.

Approach to Conserving Biodiversity

The Kubota Group has set Conserving Biodiversity as one of its five basic items for environmental conservation. In December 2009, we incorporated corporate activities that consider biodiversity into the Kubota Group Environmental Action Guidelines. Then, in our ECO FIRST Commitment submitted to the Japanese Minister of the Environment in 2010, we also included a commitment to promoting activities for conserving biodiversity.

Approach to Conserving Biodiversity

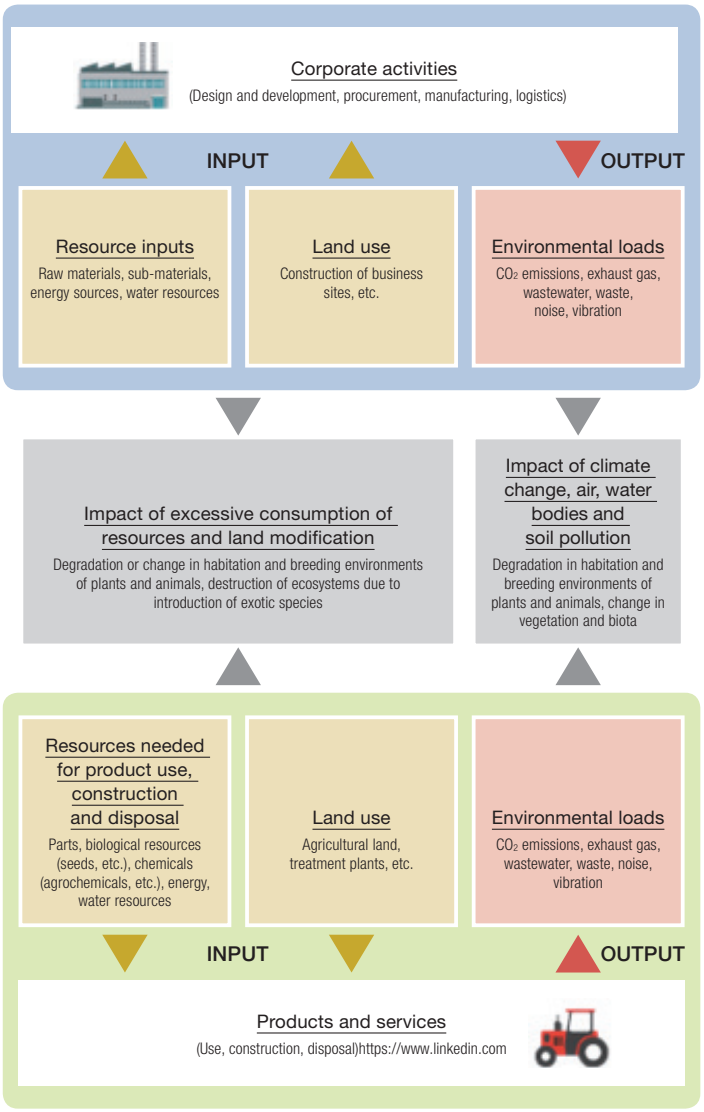
The Kubota Group has included Conserving Biodiversity as one of its five basic items for environmental conservation. In its corporate activities, provision of products and services, and social contribution initiatives, in view of its impact on natural capital, the Group will endeavor to ensure that care is taken to conserve biodiversity and protect the natural environment.

[Major Initiatives]

1. Corporate activities
   1) At the design and development stage, we conduct product environmental assessments to evaluate the impact on natural capital.
   2) At the procurement stage, we present our Green Procurement Guidelines to our suppliers and require them to give consideration for biodiversity.
   3) At the production and logistics stages, we strive to reduce the environmental loads and environmental risks associated with operations at our sites and transport of materials.
   4) As part of our environmental management, we conduct environmental education and awareness-raising for employees to foster their recognition of the value of biodiversity and the importance of conservation activities.
   5) Our environmental communication initiatives include efforts to disseminate information about our biodiversity conservation activities.
2. Provision of products and services
   1) By providing products and services with less environmental loads through fuel efficiency and exhaust gas purification, for example, we are striving to lessen our impact on biodiversity.
   2) By providing water environment solutions such as wastewater treatment and waste treatment, we contribute to improving the ecosystems and nurturing environment for plants and animals.
   3) By providing products and services that contribute to urban infrastructure development that considers smart agriculture and the environment, we contribute to sustainable use of ecosystem services.
3. Social contribution activities
   1) Through our social contribution activity the Kubota e-Project supporting reclamation of abandoned farmland and conservation activities in rural and forest areas, we are promoting protection of the natural environment.
   2) We are promoting the beautification and greening of business sites and neighborhoods as well as protection of plants and animals.

Relationship with Biodiversity

Relationship between the Kubota Group and Biodiversity



Management and reduction of environmental loads involved with corporate activities

Reduce environmental loads due to the Kubota Group's corporate activities, consider the impact on biodiversity

- Green procurement
- Environmental impact assessment on land use
- Tackling climate change (energy conservation, etc.)
- Working toward a recycling-based society (conserve resources, 3Rs for waste, etc.)
- Conserving water resources (3Rs for water resources, etc.)
- Controlling chemical substances (reduce the use of substances of concern, reduce VOC emissions, etc.)
- Environmental Management (prevent air, water bodies and soil pollution, provide employees with environmental training, etc.)

Contributions through social contribution initiatives

Collaborate with NPOs, etc., work for protection of the natural environment

- Kubota e-Project (supporting reclamation of abandoned farmland, Kubota Forest, nature experiences for elementary school students, etc.)
- Kubota e-Day (environmental beautification volunteers)
- Greening our establishments, inside and outside
- Protect regional animals and plants

Impact reduction and environmental contributions through products and services

Reduce the impact of the use, construction and disposal of products and services, contribute to preservation of biodiversity and use of sustainable ecosystem services.

[Impact reduction]

- Product environmental assessment
- Develop environmentally conscious products (energy saving, resource conserving, prevent air, water bodies and soil pollution, etc.)

[Contributions]

- Provide water environment solutions for wastewater treatment and waste disposal treatment, etc.
- Provide products and services for smart farming and establishment of urban infrastructure considering the environment

Initiatives Taken at Business Sites

Participation in Cleanup Activities in Watershed Forests

Kubota's branch office in the Tohoku region is working to protect watershed forests by participating in a joint public-private sector project in Sendai City.

In 2020, employees from the office felled trees in a watershed protection forest and collected fallen leaves.

Participation in Cleanup Activities of Old Bamboo Thicket

In cooperation with the city of Odawara, Odawara Plant of Kubota ChemiX is developing a platform business for creating a regional circular symbiotic community, as advocated for by the Ministry of the Environment.

In 2020 it cooperated with other companies to cut down abandoned bamboo thickets.

Tree Planting on Factory Grounds

In June 2020, SIAM Kubota Metal Technology Co., Ltd. (Thailand) planted trees on its factory grounds. A total of 77 employees helped plant 110 trees in an effort to add more greenery to the site's surroundings.

Expanding Environment-friendly Products and Services

The Kubota Group is contributing to protecting the global environment and solving social issues in the food, water and living environment fields through the provision of environment-friendly products and services. The Group conducts environmental assessment of products in the design and development stages, and promotes environment-friendliness over the entire product life cycle, from the procurement of raw materials to the disposal of products. The Group internally certifies exceptionally environment-friendly products as Eco-Products, and is working to expand its lineup of certified products.

Environmental Considerations in the Product Life Cycle

Major Initiatives to Ensure Environment-friendliness

Design and development
- Product environmental assessment to ensure environment-friendly design
- Internal certification of Eco-Products

Raw materials and parts procurement
- Green procurement
- Optimal regional procurement

Production
- Reduction of waste and loss in the use of energy and other resources
- 3Rs for waste and water resources, use of recycled materials
- Reduction of VOC emissions, replacement of organic solvents with substitutes

Distribution
- Improving loading efficiency
- Modal shift
- Reduction of packing materials

Construction
- Improving efficiency and saving labor for construction work
- Shortening of construction period
- Reduction of resources used for construction

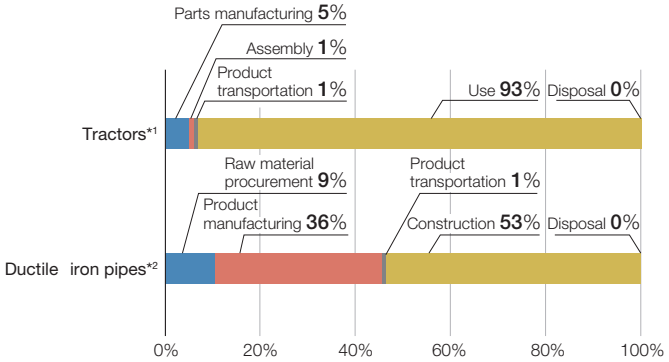
Use
- Reduction of fuel consumption
- Improving efficiency and saving labor for work and management
- Improving ease of maintenance, extending product life
- Reduction of exhaust gas
- Reduction of noise, vibration

Disposal
- Collecting/reuse/recycling of used products and parts
- Proper disposal

Analysis of Greenhouse Gas Emissions Volume in the Product Life Cycle

The Kubota Group handles a diverse range of products, from agricultural and construction machinery to pipe systems and water treatment equipment. As part of its product environmental assessment, the Group conducts life cycle assessment (LCA) for its major products to determine the amount of greenhouse gas emissions over each product life cycle. The results of the LCA were subject to third-party review in 2014 by the Japan Environmental Management Association for Industry.

Results of LCA: Proportions of Greenhouse Gases



*1 LCA results for tractors were calculated based on the assumption of towing and transporting work for 5,000 hours by the M9540DTHQ-EC agricultural tractor in France.
*2 LCA results for ductile iron pipes were calculated based on the data reported in the "Study on Piping Technologies for Sustainable Water Supply Service" (Japan Water Research Center). The proportions of raw material procurement, manufacturing, and product transportation were determined according to Kubota's CO_2 emissions data.

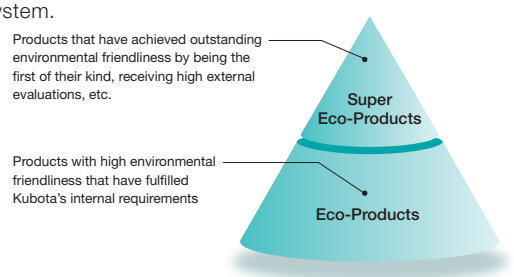
Greenhouse gases emitted in the use stage account for around 90% in the life cycle of agricultural tractors, while gases emitted in the manufacturing and construction stage account for around 90% in ductile iron pipes. Thus, the frequency and scale of environmental loads in the life cycle vary depending on the product type. The Kubota Group enhances its environment-friendly products and services by reflecting the results of the analysis of environmental loads in the product life cycle in its environment-friendly design development.

Internal Certification System for Eco-Products

Regarding the Internal Certification System for Eco-Products

The Kubota Group's internal certification system for Eco-Products was introduced to internally certify products with exceptional environmental friendliness. We evaluate products in accordance with matters related to the five basic items for environmental conservation in the Kubota Group's environmental management, namely, "Tackling Climate Change," "Working towards a Recycling-based Society," "Conserving Water Resources," "Controlling Chemical Substances," and "Conserving Biodiversity," and certify those products that satisfy our internal standards as Eco-Products.

We have also received third-party assurance for our "Sales Ratio of Eco-Products," which is the ratio of sales generated by Eco-Products certified under our internal system.



Example of an Eco-Product label

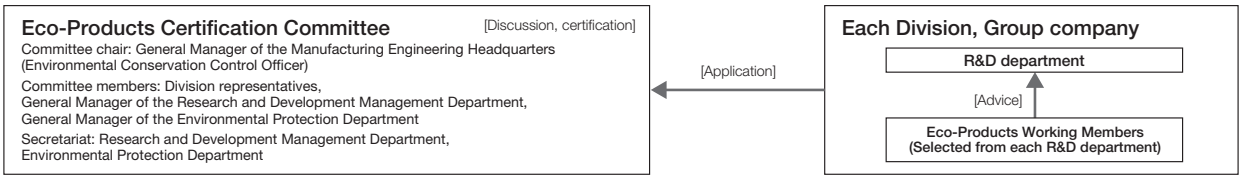
Reduced fuel consumption by xx% (vs. Kubota XX model, FYXXXX)

Eco-Products feature a label that shows their certification as Eco-Products.

Five basic items for environmental conservation	Evaluation items	Relationships with SDGs
• Tackling Climate Change	1. Energy saving (CO_2 reduction) Reducing energy consumption during production, transportation, construction and use, etc.	
• Working towards a Recycling-based Society	2. Resources saving Reducing weight and volume, extending product life, etc.	
• Conserving Water Resources	3. Recycling Using recycled materials and recycled rare metals, etc.	
• Controlling Chemical Substances	4. Reducing environmentally hazardous substances Reducing RoHS-designated substances, reducing gas emissions, etc.	
• Conserving Biodiversity	5. Information disclosure Notes about energy-saving operations, recycling and disposal, etc.	

Eco-Products Certification Committee

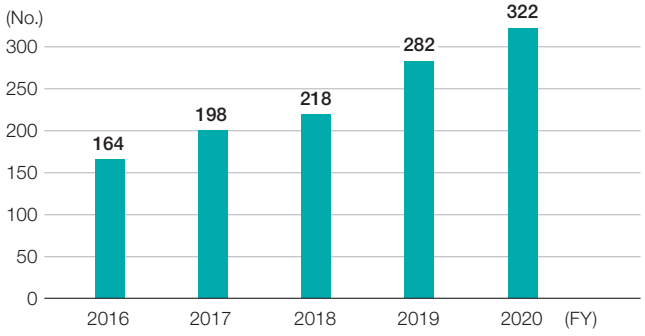
The Eco-Products Certification Committee, chaired by the General Manager of the Manufacturing Engineering Headquarters, consists of the committee members elected from each Division, as well as the Research and Development Management Department and the Environmental Protection Department. Upon receiving an application from each Division for the certification of a product, the Committee examines the product's adequacy as an Eco-Product and gives certification.



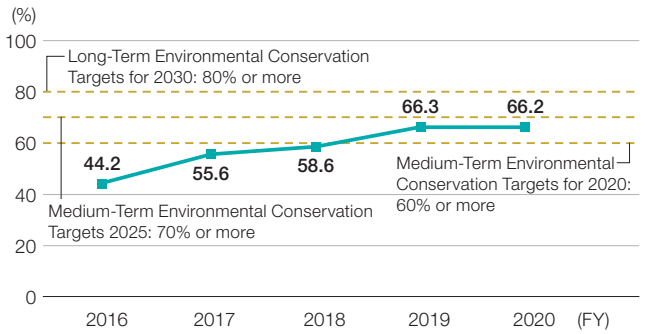
The Pathway to Expanding Certified Eco-Products

Based on our internal certification system established for Eco-Products, the Kubota Group certified an additional 40 products in FY2020, including 2 Super Eco-Products, bringing the total number of certified Eco-Products to 322. The sales ratio of Eco-Products grew to 66.2% versus a target of 60%, achieving the Medium-Term Environmental Conservation Targets for 2020. Going forward, we will work towards achieving a sales ratio of Eco-products of 70% under Medium-Term Environmental Conservation Targets for 2025. We will expand our Eco-Products lineup by continuing to promote the development of environment-friendly products demanded by our customers and society, including products that are energy-saving, lightweight, miniaturized, long-lived, easy maintenance, and compliant with environmental regulations.

Trends in No. of Eco-Product Certifications (Total)



Trends in Sales Ratio of Eco-Products*



* The sales ratio of products that have fulfilled the internal requirements in our own Eco-Products Certification System
Sales ratio of Eco-Products (%) = Sales of Eco-Products / Sales of products (excluding construction work, services, software, parts and accessories) × 100

Products Certified as Super Eco-Products in FY2020

Diesel engine
09-E5 series
V5009-TIE5-BB (Europe, North America)

This diesel engine was awarded “Diesel of the Year 2019*” for contributing to resource conservation through achieving a more compact size (output power density) while meeting the world’s latest emissions standards (Tier 4, Stage V) and for being a product that can be used in a wide range of applications.

* Held by the Italian industry journal Diesel International

Large-size *Johkasou*, decentralized wastewater treatment plant KTZ type

This product received the Chairman’s Award of the Japan Society of Industrial Machinery Manufacturers for achieving a more compact size while boosting processing capacity per unit volume, and contributing to the conservation of resources and energy saving at each stage in its life cycle.

Products Certified as Eco-Products in FY2020 (excerpt)

Tractor
M7003 series
M7153 (Europe)

[Key certification point]
Compliant with exhaust gas regulations

Garden tractor
G series
G261 (Europe)

[Key certification point]
Compliant with exhaust gas regulations

Tractor
Agri Robo tractor
MR1000A (driverless specification)

[Key certification point]
Compliant with exhaust gas regulations

Combine harvester
DC series
DC-93 (ASEAN)

[Key certification point]
Conserving resources

Ride-on rice transplanter
NAVIWEL special class
NW10S

[Key certification point]
Compliant with exhaust gas regulations

Construction machinery
Excavator
KX080-4s2 (North America)

[Key certification point]
Compliant with exhaust gas regulations

Construction machinery
Wheel loader
R090 (Europe)

[Key certification point]
Compliant with exhaust gas regulations

Earthquake-resistant ductile iron pipe
Nominal diameter 1500 – 2600
US type (R type)

[Key certification point]
Conserving resources/ Recycling

Click here for details on products certified as Eco-Products.
www.kubota.com/sustainability/environment/ecopro/

Major Initiatives to Ensure Environment-friendliness by Product Group

C Tackling Climate Change
R Working towards a Recycling-based Society
W Conserving Water Resources
Ch Controlling Chemical Substances
B Conserving Biodiversity, etc.

Farm & Industrial Machinery

Product group	Major initiatives to ensure environment-friendliness	Life cycle				
		Procurement production	Distribution	Construction	Use	Disposal
Tractor	Reducing the number of parts	R				
	Reducing environmentally hazardous substances contained in paint	Ch				
	Reducing fuel consumption by improving loading efficiency in product transportation		C			
	Reducing fuel consumption by introducing an energy-saving mode				C	
	Conforming to exhaust gas regulations				Ch	
	Reducing noise, vibration				B	
	Indicating parts materials, providing information on points to be noted for disposal					R
Rice transplanter	Reducing environmentally hazardous substances contained in paint	Ch				
	Reducing fuel consumption by improving loading efficiency in product transportation		C			
	Reducing fuel consumption by introducing an energy-saving mode or a multiple-function capacity to simultaneously perform five farming operations				C	
	Reducing seedling cultivation-related materials by sparse planting or dense-sown seedling transplantation, and a straight-line maintenance function				R	
	Conforming to exhaust gas regulations				Ch	
	Indicating parts materials, providing information on points to be noted for disposal					R
Combine harvesters	Reducing the number of parts and weight	R				
	Reducing environmentally hazardous substances contained in paint	Ch				
	Reducing fuel consumption by improving loading efficiency in product transportation		C			
	Reducing fuel consumption by introducing an energy-saving mode				C	
	Reducing fuel consumption with improved reaping accuracy by horizontal control of the vehicle body				C	
	Conforming to exhaust gas regulations				Ch	
	Reducing noise, vibration				B	
	Indicating parts materials, providing information on points to be noted for disposal					R
KSAS (Kubota Smart Agri System)	Reducing fuel consumption per unit yield of agricultural machinery by improving farm work efficiency and increasing yield				C	
	Proper fertilizer application to prevent excessive fertilizers from flowing downstream				W	
	Facilitating self-maintenance and reducing mechanical problems by monitoring the operation status of agricultural machinery				R	
Cultivators	Reducing environmentally hazardous substances contained in paint	Ch				
	Reducing fuel consumption by improving loading efficiency in product transportation		C			
	Reducing CO_2 emissions by electrification				C	
	Achieving zero CO_2 emissions by electrification				Ch	
	Conforming to exhaust gas regulations				Ch	
	Reducing noise, vibration				B	
	Indicating parts materials, providing information on points to be noted for disposal					R
Riding mowers	Reducing environmentally hazardous substances contained in paint	Ch				
	Reducing fuel consumption by improving loading efficiency in product transportation		C			
	Reducing fuel consumption by introducing a unique mowing method to alleviate power load				C	
	Conforming to exhaust gas regulations				Ch	
	Indicating parts materials, providing information on points to be noted for disposal					R
Utility vehicles	Reducing fuel consumption by improving loading efficiency in product transportation		C			
	Conforming to exhaust gas regulations				Ch	
	Indicating parts materials, providing information on points to be noted for disposal					R
	Reducing RoHS-designated substances					Ch
Agriculture-related products (color sorter, rice-milling machine, etc.)	Reducing the number of parts and weight		C			
	Reducing air consumption necessary for sorting of defective rice by improving the air injection accuracy of color sorters				C	
	Reducing power consumption of electronic circuits				C	
	Reducing power consumption of improved thermal insulation efficiency of low-temperature brown rice storage containers				C	
	Reducing electric power consumption during waiting time for fruit selector measurement				C	
	Reducing the noise of rice-milling machines				B	
	Indicating parts materials, providing information on points to be noted for disposal					R
	Reducing RoHS-designated substances					Ch
Engines	Reducing fuel consumption by improving combustion efficiency and reducing losses				C	
	Accepting bio diesel/gasoline				C	
	Conforming to exhaust gas regulations				Ch	
	Reducing noise, vibration				B	
	Reducing RoHS-designated substances					Ch
Construction machinery	Reducing environmentally hazardous substances contained in paint	Ch				
	Reducing fuel consumption by improving loading efficiency in product transportation		C			
	Reducing fuel consumption by introducing an energy-saving mode				C	
	Conforming to exhaust gas regulations				Ch	
	Reducing noise, vibration				B	
	Indicating parts materials, providing information on points to be noted for disposal					R
	Reducing RoHS-designated substances					Ch
Precision machinery (Measuring instruments)	Reducing the number of parts and weight	R				
	Reducing fuel consumption by improving loading efficiency in product transportation		C			
	Reducing power consumption of electronic circuits				C	
	Reducing electric power consumption of peripheral equipment during waiting time for truck scale measurement				C	
	Reducing the number of waste batteries by introducing energy-saving measuring instruments					R
	Reducing RoHS-designated substances					Ch
Air-conditioning equipment	Using recycled resin	R				
	Reducing power consumption by installing a heat pump and a highly efficient motor				C	
	Easier maintenance by reducing the number of parts and adopting designs that are easy to disassemble				R	
	Providing information on points to be noted for disposal					R
	Reducing RoHS-designated substances					Ch

C Tackling Climate Change
R Working towards a Recycling-based Society
W Conserving Water Resources
Ch Controlling Chemical Substances
B Conserving Biodiversity, etc.

Water & Environment

Product group	Major initiatives to ensure environment-friendliness	Life cycle				
		Procurement production	Distribution	Construction	Use	Disposal
Ductile iron pipes	Reducing weight by thinning pipes or changing the structure of couplings	R				
	Reducing VOC by changing the paint for the inner surface	Ch				
	Reducing fuel consumption by improving loading efficiency in product transportation		C			
	Reducing the width of the excavation groove by reducing the insertion force at the time of jointing couplings to decrease the number of items necessary for jointing			C		
	Reducing polyethylene sleeves by improving anti-corrosion performance			R		
	Improving maintenance performance by introducing a coupling structure with reduced insertion force or reducing the number of parts				R	
	Extending product life by improving anti-corrosion performance and introducing earthquake-resistant couplings				R	
Plastic pipes	Reducing chemical substances specified under the technical standards based on the Water Supply Act	Ch				
	Reducing power consumption when joining pipes by a fusing process			C		
	Indicating parts materials, providing information on points to be noted for disposal					R
	Reducing RoHS-designated substances					Ch
Valves	Reducing fuel consumption by improving loading efficiency in product transportation		C			
	Reducing the width of excavation grooves by reducing the insertion force at the time of jointing couplings to decrease the number of items necessary for jointing			C		
	Reducing polyethylene sleeves by improving anti-corrosion performance			R		
	Extending product life by improving anti-corrosion performance				R	
Pumps	Reducing the cut amount during processing by introducing compact casings	C				
	Reducing the weight and volume by introducing compact and thinner casings	R				
	Reducing fuel consumption by improving loading efficiency in product transportation		C			
	Reducing power consumption by improving pump efficiency				C	
	Reducing RoHS-designated substances					Ch
Businesses related to water purification, sewage and wastewater treatment (Condensation, dehydration, agitator, etc.)	Reducing weight and the number of parts by eliminating frames or introducing multi-function parts	R				
	Reducing the power consumption of dehydrators by downsizing hydraulic units, etc.				C	
	Reducing the power consumption by introducing agitating blades capable of efficient agitation with low power				C	
	Reducing the power consumption of fans by introducing a low-pressure membrane-type air diffuser				C	
	Reducing dehydrated sludge volume				R	
KSIS	Saving energy by the efficient operation of equipment through remote monitoring/ diagnosis using IoT				C	
	Extending equipment life by failure diagnosis using AI				R	
	Reducing water consumption through field water management systems				W	
Submerged membranes	Reducing weight and volume by reducing the weight per unit membrane area or the membrane filling rate	R				
	Reducing fuel consumption by improving loading efficiency in product transportation		C			
	Reducing power consumption per unit processing quantity by improving the membrane filtration performance and expanding the membrane-carrying area				C	
	Collecting/recycling of used membrane cartridges					R
	Reducing RoHS-designated substances					Ch
Membrane-type methane fermentation units	Generating biogases by the methane fermentation of food waste and palm oil mill effluent				C	
	Reducing the volume of food waste				R	
Decentralized wastewater treatment plant *(Johkasou)*	Using recycled resin	R				
	Reducing the weight and volume of *Johkasou* by improving the processing capacity per unit volume	R				
	Reducing fuel consumption by improving loading efficiency in product transportation		C			
	Reducing the amount of excavated soil at the time of burying by reducing volume			C		
	Reducing RoHS-designated substances					Ch
Steel pipes	Reducing fuel consumption by improving loading efficiency in product transportation		C			
	Reducing energy during construction by mechanical couplings			C		
	Reducing RoHS-designated substances					Ch
Ethylene thermal cracking pipes	Reducing the use of rare metals, using recycled rare metals	R				
	Reducing fuel consumption by improving loading efficiency in product transportation		C			
	Reducing fuel consumption necessary for decoking (maintenance) by changing the internal structure of pipes				C	
	Reducing RoHS-designated substances					Ch
Rolls	Using recycled rare metals	R				
	Reducing fuel consumption by improving loading efficiency in product transportation		C			
	Extending product life by improving the roll surface strength				R	
	Reducing RoHS-designated substances					Ch

Introduction of Examples of Initiatives to Ensure Environment-friendliness

Mini cultivator

Environmental performance through electrification

- Zero exhaust emissions
- Reduced CO_2 emissions
- Reduced noise

www.kubota.com/sustainability/environment/ecopro/data/Mini_Cultivator.pdf

Riding diesel mower

Environmental performance through operational improvement

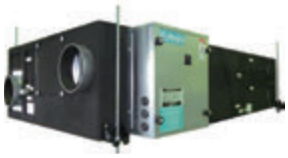
- Using a proprietary cutting method that reduces the load on the motor achieves a reduction in fuel consumption during operation.

www.kubota.com/sustainability/environment/ecopro/data/Zero_Turn_Mower.pdf

Humidity control outdoor-air processing unit

Environmental performance through more compact size

- Achieves a more compact size compared with a desiccant air-conditioning unit by removing the need for a machine room.
- Reduction of electric power consumption needed for cooling.
- Also enables use of renewable energy.



www.kubota.com/sustainability/environment/ecopro/data/Air-conditioning_Equipment.pdf

Plastic ribbed pipe

Environmental performance through change in shape

- Ribbed construction allows thinner walls, reducing weight.
- Increased flattening strength and ribbed shape enable selection of installation methods and base materials with low environmental impact.

www.kubota.com/sustainability/environment/ecopro/data/Plastic_Pipes.pdf

Combine harvester

Environmental performance through resource conservation

- Increased durability of major replacement parts and increased efficiency of harvesting operations achieve resource conservation throughout the product lifecycle.

www.kubota.com/sustainability/environment/ecopro/data/Combine_Harvesters.pdf

Johkasou, Decentralized wastewater treatment plant

Environmental performance through achieving a more compact size

- Use of sponge-type carriers to increase processing capacity and achieve a more compact size.
- Reduction in energy consumption during installation and use.

www.kubota.com/sustainability/environment/ecopro/data/jokaso.pdf

Evolution and History of Environmentally Friendly Products and Services

Evolution and History of Iron Pipe

In almost 120 years of history since becoming the first company in Japan to successfully manufacture cast-iron pipe in 1893, the Kubota Group has succeeded at developing several technologies, including manufacturing technologies for ductile cast-iron pipe with durability equivalent to that of steel, earthquake-resistant technology for pipelines, and long-life external surface corrosion-resistant technology. Our efforts have contributed to resource conservation by reducing pipe weight, reducing the percentage of water leaked by minimizing the number of pipeline breakages, and further resource conservation through making pipelines with a long service life.

www.kubota.com/sustainability/environment/ecopro/data/The_Evolution_of_Iron_Pipes.pdf

Evolution and History of Engines

Since it started production of the water-cooled horizontal-type oil engine Type A for agriculture and industry in 1992, the Kubota Group has thoroughly pursued basic performance of industrial engines. Responding also to the increasingly tightened exhaust gas regulations of many countries in the world, Kubota engines have constantly satisfied the needs of the customers worldwide as the power source of various types of industrial machinery, and will continue contributing to reduced environmental impacts.

www.kubota.com/sustainability/environment/ecopro/data/The_Evolution_of_Engines.pdf

Evolution and History of Scales

Since its foundation, the Kubota Group has manufactured cast metal parts for scales. After starting manufacturing mechanical platform scales in 1924, the Group has produced various industrial scales, contributing to the improved efficiency of manufacturing by companies. At manufacturing sites today, technological innovations using huge data, such as IoT and AI, have been rapidly advancing. We will continue to support the manufacturing sites by further sophisticating their measuring and weighing technologies to obtain accurate data.

www.kubota.com/sustainability/environment/ecopro/data/The_Evolution_of_Scales.pdf

Evolution and History of Tractors

Since creating the walk-behind cultivator in 1947, the Kubota Group has launched various compact, lightweight, high-powered tractors designed for upland or rice farming in Japan. Over time, we played a key role in the shift to mechanized, efficient farming methods by developing a wide range of new capabilities that reduced the burden of agricultural work. Looking ahead, we aim to help reduce the impact of farming on the environment through smart agriculture, which brings together high-precision farming methods based on ICT and IoT, and ultra-labor-saving farming using automated tractors.

www.kubota.com/sustainability/environment/ecopro/data/The_Evolution_of_Tractors.pdf

Evolution and History of Rice Transplanters

The Kubota Group developed the world's first walk-behind rice transplanter using seedling mats in 1968 with the aim of reducing the burden of planting rice. In order to meet demand for labor-saving measures precipitated by the subsequent decline in the number of farmers and the aging of Japan's population, we continued to develop our lineup of rice transplanters—we made them rideable, bigger, and equipped them with more functions. We will continue to implement labor-saving efforts and reduce our impact on the environment by proposing efficient cultivation methods and refining agricultural practices with the use of ICT and automation.

www.kubota.com/sustainability/environment/ecopro/data/The_Evolution_of_planter.pdf

Practice Report

Contributing to Zero Burning through the Development of a Sugarcane Leaf Remover

Thailand is the fouth-largest sugar producer in the world and sugarcane production is widespread there. Because most sugarcane farmers are small-scale farmers who harvest by hand, as it reaches harvest time, the sugarcane produces a large quantity of covering leaves that obstruct the harvesting operation. To increase the efficiency of this operation, in Thailand, the sugarcane leaves are burned in approximately 65% of operations. The Thai government has cooperated with private sector companies and others since 2019 on a campaign to reduce field burning to zero, aimed at controlling atmospheric pollution by PM 2.5.

A research and development site in Thailand, Kubota Research and Development Asia (KRDA), has developed the SLR110H, an implement for removing sugarcane leaves, as a solution to eliminate leaf burning. SLR110H is an implement that can be used with small tractors that are already widely used by sugarcane farmers. It can efficiently remove leaves between sugarcanes inter-row by rotating a roller with a string-type trimmer attached. The trimmer removes leaves that it contacts. Its simple structure results in a highly cost-efficient implement with a low price.

This method increases both the quality and volume of the harvest compared with harvesting sugar cane by leaf burning, and also contributes to the resolution of environmental issues in Thailand. Since launching in the market in December 2018, unit sales have been steadily increasing and we are also focusing on exports to surrounding Asian countries.


SLR110H mounted on a small tractor


Leaf removal using SLR110H

Environmental Management

The Kubota Group has systematically established its environmental management systems in order to facilitate business operation throughout the entire value chain including business sites and operational divisions based on the Kubota Global Identity and the Environmental Charter. The Group also promotes environmental management that is appropriate for the type of business activities of the site/operational division. Production sites, in particular, are associated with large environmental loads related to energy and waste, as well as the risks of air pollution and water contamination. In order to properly address such risks, the Group has established environmental management systems based on ISO 14001 and EMAS, and is endeavoring to promote business management in accordance with the required rules and the continuous improvement of environmental conservation activities.

Compliance with Environmental Laws and Regulations

To ensure compliance with environmental laws and regulations and prevent environmental accidents, the Kubota Group conducts its business in accordance with the rules and regulations it has formulated in relation to environmental conservation.

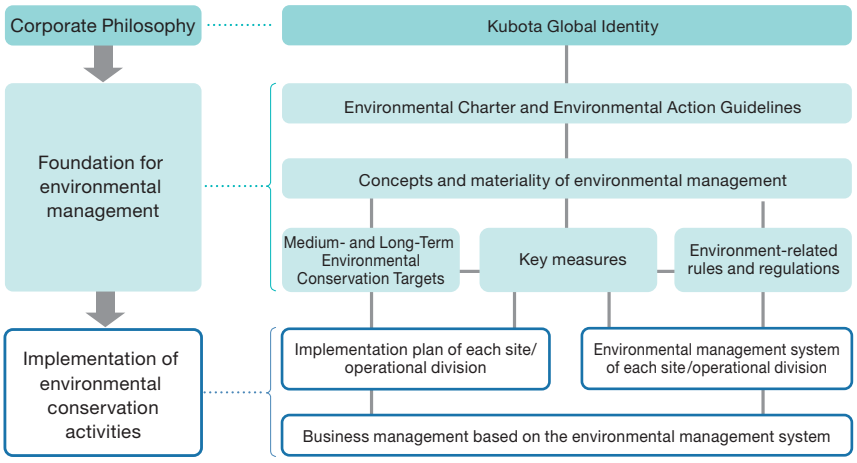
For exhaust gas, wastewater, noise, vibration and other variables, the Group has set and thoroughly manages its own control values at each production site, which are stricter than the corresponding laws and regulations, and has also established a system to promptly report any instances of non-compliance or complaints relating to environmental laws and regulations to relevant government bodies and the head office.

Each year, the Kubota Group also conducts environmental audits to confirm that the environmental conservation systems and activities are properly implemented at each site, as well as environmental risk assessments to clarify the status of environmental risks and establish improvements, with the aim of preventing the violation of environmental laws/regulations and environmental accidents.

Despite these efforts, however, in FY2020 in Japan we had one case of atmospheric emissions of dust in excess of standards, one case of atmospheric release of fluorocarbons, and one case of inappropriate processing of waste, and one case overseas of wastewater exceeding regulation levels. We investigated any impact on the ambient environment and are working to prevent recurrence. Furthermore, we were not subject to any fines or punishments.

The Kubota Group's Environmental Management System

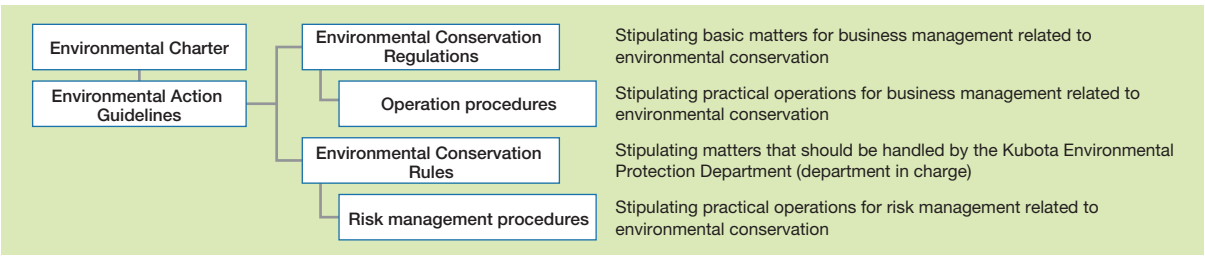
The diagram below shows the structure of the environmental management system of the Kubota Group.



Environment-related Rules and Regulations

The Kubota Group has formulated environment-related rules and regulations based on its internal control system, targeting Kubota Corporation, all of its consolidated subsidiaries and a part of its affiliated companies accounted for under the equity method that are highly significant in its environmental management.

The rules and regulations are classified as follows:



These rules and regulations are reviewed every year, according to the business environment and revisions of laws and regulations. The latest version of these rules and regulations are available on the Group portal site, allowing employees around the world to refer to them.

Environmental Auditing

Each year, the Environmental Protection Department conducts an environmental audit that incorporates a document audit targeting all production sites, service sites, offices, and construction and maintenance management departments in Japan, as well as overseas group production sites.

Moreover, in addition to the environmental audit by the Environmental Protection Department, annual internal environmental audits are conducted at production sites. Through these means, and by taking the initiative to self-check the status of environmental management, every effort is being made to further improve management levels.

All of the audit results are reported to the President and management at the Company-wide Risk Management Committee in accordance with the company-wide internal control system.

FY2019 Environmental audit
Kubota Baumaschinen GmbH (Germany)
* Due to the COVID-19 pandemic, the environmental audit was not held in FY2020.

FY2020 Environmental Audit Implementation Status

- Number of sites : 271 (258 sites and 13 agricultural machinery sales companies)
- Number of audit items : 29 (for maintenance and management departments) up to 52 (for service sites)
  * Details are as shown in the table below.
- Audit details : Water and air quality management, noise and vibration management, waste discharge and chemical substance management, climate change prevention, response to abnormalities and emergencies, and environmental management system

Environmental Audit Implementation Status

		Production sites	Offices	Service sites		Construction departments	Maintenance management departments*2	Total number of sites audited
				Agricultural machinery distributors	Other			
Group companies in Japan	Number of sites audited	24	73	13 companies*1	91	44	8	253
	Number of audit items	47	41	52	52	38	29	
Overseas group companies	Number of sites audited	18	—	—	—	—	—	18
	Number of audit items	31						

*1 For agricultural machinery distributors, the audit was conducted on a company basis instead of on a site basis.
*2 Departments engaged in the business of operation or maintenance of environmental plants

Environmental Risk Assessment

Environmental risks for facilities are evaluated from the function and management methods, etc., of environment-related equipment, and for facilities that are deemed to require countermeasures, risk reduction activities are promoted to strengthen equipment and management countermeasures until environmental risks are at an acceptable level.

The Kubota Group is proactively working to further reduce environmental risks by conducting environmental audits and environmental risk assessments—two activities with differing perspectives—in parallel.

Environmental risk assessment
Kubota Tsukuba Plant

Environmental Patrols

At each site, environmental patrols are carried out to meticulously assess the entire site and confirm the absence or presence of conditions that may lead to environmental accidents or violations of environmental laws and regulations. The Kubota Group aims to reduce environmental risks by conducting environmental patrols and finding situations that may cause any abnormalities at an early stage.

Environmental patrol
Kubota Sakai Plant

Drills for Responding to Abnormal and Emergency Situations

The Kubota Group is working to identify and minimize environmental risks associated with its business activities through risk-specific response procedures.

We are also conducting drills each year based on response procedures that assume the outbreak of environmental accidents or situations that could arise in environmental accidents, in order to mitigate the impact on the ambient environment.

Training based on an oil leak scenario
Niigata Office, Kubota Agri Service

On-site Investigations of Waste Treatment Contractors and Purchasers of Valuable Resources

In order to promote the proper treatment of waste and other materials including valuable resources at its operating sites in Japan, the Kubota Group is increasingly employing the services of top-rated certified operators.

At the same time, the Group has stipulated internal rules for conducting on-site investigations of industrial and other recyclable waste treatment contractors as well as purchasers of valuable resources. As far as industrial waste where there are large numbers of treatment contractors, the Kubota Group conducted investigations using its own on-site investigation appointing system that is run by its production sites, offices, sales companies, and other companies.

In 2020, due to the COVID-19 pandemic, on-site investigations were conducted only at sites where on-site checking was required due to local government ordinances and so forth. At other sites, we conducted investigations based on published information of treatment contactors and so forth. Looking ahead, we will continue to conduct investigations that increase validity to promote appropriate treatment.

Green Procurement

Green Procurement Guidelines

For the purpose of providing products that are friendly to global and local environments, the Kubota Group is seeking to procure products with reduced environmental impact from ecofriendly suppliers.

In order to proactively promote these activities, the Kubota Group presents its policies on green procurement to suppliers through the Group's Green Procurement Guidelines, asking for their understanding and cooperation.

In addition, we conclude basic trading agreements with Japanese suppliers who deal with Kubota, and through these agreements we ask the suppliers to observe environmental laws and regulations, and take steps to reduce their environmental impact.

For details on the Kubota Group's Green Procurement Guidelines, click here
www.kubota.com/sustainability/environment/procure/

The Kubota Group's Green Procurement Guidelines and Appendix [Substances of Concern List] (Published in Japanese, English and Chinese)

Award System for Green Procurement

The Green Supplier Award System was launched in 2015 to award suppliers recognized as having made notable contributions in the area of environmental conservation, such as the supplies (materials, components, equipment, etc.) procured by the Kubota Group. The awards are presented every year.

In accordance with the Kubota Group's Green Procurement Guidelines, this award system quantitatively evaluates goods supplied to the Kubota Group and environmental conservation activities engaged in by suppliers from the perspective of resources and energy-saving and awards notably excellent examples.

In 2020, of the 128 environmental conservation activities that were submitted from our suppliers in Japan, 12 activities with particularly high achievements were awarded, one of which received the Excellent Prize.

We started expanding this system globally in 2018, and presented awards at overseas sites as well. We will continue to utilize the system and carry out activities in the name of green procurement and promote environmental conservation initiatives hand-in-hand with our suppliers.

FY2019 Awarding ceremony (January 2020)
* Due to the COVID-19 pandemic, the awarding ceremony was not held in FY2020.

Supplier Management

The Kubota Group promotes measures to protect the environment, working closely with suppliers who support our environmental management.

As a specific example of activities, Kubota Agricultural Machinery (Suzhou) Co., Ltd. (China) conducts “environmental patrols” of existing suppliers to verify compliance with environmental laws and requests suppliers to take recommended steps for addressing any points for improvement found with the goal of minimizing the risk of supply stoppages for procured components. For new suppliers, patrols are carried out prior to their approval, with only those verified as legally compliant selected as new suppliers.

Environmental Education and Enlightenment

Results of Environmental Education in 2020

The Kubota Group offers environmental education programs to raise awareness among its employees. The education program for employees consists of rank-based training, professional training, and general training. The Group also assists external group’s environmental education programs.

Classification	Course title	Frequency	No. of participants	Course descriptions
Education by employee-level	Training for new employees	1	184	Global and local environmental issues and Kubota’s environmental conservation activities
	Training for newly appointed supervisors	2	40	Kubota’s environmental management and efforts as supervisors
	Training for newly appointed foremen	1	19	Kubota’s environmental management and efforts as foremen
	The Safety, Environment and Quality Forum for executive management	1	180	A lecture on “Sustainable Management at Daikin Industries” by Satoru Fujimoto (General Manager, CSR & Global Environment Center, Daikin Industries, Ltd.)
Professional education	Waste management (Basic)	1	20	Waste Management and Public Cleansing Law, practical training in consignment contracts and manifests, etc.
	Education to train ISO 14001 environmental auditors	2	33	The ISO 14001 standard, environment-related laws, audit techniques
Site training	Waste management	1	60	Waste management in installation and management of decentralized wastewater treatment plants
	Fluorocarbon management (e-learning)	1	3,563	Revision details of fluorocarbon emission control law and the Kubota Group’s response
	Increasing sensitivity to environmental risks (e-learning)	1	1,608	Training for increased sensitivity to environmental risks
Total		11	5,707	

The Safety, Environment and Quality Forum for executive management
(Lecturer: Satoru Fujimoto)

Environment Month Report

Employee Awareness-raising Activities during Kubota Environment Month

The Kubota Group designates June of each year as "Environment Month" and promotes various programs to raise awareness among its employees. Following on from 2019, in 2020, we again promoted activities with the theme of "Let's work together to reduce plastic waste!"

At each business site, we conducted various activities, such as ensuring separation of trash, reducing use of plastic shopping bags by distributing eco-bags, reducing the volume of PET bottle waste by bringing personal drink bottles, and displaying awareness-raising posters and slogans in common spaces, such as stores.

As we go forward, we will continue to raise awareness of the environment among employees through Environment Month.

Environment Month poster (2020)

Environmental Achievement Awards

The Kubota Group presents the Environmental Achievement Awards to commend individuals and groups that have made notable contributions to environmental conservation, as well as to boost the Group's employees' environmental conservation awareness and activate their environmental activities.

In 2020, environmental conservation activities were evaluated targeting four categories: production divisions, non-production divisions, product development, and education and awareness raising. Twenty-one activities were awarded for their achievements in energy saving, waste reduction, VOC reduction, environmental risk reduction, development of environment-friendly products, and so on. Seven of these were awarded as the Excellent Prize.

We will continue to award excellent initiatives that contribute to regional or global environmental conservation, and encourage sharing of the details of such initiatives within the Group, with the aim of further activating environmental conservation activities.

Environmental Achievement Award Excellent Prize in 2020

Boundary	Company, department	Theme
Production divisions	Kubota Group in Thailand (six sites in Thailand)	Energy Just In Time [One Kubota In Thailand]
	Kubota Agricultural Machinery (Suzhou) Co., Ltd.	Installation of solar power generation equipment
	Kubota Manufacturing of America Corporation	Energy Savings/Airborne Pollutant Reduction through the development of more efficient paint hangers
Non-production divisions	KBS Kubota Co., Ltd.	Increased efficiency of transportation and environmental load reduction through shared shipping with competing manufacturers
Product development	Harvester and Transplanter Division, Transplanter Engineering Department	Ride-on rice transplanter NAVIWEL NW8S-GS
	Harvester and Transplanter Division, Combine Harvester Engineering Department	Agri Robo Combine Harvester WRH1200A
	Environmental Solutions Division, Environmental Engineering Department	High-efficiency twin screw press dehydrator SHD-030W- 090W

Environmental Achievement Awards in 2020

Boundary	Classification, No. of winners
Production sites	Excellent Prize: 3, Encouragement Award: 7
Non-production sites	Excellent Prize: 1, Encouragement Award: 1

Boundary	Classification, No. of winners
Product development	Excellent Prize: 3, Encouragement Award: 5
Education and awareness raising	Education and Awareness Raising Award: 1

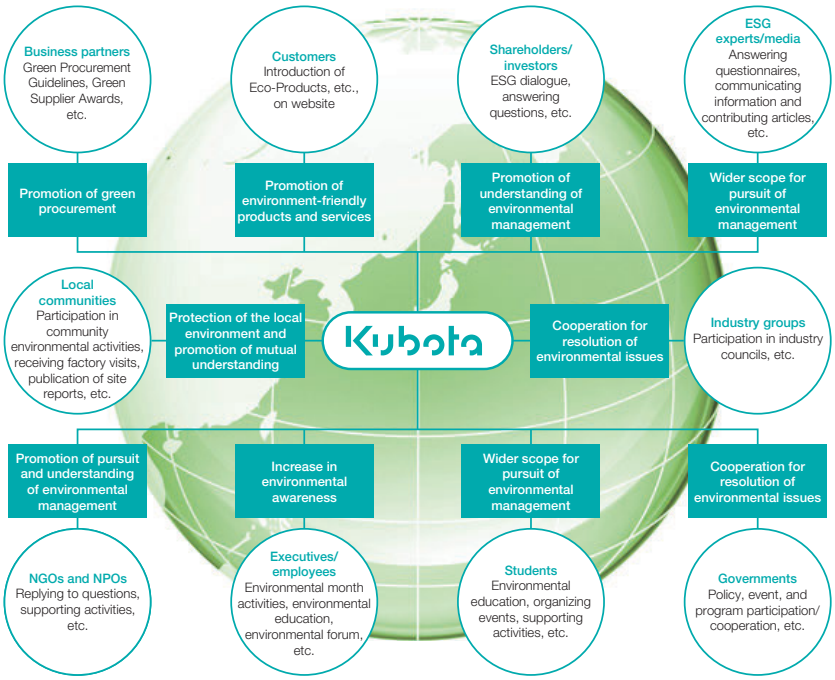
Environmental Communication

Since it published its first Environmental Report in FY1999, the Kubota Group has continued to disclose its environmental information. Along with the globalization of its businesses, the Group has enhanced the contents of the environmental information it discloses, to allow the Group's global initiatives to be understood. To expand and improve disclosures further, the Group will continue its dialogues with stakeholders and further disclosing information in line with international standards such as the environmental reporting guidelines by the Japanese Ministry of the Environment, the GRI standards and the recommendations of TCFD.

Each business site also works to enhance understanding of the environmental conservation activities by the local residents and family members of employees by participating in local environmental conservation activities and other environmental communication activities, such as environmental education and protection of the natural environment, for the purpose of achieving symbiosis with local communities.

Environmental Communication Activities

To practice environmental management globally, the Kubota Group is committed to deepening mutual understanding via dialogue with various stakeholders. The opinions and feedback gained from dialogue are used to improve Group environmental management practices with the aim of meeting social expectations and addressing societal issues.



Cooperation with Environment-related Industry Groups and Governments

The Kubota Group believes that in promoting environmental conservation, it is important to promote environmental conservation initiatives not only within its Group but also in cooperation with various sectors, such as the national or local government and relevant industry groups. Through participating in programs and campaigns hosted by government organs and establishing partnerships with various organizations, the Group aims to create synergy and conduct more effective environmental conservation activities.

Participating in Systems, Verification Programs, Campaigns by the National Government

In May 2010, the Kubota Group was certified by the Japanese Minister of the Environment as an "Eco-First Company," and has been a member of the Eco-First Promotion Council since then. Through the Council, the Group submits proposals to or exchanges opinions with the Ministry of the Environment, supports Eco-First companies promoting environmental conservation activities and enhancing cooperation between companies, and engages in activities to raise the environmental awareness of the public. The Group also participates in the "Fun to Share" campaign by the Ministry of the Environment to tackle climate change toward the realization of a low-carbon society, the "Cool Choice" national movement to encourage smart choices contributing to measures against global warming, and the Water Project to raise awareness concerning water circulation and conservation of the water environment. Moreover, the Group also participates in the Environmental Reporting Platform Development Pilot Project to promote ESG dialogues between investors and companies.

Participating in Industry Groups

The Kubota Group is a member of various environment-related committees in the Kansai Economic Federation and other industry groups it is participating in. The committee activities help deepen understanding of the roles that companies should play in addressing environmental issues such as climate change, while providing opportunities to share information and exchange opinions on energy and environmental policies. In addition, the Group actively participates in initiatives to promote global environmental conservation.

- Major participating groups

  Industry groups: Japan Business Federation, Kansai Economic Federation, Japan Society of Industrial Machinery Manufacturers, etc.

  Environmental initiatives: Japan Climate Initiative, Task Force on Climate-Related Financial Disclosures (TCFD)

Agreement with the TCFD Recommendations

The Kubota Group considers tackling climate change to be one of the material issues for environmental management. We are making efforts to respond to climate change through environment-friendly products, technologies, services, and corporate activities. To further enhance stakeholder communication, we expressed support for the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD) in January 2020.

Participation in JCI activities

The Kubota Group has participated in the activities of the Japan Climate Initiative (JCI) since October 2018. JCI participants include Japanese companies, local governments, NGOs and others who aim to realize a carbon-free society.

Dialogue and Collaboration with Local Governments

The Kubota Group proactively participates in various committees of Osaka City and other local governments and their related groups, and works to establish partnerships with them. The Group promotes industry-government-academia collaboration through participating in discussions and opinion exchange on environmental issues, and various activities.

- Major collaborating groups/partners

  Gifu Prefecture "Consortium for Forest Technology Development and Promotion," Osaka City "Environmental Management Promotion Council," sponsored flowerbeds in front of the Kyuhoji Green Space in Osaka Prefecture, the "Carrying Water Project" by Ono City, Fukui Prefecture, and so on.

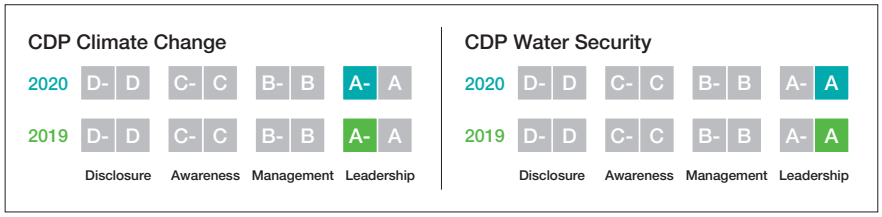
Environment-related External Evaluation

Kubota Receives the Highest Evaluation for the Third Time in a Second Consecutive Year in CDP* Water Security 2020

Kubota was selected for inclusion in the A list of companies—the highest position—in the CDP Water Security 2020 survey on water security conducted by the CDP. It is the second consecutive year after CDP 2019 that Kubota has been selected as an A list company for water security, and the third time. In the online event held in January 2021, "CDP 2020 A List Company Awards," President and Representative Director Yuichi Kitao gave a speech as an outstanding company.

We were also awarded an "A-" rating—the second highest on an 8-point scale—in the CDP Climate Change 2020 survey, a survey on climate change conducted by the CDP.

* Established in the UK in 2000, the CDP is a non-profit organization that works with institutional investors to encourage companies and cities to disclose their strategies and data related to climate change, water, and forests by providing institutional investors with research-based analytical results and environmental performance ratings.



Speech at the CDP 2020 A List Company Awards

Receiving Environmental Awards

The Kubota Environmental Engineering Department Receives the "Environmental Technology and Project Award"

In December 2020, the 57th Environmental Engineering Forum was held by the Committee of Environmental Engineering of the Japan Society of Civil Engineers. The Kubota Environmental Engineering Department members Takayuki Tatsumichi, Hisafumi Nomura, Haruhiko Takeuchi, and Koichi Nakagawa received the "Environmental Technology and Project Award" for their presentation on "Development of Energy-saving Fertilizer Technology by Non-heat Reforming of Sewage Dewatered Sludge."

The award is presented to the most outstanding technology among those presented at the Environmental Engineering Forum. This is the third consecutive year that Kubota has received the award. The technology proposes a new energy-saving system for a different approach from the conventional drying technology to dewater sewage sludge and convert it into fertilizer. It was highly evaluated from its low lifecycle cost.


賞状

「脱水汚泥の非加熱改質による省エネルギー肥料化技術の開発」

右に対しその優れた研究成果を讃え第57回環境工学研究フォーラム環境技術・プロジェクト賞を贈る

令和二年十二月十一日

公益社団法人土木学会
環境工学委員会
委員長 滝沢 智

立道隆幸 野邑尚史
武内晴彦 中河浩一

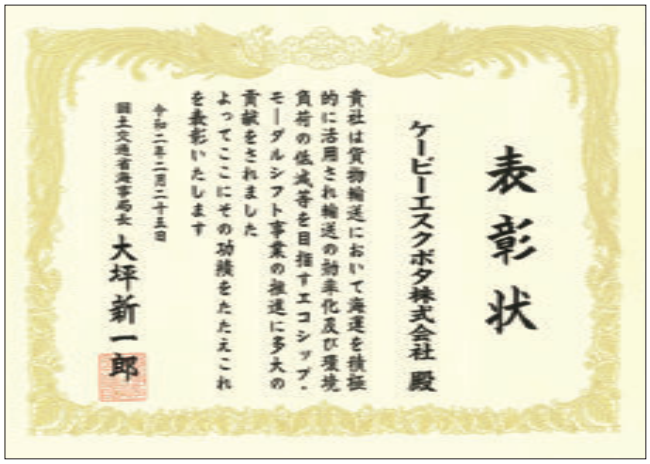
Environmental Technology and Project Award certificate

KBS Kubota Co., Ltd. Receives the “Director-General Commendation of the Maritime Bureau, Ministry of Land, Infrastructure, Transport and Tourism”

On February 25, 2020, KBS Kubota Co., Ltd. received the “Director-General Commendation of the Maritime Bureau, Ministry of Land, Infrastructure, Transport and Tourism” at the Eco Ship Mark Designation System Maritime Modal Shift Grand Awards.

This commendation is presented to entrepreneurs recognized as making a special contribution to reducing environmental impact by implementing a modal shift from land transport-centered distribution systems to marine transport, which has superior transport efficiency. In receiving the award, KBS Kubota Co., Ltd. was recognized for actively working to reduce its environmental impact through measures such as return use of mainly import and export containers, making use of inland container depots, and proactively introducing modal shift conducted jointly with shippers.

Award ceremony held on February 25, 2020



表彰状

ケービーエスクボタ株式会社 殿

貴社は貨物輸送において海運を積極的に活用され輸送の効率化及び環境負荷の低減等を目指すエコシップ・モーダルシフト事業の推進に多大の貢献をされましたよってここにその功績をたたえこれを表彰いたします

令和二年二月二十五日

国土交通省海事局長 大坪新一郎

Commendation certificate of the “Director-General Commendation of the Maritime Bureau, Ministry of Land, Infrastructure, Transport and Tourism”

SIAM KUBOTA Corporation Co., Ltd. (Headquarters Plant, Amata Nakorn Plant) and SIAM KUBOTA Metal Technology Co., Ltd. Receive Green Industry Award

SIAM KUBOTA Corporation Co., Ltd. (Headquarters Plant, Amata Nakorn Plant) (SKC) and SIAM KUBOTA Metal Technology Co., Ltd. (SKMT) received the Green Industry Award from the Thai government in 2020 and 2021, respectively as clean plants that are environmentally considerate. On the five-point evaluation scale (Level 5 being the highest), SKC scored Level 4 for having strongly rooted environmental conservation activities in their corporate culture, while SKMT was awarded Level 3 in recognition of having built an environmental management system and steadily implementing a PDCA cycle.

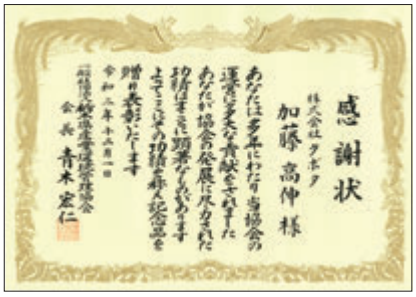
The award has a three-year certification period, and KUBOTA Precision Machinery (Thailand) Co., Ltd. has previously received a Level 3 award, and KUBOTA Engine (Thailand) Co., Ltd. a Level 4 award. They are still currently recognized as Green Industries.

Green Industry Award certificate

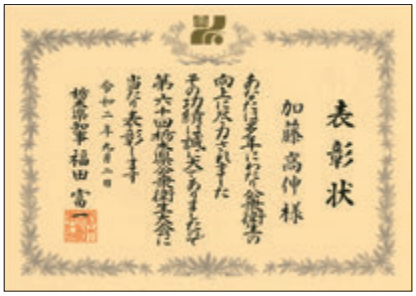
An Employee of Kubota Utsunomiya Plant Receives the Prefectural Governor's Commendation and other recognition at the Tochigi Prefecture Public Health Competition

At the Kubota Utsunomiya Plant, Takanobu Kato of the Production Engineering Section has been an active participant in various external environmental groups for 14 years. He received a personal commendation from the prefectural governor for his remarkable achievements in various fields, including local government, prefectural citizenship activities, education and culture, environment, social welfare, public health, and industrial revitalization.

Mr. Kato is a member of the Tochigi Ken Sangyou Kankyou Kanri Kyoukai (Tochigi Prefecture industrial and environmental management association), an association for promoting the spread of knowledge and awareness about preventing pollution, the smooth execution of pollution prevention at plants, and preservation of the local environment. He received a certificate of appreciation from the association for his distinguished service as an officer.



The certification of appreciation for distinguished service as an officer of the Tochigi Ken Sangyou Kankyou Kanri Kyoukai and the award ceremony



The certificate of commendation from the prefectural governor at the Tochigi Prefecture Public Health Competition and the award ceremony

Kubota Hanshin Plant Amagasaki Site Receives "Award for Nurturing Greenery and Wetland Areas"

At the Amagasaki Site of the Kubota Hanshin Plant, workers use their lunch hours once a month to conduct tree pruning and clean-up activities around the plant. They received the "Award for Nurturing Greenery and Wetland Areas" from the Hyogo Prefecture Hanshin Minami Prefectural Citizens Center Amagasaki Port Management Office as they contribute to the "21st Century Forest Concept" project for promoting local greenery of Hyogo Prefecture.

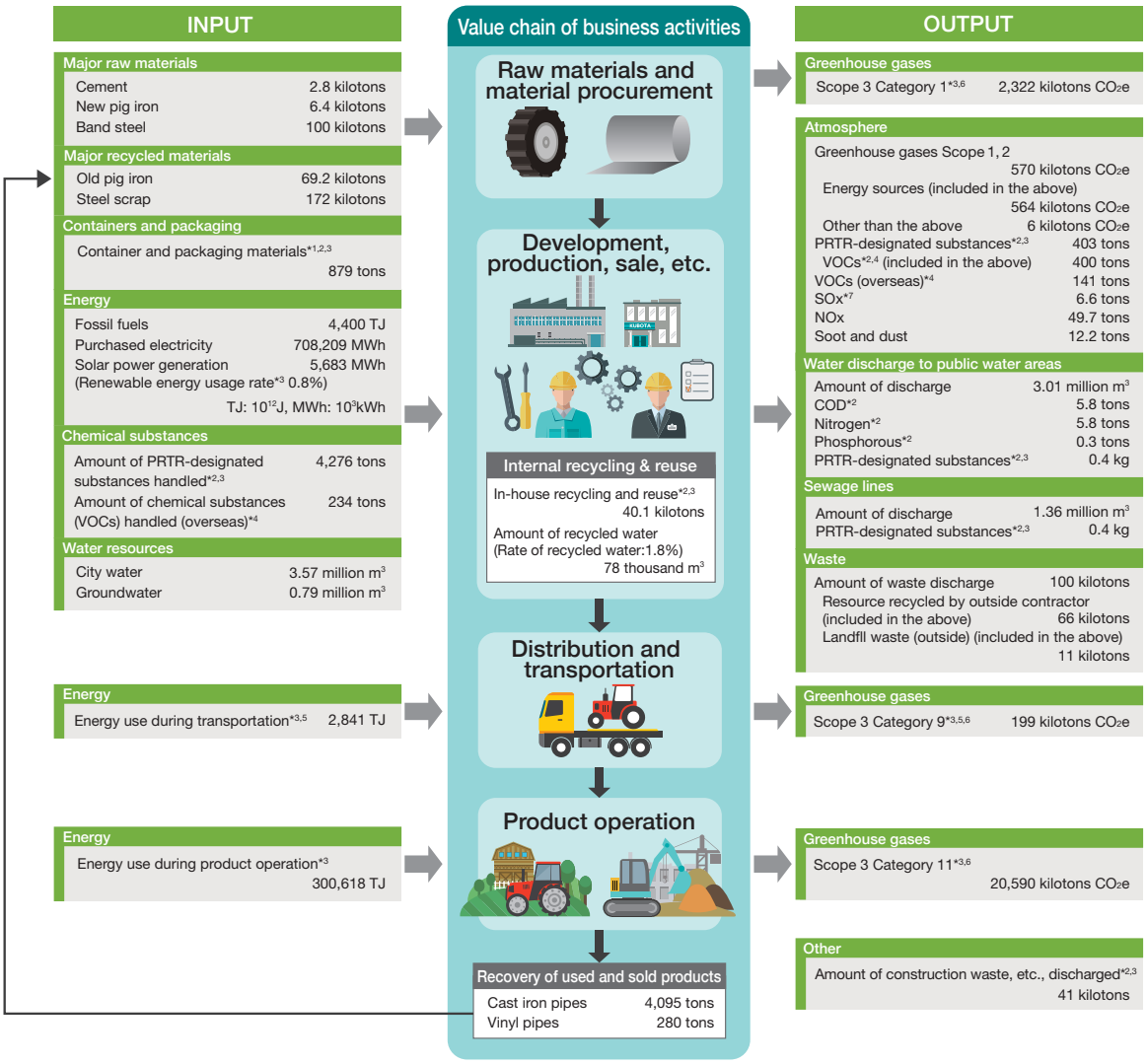
Certificate of appreciation from the Hyogo Prefecture Hanshin Minami Prefectural Citizens Center Amagasaki Port Management Office and award ceremony

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 FY2020. 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 FY2020)



*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 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.55).
*7 If sulfur contained in the slag managed onsite at end of year (December 31, 2020) by some sites in Japan is included, SOx emissions for FY2020 amounted to 3.0 tons.

For the calculation method of each item of environmental data, see the Calculation Standards of Environmental Performance Indicators (p.98).

Trends in Major Environmental Indicators

Energy

Environmental indicators				Unit	FY2016	FY2017	FY2018	FY2019	FY2020
Energy	Within business sites	Energy consumption*1		TJ	11,295	11,602	12,234	12,075	11,362
			Fossil fuels	TJ	4,434	4,399	4,687	4,641	4,400
			Natural gas included in the above*2	TJ	2,056	2,267	2,501	2,561	2,450
			Purchased electricity	MWh	698,370	732,508	767,255	756,013	708,209
		Power generation for own use	Cogeneration*2	MWh	1,977	416	1,805	2,274	2,398
			Solar power generation	MWh	1,732	1,855	2,412	2,604	5,683
	Energy use during transportation*2,3			TJ	606	643	2,741	2,629	2,841

CO_2 Emissions

Environmental indicators			Unit	FY2016	FY2017	FY2018	FY2019	FY2020
Greenhouse gases	Scope 1, 2		kilotons CO_2e	647	645	647	630	570
		Overseas included in the above	kilotons CO_2e	172	197	204	203	176
		Energy sources	kilotons CO_2e	639	638	640	623	564
		Other than the above	kilotons CO_2e	8	8	7	7	6
	Scope 3 Category 9 (Transportation of sold products)*2,4,5,6		kilotons CO_2e	42	44	192	184	199

Resources and Materials

Environmental indicators		Unit	FY2016	FY2017	FY2018	FY2019	FY2020
Major raw materials	Cement	kilotons	6.8	4.4	4.9	3.4	2.8
	New pig iron	kilotons	6.7	7.2	9.7	8.8	6.4
	Band steel	kilotons	106	132	121	112	100
Major recycled materials	Old pig iron	kilotons	58.6	64.0	71.8	74.2	69.2
	Steel scrap	kilotons	224	182	193	183	172
Containers and packaging	Container and packaging materials (Japan)*2,7	tons	—	988	922	973	879

Waste

Environmental indicators				Unit	FY2016	FY2017	FY2018	FY2019	FY2020
Waste, others	Amount of waste discharge*8			kilotons	115	113	118	113	100
			Overseas included in the above	kilotons	48	47	56	44	36
		Hazardous/non-hazardous waste	Hazardous waste	kilotons	—	6.0	5.3	5.5	6.1
			Non-hazardous waste*9	kilotons	—	107	113	108	94
		By treatment category	Resource recycled by outside contractor	kilotons	85	88	92	79	66
			Landfill waste (outside)	kilotons	11	10	10	12	11
	Amount of construction waste, etc., discharged (Japan)*2			kilotons	54	46	41	41	41

*1 Conventionally, energy use during transportation (Japan) was included in total energy consumption. But starting from FY2017, it is not retrospectively included.
*2 Not subject to the third-party assurance
*3 In addition to the data for Japan, energy use associated with the overseas shipping of certain products from Japan has been included from FY2018.
*4 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.55).
*5 In addition to the data for Japan, CO_2 emissions associated with the overseas shipping of certain products from Japan have been included from FY2018.
*6 Values for FY2018 were corrected to improve accuracy.
*7 Packaging materials subject to the Act on the Promotion of Sorted Collection and Recycling of Containers and Packaging.
*8 In FY2020, in consideration of the actual cleaning process, some overseas site reclassified water remaining after product cleaning as waste (included in resource recycling and volume reduction values) rather than wastewater. This change has been reflected retrospectively for previous reporting years. Values for FY2019 have also been revised to improve accuracy.
*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.98).

Water resources

Environmental indicators			Unit	FY2016	FY2017	FY2018	FY2019	FY2020
Water resources	Water consumption		million m^3	4.86	4.51	4.88	4.59	4.36
		Overseas included in the above	million m^3	1.20	1.07	1.10	1.11	0.99
		City water*1	million m^3	3.99	3.60	3.89	3.72	3.57
		Groundwater	million m^3	0.87	0.91	0.99	0.87	0.79

Water system discharge

Environmental indicators		Unit	FY2016	FY2017	FY2018	FY2019	FY2020
Water discharge to public water areas	Wastewater discharge	million m^3	3.71	3.26	3.62	3.26	3.01
	COD (Japan)*2	tons	10.1	7.7	8.6	7.6	5.8
	Nitrogen discharge (Japan)*2	tons	9.2	9.1	6.9	6.2	5.8
	Phosphorous discharge (Japan)*2	tons	0.36	0.27	0.38	0.30	0.30
	Amount of PRTR-designated substances released (Japan)*3	kg	0	0.8	0.9	0.6	0.4
Sewage lines	Wastewater discharge*4	million m^3	1.53	1.42	1.50	1.51	1.36
	Amount of PRTR-designated substances transferred (Japan)*3	kg	22	17	0.1	0.2	0.4

Chemical Substances

Environmental indicators		Unit	FY2016	FY2017	FY2018	FY2019	FY2020
Chemical substances	Amount of PRTR-designated substances handled (Japan)*3,5	tons	4,871	4,488	5,339	4,918	4,276
	Amount of chemical substances (VOCs) handled (overseas)*5,6	tons	350	318	323	227	234

Atmospheric Discharge

Environmental indicators			Unit	FY2016	FY2017	FY2018	FY2019	FY2020
Atmosphere	Amount of PRTR-designated substances released (Japan)*3,5		tons	458	451	454	449	403
	VOC emissions*5,6		tons	698	663	619	575	541
		Overseas included in the above*5.6	tons	243	215	168	130	141
	SOx emissions		tons	31.5	17.5	9.4*7	3.7*7	6.6*7
	NOx emissions		tons	94.2	68.8	49.5	47.3	49.7
	Soot and dust emissions		tons	26.5	21.9	9.8	10.8	12.2

*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 In FY2020, in consideration of the actual cleaning process, some overseas sites changed reclassified water remaining after product cleaning as waste (included in resource recycling and volume reduction values) rather than wastewater. This change has been reflected retrospectively for previous reporting years.
*5 Values for FY2016 to FY2019 were corrected to improve accuracy.
*6 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.
*7 If sulfur contained in the slag managed onsite by some sites in Japan is included, SOx emissions to 7.3 tons for FY2018, 5.2 tons for FY2019, 3.0 tons for FY2020.

For the calculation method of each item of environmental data, see the Calculation Standards of Environmental Performance Indicators (p.98).

Calculation Results of PRTR-designated Substances

FY2020 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	690
51	2-Ethylhexanoic acid	0.0	0.0	0.0	0.0	0.0	0.0
53	Ethylbenzene	123,270	0.0	0.0	0.0	0.0	24,089
71	Ferric chloride	0.0	0.0	0.0	0.0	0.0	0.0
80	Xylene	170,524	0.0	0.0	0.0	0.0	32,955
87	Chromium and chromium (III) compounds	0.0	0.0	0.0	0.0	0.0	4,661
132	Cobalt and its compounds	0.0	0.0	0.0	0.0	0.0	1.4
239	Organic tin compounds	0.0	0.0	0.0	0.0	0.0	13
240	Styrene	20,032	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	17,584	0.0	0.0	0.0	0.0	6,322
297	1,3,5-trimethylbenzene	2,726	0.0	0.0	0.0	0.0	1,034
300	Toluene	66,296	0.0	0.0	0.0	0.0	14,308
302	Naphthalene	2,484	0.0	0.0	0.0	0.0	0.0
305	Lead compounds	55	0.40	0.0	0.0	0.40	5,875
308	Nickel	5.0	0.0	0.0	0.0	0.0	492
349	Phenol	0.0	0.0	0.0	0.0	0.0	0.0
352	Diallyl phthalate	98	0.0	0.0	0.0	0.0	0.0
354	Di-n-butyl phthalate	2.0	0.0	0.0	0.0	0.0	195
392	N-hexane	17	0.0	0.0	0.0	0.0	0.0
400	Benzene	0.0	0.0	0.0	0.0	0.0	0.0
405	Boron compounds	0.0	0.0	0.0	0.0	0.0	1,253
412	Manganese and its compounds	0.0	0.0	0.0	0.0	0.0	54,036
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		403,095	0.40	0.0	0.0	0.40	145,925

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.98).

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	FY2019		FY2020	
			Investment	Expenses	Investment	Expenses
Within the business area cost			867	2,821	1,104	2,710
	Local environmental conservation cost	Prevention of air and water pollution, soil contamination, noise, vibration, etc.	180	436	249	446
	Global environmental conservation cost	Prevention of climate change, etc.	656	1,009	846	977
	Resource recycling cost	Minimizing waste production, reducing quantity of waste, and recycling	31	1,376	9	1,287
Upstream and downstream costs		Collection of used products and commercialization of recycled products	0	37	0	115
Management activities cost		Environmental management personnel, ISO maintenance and implementation, environmental information dissemination	18	1,613	0	1,590
R&D cost		R&D for reducing of product environmental load and developing environment conservation equipment	576	7,497	2,466	8,286
Social activities cost		Local cleanup activities, and membership fees and contributions to environmental groups, etc.	0	1	0	0.5
Environmental remediation cost		Contributions and impositions, etc.	0	224	0	88
Total			1,461	12,193	3,570	12,789

Total capital investment (including land) for the corresponding period (consolidated data)	87,200
Total R&D costs for the corresponding period	55,300

Environmental Conservation Effects

Effects	Items	FY2019	FY2020
Environmental effects related to resources input into business activities	Energy consumption (TJ)	7,615	7,302
	Water consumption (million m^3)	3.48	3.37
Environmental effect related to waste or environmental impact originating from business activities	CO_2 emissions (energy related CO_2) (kilotons CO_2e)	427	389
	SOx emissions (tons)	3.1	5.6
	NOx emissions (tons)	42.9	43.1
	Soot and dust emissions (tons)	2.7	4.1
	Releases and transfers of PRTR-designated substances (tons)	586	549
	Waste discharge (kilotons)	69.2	64.5
	Waste to external landfills (kilotons)	1.9	1.7

Economic effects

(Yen in millions)

Classifications	Details	Annual effects of the year ended December 31, 2020
Energy conservation measures	Improve the operations of production facilities and switch to more efficient lighting and air-conditioning systems	770
Zero-emissions measures	Reduce the amount of industrial waste; promote resource recycling	826
	Sales of valuable resources	865
Total		2,461

<Environmental accounting principles>
1) The period is from January 1, 2020 to December 31, 2020.
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.).

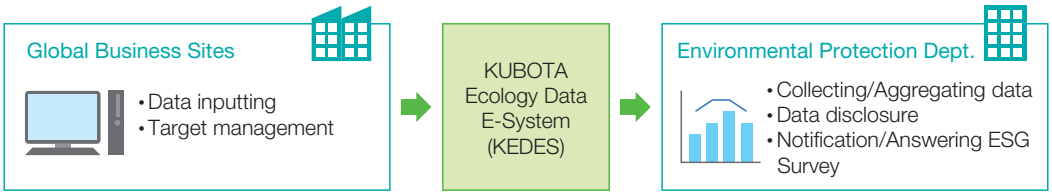
As of the end of FY2020, 42 of the Group's 56 production sites worldwide (acquisition rate of 75%) have acquired environmental management system certification. In Japan, all of its 23 production sites (acquisition rate of 100%) have acquired ISO 14001 certification. Of its 33 overseas production sites, 19 sites (acquisition rate of 58%) 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/sustainability/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

FY	Period		Organizations covered (No. of companies)			
			Kubota/Consolidated subsidiaries*2			Affiliated companies accounted for under the equity method*3
	Data in Japan	Overseas data	Japan	Overseas	Total	
2016	January 2016 to December 2016	January 2016 to December 2016*1	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
2020	January 2020 to December 2020	January 2020 to December 2020	44	128	172	8

*1 For FY2016, 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 FY2016) and four major non-production sites (accounting for over 90% of the employees of non-production sites of the GP Group in FY2015) is estimated. Data of the amount of chemical substances (VOC) handled and VOC emissions is excluded from the calculation.
From FY2017, the data for all of the GP Group sites is calculated based on results.
*2 The coverage of consolidated subsidiaries is 100% for each year.
*3 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 [FY2014] <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). [FY2016 to FY2020] <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) or Emission Factors 2020 (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 "Energy Conservation Laws: Guide to Promoting Shipper's Energy Saving, 6th Edition" (Agency for 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 FY2018.
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)
Ratio of renewable energy usage (%)	• Ratio of renewable energy usage (%) = amount of solar power generated / (amount of solar power generated + amount of purchased electricity)

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 (Ver3.0)
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 and fuel consumed at business sites × CO_2 emissions per unit • CO_2 emission units are based on the LCI database IDEA version 2.3 (Research Laboratory for IDEA, Research Institute of Science for Safety and Sustainability, National Institute of Advanced Industrial Science and Technology, and Japan Environmental Management Association for Industry)
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 FY2019, 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 FY2018. 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 from FY2016-2020
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 and reduction ratio (%)	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.

Third-Party Assurance of Environmental Report

Since 2004, the Kubota Group has received third-party assurance for the purpose of improving the reliability and comprehensiveness of its environmental data. Information that is marked with a symbol indicates that that information has been assessed by a third party. Based on the third-party assurance obtained this reporting year, the KUBOTA REPORT 2021 Full Version received the J-SUS Symbol of the Japanese Association of Assurance Organizations for Sustainability Information (J-SUS). This symbol indicates that an assurance was undertaken by an assurance body certified by J-SUS regarding the reliability of the environmental data presented in the report.

KPMG

Independent Assurance Report

To the President and Representative Director of Kubota Corporation

We were engaged by Kubota Corporation (the "Company") to undertake a limited assurance engagement of the environmental performance indicators marked with "" (the "Indicators") for the period from January 1, 2020 to December 31, 2020 included in its KUBOTA REPORT 2021 Full Version (the "Report") for the fiscal year ended December 31, 2020.

The Company's Responsibility

The Company is responsible for the preparation of the Indicators in accordance with its own reporting criteria (the "Company's reporting criteria"), as described in the Report.

Our Responsibility

Our responsibility is to express a limited assurance conclusion on the Indicators based on the procedures we have performed. We conducted our engagement in accordance with the 'International Standard on Assurance Engagements (ISAE) 3000, Assurance Engagements other than Audits or Reviews of Historical Financial Information' and the 'ISAE 3410, Assurance Engagements on Greenhouse Gas Statements' issued by the International Auditing and Assurance Standards Board. The limited assurance engagement consisted of making inquiries, primarily of persons responsible for the preparation of information presented in the Report, and applying analytical and other procedures, and the procedures performed vary in nature from, and are less in extent than for, a reasonable assurance engagement. The level of assurance provided is thus not as high as that provided by a reasonable assurance engagement. Our assurance procedures included:

- Interviewing the Company's responsible personnel to obtain an understanding of its policy for preparing the Report and reviewing the Company's reporting criteria.
- Inquiring about the design of the systems and methods used to collect and process the Indicators.
- Performing analytical procedures on the Indicators.
- Examining, on a test basis, evidence supporting the generation, aggregation and reporting of the Indicators in conformity with the Company's reporting criteria, and recalculating the Indicators.
- Visiting one of the Company's factories selected on the basis of a risk analysis.
- Evaluating the overall presentation of the Indicators.

Conclusion

Based on the procedures performed, as described above, nothing has come to our attention that causes us to believe that the Indicators in the Report are not prepared, in all material respects, in accordance with the Company's reporting criteria as described in the Report.

Our Independence and Quality Control

We have complied with the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants, which includes independence and other requirements founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior. In accordance with International Standard on Quality Control 1, we maintain a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

KPMG AZSA Sustainability Co., Ltd.
Osaka, Japan
June 7, 2021

J-SUS Symbol

J-SUS

This symbol indicates that an assurance was undertaken by an assurance body certified by J-SUS regarding the reliability of the environmental data presented in the KUBOTA REPORT 2021 Full Version.

Japanese version www.j-sus.org/
English version www.j-sus.org/english.html

Factory Visit

Kubota Hanshin Plant Mukogawa Site