Environmental Report

Environmental Management of the Sumitomo Forestry Group

Environmental Management of the Sumitomo Forestry Group

The Sumitomo Forestry Group advocates contributions to the realization of a sustainable society in its Corporate Philosophy. The Group established its Environmental Philosophy in 1994 and Group-wide Environmental Policies in 2000.

Moreover, in 2015, the Group has initiated the Sumitomo Forestry Group Environmental Policy, bringing together the Environmental Philosophy, the Environmental Policies, the Sumitomo Forestry Group Declaration of Biodiversity, and the Sumitomo Forestry Group's Biodiversity Action Guidelines. The Environmental Policies applies to the product life cycle and all business processes from product and service development, design and manufacturing to material procurement, distribution, waste management, supplier and partner selection, new project launches, mergers, and acquisitions in all businesses of the Sumitomo Forestry Group to promote businesses that contribute to the realization of a sustainable society.

A green procurement survey is conducted for the selection and evaluation of suppliers based on the Sumitomo Forestry Group Environmental Policies to assess risks from both environmental and social perspectives in each business when launching new businesses as well as in mergers and acquisitions.

To share and raise awareness of the Environmental Policies among Group employees, they were printed in employee handbooks. Opportunities to read through and discuss them were also arranged, for example as part of new employee training, ISO 14001 internal environmental auditor training courses and departmental meetings. The environmental policies are also posted in meeting rooms, and the environmental approach of the Sumitomo Forestry Group has been shared with business partners.

Furthermore, the Sumitomo Forestry Group Code of Conduct established in 2017 not only encompasses Group companies but everyone in the supply chain. The Code of Conduct drives coexistence with the environment and clarifies the approach to advance efforts toward the environment, including all of the business partners of Sumitomo Forestry Group.

We formulated the Mid-Term Environmental Management Plan (fiscal 2010 to 2014) with specific numerical targets for the first time in fiscal 2009 as environmental goals and established the Mid-Term CSR Management Plan (fiscal 2015 to 2020) that includes environmental targets in fiscal 2014. The plan was incorporated into CSR budget as concrete numerical targets for each fiscal year and environmental activities have been steadily enhanced through implementation of the PDCA (plan-do-check-act) cycle at each organization.

In May 2019, We have announced the Sumitomo Forestry Group 2021 Mid-Term Management Plan (fiscal 2019 to 2021). As one of four basic policies, the Mid-Term CSR Management Plan (fiscal 2015 to 2020) was revised to promote the integration of business and ESG efforts in addition to the formulation of non-financial targets as Mid-Term Sustainability Targets. In the future, the Sumitomo Forestry Group will further enhance its environmental management in accordance with these goals.

- Sumitomo Forestry Group Corporate Philosophy and Sustainability Management
- Material Issue 3: The Reduction of the Environmental Impact of Our Business Activities
- New Business Plan Risk Assessment

Sumitomo Forestry Group Environmental Policy

Through our experience nurturing forests since our founding, Sumitomo Forestry Group has learned to appreciate the wonders of wood and the importance of nature. As a corporate entity with a close affinity to nature, we will pursue business activities that balance both environmental and economic interests and contribute to a sustainable society.

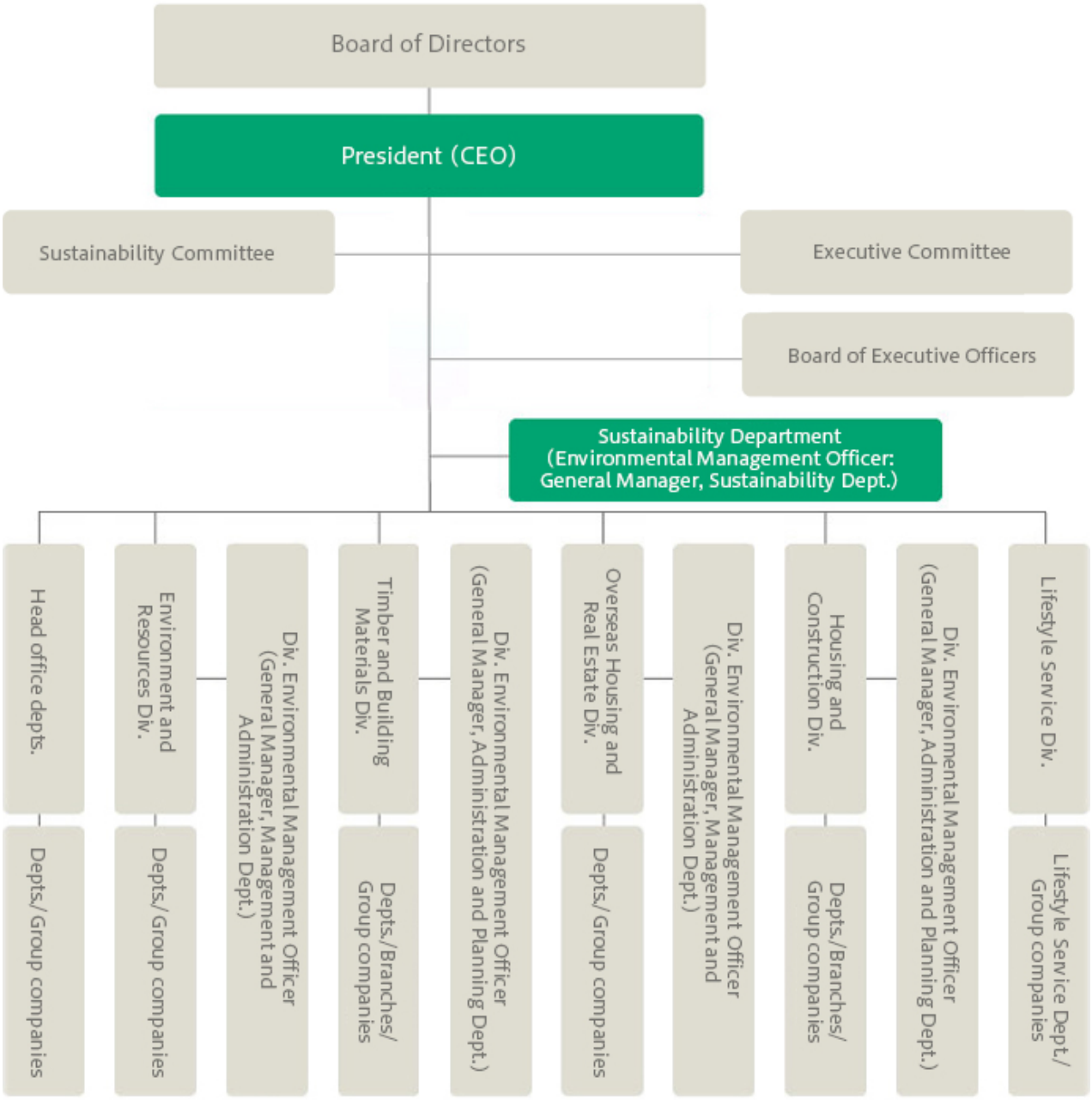
1. **Develop business operations centered on wood and forests**
   We will cultivate forests and their ability to preserve and enhance the rich ecosystem to protect biodiversity, actively utilize timber resources and create new corporate value.
2. **Develop and offer environmentally conscious products and services**
   We will develop and sell products and services that are environmentally conscious throughout the entire product lifecycle.
3. **Minimize and improve environmental impact**
   To minimize and improve environmental impact, we will employ procurement practices that prevent environmental pollution and climate change and promote the effective utilization of natural resources.
4. **Ensure strict legal compliance**
   We will adhere to all environmental laws, rules and regulations, global standards, voluntary standards and accords with stakeholders.
5. **Make continual improvements to our environmental management system**
   We will accurately access environment-related risks associated with our business activities and with a mid-to-long-term outlook, set and work to fulfill yearly environment goals. In addition, we will regularly evaluate our environmental management system and make continual improvements.
6. **Promote environmental education**
   We will provide environmental education for all parties involved in Sumitomo Forestry Group's business operations and encourage voluntary environmental efforts.
7. **Pursue active communication**
   We will actively disclose information about our environmental policies and initiatives and pursue activities that convey the wonders of trees and forests and the importance of nature.

Environmental Management Structure

Environmental Management Structure

To ensure that management is practiced in accordance with the Environmental Policies, whose objective is to contribute to the creation of a sustainable society, the Sumitomo Forestry Group has established an environmental management structure with the President of Sumitomo Forestry assuming overall responsibility.

The General Manager of Sustainability Department under the President (CEO) acts as the Environmental Management Officer to raise the effectiveness of environmental activities by drafting a Sustainability Budget as a quantitative targets for each fiscal year for environmental activities that each department of the Group is advancing and regularly checks in with the Sustainability Committee.



▶ Sustainability Targets of Our Group 2021 Mid-Term Management Plan and Material Issues

Roles of Environmental Management Personnel

- Group Overall Environmental Representative: President (CEO)
- Group Environmental Management Officer: General Manager, Sustainability Dept.
- Division Environmental Management Officers: General Manager, Administration and Planning Dept. (Timber and Building Materials Div.); General Manager, Administration and Planning Dept. (Housing and Construction Div.); General Manager, Management and Administration Dept. (Overseas Housing and Real Estate Div.); General Manager, Management and Administration Dept. (Environment and Resources Div.)
- Department Environmental Managers: General Managers, presidents of group companies, etc.
- Environmental activity personnel: Environmental promotion personnel

ISO 14001 Certification

Sumitomo Forestry introduced an environmental management system in fiscal 1995 and acquired ISO 14001 certification for its housing operations in fiscal 1997 ahead of other players in the housing industry. Certification was subsequently acquired for other operations with all departments and divisions in Japan achieving integrated ISO 14001 certification in fiscal 2002.

The scope of certified Group companies has been extended to businesses that have a large influence on the environment, and today the Group has four certified companies in Japan. Progress is also being made on certification of overseas Group companies, focused on manufacturing companies, with six companies already certified.

As of March 2020, the certification rate of consolidated organizations was 89.7% (based on sales).

ISO 14001 Certification Rate (Based on Sales)

89.7%

Sumitomo Forestry Group ISO 14001 Certification

Company Name		Date acquired	Date renewed (valid for three years)
Expanded Certification at Group Companies in Japan	Sumitomo Forestry Co., Ltd.(excl. overseas operations)	August 2002*1	August 2019*1
	Sumitomo Forestry Landscaping Co., Ltd.	November 2002*2	
	Sumitomo Forestry Crest Co., Ltd.	September 2003*2	
	Sumitomo Forestry Home Tech Co., Ltd.	March 2013*2	
	Japan Bio Energy Co., Ltd.	August 2014*2	
PT. Kutai Timber Indonesia (KTI)		July 2001	September 2019
Nelson Pine Industries Ltd. (NPIL)		July 2003	April 2018
PT. Rimba Partikel Indonesia (RPI)		October 2005	October 2017
PT. AST Indonesia (ASTI)		January 2007	October 2017
Vina Eco Board Co., Ltd. (VECO)		March 2014	March 2020
Pan Asia Packing (PAP)		April 2017	April 2020

*1 Certification was acquired by individual departments and divisions from 1997 before integrated ISO 14001 certification was acquired for the entire company.

*2 Acquired by inclusion in Sumitomo Forestry's integrated certification

Audits by External Certification Bodies

Companies covered by the integrated ISO 14001 certification in Japan undergo routine reviews conducted once a year by certification body JIC Quality Assurance Ltd. In fiscal 2019, 84 departments at 5 companies went under renewal and surveillance reviews for the ISO 14001: 2015 (JISQ 14001: 2015) standards.

As a result of these reviews, eight incompatibilities and 96 points of advice for improvement were identified as matters to be observed. After reviewing report on the corrective measures taken to address the incompatibilities was examined, all of the entities were approved for renewal of registration on August 8, 2019.

In addition to examining methods of improvement and taking action for each of the observation items, notices were issued by the Sustainability Department to share information on any issues common to the Group companies, and internal environmental audits were conducted to check the implementation of preventive measures.

Internal Environmental Audits

In addition to reviews conducted by external certification bodies, companies covered by the ISO 14001 certification periodically carry out internal environmental audits. These audits are implemented by employees who have passed an exam upon completion of an in-house training course taught by third-party instructors to become internal environmental auditors.

Following the amendments of the international standards in September 2015, requiring these courses be taken and passed by all general managers within the scope of the registration in particular enhances understanding about the revisions to these standards and strengthens leadership. As a result, the number of employees certified as internal environmental auditors has reached a cumulative total of 1,297 (as of the end of fiscal 2019).

Internal environmental audits are in the fifth year since the update to the ISO14001:2015 standard. After a full audit of all the departments at five Japanese companies within the scope of the registration, internal environmental audits were conducted at 108 departments from July 2019 to March 2020, following the audits conducted in fiscal 2018 with emphasis on departments that had many points of improvement. When irregularities due to the amendments were found, the audited departments took corrective actions and subsequently submitted the action reports to the audit department. Audit results were reported to management by the General Manager of Sustainability Department and a review was conducted.

Compliance and Violations of Environmental Laws

There were no significant violations* of any, environment-related laws or ordinances in the past five years.

* Violation with a penalty or punishment of one million yen or more

Significant violations in the last five years

0

Environmental Risk Management

Understanding and Responding to Environmental Risks

The Sumitomo Forestry Group is aware of the risk upon our business activities from environmental changes such as climate change or reduced biodiversity and works to gather related information, analyze this information as necessary as a way to evaluate business risks.

We also determined specific measures as evaluation metrics in each department for risk with the potential to arise in daily operations and report on the progress of those measures to the Risk Management Committee each quarter while the Sustainability Committee formulates measures for risk with the potential to arise in the medium to long term. Risks with the potential to high impact business are reported to the Board of Directors to discuss their countermeasures. In fiscal 2019, the Sustainability Committee invited instructors from outside the company to teach a Risk and Opportunity of ESG Investment and Corporate Strategy study session. This seminar discussed specific challenges related to mainly climate change such as amendments to SBT certification standards and RE100 trends.

▶ Risk Management Framework

Climate Change and Biodiversity-related Risks and Strategies

Responding to Natural Disasters

Damage from a major earthquake, windstorm, flood or other natural disaster could result in significant costs arising from restoring operations at facilities, verifying the safety of delivered housing products, delays in the completion and handover of contracted properties, or other events. Such costs could influence the Group's operating results and financial position.

As countermeasures, Sumitomo Forestry promotes the sale of homes built with highly seismic resistant BF construction method as well as the sale of resilience housing equipped with the functionality to sustain living for a certain period of time even if lifelines are cut. Furthermore, we are building a service framework that aims to provide rapid assistance through IoT technology that rapidly grasps the damage during a disaster in real time.

▶ HIGHLIGHT 2 : Building homes that protect lives and lifestyles
▶ BF Method
▶ Housing Sales Adapted to Climate Change

Responding to Changes in the Wood Cultivation and Procurement Regulations

Because Sumitomo Forestry positions wood as its principal material and product, the risk of higher costs as well as the risk of having to change suppliers in the event of limitations being imposed due to the depletion of timber resources or changes to habitats resulting from climate change and the loss of biodiversity.

Sumitomo Forestry imports timber and wood products from more than 20 different countries and strives to place representatives in primary locations to collect information to mitigate the risk of changes in timber cultivation and timber procurement regulations. The company also makes efforts to verify legal compliance, such as deploying employees from the head office. We work to procure legally harvested timber throughout the entire Group in accordance with the Clean Wood Act enacted in May 2017, such as becoming the first company to register in Japan.

▶ Procurement Initiatives (Distribution Business)

Setting Carbon Pricing Such as Mandatory Emission Reductions

As reduction of greenhouse gases advances globally, there is the possibility that reduction obligations will be imposed upon businesses in countries where the Sumitomo Forestry Group has bases. If Group companies with bases in these countries are unable to meet reduction obligations, they will be required to purchase emission credits, creating the risk of increased business costs.

Even in Japan, carbon pricing has been implemented due to Tax for Climate change measures enforced in October 2012. Achieving targets outlined in the Paris Agreement could result in changes such as higher taxes and the adoption of new carbon taxes, which could influence business activities and costs.

As a countermeasure, Sumitomo Forestry sets greenhouse gas reduction target for each Group company and department and pursues those reductions based on the numerical targets that are drafted each fiscal year.

▶ Sustainability Targets of Our Group 2021 Mid-Term Management Plan and Material Issues

Responding to Energy Supply Shortages

In countries like New Zealand, where hydroelectric power is used, there is a risk that a change in the amount of rainfall will cause dam levels to fall and lead to a disruption of supply from hydroelectric power stations, forcing Sumitomo Forestry Group sites in those countries to suspend plant operations.

As a countermeasure, Sumitomo Forestry sets greenhouse gas reduction targets for each Group company and department and promotes energy savings while pursuing those reductions based on the numerical targets that are drafted each fiscal year.

Corporate Image Deterioration

Any failure in addressing various risks such as climate change measures and the preservation of biodiversity may be detrimental to the corporate image, directly affecting sales and other performance indicators.

Sumitomo Forestry comprehensively analyzes and addresses risks from environmental, social and governance perspectives in the short to medium and long term through the Risk Management Committee and Sustainability Committee.

▶ Risk Management

Responding to Environmental Laws and Regulations

The Sumitomo Forestry Group is striving to reduce and to prevent the manifestation of legal risks such as the disposal of industrial waste, soil and water pollution caused by toxic substances, noise and vibration.

In fiscal 2019, there were no significant violations of any environment-related laws or regulations or any grave environmental incidents.

Processing of Industrial Waste

Construction-related waste makes up the highest percentage of industrial waste that is illegally dumped in Japan. Viewing the environmental risks presented by the processing of industrial waste as one of the biggest in terms of the potential impact on society and business, the Sumitomo Forestry Group works to ensure that industrial waste is disposed of appropriately.

Specifically, to comply with the Waste Management and Public Cleansing Act and other related laws and regulations, the Group has established a set of industrial waste management regulations covering appropriate disposal, reduction, recycling and reuse of industrial, as well as manufacturing regulations stipulating standards essential for production activities. In keeping with these regulations, voluntary audits of waste manifests and terms of outsourcing agreements with waste processors are carried out twice a year for each Group company office in Japan emitting industrial waste. If an audit concludes that corrective action is required, appropriate action is taken and it is subsequently confirmed through reports submitted in line with the industrial waste management system that waste is being properly treated.

In addition, industrial waste managers at each office conduct site checks of contractors' waste treatment plants at least once a year. In fiscal 2019, managers from the Housing and Construction Division conducted approximately 639 on-site checks at roughly 550 waste treatment plants run by 335 waste treatment contractors. Divisions other than the Housing and Construction Division as well as offices of Group companies are being instructed to continue using waste treatment plants which the Housing Division has already inspected.

To be able to determine whether industrial waste is being processed in an appropriate manner, the Group asks waste treatment contractors to employ electronic manifests. All branches of the Housing and Construction Division as well as all contractors accepting industrial waste from new housing construction sites have already introduced electronic manifests. In fiscal 2019, 99.7% of all manifests, including those for housing demolition waste, were electronic.

In conjunction with this, training is also provided for employees who coordinate the processing of industrial waste. In fiscal 2019, a total of 18 people participated, including newly appointed personnel in charge of industrial waste processing at Group companies in Japan. Moreover, training was conducted in the same way for building contractors, demolition contractors and industrial waste disposal operators. Furthermore, in April 2020, the Sumitomo Forestry Group created an e-learning program on basic waste management to teach the fundamentals of industrial waste management and built a system for employees to undergo this curriculum via the intranet.

▶ Promotion of Waste Reduction and Recycling

Soil Contamination

Soil contamination is difficult to discover as contaminants build up and spread underground out of sight. The Sumitomo Forestry Group implements soil contamination countermeasures for land owned or administered by the Group and conducts voluntary soil contamination studies prior to new land purchases in the subdivision business. We are in compliance on land applicable to the Soil Contamination Countermeasures Act.

Water Pollution

Water pollution creates the risks of human health being directly affected by contamination of drinking water and of contamination affecting the habitats of organisms living in rivers, lakes and seas. Inspections entrusted to external measurement agencies are conducted once every two months and daily water quality tests are done internally through automatic COD measurement devices for the waste water expelled from waste water processing facilities in the Sumitomo Forestry Crest Imari Plant, which is a specified office under the amended Water Pollution Control Act of Japan, and the inspection results are issued to the local municipals every six months.

Water is also sampled and inspected by the prefecture once a year and by the city three times a year. Through this measure, all inspections found the level of water pollution to be within the statutory limit for wastewater.

In addition, the Tsukuba Research Institute is considered a specified office under the amended Water Pollution Control Act of Japan and therefore, delivers notification of updates to some testing equipment and new installations according to this law. The Institute also conducts water quality inspections once every month through an external measurement agency to monitor those results and issue reports to Tsukuba City once every six months.

▶ Management of Hazardous Chemical Substances and Appropriate Disposal

Contamination by Hazardous Chemical Substances

Contamination caused by hazardous chemical substances leads to risks of a major impact on human health or the environment and the risk of a disaster. The Sumitomo Forestry Group keeps track of amounts of hazardous chemical substances including volatile organic compounds (VOCs) used and discharged as part of appropriate management, meanwhile making an effort to reduce the use of these chemicals.

The Group takes appropriate action in response to the Air Pollution Control Act. Sumitomo Forestry Crest's Niihama Plant equipped with boilers and Kagoshima and Shizuoka plants equipped with incinerator make regular measurements of emission volumes and concentrations of NOx, SOx and soot and dust, and dioxins, respectively, and monitor that these figures are maintained below the statutory limits.

▶ Management of Hazardous Chemical Substances and Appropriate Disposal

Noise and Vibrations

Sumitomo Forestry makes an effort to prevent noise and vibrations during housing construction. When complaints about noise or vibrations are received, the circumstances are recorded and the information is shared with the rest of Group to prevent the occurrence of similar incidents.

Sumitomo Forestry Crest confirms that noise levels within the site boundaries of plants are below the statutory limit by taking regular measurements.

No complaints about noise or vibrations having a major impact on the environment were received from local residents during fiscal 2019.

Global Warming (Addressing the Act on Rational Use and Proper Management of Fluorocarbons)

In April 2015, the Fluorocarbons Recovery and Destruction Law came into force for the purpose of promoting drastic measures over the entire lifecycle of chlorofluorocarbons that have a strong greenhouse effect, from manufacture to disposal.

Since April 2020, regulation based on the law have been further strengthened, and the Group has taken steps to disseminate the details and take appropriate measures.

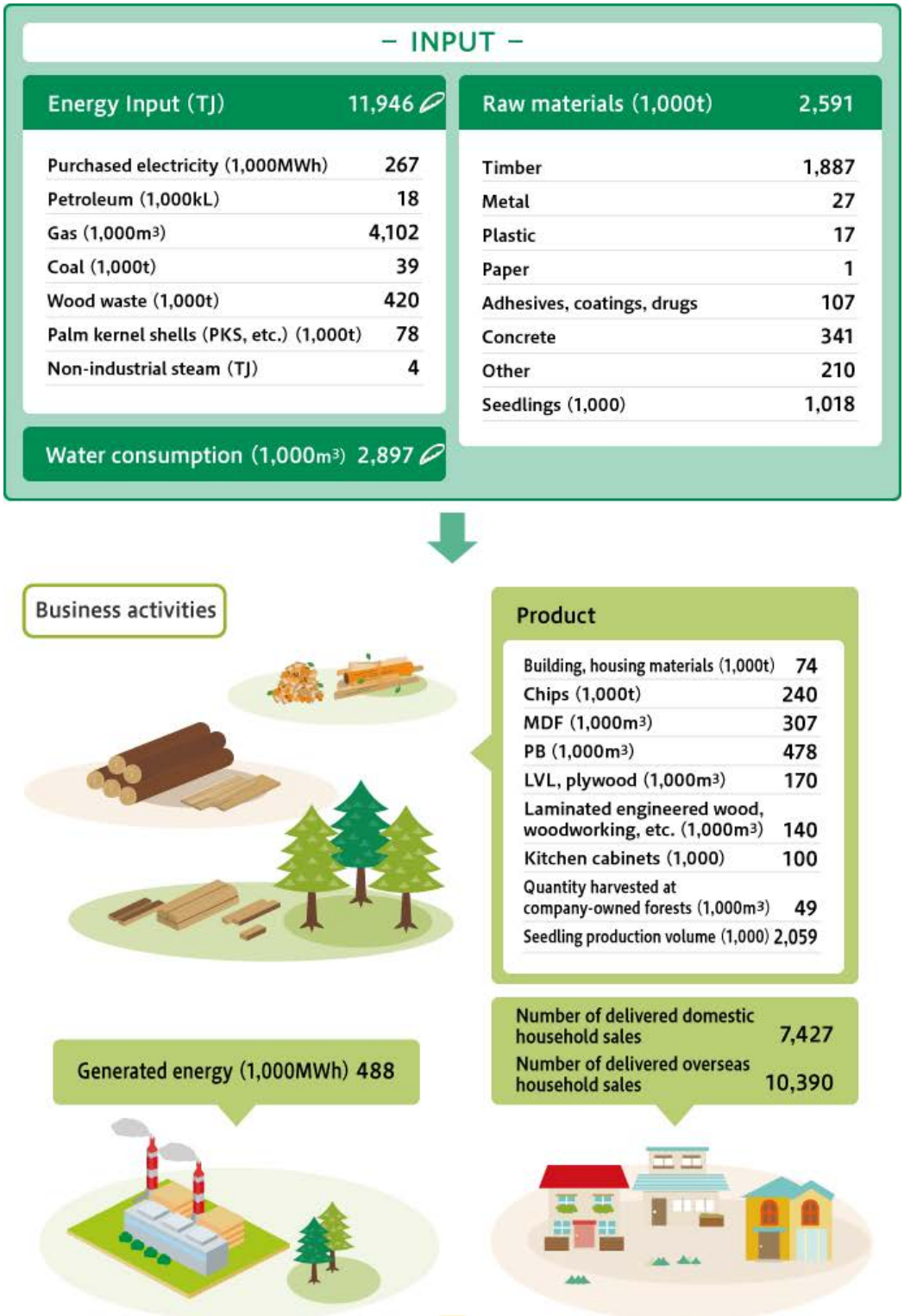
In most cases, the Sumitomo Forestry Group leases its offices in buildings, and since the Group is primarily engaged in the construction and sale of housing and the manufacture and distribution of processed wood products, it does not own (or manage) that much commercial refrigeration and air conditioning equipment (air-conditioners, refrigerators, etc.). However, in response to the enactment of this law, we are conducting periodic simple inspections of the same equipment that is using fluorocarbons as a coolant as well as executing legal and periodic inspections for devices with compressors that have 7.5kW or higher rated output. Furthermore, Sumitomo Forestry promotes the transition to products that do not use fluorocarbons in accordance with the Law on Promoting Green Purchasing when replacing existing equipment or purchasing new equipment.

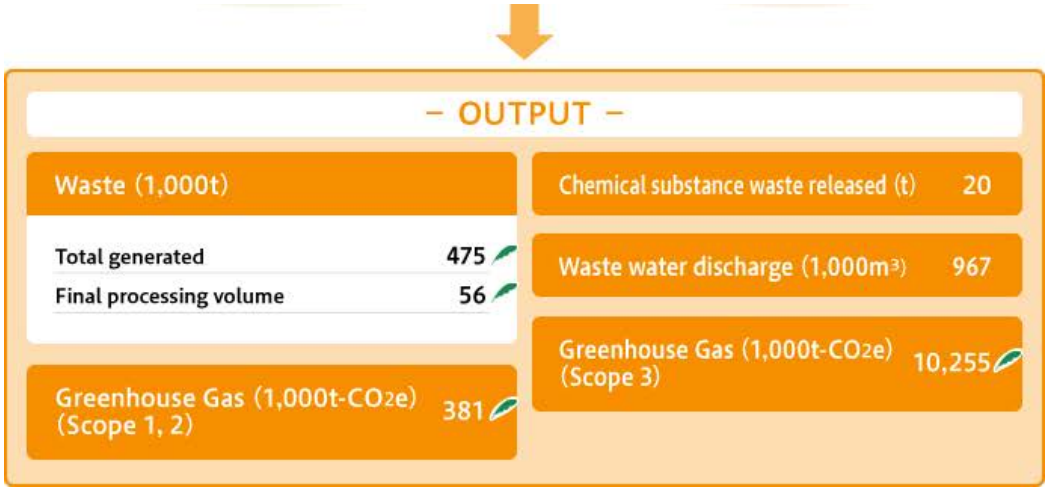
Balance of Input & Output

Balance of Input & Output

The Sumitomo Forestry Group accurately understands how its business activities impact the environment and make evaluations and manage them in its environmental management. As such, data on environmental impact is collected at each stage from energy and raw material input to manufacturing and disposal per plant and business to utilize them for reduction initiatives.

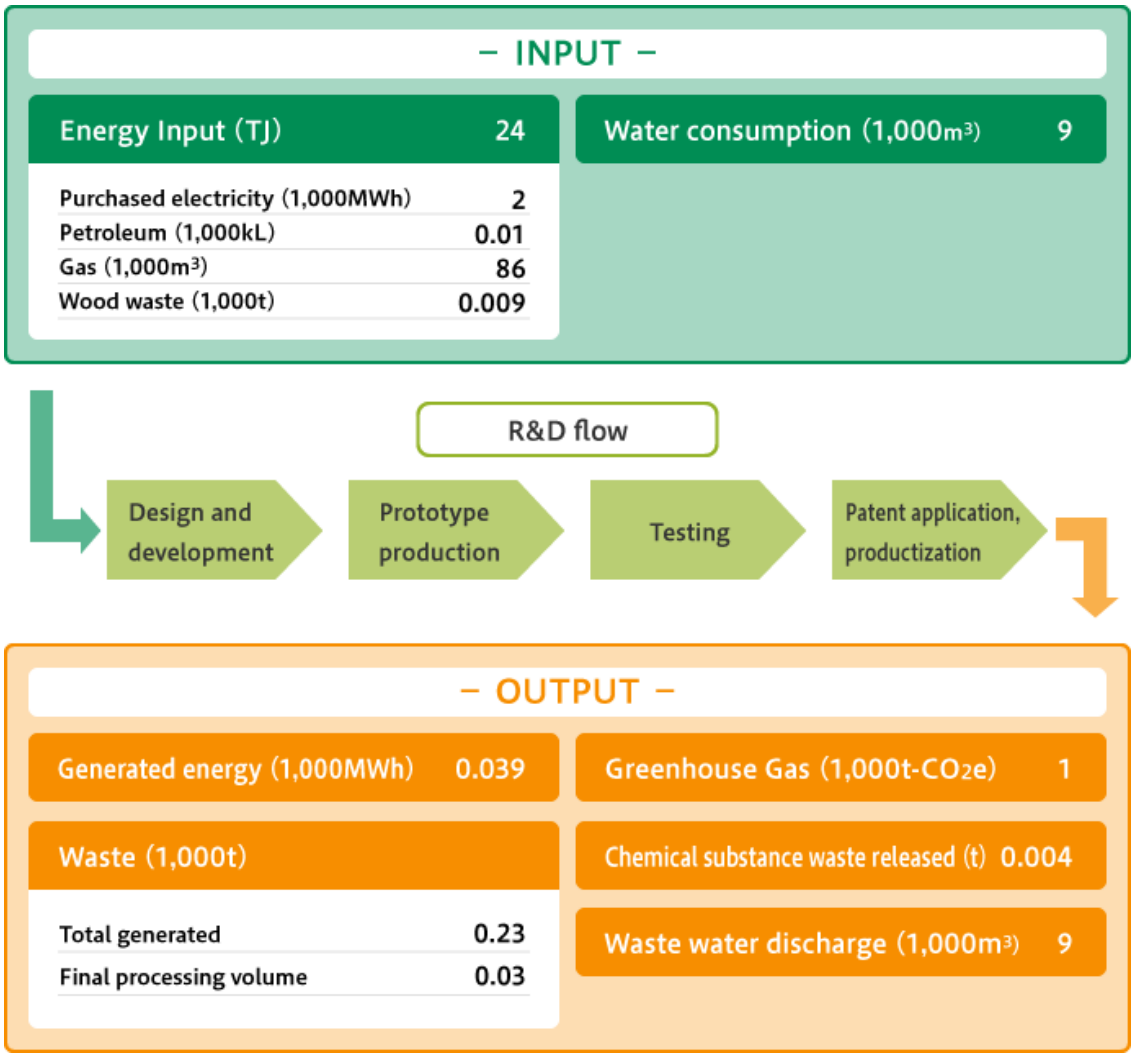
Fiscal 2019 Sumitomo Forestry Group Balance of Input & Output





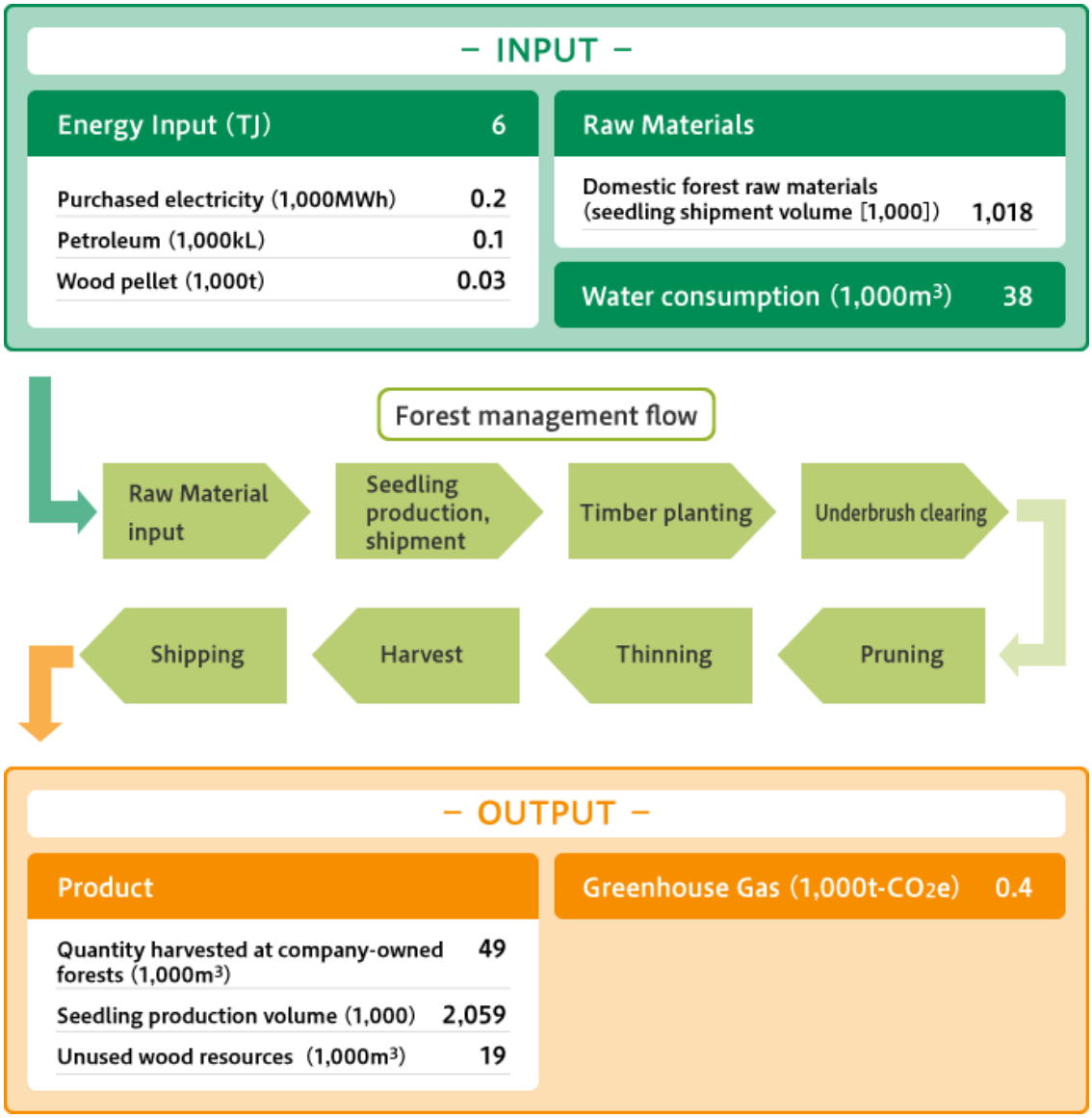
▶ About symbol for Independent assurance

Research & Development*



* Subject: Tsukuba Research Institute

Forest Management*



* Subjects: Forestry offices (Hyuga, Niihama, Osaka, and Mombetsu); seedling tree farming centers (Togo, Motoyama, Gifu, Watarase, and Mombetsu)

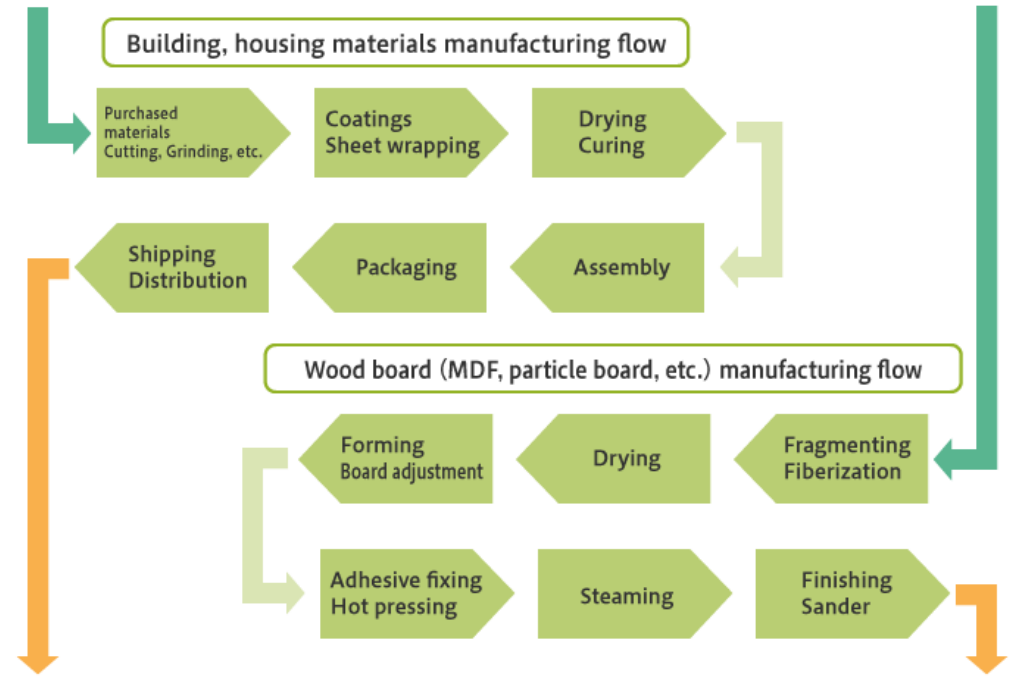
Manufacturing Business*

– INPUT –

Energy Input (TJ)	4,221
Purchased electricity (1,000MWh)	220
Petroleum (1,000kL)	4
Gas (1,000m³)	2,369
Wood waste (1,000t)	118
Waste plastic (1,000t)	0.01

Water consumption (1,000m³)	1,003

Raw materials (1,000t)	1,918
Timber	1,782
Metal	3
Plastic	5
Paper	1
Adhesives, coatings, drugs	102
Water purification properties	20
Other	4



– OUTPUT –

Product	
Building, housing materials (1,000t)	74
Chips (1,000t)	240
MDF (1,000m³)	307
PB (1,000m³)	478
LVL, plywood (1,000m³)	170
Laminated engineered wood, woodworking, etc. (1,000m³)	140
Kitchen cabinets (1,000)	100

Chemical substance waste released (t)	18

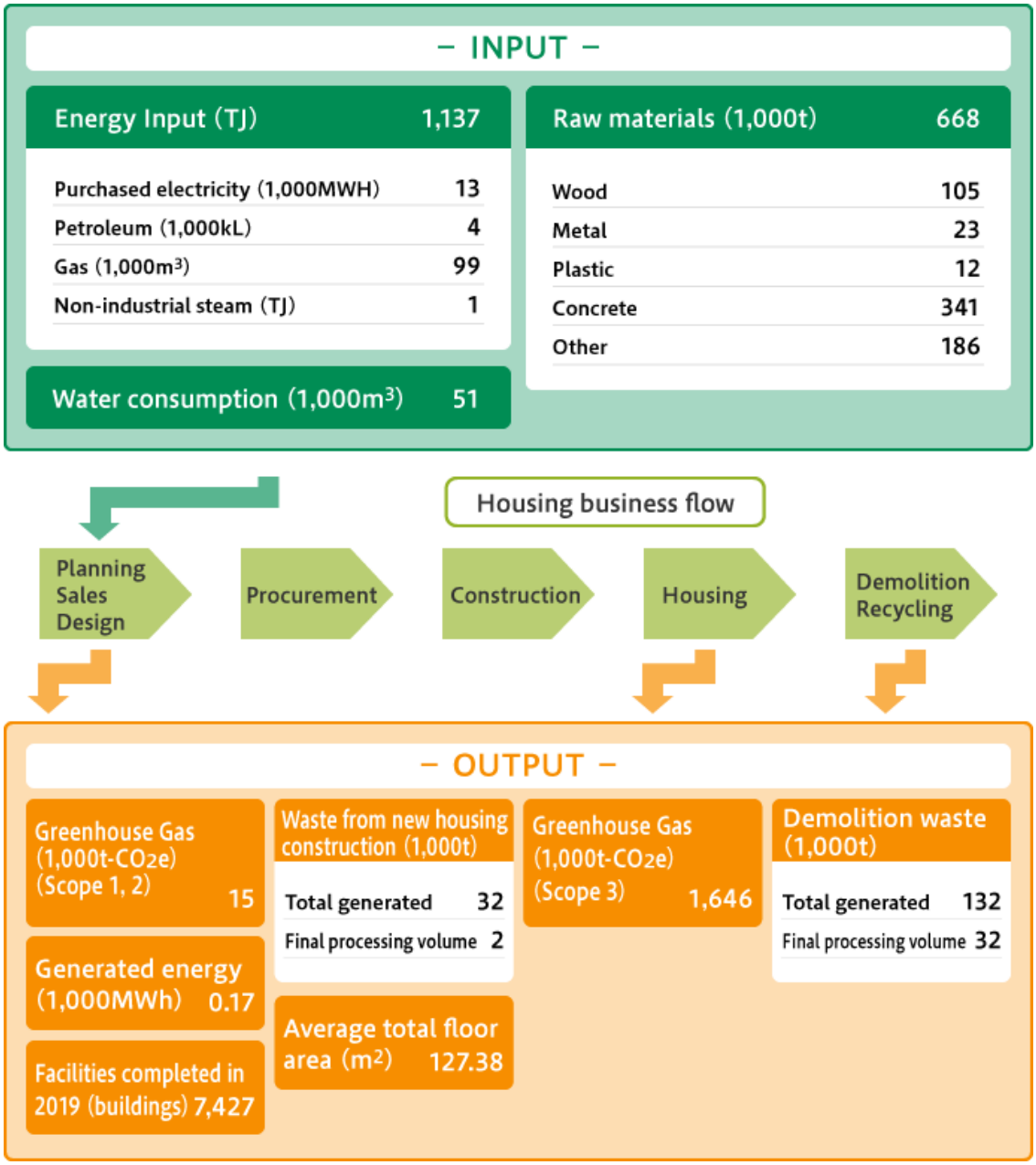
Waste (1,000t)	
Total generated	249
Final processing volume	6

Greenhouse Gas (1,000t-CO_2e)	116

Waste water discharge (1,000m³)	443

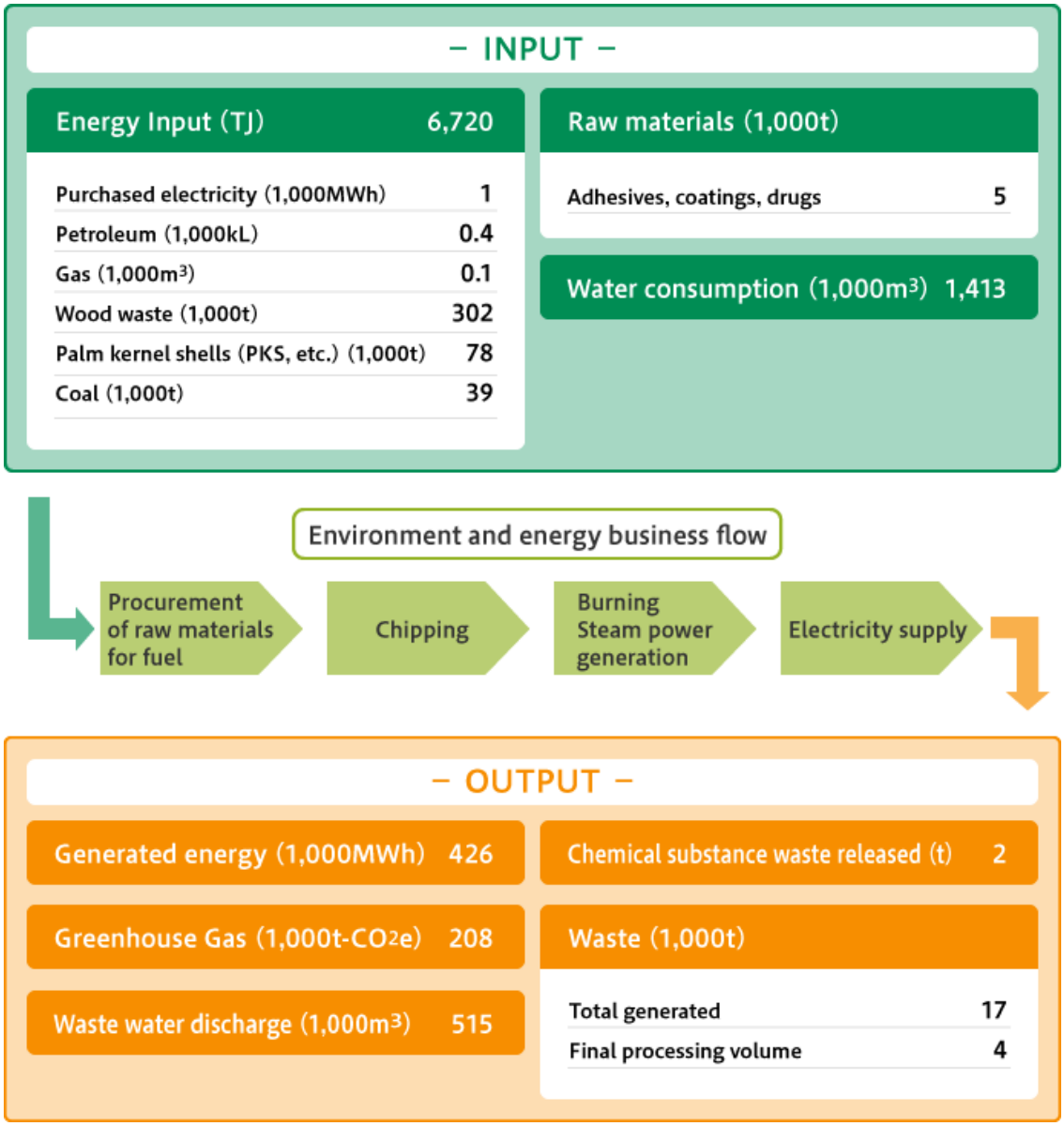
* Subjects: Sumitomo Forestry Crest Co., Ltd. (Kashima Plant, Shizuoka Plant, Niihama Plant and Imari Plant), Sumitomo Forestry Landscaping (Shinshiro Plant and Tobishima Plant), Kutai Timber Indonesia (KTI, Indonesia), Rimba Partikel Indonesia (RPI, Indonesia), Sinar Rimba Pasifik (SRP, Indonesia), AST Indonesia (AST, Indonesia), Nelson Pine Industries (NPIL, New Zealand), Vina Eco Board (VECO, Vietnam), Canyon Creek Cabinet Company (America), Japan Bio Energy, Okhotsk Bio Energy, Michinoku Bio Energy.

Housing and Construction Business (Domestic)*



* Boundary: Sumitomo Forestry Housing and Construction Division and Sumitomo Forestry Home Engineering

Environmental Energy Business*



* Subjects: Mombetsu Biomass Power Generation, Hachinohe Biomass Power Generation

▶ Boundaries and Method of Data Aggregation (Balance of Input & Output)

Boundaries and Method of Data Aggregation (Balance of Input & Output)

Boundaries (Organizational Range)

Classification	Boundary
All Business Activities	All Sumitomo Forestry Group Companies
Research & Development	Tsukuba Research Institute
Forest Management	Forestry offices (Hyuga, Niihama, Osaka, and Mombetsu); seedling tree farming centers (Hyuga, Motoyama, Gero, Midori, Mombetsu, and Minamiaizu)
Manufacturing Business	Sumitomo Forestry Crest (Kashima Plant, Shizuoka Plant, Niihama Plant and Imari Plant), Sumitomo Forestry Landscaping (Shinshiro Plant and Tobishima Plant), Japan Bio Energy, Okhotsk Bio Energy, Michinoku Bio Energy, Rimba Partikel Indonesia, AST Indonesia, Kutai Timber Indonesia, Nelson Pine Industries, Vina Eco Board, Sinar Rimba Pasifik and Canyon Creek Cabinet Company
Environmental Energy Business	Mombetsu Biomass Electric Power Co., Hachinohe Biomass Electric Power Co.
Housing and Construction Business (Domestic)	Sumitomo Forestry (Housing and Construction Division), Sumitomo Forestry Home Tech, Sumitomo Forestry Home Engineering, Sumitomo Forestry Landscaping, Sumitomo Forestry Archi Techno
Offices and other sites	Sumitomo Forestry and Group companies other than the above

▶ All Sumitomo Forestry Group Companies

Prerequisites

Classification	Prerequisites	
Research & Development	Energy/CO_2	Energy use and CO_2 emissions at research institutes
	Raw Materials	Raw materials used during research and development
	Water	Water used during research and development
	Waste	Waste produced during research and development
Forest Management	Energy/CO_2	Energy use and CO_2 emissions from harvesting and seedbed production at Company-owned forests
	Raw Materials	Raw materials use during harvesting and seedbed production at Company-owned forests

Classification	Prerequisites	
Forest Management	Water	Water use from harvesting and seedbed production at Company-owned forests
	Waste	Waste produced during harvesting and seedbed production at Company-owned forests
Manufacturing Business	Energy/CO_2	Energy use and CO_2 emissions at each plant
	Raw Materials	Raw materials used during production of wood products, construction materials and horticulture
	Water	Water used during production of wood products, construction materials and horticulture
	Waste	Waste produced during production of wood products, construction materials and horticulture
Environmental Energy Business	Energy/CO_2	Energy use and CO_2 emissions at power generation plants
	Raw Materials	Raw materials used during power generation
	Water	Water used during power generation
	Waste	Waste produced during power generation
Housing and Construction Business (Domestic)	Energy/CO_2	Energy use and CO_2 emissions for business sites (including model homes) related to the housing business
	Raw Materials	Materials invested in housing construction
	Water	Water use at business sites related to the housing business
	Waste	Waste emitted from housing construction (including renovations) and demolition
Offices and other sites	Energy/CO_2	Energy use and CO_2 emissions at Sumitomo Forestry and other business sites of Group companies not related to domestic or overseas manufacturing or design, construction and sales of houses
	Water	Water use at Sumitomo Forestry and other business sites of Group companies not related to domestic or overseas manufacturing or design, construction and sales of houses
	Waste	Waste produced at Sumitomo Forestry and other business sites of Group companies not related to domestic or overseas manufacturing or design, construction and sales of houses

Aggregation Method

CO_2: Refer to the pages below

▶ Boundaries and Methods of CO_2 Emissions Calculation

Waste: Calculating Emissions with Data Collected from Manifests

Responding to TCFD

Responding to TCFD

Established by the direction of the Financial Stability Board (FSB) in April 2015, the Task Force on Climate-related Financial Disclosures (TCFD) issued its final report in June 2017. The TCFD requires the disclosure of information on four aspects of climate change risks and opportunities: governance, strategy, risk management, and metrics and targets. In particular, strategic aspects recommend disclosure about strategic resilience according to investigations conducted according to future climate scenarios. Sumitomo Forestry Group has undertaken this as one of its agenda items, recognized the risks associated with climate change as serious risks, and announced its support to the TCFD in July 2018. Based on the TCFD recommendations, scenario analysis was begun the same year.

In the initial scenario analysis, the timber and building materials, and the housing and construction business— core businesses of Sumitomo Forestry—examined the circumstances in 2030 according to two scenarios anticipating the global average temperature rising by two degrees Celsius and four degrees Celsius compared to temperatures before the industrial revolution. These findings were reported to the Sustainability Committee and Board of Directors. In addition, the Sumitomo Forestry Group has set targets in the Mid-Term Sustainability Targets for further initiatives in the future based on the scenario analyses.

▶ Material Issue 5: Corporate Ethics and Governance Structures

Governance Related to the Issue of Climate Change

The Sumitomo Forestry Group will promote the response to issue of climate change centered on the Sustainability Committee, similarly as other ESG challenges. The Sustainability Committee, chaired by the President and composed of members made up of executive officers, directors and each divisional manager, formulates and promotes initiatives for medium to long-term ESG challenges related to the sustainability of the Sumitomo Forestry Group in addition to analyzing risks and opportunities, conducting progress management of the Mid-Term Sustainability Targets, which incorporate business strategies toward achieving the SDGs, including monitoring of implementation and effectiveness of the Our Values and Code of Conduct. The content of all committee proceedings is reported to the Board of Directors.

▶ Sustainability Committee
▶ Risk Management Framework

Identifying and Evaluating Risks and Opportunities

In business operations in which we position wood as our principal material and product, a major transitional business risk that we face is the increase in timber procurement costs associated with stricter regulations such as forest protection policies and logging regulations. Examples of physical risks include the increased costs associated with delayed construction processes and decreased efficiency of housing construction caused by increasingly intense natural disasters and the impact of abnormal weather involving temperature rises. At the same time, the advance of regulations against fossil fuels provide a boost (opportunities) for our biomass energy generation operations business and demand for fuels made from wood chips.

Our corporate headquarters has worked with each division in these scenario analyses to identify risks and opportunities and to evaluate the impact mainly from financial aspects. We discussed measures to prevent risks with respect to the items identified as material risks and opportunities, and reported them to the Sustainability Committee and the Board of Directors. Moving forward, we will increase the accuracy of our scenario analyses and discuss how to reflect them in our business planning, while moving forward with the creation of business strategies for the resilience that will see us through into an uncertain future.

Timber and Building Materials Division

	Risk category	Impact on operations	Risk level
Transition Risks	Carbon emission targets, policies in each country	• Increased timber procurement costs due to policies related to forest carbon sinks.	High
	Forest conservation policies	• Increased timber procurement costs due to logging taxes, logging fees and other.	High
	Energy conservation and other subsidy policies	• Increased revenues from the promotion of wood biomass operations. • On the other hand, if subsidy policies are abolished, decreased revenues.	High
	Changes in energy mix	• Increased revenues if biomass is incorporated into each country's sustainability criteria. • On the other hand, higher costs of biomass fuel (wood chips) with an increase in demand.	High
	Economic stagnation with global warming regulations	• A fall in demand for wood building materials and a decrease in revenues if construction is suppressed.	High
	Increase / decrease in demand for important products and increase / decrease in product price		Low to moderate
	Advances in next-generation technologies		Low to moderate
	Popularization of renewable energy/energy conservation technologies		Low to moderate
	Changes in investor evaluation		Low to moderate
Physical Risks	Rise in average temperatures	• Increased timber procurement costs with forest fires and tree diseases, insects and other. • On the other hand, rising temperatures and increased precipitation will lengthen the growth period. This will increase productivity, which may reduce timber procurement costs.	High
	Changes in rainfall and climate patterns	• Increased timber procurement costs with changes in the regions where we can plant and procure trees.	High
	Intensification of abnormal weather	• A fall in revenues due to factory shutdowns. Increased timber procurement costs with a decline in forest resources.	High

Housing and Construction Division

	Risk category	Impact on operations	Risk level
Transition Risks	Carbon emission targets, policies in each country	• Increased timber procurement costs due to policies related to forest carbon sinks.	High
	Forest conservation policies	• Increased timber procurement costs due to logging taxes, logging fees and other.	High
	Policies related to buildings	• Additional investments and renovation costs to comply with policies. • A continuation of the subsidy program will create a monetary incentive. Depending on the policy, this may impact market competitiveness and revenues.	High
	Changes in customer evaluation	• If customer awareness of climate change increases, customer preference will move toward the use of certified timber, increasing procurement costs.	High
	Energy conservation and other subsidy policies		Low to moderate
	Fossil fuel subsidy program		Low to moderate
	Changes in energy mix		Low to moderate
	Changes in investor evaluation		Low to moderate
Physical Risks	Intensification of abnormal weather	• In the event of a major natural disaster, increased construction costs due to schedule delays, equipment repairs or replacement, and other factors. An increase in extremely hot days will lower outdoor work productivity. • Increased costs due to construction delays and maintaining and enhancing worker health.	High

▶ HIGHLIGHT 7: A Strategic Response to Climate Change
▶ Climate Change and Biodiversity-related Risks and Strategies

Climate Change Related Opportunities and Strategies

Expanding Housing Sales in Concert with Government ZEH Promotion

Japan has launched policy targets that aim for more than half of all custom-built detached houses constructed by housing manufacturers and other companies to be ZEH compliant by 2020 as a countermeasure global warming approved by Cabinet decision in May 2016.

Working in concert with this policy, Sumitomo Forestry is promoting ZEH housing sales with a ZEH order ratio goal set in the Mid-Term Sustainability Targets while also leveraging the appeal of Double Power Generation that distinguishes our ZEH homes by using both solar panel cells and fuel cell batteries for residential use. This gives us a competitive edge that is boosting our ZEH ratio.

In the 2030 scenario analyses, the ZEH ratio required by the government is even higher in the scenario with a 4-degree Celsius rise while a ZEH with even higher energy efficiency becomes the standard in the scenario with a 2-degree Celsius rise. In both scenarios, we anticipate an increase in market competitiveness for Sumitomo Forestry homes due to our technical development capabilities.

* Values based on orders include ZEH and Nearly ZEH. ZEH Standardization Performance (FY2019) submitted to Sustainable Open Innovation Initiative is 51%.

Percentage of orders for ZEH type houses out of new custom-built detached housings Target (%) (FY2021)

80%*

Percentage of orders for ZEH type houses out of new custom-built detached housings Results (%) (FY2019)

48.2%*

▶ Promotion of Net Zero Energy House (ZEH) Specifications

Expanding Renewable Energy Demand

The need for renewable energy sources such as biomass power generation and solar power generation is increasing as a means of countering climate change. We forecast greater profitability by expanding the supply of wood chips for fuel for biomass power generation.

The Sumitomo Forestry Group wood biomass power generation business expanded to four domestic locations by March 2019. Once the Kanda Biomass Power Generation Plant, slated for completion in Fukuoka Prefecture in 2021, begins operation, the Group will have a total power generation capacity of roughly 177 MW, which will supply electricity to approximately 374,000 households.

Our scenario analyses forecast biomass power generation which currently makes up 1.7% of the power composition in Japan will rise to 3.7% with a 4-degree Celsius rise and 4.6 with a 2-degree Celsius rise by 2030 in light of the overall Agency for Natural Resources and Energy policies to realize the ideal energy mix toward 2030. The Sumitomo Forestry Group anticipates growing sales in the biofuel chip supply business due to these policies.

Amount of biofuel material used (such as wood chips and pellets) Target (t) (FY2021)

1,363,930t

Amount of biofuel material used (such as wood chips and pellets) Results (t) (FY2019)

1,112,224t

▶ Material Issue 1: Ongoing Timber and Materials Procurement that Considers Sustainability and Biodiversity

Climate Change Countermeasure Metrics and Targets

At Sumitomo Forestry, our climate change countermeasures are driven by quantitative targets that are set each fiscal year by each department within each group company based on the Sustainability Targets, SBT and RE100 as metrics by which climate-related risks and opportunities are evaluated and managed.

- Sustainability Targets of Our Group 2021 Mid-Term Management Plan and Material Issues
- Material Issue 3: The Reduction of the Environmental Impact of Our Business Activities
- Saving of Energy and Reduction of Greenhouse Gas Emissions from Business Activities

Saving of Energy and Reduction of Greenhouse Gas Emissions from Business Activities

Establishment and Certification of Science Based Targets (SBT)

As the impact of climate change becomes more urgent globally, companies are being asked to reduce their emissions of greenhouse gases as a measure to counter global warming. The Sumitomo Forestry Group has announced the formulation of SBTi* and set new greenhouse gas reduction targets for the entire Group in June 2017 and was certified as SBT in July 2018. Its progress and results are explained below.

SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

1. **Scope 1&2: 21% reduction of greenhouse gas emissions compared to 2017 (base year) by 2030.**
2. **Scope 3: 16% reduction of total greenhouse gas emissions from Category 1 and Category 11 compared to 2017 (base year) by 2030.**

Sumitomo Forestry Group will further strengthen its energy-saving activities, promote use of renewable energy, and other initiatives to reduce greenhouse gas emissions and mitigate climate change based on the SBT.

* The SBTi was established in 2015 as a collaboration of four organizations - CDP (formerly the Carbon Disclosure Project), the UN Global Compact, the World Resources Institute (WRI) and the World Wide Fund for Nature (WWF). The SBTi defines and promotes best practice in science-based target setting, to help companies determine a pathway for reducing their emissions in line with what is required to keep global temperature increase below 2 degrees Celsius compared to pre-industrial temperatures.
In Japan, the Ministry of the Environment has translated this in Japanese as “Corporate 2°C Target" and is supporting company efforts.

Toward to SBT Certification Goals

In July 2018, the Sumitomo Forestry Group greenhouse gas emissions reduction targets have been officially approved by international SBT initiative (SBTi). Its progress and results are explained below.

Target Details	Base Year FY2017 t-CO_2e	FY2019 t-CO_2e	Rate of Change %
1. Scope 1&2: 21% reduction of greenhouse gas emissions compared to 2017 (base year) by 2030.	369,785	380,641*1	2.9
2. Scope 3: 16% reduction of total greenhouse gas emissions from Category 1 and Category 11 compared to 2017 (base year) by 2030.	8,895,066	9,324,602*2	4.8

*1 The fiscal 2019 increase in greenhouse gas emissions was caused by the start of full operations in April 2018 at the Hachinohe Biomass Power Generation plant.

*2 The fiscal 2019 increase in greenhouse gas emissions was caused by the increase in the number of delivered overseas household sales in the Overseas Housing and Real Estate Division.

▶ Material Issue 3: The Reduction of the Environmental Impact of Our Business Activities

Aiming for 100% Renewable Energy and Joining the RE100

The Sumitomo Forestry Group positions reduction of environmental impact of our business activities as one material issue that needs to be addressed and strives to engage in energy-saving activities and use of renewable energy. As part of these initiatives, we joined the international RE100* initiative that aims for 100% of electricity used to be from renewable energy in March 2020 to accelerate our efforts to reduce greenhouse gases.

By 2040, we aim to utilize 100% renewable energy for the electricity used for our Group business activities and for the fuel for our power generation operations.

Sumitomo Forestry Group's implementation of renewable energy includes solar power generation panels installed at our housing exhibition sites and generated power for our own use (including an adjacent wood fuel chip factory) from our biomass power generation sites. In fiscal 2019, renewable energy accounted for about 16% of our total group electricity usage. The biomass fuel accounted for about 87% on our power generation business fuel usage.
To accelerate the implementation of renewable energy, we plan to have each business division set its own targets and tackle the issue as a company-wide initiative.

For Sumitomo Forestry Group to achieve 100% renewable energy for the electricity for our operations, we are utilizing Sumirin Denki, a service where we purchase surplus power as well as supply electricity generated from solar power systems of Sumitomo Forestry home houses. We are also considering installing solar power generation systems in our factories both in Japan and overseas. Furthermore, we will consider a diverse range of procurement methods that take advantage of programs in each country we operate.

Sumitomo Forestry Group will continue to proactively utilize renewable energies to reduce greenhouse gas emissions and contribute to the realization of a sustainable society.

* RE100 is an international initiative run jointly by The Climate Group, a global environmental NGO, and the CDP. 32 companies in Japan are part of the 229 companies worldwide who are RE100 members as of March 25, 2020.

▶ HIGHLIGHT 5: Aiming for 100% Renewable Energies by 2040

Greenhouse Gas Emissions per Scope Based on the GHG Protocol

Since fiscal 2012, the Sumitomo Forestry Group has ascertained the volume of its CO_2 emissions according to different scopes* based on the GHG Protocol, a set of widely used international accounting tools for quantifying GHG emissions. In view of the increasing demand of renewable energy in recent years, the Sumitomo Forestry Group entered the biomass power generation business in 2011 and has begun operation of Okhotsk Bio Energy in December 2016 as a consolidated subsidiary. This power plant uses coal as supplemental fuel for smooth operation and maintenance while using unused wood resources as the primary fuel. Therefore, the total CO_2 emissions in Scope 1 and 2 in fiscal 2019 for the Sumitomo Forestry Group were 380,641t-CO_2e, up 2.9% compared to fiscal 2017.

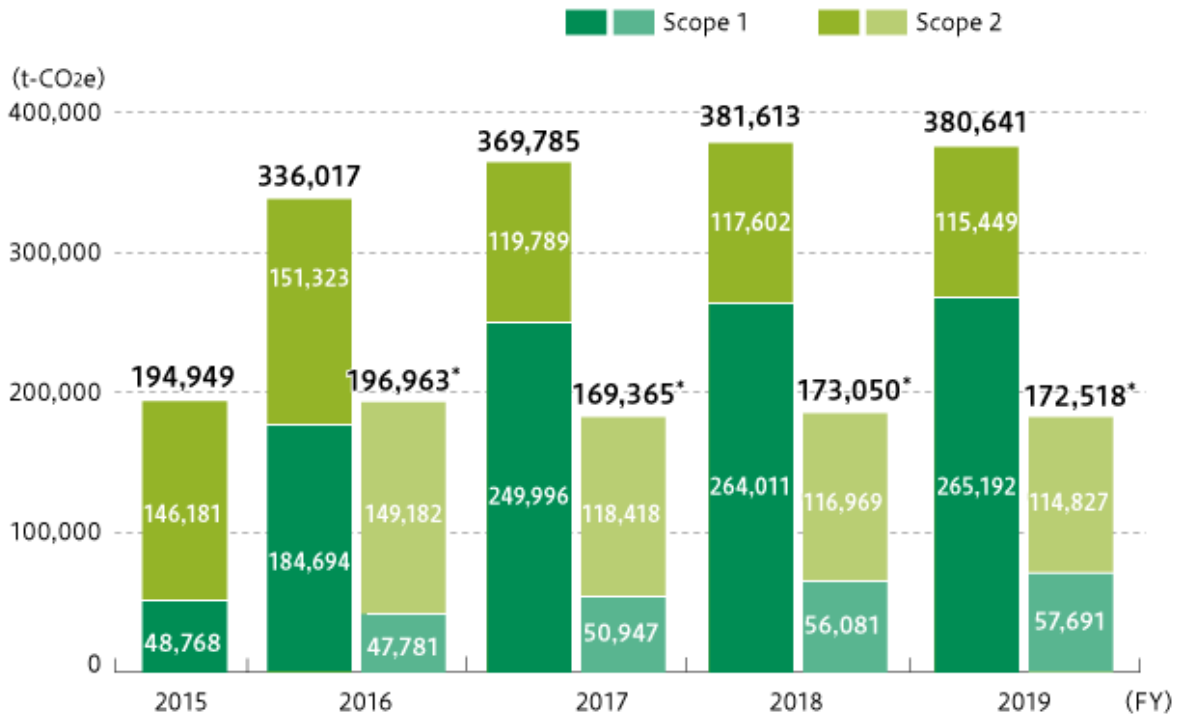
In addition, when looking by business, our plants in Japan and the power generation business make up 57.0% while our plants overseas compose 28.5%. We started to calculate Scope 3 in fiscal 2013 and the targets for this calculation largely expanded in fiscal 2015 and fiscal 2017. Among these results, the impact in category 11, “emissions during use of detached houses sold,” is acknowledged to be a major factor, and the increase in residential and construction operations in fiscal 2020 of Net Zero Energy House (ZEH) projects is expected to reduce CO_2 emissions volumes while the homes are in use.

In the future, we will work to meet targets via SBT in an effort to take greenhouse gas emissions reduction to another level.

* The GHG Protocol requires businesses to disclose their greenhouse gas emissions according to the following categories
Scope 1: Direct GHG emissions of a company, including emissions from fuel consumption. E.g. CO_2 emissions from the use of gasoline for company vehicles.
Scope 2: Indirect GHG emissions from the generation of purchased electricity and heating. E.g. CO_2 emissions from the use of electricity by offices.
Scope 3: GHG emissions occurring in the supply chain. E.g. CO_2 emissions generated during the use of products sold.

▶ Promotion of Net Zero Energy House (ZEH) Specifications

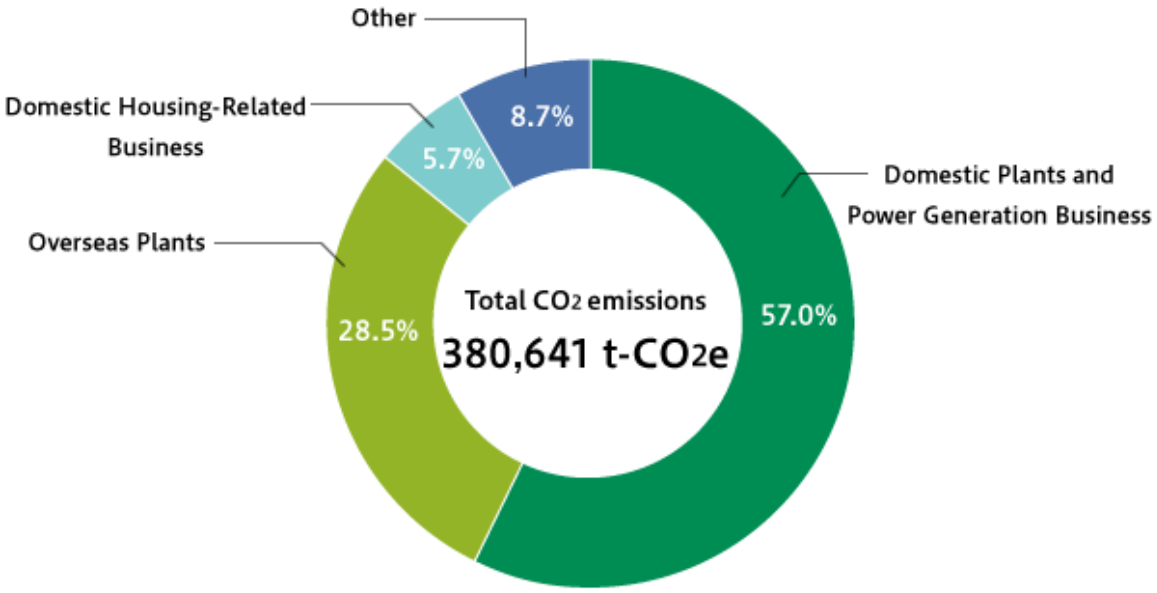
Scope 1 and Scope 2 CO_2 Emission Trends



* Electric power generation (Mombetsu Biomass Power Generation, Hachinohe Biomass Power Generation) figures are excluded.

▶ About symbol for Independent assurance

Scope 1 and 2 Breakdown by Business (FY2019)

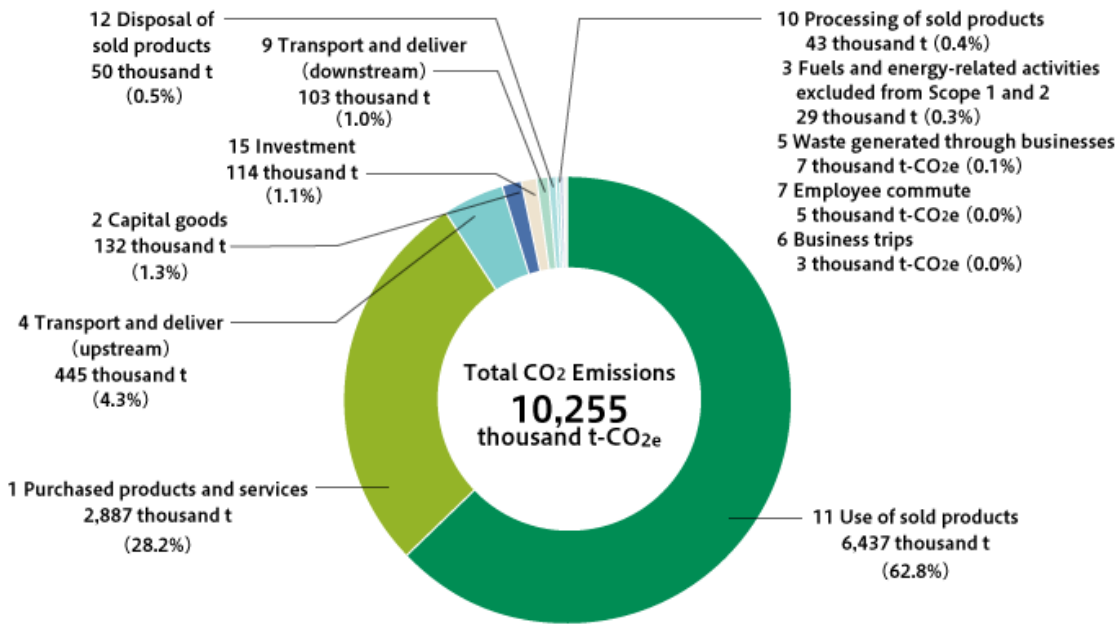


FY2019 Scope 1 and 2 CO_2 Emissions Breakdown

(Thousand t-CO_2e)

	Domestic and Overseas Office	Domestic Non-Office	Overseas Non-Office	Total
Scope 1	30	213	21	265
Scope 2	16	10	89	115
Total	46	223	111	381

Scope 3 Emissions by Category



▶ About symbol for Independent assurance

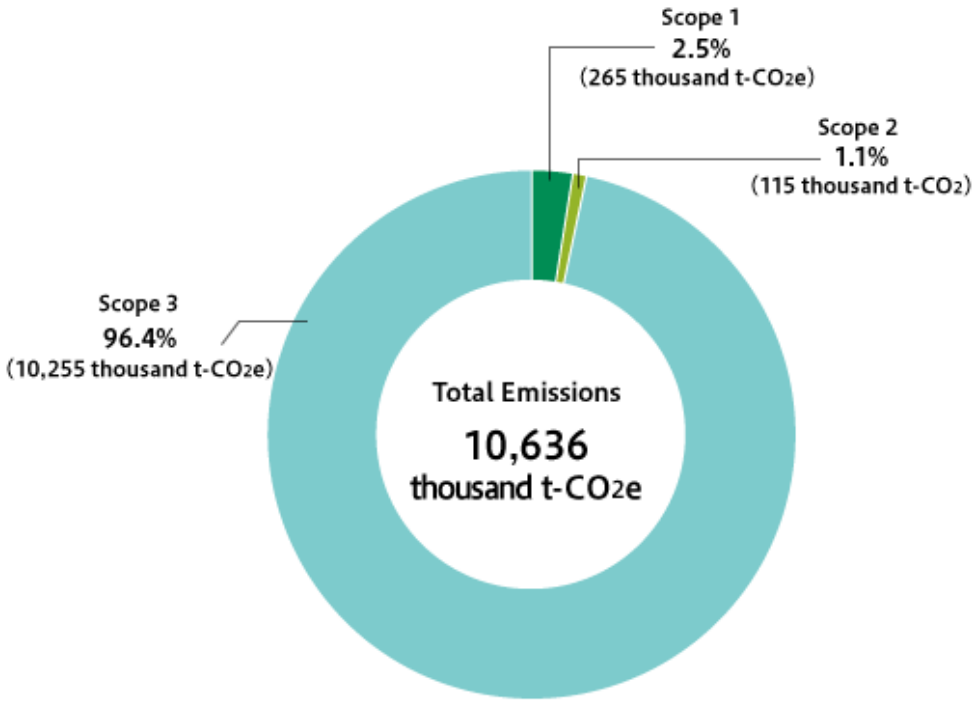
Scope 3 Emissions by Category (three years)

(thousandt-CO_2e)

Category	Boundary of Emissions included in the Category	FY2017	FY2018	FY2019
1 Purchased products and services	Emission from upstream of products and services purchased by Sumitomo Forestry	2,543	2,625	2,887
2 Capital goods	Emissions from upstream of purchased equipment	71	72	132
3 Fuels and energy related activities excluded from Scope 1 and 2	Emissions from the upstream of purchased fuels, electricity, heat capacity, and water	21	20	29
4 Transport and deliver (upstream)	Emissions from Sumitomo Forestry distribution from suppliers of purchased products and services in (1) and emissions due to logistics services other than (1) for costs incurred by Sumitomo Forestry	420	433	445
5 Waste generated through businesses	Emissions from waste treatment and its transport	8	8	7
6 Business trips	Emissions related to business trips of employees such as use of public transportation and accommodation	2	2	3
7 Employee commute	Emissions from employee commuting	5	5	5
8 Leased property (Upstream)	(Emissions from use of upstream leased property such as office buildings, heavy machinery, vehicles, and facilities are included in Scope 1 or 2)	-	-	-
9 Transport and deliver (downstream)	Emissions during transport of products sold	106	107	103

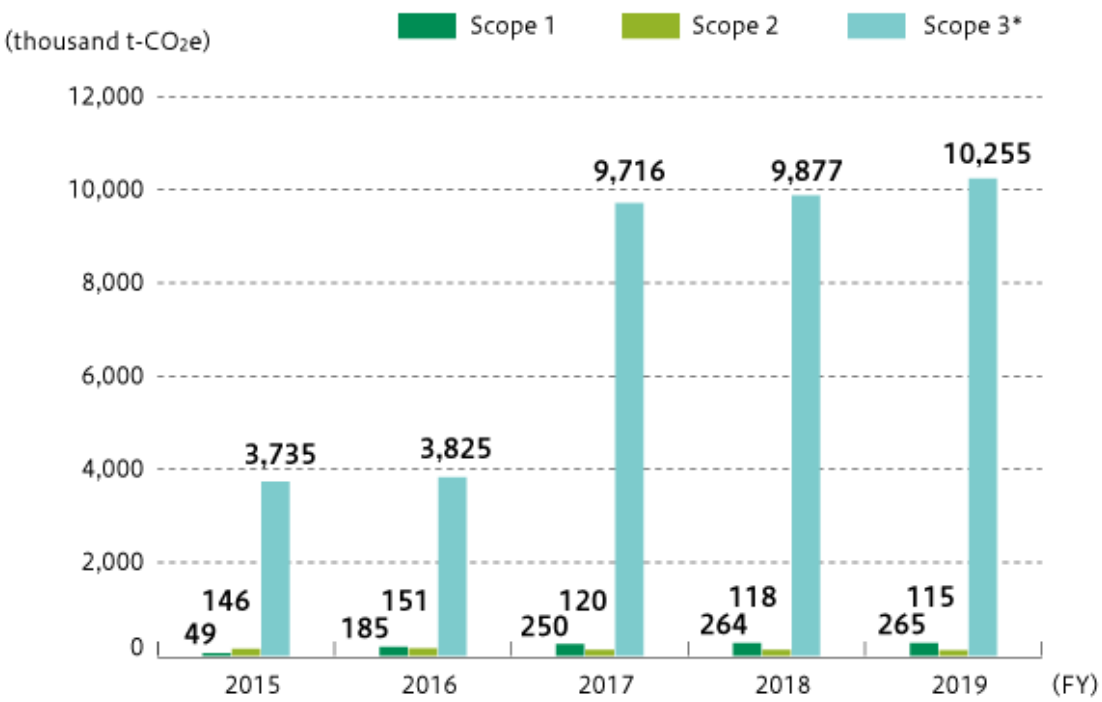
Category	Boundary of Emissions included in the Category	FY2017	FY2018	FY2019
10 Processing of sold products	Emissions from processing of raw wood into plywood as well as of sold precut processing of sold lumber	52	54	43
11 Use of sold products	Emissions during use of detached houses sold	6,352	6,384	6,437
12 Disposal of sold products	Emissions from demolition and disposal of detached houses sold by the Company	47	48	50
13 Leased property (downstream)	(Tenants must belong to the Group and the figures are included in Scope 1 and 2 of the Group)	-	-	-
14 Franchised	(excluded)	-	-	-
15 Investment	Emissions from the investees (based on the Company's proportional share)	90	117	114

FY2019 Total Greenhouse Gas Emissions Accrued From Corporate Activities



▶ About symbol for Independent assurance

Emission Trends in Scope 1, 2, and 3



* The scope of calculation of Scope 3 expanded from the traditional domestic scope in Japan to the entire Sumitomo Forestry Group as of fiscal 2017.

▶ Boundaries and Methods of CO_2 Emissions Calculation

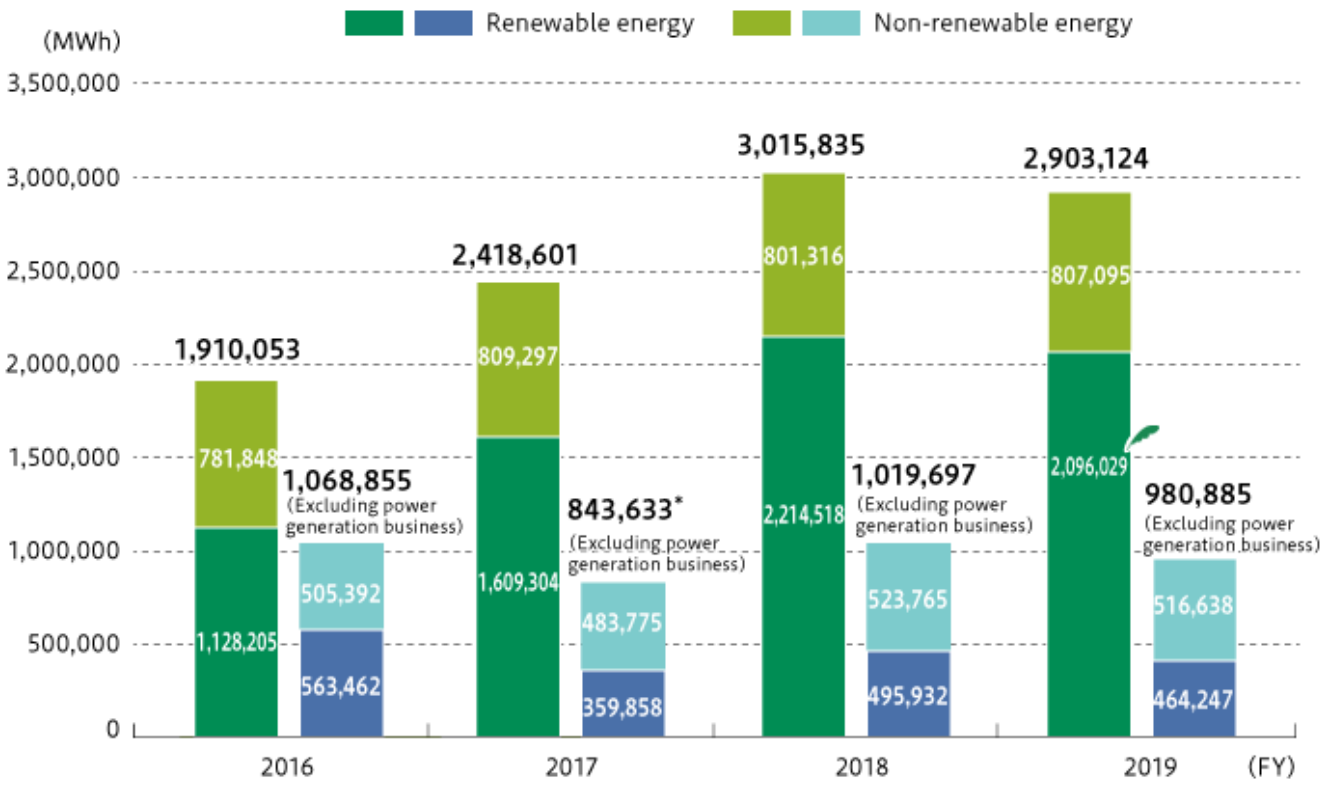
Energy Consumption from Business Activities

The Sumitomo Forestry Group consumed 2,903,124MWh* of energy in fiscal 2019. The energy consumption of the Group increased during fiscal 2016 to 2017 due to the start of trail and full-fledge operations of the Mombetsu Biomass Power Generation and Hachinohe Biomass Power Generation Businesses.

The start of full operations at the Hachinohe Biomass Power Generation Plant in April 2018 stopped a dramatic amount of the rise in energy consumption, but this power consumption declined 3.7% in fiscal 2019 compared to the previous fiscal year. The energy consumption in business other than the power generation business has declined by various energy-saving activities. In fiscal 2019, total renewable energy accounted for about 72% of our group energy usage.

* The Balance of Input & Output is calculated according to the TJ unit based on the Environmental Reporting Guidelines issued by the Ministry of the Environment. Both are equivalently calculated for the amount of energy consumption.

Energy Consumption Trends Over Past Four Years



* Data for Alpine MDF Industries Ltd. has been excluded because the company was sold in March 2017.

▶ About symbol for Independent assurance

Reducing CO_2 Emissions from Offices

All business sites of Group companies in Japan are advancing the introduction of fuel-efficient vehicles to make 547 of the 616 company-owned vehicles introduced during fiscal 2019 fuel-efficient vehicles (for an 88.8% adoption rate of fuel-efficient vehicles). In addition, the Group has encouraged employees who drive on the job at offices and business sites of Group companies in Japan to participate in the Eco Training course run by the Japan Automobile Federation (JAF).

The Group has also worked to reduce power consumption. In the Housing and Construction Division, power consumption has been reduced by moving to a “free address” office system (where personnel are not assigned to fixed desks) to make more efficient use of office space. In addition, the division has also proceeded to install solar power generation systems and LED lighting at its model homes and other business sites.

The Group will continue to reduce CO_2 emissions by such means as reducing prolonged working hours and raising awareness among employees.

Reducing CO_2 Emissions Outside Offices

To address CO_2 emissions collectively, the Group set Sumitomo Forestry Crest, manufacturing plants of Agro-Products Division of Sumitomo Forestry Landscaping, as well as power generation businesses, the Tsukuba Research Institute, the Tokyo Metropolitan Area Recycling Center, Sumirin Fill Care, Kawanokita Development, and Japan Bio Energy as domestic non-office category constituents, as well as overseas manufacturing plants of RPI, ASTI, KTI, VECO, NPIL, SRP, and CCC in addition to OBT as overseas non-office category constituents with their respective reduction targets.

In fiscal 2019, the start of full operations at Hachinohe Biomass Power Generation caused an increase of 2.0% compared to fiscal 2017, which is the base year.

Reducing CO_2 Emissions from Transportation

Under the revised Act on the Rational Use of Energy in Japan, consigners[*1] are required to reduce per-unit energy consumption by an annual average of 1% or more in the medium to long term in relation to the transportation of goods. Sumitomo Forestry and Sumitomo Forestry Crest fall under the category of “specified consigner” (annual freight transportation volume is 30 million ton-km[*2] or more), obligating them to submit reports to the Japanese Government. Sumitomo Forestry therefore sets a target each fiscal year to reduce per-unit energy consumption[*3] in transportation by 1%or more compared to the previous year. Sumitomo Forestry Crest also sets targets to reduce per-unit energy consumption compared to the previous year.

In fiscal 2019, Sumitomo Forestry's per-unit energy consumption was 99.7% compared to the previous year and Sumitomo Forestry Crest's was 98.9%.

Ongoing efforts will be made to reduce CO_2 emissions through cooperation with transportation partners on such measures as improving loading efficiency, shifting from land to sea transportation, and utilizing the return leg of construction material deliveries to transport waste.

*1 Cosigners as defined in the Act on the Rational Use of Energy in Japan is someone who transports cargo to carriers for our businesses

*2 Freight transportation volume (ton-kilometers) = freight weight (tons) × distance travelled (km)

*3 Sumitomo Forestry measures energy consumption per unit of volume handled. Sumitomo Forestry Crest measures energy consumption per unit of net sales

Energy Consumption From Transportation, CO_2 Emissions and Energy Consumption Per-Unit (FY2019 Performance)

	Energy Use (Crude Oil Equivalent)	CO_2 emissions	Energy Consumption Per Unit
Sumitomo Forestry	1,988kL	5,305t-CO_2	0.00174kL/m³ (Ratio to Previous FY: 99.7%)
Sumitomo Forestry Crest Co., Ltd.	1,896kL	5,035t-CO_2	0.0000572kL/thousand yen (Ratio to Previous FY: 98.9%)

Establishment of an Efficient Delivery

Sumitomo Forestry is reducing the CO_2 emissions in its transportation processes by bringing together materials for Sumitomo Forestry Home houses from multiple manufacturers momentarily at relay centers in approximately 30 locations throughout Japan with a system to consolidate and transport shipments.

Home Eco Logistics takes on logistics operations for the Sumitomo Forestry Group with the housing business at the core and also actively puts forward proposals for efficient logistics operations to material manufacturers, housing builders, housing construction companies and building material distributors. There are over 60 logistics contractors as of March 2020, excluding the Sumitomo Forestry Group. Furthermore, we are providing consulting for more efficient internal warehousing operations and inventory management rationalization. In fiscal 2019, two new construction materials operators contracted our consulting services.

In the future, we will actively strive in cooperative distribution through multiple companies because of insufficient shipment capacity forecast due to a decrease in the amount of new housing construction.

Boundaries and Methods of CO_2 Emissions Calculation

Boundary of CO_2 Emissions (Organizational Range)

The amount of CO_2 emissions published in this report is an aggregation for companies throughout the Group, including all consolidated subsidiaries in and outside of Japan unless otherwise noted. Furthermore, the boundaries of calculating CO_2 emissions by scope are as shown below.

- Scope 1, 2 and 3
  All Group companies, including consolidated subsidiaries in Japan and oversea.

* For scope 3, the boundary was expanded to include the entire Sumito Forestry Group in fiscal 2017 from Japan

▶ List of Applicable Companies

Scope 1 CO_2e Emissions

The CO_2 emissions both inside and outside of Japan are calculated by using heat conversion, carbon dioxide emission coefficients stipulated in the Act on Promotion of Global Warming Countermeasures, and average value of emission coefficient measured at the biomass power plant.

The waste used for energy at manufacturing plants (wood waste and waste plastics) and wood pellets are also converted to amount of heat, and the greenhouse gas emissions (CO_2e) are calculated using the CH_4 and N_2O emission coefficients stipulated in the Act on Promotion of Global Warming Countermeasures.

Scope 2 CO_2 Emissions

The CO_2 emissions caused by use of purchased electricity in Japan are calculated by the carbon dioxide emission coefficient for each power provider in each fiscal year stipulated in the Act on Promotion of Global Warming Countermeasures.

The CO_2 emissions due to the use of purchased heat are calculated by the CO_2 emission coefficient stipulated in the Act on Promotion of Global Warming Countermeasures.

The CO_2 emissions caused by use of purchased electricity overseas in fiscal 2019 are calculated by the carbon dioxide emission coefficient of each country according to the IEA Emission Factors 2019 issued by the International Energy Agency (IEA).

Scope 3 CO_2e Emissions

Category 1. Purchased goods and services

(Portion of outside contracts during construction of wooden detached houses)

Σ (energy use during on-site construction per home × CO_2 emissions coefficient by energy) × Portion of outside contracts used in houses completed in the current fiscal year

(Purchased products)

Σ (Amount of procured product or sales × Emissions per weight or per price)

Overseas companies handling timber and building materials: Sales per unit of housing in Japan is calculated and multiplied to the sales of each overseas company.

Domestic companies handling timber and building materials: Sales per unit of timber and building materials in the Timber & Building Materials Business is calculated and multiplied to the sales of each affiliate company.

Category 2. Capital goods

Σ (Capital goods procurement value by all Group companies × Per unit emissions by industrial division)

Category 3. Fuel- and energy-related activities (not included in scope 1 or scope 2)

(Procurement)

Σ (Energy and water use × Per unit emissions of energy)

(Transport from retailers)
* The target of calculations is the use on operational sites such as plants

Σ (Energy use (weight conversion) × Estimated transport distance × Per unit use of fuel in ton-kilometers × CO_2 emissions coefficient)

* Calculation based on transportation scenario

Category 4. Upstream transportation and distribution

(Transport in Japan)

Σ (Amount procured by each plant ×Estimated transport distance ×Per unit use of fuel in ton-kilometers × CO_2 emissions coefficient)

CO_2 emissions related to owner shipments (value to report based on the energy saving law; however, this excludes waste transport)

* Waste transport is included in Category 5

(Transport by sea)

Σ (Amount of import products procured × Distance to transport by sea from the country of procurement × Per unit emissions of ship transport)

Category 5. Waste generated in operations

Σ (Amount of emissions by type of waste × Per unit emissions by the type of waste or processing method)

Category 6. Business travel

Number of employees of all Group companies × Per unit emissions during business trips

Category 7. Employee commuting

(Type of transportation: Train/bus)

Number of employees of all Group companies × Per unit emissions during commute

* Per unit emissions during commute: Calculated from the emissions during commute for the past three years (2013, 2014, 2015) of Group companies in Japan

(Type of transportation: Automobile)

Number of employees of all Group companies × Per unit emissions during commute by automobiles

* Per unit emissions during commute: Calculated by dividing the costs of commuting by automobiles by average unit price of gasoline of that fiscal year, and then multiplying the emission coefficient of burning gasoline

* Emissions during commute using employee-owned vehicles is included in Scope 1

Category 9. Downstream transportation and distribution

(Wood yard pick up such as the plywood or fiberboard that is sold)

∑ (Sales volume × Estimated transport distance × Per unit fuel use in ton-kilometer × CO_2 emissions coefficient)

* Calculation based on transportation scenario

Category 10. Processing of sold products

(Plywood work and Precut factories)

∑ (Sales volume of crude wood and processed materials × Per unit emissions during processing)

* Per unit is based on the LCA procurement implemented in the past by the company

Category 11. Use of sold products

(CO_2 emissions during habitability)

∑ (Annual energy use per household × CO_2 emissions coefficient by energy) × Number of households × Number of houses completed by construction method for fiscal year

* Emissions related to renovations are omitted because there is a possibility to count a portion of Scope 1 and Scope 2 emissions twice for affiliate companies engaged in the renovations business (Sumitomo Forestry Home Tech Co., Ltd.)

* Energy use per household (electricity/city gas) :
  In Japan : Calculated by using the Building Research Institute's energy consumption performance calculator program
  Overseas: Average of dividing amount of fuel and electricity used per state released by the government by number of households

Category 12. End-of-life treatment of sold products

(CO_2 emissions during demolition)

∑ (Fuel use during demolition per household × CO_2 emissions coefficient by fuel) × Number of houses completed for the current fiscal year

* Fuel use during demolition per household (diesel/gasoline):
  Estimated based on sample surveys related to the fuel use in model house demolition conducted by Sumitomo Forestry in 2006

(CO_2 emissions during disposal (including transport))

∑(Amount of waste during demolition per household × Per unit emissions by volume reduction rate , disposal rate , recycling rate for each type of waste × Per unit emissions by type of waste or processing method) × Number of houses completed in the current fiscal year

* Amount of waste during demolition per household:
  The amount of waste produced during demolition annually by Sumitomo Forestry Group for fiscal 2016 is calculated by converting the equivalent building weight of the standard plan (floor area:147m²) of Sumitomo Forestry for fiscal 2010

Category 15. Investments

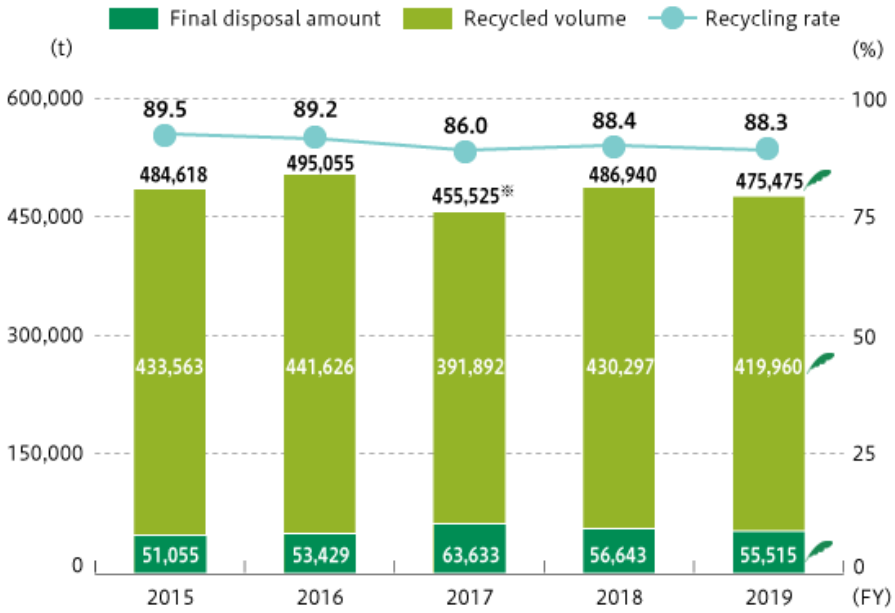
∑ (Scope 1 and 2 emissions from companies the Group invests × Equity interest of Sumitomo Forestry Group)

* Scope 1 and 2 emissions are the public values from the company the Group invests or the values released in the Act on Promotion of Global Warming Countermeasures

Promotion of Waste Reduction and Recycling

The Sumitomo Forestry Group makes efforts in attaining zero emissions and reducing industrial waste generated, at the same time as promoting reuse and recycling for each operational process in accordance with the Sumitomo Forestry Group Environmental Policies in order to build a sustainable and recycling-oriented society. The Mid-Term Sustainability Targets announced in May 2019 set targets for protecting resources, reducing the emission of waste and achieving zero emissions. In addition to the recycling rate, we have also set a target for the absolute amount of final disposal and are further strengthening the management system. In fiscal 2019, overall Sumitomo Forestry Group emissions volume was down 2.4% compared to the previous year. The amount of final disposal achieved our target of 58,860 ton with a result of 55,515 tons. This was a 2.0% reduction compared to the previous fiscal year. We will continue to strive to effectively use resources in the future.

Trends in Waste Generated and Recycling Rate Over the Last Five Years



* Data for Alpine MDF Industries Ltd. (Alpine) has been excluded because the company was sold in March 2017.

▶ About symbol for Independent assurance

Initiatives to Achieve Zero Emissions

The Sumitomo Forestry Group has defined “Zero emissions” as no incineration or landfill of industrial waste (recycling rate of 98% or more) generated by domestic manufacturing facilities and new housing construction sites.

Based on this definition, domestic manufacturing facilities achieved zero emissions in fiscal 2009. As for new housing construction sites, including exterior landscaping, the Group achieved zero emissions in the Tokyo metropolitan area in fiscal 2012.

Since fiscal 2015, the Group has been adhering to the former Mid-Term CSR Management Plan with its target year of fiscal 2020 while continuously working towards zero emissions. From fiscal 2019, we are working to achieve zero emissions in keeping with the new Mid-Term Sustainability Targets, with a target year of fiscal 2021. In addition to the recycling rate, the Mid-Term Sustainability Targets set a target of 15% reduction in the amount of final disposal throughout the entire Sumitomo Forestry Group compared to fiscal 2017, and we worked toward zero emissions. Furthermore, within the Mid-Term Sustainability Targets, we take factors such as the state of progress of business activities and the resulting waste generation into account, establishing the following seven categories for a more finely differentiated effort to achieve zero emissions than in the Mid-Term CSR Management Plan. These categories are: New Housing Construction Sites, Domestic Production Plants, Power Generation Business, Renovation Business, Lifestyle Service Business, Overseas Manufacturing Plants, and Demolition Work sites.

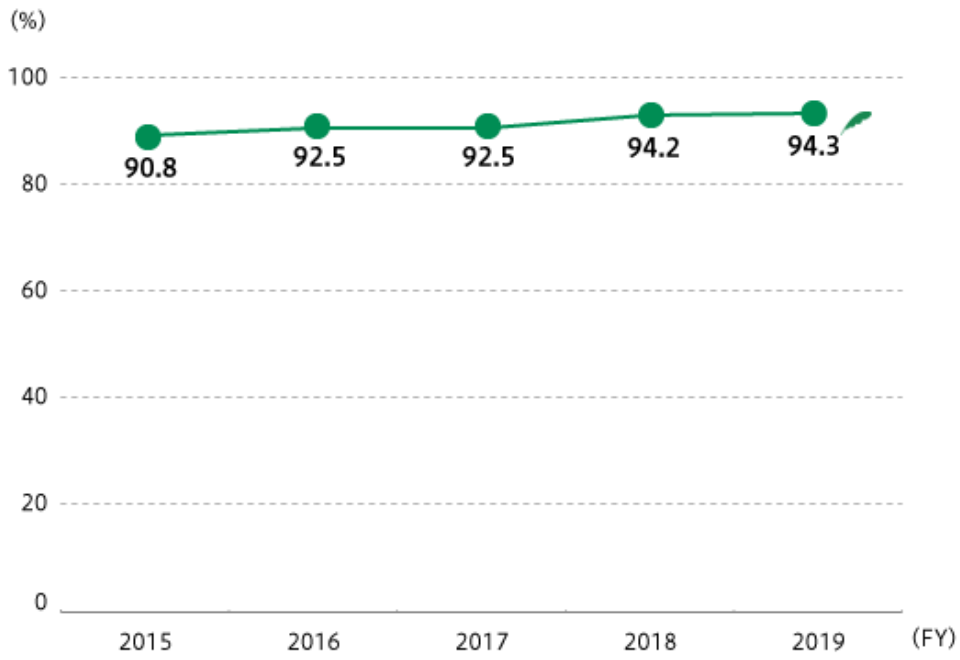
▶ Material Issue 3: The Reduction of the Environmental Impact of Our Business Activities

Efforts at New Housing Construction Sites

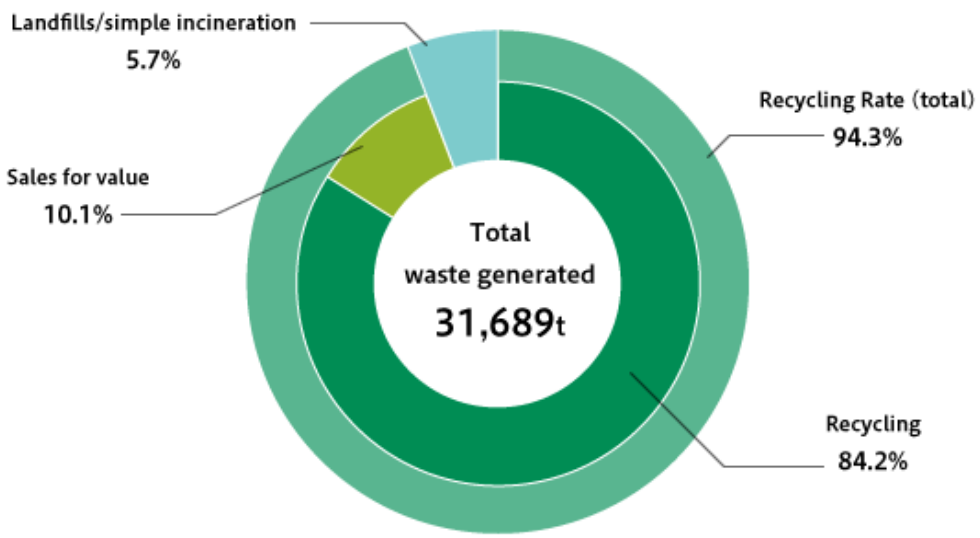
We work to reduce waste generated at Sumitomo Forestry's new housing construction sites. At monthly meetings of our Waste Reduction Working Group, leaders of sub-groups raise and share issues while managing progress toward meeting targets. Efforts to reduce waste have included the use of the bare minimum necessary packaging materials and reusable protective material for flooring. We engaged in initiatives that aimed to achieve the 98% recycling rate set by the Mid-Term Sustainability Targets, which was 94.3% against our target of 96.1% for fiscal 2019. In the future, we will strive to further reduce waste emissions and improve our recycling rate through precuts of roof slate and external wall siding.

In the Tokyo metropolitan area, the Company obtained inter-region recovery and recycling certification, whereupon we established the Metropolitan Area Recycling Center, and implemented streamlined sorting of waste. Since fiscal 2018, new housing construction site waste processing operations expanded areas covered by the inter-region recovery and recycling certification are promoting a higher recycling rate.

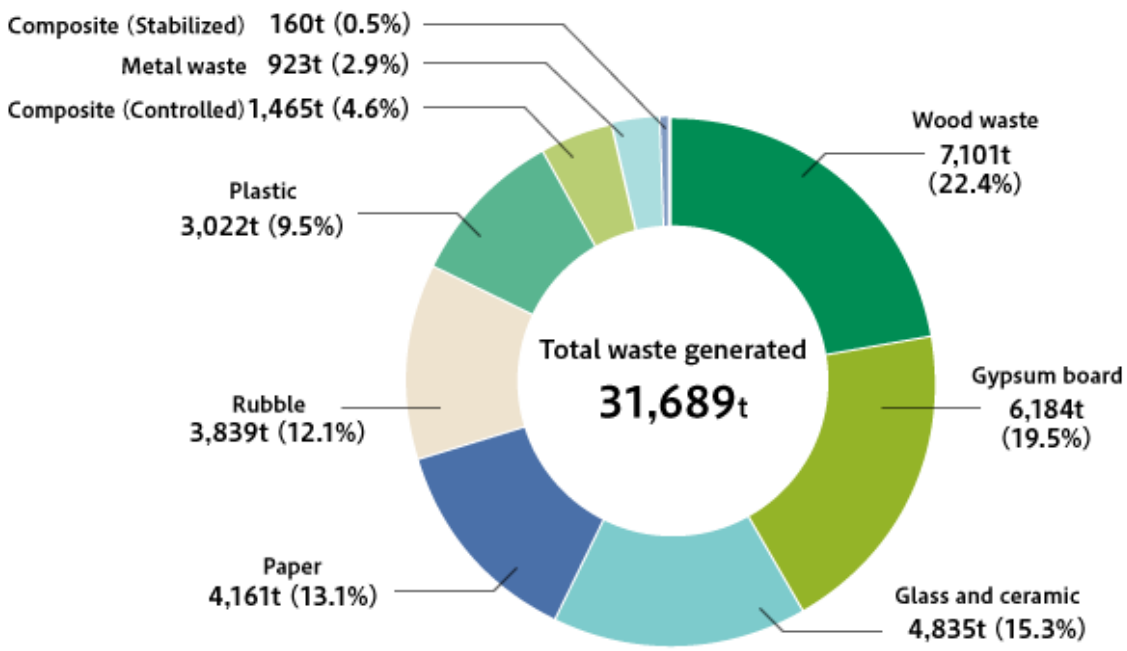
Recycling Rate at New Housing Construction Sites (Housing and Construction Division, Sumitomo Forestry Landscaping, Sumitomo Forestry Home Engineering)



Breakdown of Waste Generated by Disposal Process for New Housing Construction Sites (FY2019)



Breakdown of Waste Generated at New Housing Construction Sites (FY2019)

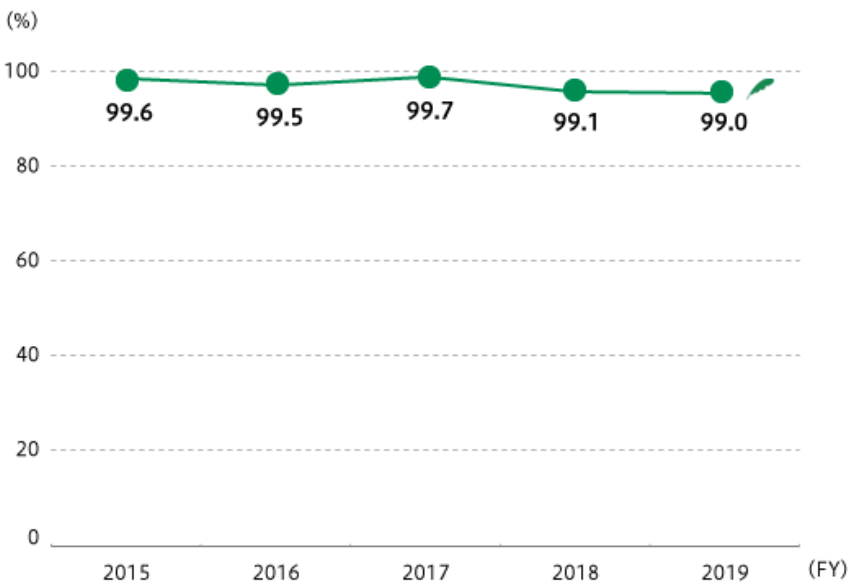


▶ About symbol for Independent assurance

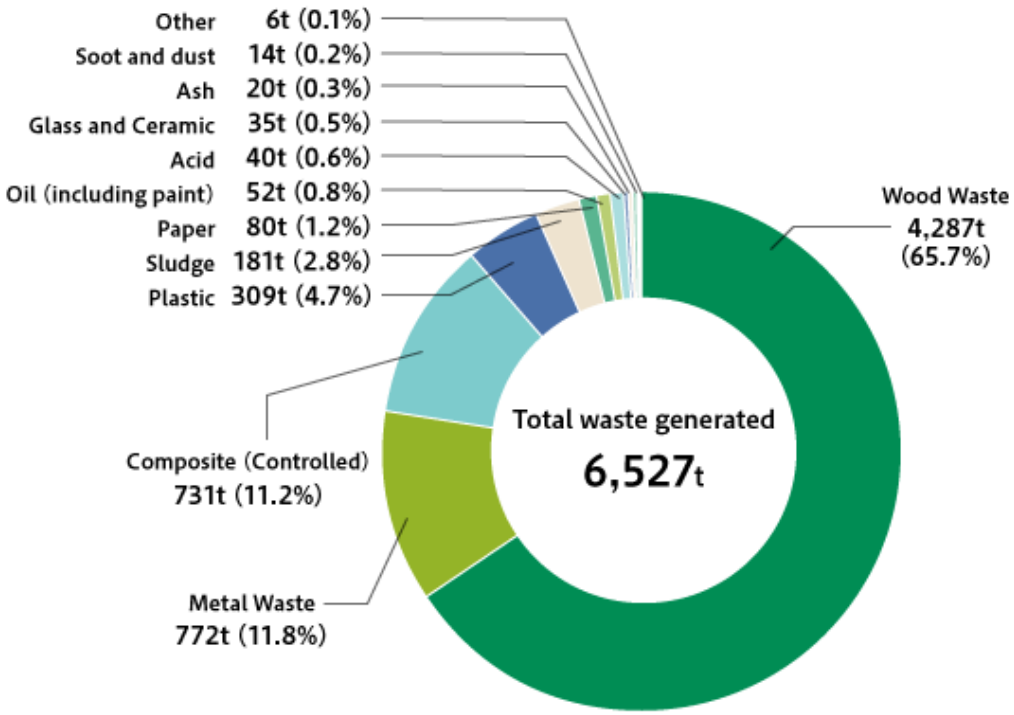
Initiatives at Domestic Manufacturing Facilities

Sumitomo Forestry Group managed to achieve a recycling rate of 99.0% against the target of 99.3% while zero emissions (recycling rate of 98% or more) were achieved at Sumitomo Forestry Crest and the Agro-Products division of Sumitomo Forestry Landscaping in fiscal 2019 as a result of ongoing efforts to reduce waste emissions, for example by tightening the sorting of industrial waste and selling it for a profit.

Recycling Rate at Domestic Manufacturing Plants (Sumitomo Forestry Crest, the Agro-Products division of Sumitomo Forestry Landscaping, Japan Bio Energy, Okhotsk Bio Energy, Michinoku Bio Energy)



Breakdown of Waste Generated at Domestic Manufacturing Plants (FY2019)

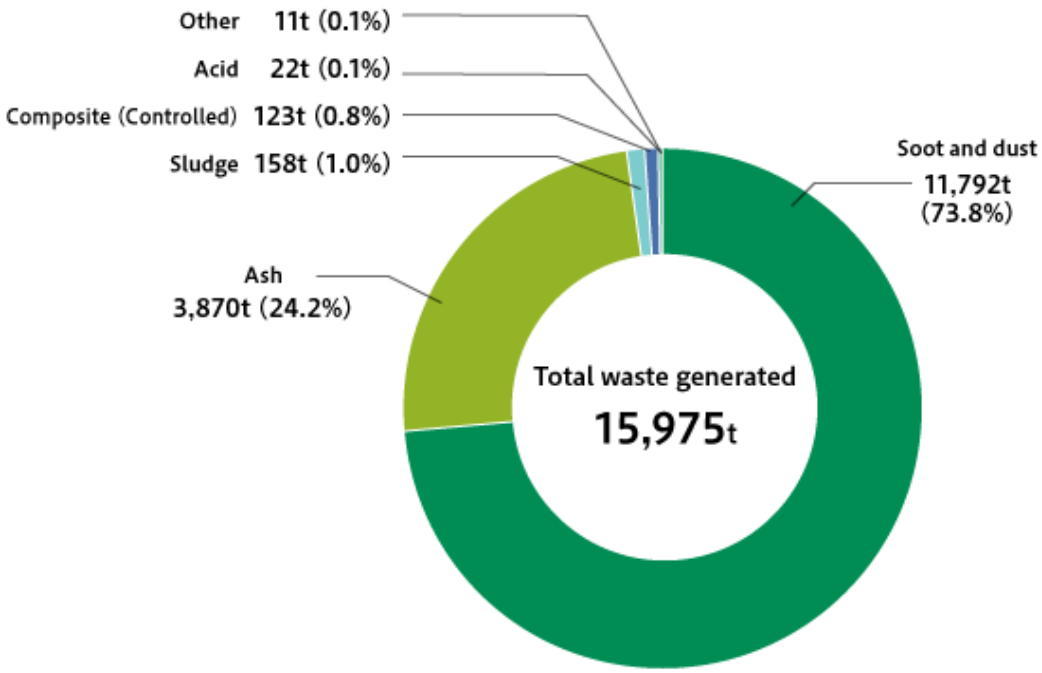


▶ About symbol for Independent assurance

Power Generation Business Initiatives

In power generation business operations, incineration ash emitted by biomass boilers is blended with quicklime for reuse primarily as a forest roadbed material. In fiscal 2018, it was manufactured under the product name Rovander, and received approval as a Hokkaido Government-certified Recycled Product. The recycling rate set as a target for fiscal 2019 was 52.5%, but effective use of incinerator ash allowed us to surpass our target and achieve a rate of 81.6%.

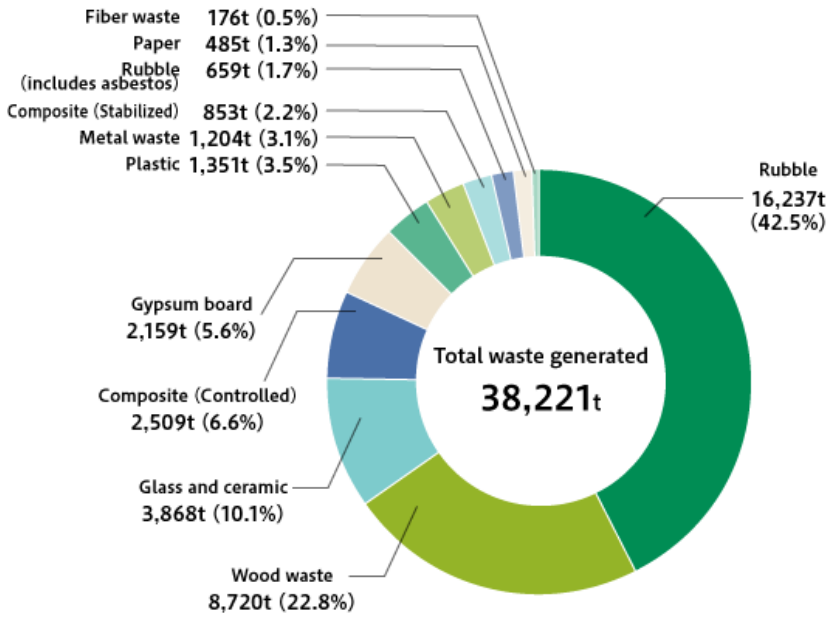
Breakdown of Waste Generated at Power Generation Business Operations (FY2019) (Mombetsu Biomass Power Generation, Hachinohe Biomass Power Generation)



Renovation Business Initiatives

We are working to reduce waste generated by renovation sites by using protective materials as well as other measures to mitigate waste generation. In fiscal 2014, Sumitomo Forestry Home Tech began recycling wood waste materials generated at its renovation sites. Our efforts to use resources effectively include recycling wood waste as raw material for particle board. The recycling rate in fiscal 2019 was 69.3% against our target of 80.0%. In the future, we will more thoroughly sort waste on site with the aim of a recycling rate of 80%.

Breakdown of Waste Generated at Renovation Business Operations (FY2019) (Sumitomo Forestry Home Tech)

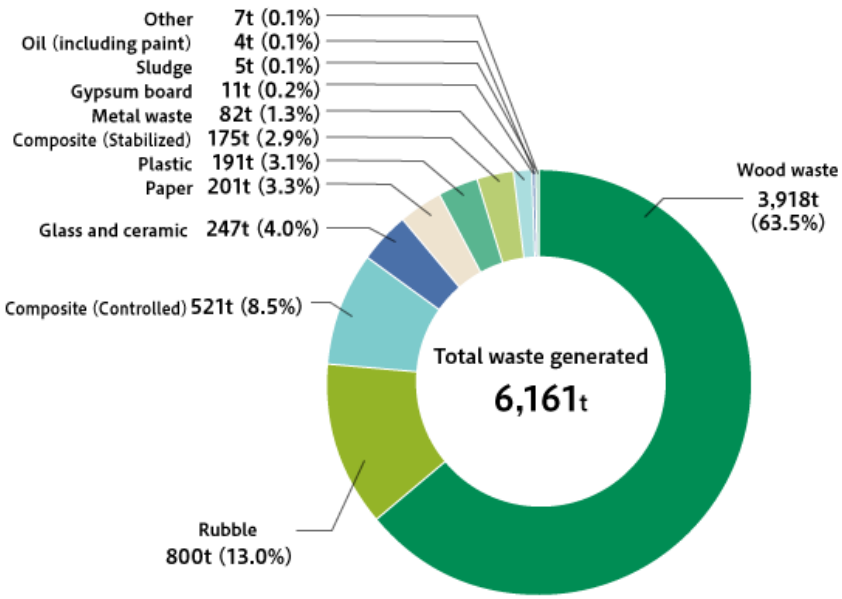


Initiatives at Lifestyle Service Business, Housing-Related Materials Sales*, etc.

At waste-generating locations of enterprises such as Lifestyle Service Business and housing materials sales, initiatives to reduce amounts of waste generated are implemented at a department level.

* Housing materials sales comprise distribution and renovation operations, Tsukuba Research Institute, etc.

Breakdown of Waste Generated by Lifestyle Service Business, Housing-related Materials Sales, etc. (FY2019)



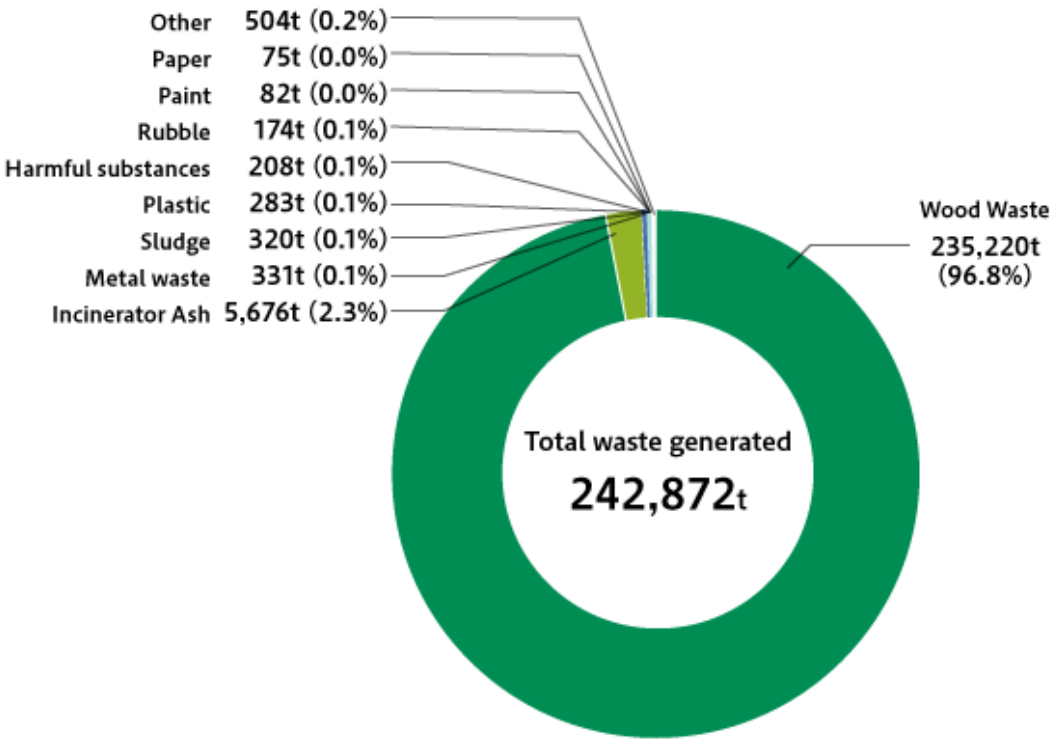
Initiatives at Overseas Manufacturing Plants

We are working toward zero emissions with two new Group companies from 2019: Sinar Rimba Pasifik (SRP) in Indonesia and Canyon Creek Cabinet (CCC) in the United States in addition to five main manufacturing companies outside Japan*. Kutai Timber Indonesia collects wood waste generated during the particle board manufacturing process and reuses it as boiler fuel or in wood building materials.

In fiscal 2019, the total volume of waste produced was 242,872t, with a final waste processing volume of 6,114t and a recycling rate of 97.5% against the 97.9% target set by the Mid-Term Sustainability Targets. The Mid-Term Sustainability Targets set the target of a 98% recycling rate to be achieved by fiscal 2021.

* Indonesia: PT. Kutai Timber Indonesia, PT. Rimba Partikel Indonesia, and PT. AST Indonesia
New Zealand: Nelson Pine Industries Ltd.
Vietnam: Vina Eco Board Co., Ltd.

Breakdown of Waste Generated at Overseas Manufacturing Plants (FY2019)



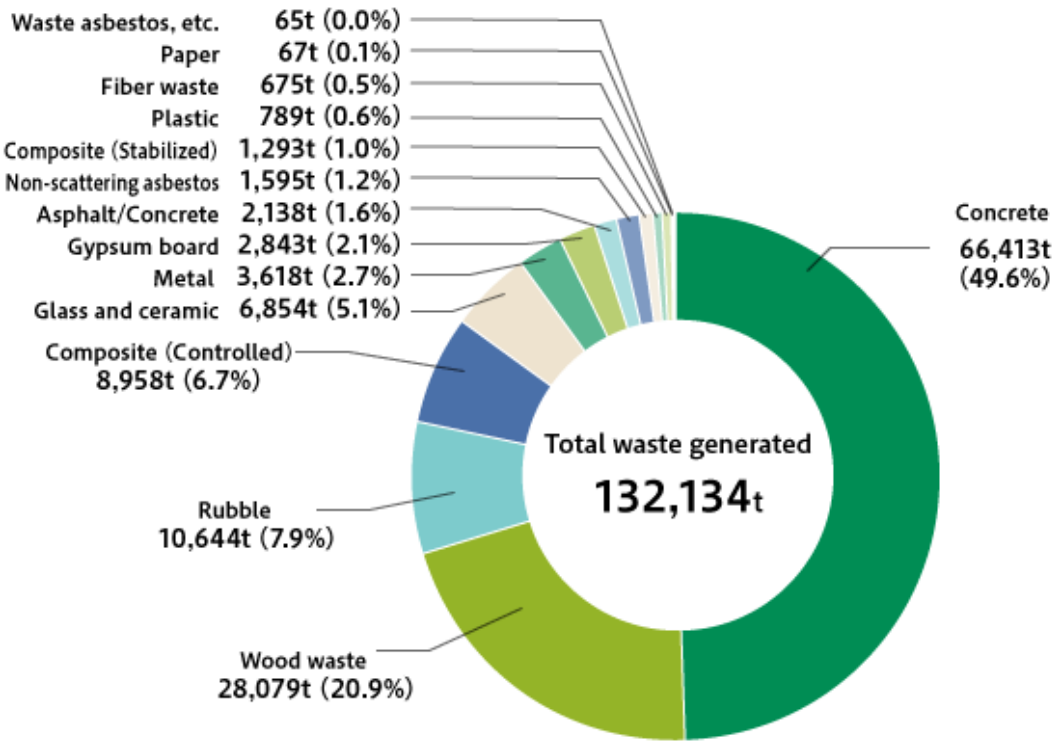
Efforts at Demolition Housing Sites

Sumitomo Forestry was promoting resource recycling even before the enactment of the Construction Material Recycling Law implemented in 2002 by ensuring that materials were properly sorted during demolition prior to the construction of a new house and that waste remained sorted for processing afterwards. Since the enactment in 2002, the Company has recycled the items required under the Law (wood waste, concrete, etc.), sorting them at the sites where the waste is generated.

The recycling rate* for concrete and metal waste was almost 100% in fiscal 2019, as it was the previous year. A 100%recycling rate was achieved for wood waste through measures including the thorough removal of extraneous matter. The Mid-Term Sustainability Targets set the target of 98% recycling rate for construction areas that the Construction Material Recycling Law does not apply to (total floor area of 80m² or less).

* Recycling rate calculation includes metals in addition to construction materials specified under the Construction Material Recycling Law (concrete, asphalt-concrete and wood waste) and metals.

Breakdown of Demolition Waste Generated (FY2019)



Education for New Construction and Demolition Contractors

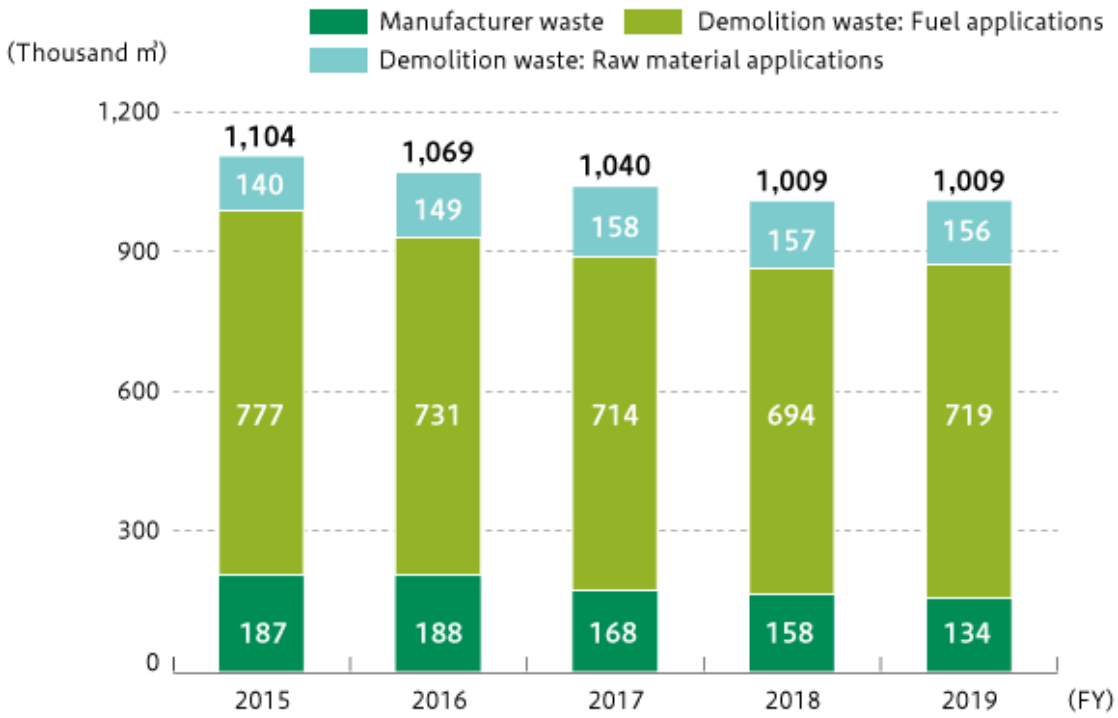
Demolition contractors report about industrial waste to the Housing and Construction Division from the start of demolition work to its completion, recording the work according to a manual. The Housing and Construction Division comprehensively checks these reports and, if there are any inconsistencies, education and comprehension tests about industrial waste are conducted for new construction contractors with monthly construction contractor meetings as an important management branch to confirm their capabilities.

Recycling of Wood Resources into Chips

The Sumitomo Forestry Group contributes to resource recycling through its wood chip operations, whereby offcuts generated during the timber milling process and wood waste from new housing construction and demolition sites are turned into wood chips to be used as a raw material for products such as paper and particle board, and also as a fuel for power-generating boilers or other equipment.

In fiscal 2020, we aim to further increase the volume we handle for use as fuel in order to meet the growing demand for fuel used in biomass power generation.

Handling Volume of Wood Chips



▶ About symbol for Independent assurance

Effective Utilization of Used Activated Carbon from Water Purification Plants

The Tokyo Metropolitan Government (TMG) Bureau of Waterworks uses an advanced water treatment system combining ozonation and the use of biological activated carbon.

The Agro-Products division of Sumitomo Forestry Landscaping (formerly Sumirin Agro-Products Co.) is making effective use of this used activated carbon to develop and market potting media for agriculture and horticulture and a soil improvement agent for greening. Joint research conducted with the TMG found that these items were effective in promoting plant growth, and the two parties applied for a joint patent based on the research results.

The amount of used activated carbon in fiscal 2019 was 3,630m³. In fiscal 2020 as in fiscal 2019, Tane Baido and Karuido products that use many used activated carbons are expected to perform favorably with the aim of procuring 4,500 m³ from Tokyo and 800 m³ from the Kansai region.

Used activated carbon and farming-garden products made from it

Measures for Plastic

Formulating Standards to Handle Plastics

Plastics spread throughout society quickly and brought convenience and other benefits to our lives. However, the reuse and material recycling rate of plastics is still low in the world, compared to other materials. Pollution problems caused by plastics waste flowing into our oceans have become a global issue. The Sumitomo Forestry Group set measures to respond to the issue of plastics in August 2019, and it has been raising awareness in all relevant departments. We are looking into any and all alternatives to plastic goods for novelty item, stationary supplies and even packaging. We have put in place various initiatives from using cans instead of plastic bottles for vending machines and drinks stored at the company unless for a special reason, such as disaster prevention, to not passing out drinks in plastic bottles during meetings. We have also reflected and revised measures for handling plastics in the Green Procurement Guidelines.

Endorsement of “Kanagawa Zero Plastic Waste Declaration” in Response to Plastic Waste

The problem of plastic waste in the oceans is internationally acknowledged as an extremely serious environmental problem for the major impact it exerts on aquatic ecosystems and human lives. On February 12, 2019, the Yokohama Branch Office, representing the five offices[*1] it manages in the Kanagawa Prefecture area, announced its endorsement of the “Kanagawa Zero Plastic Waste Declaration”.[*2] Efforts spearheaded by the Shonan Branch Headquarters, which have included clean-up activities at the Shonan-Tsujido shoreline, will be stepped up in a collaborative effort by all five offices.

Clean-up efforts at the Shonan shore.

As part of this activity, the Shonan Branch worked with Shoyukai to clean up the beach along the Tsujido shoreline in July 2019. More than 80 people gathered together in the sprinkling rain to pick up trash such as plastic waste, wood waste, and metal for roughly an hour from 7:30 in the morning. The trash included not only plastic waste but also syringes and old tires. This activity was a great chance to reflect once again on the environment around us.

*1 The Housing and Construction Division Yokohama, Yokohama-kita, Kanagawa-nishi, Shonan and Tokyo-minami Branches.

*2 As an “SDGs Future City,” area, Kanagawa Prefecture announced its “Kanagawa Zero Plastic Wasted Declaration” as part of its specific SDG targets for a sustainable society, publicized as a “Message from the Whales” in September 2018. The project aims to achieve “zero plastic waste” by 2030 or earlier if possible by spreading efforts among the municipalities, private-sector companies and residents of the prefecture to eliminate and collect plastic straws, shopping bags, etc.

Management of Hazardous Chemical Substances and Appropriate Disposal

Management of Chemical Substances

Management of Chemical Substances at Plants in Japan

The Sumitomo Forestry Group manages hazardous chemical substances at each of three relevant Sumitomo Forestry Crest Co., Ltd. plants (Kashima Plant, Niihama Plant, Imari Plant) in accordance with the Pollutant Release and Transfer Register Law in Japan.

Management Table of Chemical Substances at Plants in Japan (FY2019)

Applicable Company	Applicable Department	Substance No.	Name of Chemical Substance	Total Use (kg/year)	Total Released (kg/year)				Total Transferred (kg/year)		Conversion into Products (kg)
					Air* For VOC regulations	Water	Soil	Landfill Disposal	Sewerage	Outside Plant Premises	
Sumitomo Forestry Crest Co., Ltd.	Kashima Plant	186	Methylene chloride (dichloromethane)	10,991	7,800	0	0	0	0	3,200	1
		448	Methylenebis (4,1- phenylene) diisocyanate	1,357	0	0	0	0	0	52	0
	Subtotal			12,348	7,800	0	0	0	0	3,252	1
	Niihama Plant	186	Methylene chloride (dichloromethane)	4,355	2,868	0	0	0	0	1,487	1
	Subtotal			4,355	2,868	0	0	0	0	1,487	1
	Imari Plant	4	Acrylic acid and water-soluble salts	14,039	0	0	0	0	0	0	14,039
		7	n-Butyl acrylate	8,705	0	0	0	0	0	24	8,681
		84	Glyoxal	2,400	0	0	0	0	0	4	2,396
		134	Vinyl acetate	2,270,087	2,400	100	0	0	0	64	2,267,523
		349	Phenol	61,200	0	0	0	0	0	21	61,179
		395	The water-soluble salts of peroxy disulfuric acid	3,764	0	0	0	0	0	9	3,755
		407	Poly (Oxyethylene) = Alkylether (alkyl group: C12～C15)	2,649	0	24	0	0	0	7	2,618

Applicable Company	Applicable Department	Substance No.	Name of Chemical Substance	Total Use (kg/year)	Total Released (kg/year)				Total Transferred (kg/year)		Conversion into Products (kg)
					Air* For VOC regulations	Water	Soil	Landfill Disposal	Sewerage	Outside Plant Premises	
		411	Formaldehyde	159,921	48	0	0	0	0	310	159,563
		415	Methacrylic acid	891	0	0	0	0	0	0	891
		448	Methylenebis (4,1- phenylene) diisocyanate	10,108	0	0	0	0	0	53	10,055
	Subtotal			2,533,764	2,448	124	0	0	0	493	2,530,699
Total				2,550,467	13,116	124	0	0	0	5,232	2,530,700

▶ About symbol for Independent assurance

Management of Chemical Substances at Plants Overseas

Chemical substances, including adhesives and coatings, in the table below are managed at overseas plants in accordance with the management regulations for chemical substances in each country.

Management Table of Chemical Substances at Plants Overseas (FY2019)

Applicable Company	Country	Name of Chemical Substance	Total Use (t/year)	Total Released (t/year)		Total Transferred (t/year)
				Air * For VOC regulations	Waters, etc.	Waste Processing
KTI	Indonesia	Adhesives at MA, UA, etc.	20,636	-	-	5
ASTI	Indonesia	Styrene, xylene, solvents	30	-	-	9
RPI	Indonesia	Isocyanate/ Formaldehyde	539	-	-	0
NPIL	New Zealand	Formaldehyde	347	-	-	0
VECO	Vietnam	Isocyanate/ Formaldehyde, etc.	360	-	-	8
CCC	United States of America	MEK, alcohols, etc.	340	-	-	12
Total			22,252	-	-	34

Management of Air Pollutants

Management of Air Pollutants at Plants in Japan

The Sumitomo Forestry Group periodically conducts atmospheric emission concentration tests for dioxins, NOx, SOx, and smoke dust for each relevant plant at Sumitomo Forestry Crest (Kashima Plant, Shizuoka Plant, and Niihama Plant), the Shinshiro Plant at Sumitomo Forestry Landscaping, and at the Mombetsu Biomass Electric Power in accordance with the Air Pollution Control Act as well as local regulations. In fiscal 2019, emissions concentration testing results were all within the relevant standard values.

Management Table of Air Pollutants at Plants in Japan (FY2019)

Applicable Company	Applicable Department	Measured Substances	(Baseline)		Measured Concentration	Emissions to the Air(mg-TEQ)
			Unit			
Sumitomo Forestry Crest Co., Ltd.	Kashima Plant	Dioxin	ng-TEQ/m³	5	0.65	25
	Shizuoka Plant	Dioxin	ng-TEQ/m³	5	1.1	2.6

Applicable Company	Applicable Department	Measured Substances	Total Released (kg/year)	(Baseline)		Measured Concentration	Dry gas flow rate (Nm³/h)
				Unit			
Sumitomo Forestry Crest Co., Ltd.	Niihama Plant (Wood Waste Boiler)	Sulfur oxides (SOx)	110	ppm	-	Less than 5	3,370
		Nitrogen oxides (NOx)	1,310	ppm	350	69	3,370
		Soot and dust	40	g/Nm³	0.3	0.03	3,370
	Niihama Plant (Heavy Oil Boiler)	Sulfur oxides (SOx)	265	ppm	-	0.023	590
		Nitrogen oxides (NOx)	47	ppm	180	67	590
		Soot and dust	3	g/Nm³	0.3	0.004	590
	Imari Plant	Sulfur oxides (SOx)	1,399	-	-	- * There are no standards on the measurement frequency because this is a small-size once-through boiler.	-
The Agro-Products division of Sumitomo Forestry Landscaping	Shinshiro Plant	Sulfur oxides (SOx)	31	ppm	0.49	Less than 1.2	10,100
		Nitrogen oxides (NOx)	709	ppm	200	38	10,100
		Soot and dust	554	g/Nm³	0.2	0.061	10,100

Applicable Company	Applicable Department	Measured Substances	Total Released (kg/year)	(Baseline)		Measured Concentration	Dry gas flow rate (Nm³/h)
				Unit			
Mombetsu Biomass Power Plant		Sulfur oxides (SOx)	115,153	ppm	373	6.0	189,000
		Nitrogen oxides (NOx)	264,852	ppm	250	86.4	189,000
		Soot and dust	2,718	g/Nm³	0.1	0.0031	189,000
Hachinohe Biomass Power Generation Plant		Sulfur oxides (SOx)	663	ppm	32.3	0.01	61,527
		Nitrogen oxides (NOx)	65,090	ppm	250	61.7	61,527
		Soot and dust	0.0	g/Nm³	0.3	0.0	61,527

▶ About symbol for Independent assurance

Management of Air Pollutants at Plants Overseas

At overseas plants, the Sumitomo Forestry Group measures the concentration of NOx, SOx and smoke dust in Indonesia and Vietnam as well as VOC emission in the United States of America in accordance with the regulations of each country and region. In fiscal 2019, emissions concentration testing results were all within the relevant standard values.

Management Table of Air Pollutants at Plants Overseas (FY2019)

Applicable Company	Country	Measured Substances	(Baseline)		Measured Concentration	Dry gas flow rate (Nm³/h)
			Unit			
KTI	Indonesia	CO(Carbon monoxide)	μg/Nm³	22,600	3,416	-
		Sulfur oxides (SOx)	μg/Nm³	262	156	-
		Nitrogen oxides (NOx)	μg/Nm³	150	20	-
		H_2S(Hydrogen sulfide)	μg/Nm³	0.03	0.0009	-
		NH_3(Ammonia)	ppm	2	0.0016	-
		O_3(Ozone)	ppm	0.1	0.0076	-
		Soot and dust	mg/Nm³	0.26	0.058	-
RPI	Indonesia	Sulfur oxides (SOx)	mg/Nm³	800	18.7	-
		Nitrogen oxides (NOx)	mg/Nm³	1,000	207	-
		Soot and dust	mg/Nm³	350	*	-
ASTI	Indonesia	CO(Carbon monoxide)	μg/Nm³	15,000	2,803	-
		Sulfur oxides (SOx)	μg/Nm³	632	4.4	-

Applicable Company	Country	Measured Substances	(Baseline)		Measured Concentration	Dry gas flow rate (Nm³/h)
			Unit			
		Nitrogen oxides (NOx)	μg/Nm³	316	28.4	-
		H_2S(Hydrogen sulfide)	μg/Nm³	0.02	0.002	-
		NH_3(Ammonia)	ppm	2.0	0.08	-
		TSP(Debu Total) Total Suspended Particulate Matter	μg/Nm³	230	116.3	
VECO	Vietnam	Sulfur oxides (SOx)	mg/Nm³	500	Below Detection Boundary	-
		Nitrogen oxides (NOx)	mg/Nm³	850	151.2	-
		Soot and dust	mg/Nm³	200	94.5	-
CCC	United States of America	Volatile organic compounds (VOCs)	1bs	200,000	144,960	

*Measurements were postponed until October 2020 due to the impact of the novel coronavirus infection (COVID-19).

Management of Water Pollutants

Management of Water Pollutants in Japan

The Sumitomo Forestry Group conducts periodic water quality concentration tests of waste water at all of the relevant plants at the Tsukuba Research Institute and Sumitomo Forestry Crest Co., Ltd. (Kashima Plant, Shizuoka Plant, Niihama Plant, Imari Plant) in accordance with the Water Pollution Control Act of Japan. In fiscal 2019, emissions concentration testing results were all within the relevant standard values.

Management Table of Water Quality at Plants in Japan (FY2019)

Applicable Company	Applicable Department	Test Items	(Baseline)		Measured Concentration
			Unit		
Sumitomo Forestry	Tsukuba Research Institute	pH	-	5～9	7.8
		BOD(Biochemical Oxygen Demand)	mg/L	＜600	8.1
		COD	mg/L	-	-
		SS(Suspended Solids)	mg/L	＜600	6.6
		Normal hexane extracts (mineral oils)	mg/L	≦5	＜1
		Normal hexane extracts (animal and vegetable oils and fats)	mg/L	≦30	＜1

Applicable Company	Applicable Department	Test Items	(Baseline)		Measured Concentration
			Unit		
		Iodine consumption	mg/L	≦ 220	5.5
		Phenol content	mg/L	≦ 5	＜ 0.02
		Cyanogen compound	mg/L	≦ 1	＜ 0.1
		Copper content	mg/L	≦ 3	＜ 0.02
		Zinc content	mg/L	≦ 2	0.021
		Soluble iron content	mg/L	≦ 10	0.047
		Soluble manganese content	mg/L	≦ 10	＜ 0.02
		Benzene	mg/L	≦ 0.1	＜ 0.001
		Boron and other compounds	mg/L	≦ 10	0.125
		Fluorine and other compounds	mg/L	≦ 8	＜ 0.17
Sumitomo Forestry Crest Co., Ltd.	Kashima Plant	pH	-	5.8～8.6	12.6
		BOD(Biochemical Oxygen Demand)	mg/L	-	1
		COD(Chemical Oxygen Demand)	mg/L	10.0	3
		SS (Suspended Solids)	mg/L	10.0	<1
	Shizuoka Plant	pH	-	5.8～8.6	7.8
		BOD(Biochemical Oxygen Demand)	mg/L	≦ 160	1.1
		COD(Chemical Oxygen Demand)	mg/L	-	-
		SS (Suspended Solids)	mg/L	≦ 200	1.8
	Niihama Plant	pH	-	5.8～8.6	8.2
		BOD(Biochemical Oxygen Demand)	mg/L	-	-
		COD(Chemical Oxygen Demand)	mg/L	160	18
		SS (Suspended Solids)	mg/L	200.0	16
	Imari Plant	pH	-	5.8～8.6	8.0
		BOD(Biochemical Oxygen Demand)	mg/L	-	-
		COD(Chemical Oxygen Demand)	mg/L	70	19.8
		SS (Suspended Solids)	mg/L	70	9.5
Mombetsu Biomass Power Plant		pH	-	5～9	7.7

Applicable Company	Applicable Department	Test Items	(Baseline)		Measured Concentration
			Unit		
		BOD(Biochemical Oxygen Demand)	mg/L	1,000 mg/L or less over five days	3
		SS (Suspended Solids)	mg/L	1,000	3
Hachinohe Biomass Power Generation Plant		pH	-	5.8～8.6	7.5

Management of Water Pollutants Overseas

The Sumitomo Forestry Group conducts concentration tests of water pollutants at overseas plants in accordance with the water quality regulations for waste water in each country. In fiscal 2019, emissions concentration testing results were all within the relevant standard values.

Management Table of Water Quality at Plants Overseas (FY2019)

Applicable Company	Applicable Department	Test Items	(Baseline)		Measured Concentration
			Unit		
KTI	Indonesia	pH	-	6～9	7.8
		BOD(Biochemical Oxygen Demand)	mg/L	75.0	10.8
		COD(Chemical Oxygen Demand)	mg/L	125.0	39.1
		TSS (Suspended Solids)	mg/L	50.0	7.8
		NH_3-N (Ammonia concentration)	mg/L	4.0	1.4
		Fenol (Fenol concentration)	mg/L	0.25	0.002
RPI	Indonesia	pH	-	6～9	8.8
		BOD(Biochemical Oxygen Demand)	mg/L	75	8.8
		COD(Chemical Oxygen Demand)	mg/L	125	29.3
		TSS (Suspended Solids)	mg/L	50	3
		NH_3-N(Ammonia concentration)	mg/L	4	0.16
		Fenol (Fenol concentration)	mg/L	0.25	< 0,001
ASTI	Indonesia	pH	-	6～9	7.3
		BOD(Biochemical Oxygen Demand)	mg/L	50.0	35
		COD(Chemical Oxygen Demand)	mg/L	100.0	64
		Soluble iron content	mg/L	5	0.2

Applicable Company	Applicable Department	Test Items	(Baseline)		Measured Concentration
			Unit		
		Soluble manganese content	mg/L	2	0.1
		Copper content	mg/L	2	0.02
		Zinc content	mg/L	5	0.019
		Chromium hexavalent compound	mg/L	0.1	0.027
		Chromium compound	mg/L	0.5	0.075
		Cadmium compound	mg/L	0.05	0.002
		Lead compound	mg/L	0.1	0.009
		Hydrogen sulfide compound	mg/L	0.05	0.031
		Nitrate compound	mg/L	20	0.191
		Nitrite compound	mg/L	1	0.003
VECO	Vietnam	pH	-	5～9	7.0
		BOD(Biochemical Oxygen Demand)	mg/L	200	62.6
		COD(Chemical Oxygen Demand)	mg/L	300	152
		SS (Suspended Solids)	mg/L	200	22.5
		Nitrogen compound	mg/L	60	55
		Phosphate compound	mg/L	10	1.2
NPIL	New Zealand	pH	-	6～9	7.0
		BOD(Biochemical Oxygen Demand)	mg/L	2,350	1,503
		COD(Chemical Oxygen Demand)	mg/L	6,400	3,998
		SS (Suspended Solids)	mg/L	650	416

Appropriate Disposal of Building Materials Containing Asbestos

The Sumitomo Forestry Group has secured the proper disposal routes for asbestos. Sumitomo Forestry strives to prevent the spread of asbestos in the demolition work of residences through the formulation of the Guide for Appropriate Measures during Demolition Work.

The Group is also engaged in proper disposal of asbestos in the buildings of each office based on the law.

Proper Disposal of Building Materials Containing Asbestos

We are also furthering the proper management and processing of Polychlorinated Biphenyl (PCB) contained in equipment such as spent high-voltage capacitors in accordance with the Act on Special Measures Concerning Promotion of Proper Treatment of PCB Wastes.

Disposal Status of Polychlorinated Biphenyl (PCB) Waste*1

Applicable Company	Applicable Facility	Total Disposal in FY2017(kg)*1	Total Disposal in FY2018(kg)*1	Total Disposal in FY2019(kg)*1
Sumitomo Forestry Crest Co., Ltd.	(Former) Nagoya Plant*2	44,190	0	0
ASTI	ASTI Plants	0	0	0
Subtotal		44,190	0	0

*1 The total disposal amount is based on the disposal notification and includes the weight of the storage container.

*2 The (Former) Nagoya Plant was closed in end of June 2015.

Management Status of Polychlorinated Biphenyl(PCB)*1

Applicable Company	Applicable Facility	FY2019 Onward Estimated Processing (Units)	Management Status
Sumitomo Forestry Crest Co., Ltd.	(Former) Nagoya Plant※2	513unit	Stabilizers in storage
ASTI	ASTI Plants	14kg	Electrical Boards

*1 The equipment included above is equipment currently in use or in storage which is being evaluated for processing

*2 The (Former) Nagoya Plant was closed in end of June 2015

Management of Fluorocarbon Emissions

The Sumitomo Forestry Group is managing fluorocarbon emissions related to the fluorocarbon gases that are used as coolants by equipment such as air-conditioning and refrigeration at affiliate companies, and for testing equipment at the Tsukuba Research Institute, through periodic inspections of fluorocarbon emissions indicated in the table below in accordance with the Act on Rational Use and Proper Management of Fluorocarbons enacted April 2015. There were no leaks of fluorocarbons in fiscal 2019. We also raised legal awareness inside the Group following amendments to the Act on Rational Use and Proper Management of Fluorocarbons in April 2020.

Project for Soil Purification Technology and Environmental Remediation Aided by Plants

An issue in re-using the site of an old factory is the environmental impact associated with soil contamination and the cost burden of any remedial measures. For example, under the revised Fire Service Act of Japan, gasoline stations are now obliged to repair any underground tanks that have lain under the ground for more than 40 years, and as a consequence of this, it is expected that between 1,000 and 2,000 stations will close down each year.

Grass laid on the site where a gasoline station once stood

In order to meet the demand for environmental remediation and measures dealing with soil contamination, the Sumitomo Forestry Group has been working on cleansing contaminated soil by using the functions of plants (phytoremediation). As part of this, during fiscal 2012, in collaboration with ENEOS (JX Nippon Oil & Energy Corporation at the time), the Group developed a method for purifying soil contaminated with oil using Burning Field, a variety of Japanese lawn-grass independently registered by the Group.

One of the functions possessed by the variety of Japanese lawn-grass used in this method is that the nutrients transpiring from its roots activate microorganisms in the soil, and the upshot of this is that it has the potential to inexpensively reduce the oil content in polluted soil. This method has been adopted at nine sites so far to purify areas where gasoline stands or oil depots once stood, with purification at five sites now complete.

In fiscal 2013 and 2014, the Ministry of the Environment conducted a study on low-cost, low-impact technologies for surveying and for counteracting contaminated soil in addition to presenting the Environmental Measures Exemplary Efforts Awards (Minister of the Environment Award) in 2013. The study found that oil-degrading microorganisms tend to become more active, and were recognized as having potential to be applied at sites heavily contaminated with oil. Received the Good Design Award in October 2018 from the Japan Institute of Design Promotion.

Moving forward, by steadily producing results in soil purification based on this technique, the Group will continue to help resolve the nationwide problem of oil contamination.

Policies and Targets for Biodiversity Conservation

Declaration of Biodiversity and Biodiversity Action Guidelines

Sumitomo Forestry established its policy on Biodiversity Conservation in Company-owned Forests in Japan in fiscal 2006, and its Timber Procurement Philosophy and Policy in fiscal 2007. The Company also revised its Environmental Policies in fiscal 2007 to incorporate biodiversity considerations. Then in March 2012, the Sumitomo Forestry Group established its Declaration of Biodiversity, setting out the Sumitomo Forestry Group's understanding of and stance on biodiversity; Biodiversity Action Guidelines, specifying an internal set of guidelines; and Biodiversity Long-Term Targets as specific goals of activity.

In July 2015, the Group initiated the Sumitomo Forestry Group Environmental Policy, bringing together the Environmental Philosophy, the Environmental Policies*, the Sumitomo Forestry Group Declaration of Biodiversity, and the Sumitomo Forestry Group's Biodiversity Action Guidelines. Therefore, the efforts in biodiversity are also operated based on the policies integrated in the Sumitomo Forestry Group Environmental Policy.

* The Sumitomo Forestry Group formulated the Environmental Philosophy in 1994 and the Environmental Policies in 2000.

▶ Sumitomo Forestry Group Environmental Policy

Long-Term Biodiversity Targets

As well as advancing biodiversity conservation initiatives, the Group established its Long-Term Biodiversity Targets in March 2012 as a way of contributing to the international community in respect to attainment of the Aichi Biodiversity Targets adopted at the Conference of Parties to the Convention on Biological Diversity (COP10) in 2010. Rough schedules for achieving each of the long-term targets were put in place covering the period up until 2020 and serve as a guideline for advancing initiatives.

The Sumitomo Forestry Group's Long-term Biodiversity Targets (summary)

Group-wide Targets

1. (Aim to achieve sustainable forests)
   In all timber-related businesses, from upstream to downstream, we will work to prevent a reduction in forest areas and pursue forest sustainability.
   - We will strive to regenerate forests through reforestation and natural regeneration and logging a planned, sustainable manner that takes into account the forest's ability to grow.
   - We will increase the procurement and use of sustainable timber, such as forest certified timber, plantation forest timber and Japanese timber.
   - We will promote the efficient use as well as the recycling and reuse of timber.
2. (Increase the amount of CO_2 absorbed by and sequestered in forests and timber)
   By cultivating healthy forests and promoting the use of timber through the greater use of timber construction materials and the construction of wooden buildings, we will strive to increase the amount of CO_2 absorbed by and sequestered in forests and timber to contribute to the protection of biodiversity and the alleviation of climate change.

Individual targets

3. (Forests)
   We will promote forest management that regenerates, maintains and increases biodiversity.
   - We will carry out zoning to protect ecosystems and the habitats of living creatures.
   - We will ensure that in terms of area, 20% or more of our Company-owned forests in Japan are environment forests that emphasize environmental protection.
   - We will maintain that 100% Company-owned forests remain forest-certified.

- We will maintain and increase biodiversity at our operation sites based on results of our biodiversity monitoring of Company-owned forests in Japan.
- We will conduct operations at plantation forests overseas while considering how best to contribute to local communities, economies and education.

4. (Products)
   We will provide products and services that take into account biodiversity, such as forest-certification and products and services that have undergone environmental assessment.
5. (Construction)
   We will work to develop homes and communities that are in harmony with the natural environment and their surrounding urban landscapes.
6. (Design)
   We will manage and minimize the generation of waste by promoting a zero-emissions policy in building and construction.
7. (Greening)
   We will be considerate to the surrounding ecosystems and tree species and actively cultivate native species.
8. (Plants)
   We will manage and minimize pollutants, waste and noise, and reduce their impact on biodiversity.
9. (Public relations)
   We will actively communicate the importance of biodiversity to all stakeholders, including customers, business partners, and local communities.
10. (Research)
    We will gather the latest information and develop conservation technologies to implement biodiversity initiatives.
11. (Social contribution)
    We will protect trees that are historically and culturally important and also preserve their genetic material.

Company Structure for Biodiversity Conservation

In accordance with our environmental management structure, the Representative Director and President is the person in charge of Sumitomo Forestry Group's biodiversity conservation initiatives, and the Executive Officer in charge of the Sustainability and the General Manager of the Sustainability Department manage Sumitomo Forestry Group company activities.

Commitment to Protected Areas

To manufacture and secure timber resources, Sumitomo Forestry owns or manages many forests both in Japan and overseas. None of these forests is located in areas designated as world heritage sites. Furthermore, we have not and will not operate in areas designated as world natural heritage sites. Regardless of land ownership, national parks in Japan, which has a small land area, operate under the Regional Natural Park System and many national parks include private property. A portion of Sumitomo Forestry's Company-owned forests are located inside national park areas, and as is the case for other areas designated as protected forests or other, we operate in strict compliance with all legal regulations.

Furthermore, in terms of risk assessment, in areas determined to be important from a biodiversity perspective, we not only strictly adhere to all legal regulations, also work to mitigate our impact through reevaluation, minimization, revitalization, offsetting and other efforts.

We manage approximately 48,000 hectares of Company-owned forests in Japan and approximately 230,000 hectares of forests overseas. These managed forests are categorized as environmental forests, commercial forests and other. Both in Japan and overseas, a nature conservation area is created according to its categorization as an environmental forest or protected forest and operations in such areas are not permitted in principle.

However, the borders of these lands set by the government do not always match the boundaries of the ecosystem. Affiliated companies PT. Wana Subur Lestari (WSL) and PT. Mayangkara Tanaman Industri (MTI) conducted thorough animal and plant surveys that included conservation forest neighboring areas under governmental management before defining preservation areas and business areas. WSL and MTI also worked with local organizations to build a conservation network that defines a net of green corridors to prevent closed off islands which would isolate the regions where orangutans, long-nose monkeys and other

rare flora and fauna live. These protected areas account for over 20% of our operating land, higher than the 17% goal for protected regions set out in the Aichi Biodiversity Targets.

Evaluation of Stakeholder Initiatives

The concept and specific initiatives of the conservation network advocated by WSL and MTI have attracted attention both in Japan and overseas as unprecedented efforts worldwide. At the Indonesian Pavilion of the United Nations Framework Convention on Climate Change (COP25) held in Madrid, Spain in 2019, representatives from international organizations, researchers, and non-profit organizations highly praised our presentation of these initiatives as a representative of private organization.

In addition, in our urban greening business, we obtain third-party evaluations by actively encouraging our customers to register for “Ikimono Kyozon Jigyousho” certification set by the Association for Business Innovation in Harmony with Nature and Community (ABINC) or the Social and Environmental Green Evaluation System (SEGES) green certification implemented by the Organization for Landscape and Urban Green Infrastructure.

Support of Related Initiatives and Cooperation with Organizations

Sumitomo Forestry participates in many organizations that are actively involved in biodiversity conservation. The chairman of Sumitomo Forestry serves as vice chairman of the Keidanren Committee on Nature Conservation, made up of Keidanren member companies. In addition, employees are temporarily assigned to serve as secretariat members* and committee members are dispatched to the planning task force, which is in charge of operations. We also participate in the Japan Business Initiative for Biodiversity (JBIB), made up of companies passionate about biodiversity, and conduct joint research on corporate biodiversity initiatives in subcommittee meetings.

In the Double 20 Project in Japan to achieve the targets for Aichi, we have registered three projects as of June 2016; The Sumitomo Forestry Group's Biodiversity Long-term Targets, Sumitomo Forestry-owned Forest Operations Friendly to Biodiversity, and the Environmental Education Program at Mt. Fuji Manabi no Mori Project. These three projects are highly praised for many reasons that include the creation of many independent links, content with a great impact that utilizes the features of the company in its efforts and for the ripple effects to related industries that can be expected thanks to the relationship outlined with Aichi targets. In March 2017, these projects were bundled and recognized as a business tie-up with the Japan Committee for United Nations Development Business (UNDB-J; 10th).

Sumitomo Forestry Landscaping Co., Ltd. is actively striving toward the registration of certifications in the JBIB Guidelines for Sustainable Business Sites promoted by the Association for Business Innovation in harmony with Nature and Community (ABINC) and the SEGES Green Certification promoted by the Organization for Landscape and urban Green Infrastructure for properties undertaken with the environmental greening business. Moreover, the Chief Corporate Advisor of Sumitomo Forestry acts as the chairman of the Organization for Landscape and Urban Green Infrastructure.

* Initiatives implemented up to fiscal 2019.

- Sumitomo Forestry Group biodiversity conservations activities have been certified as an affiliated operation of the Japan Committee for United Nations Development Business (UNDB-J) (in Japanese)
- Japan Business Initiative for Biodiversity (JBIB)

Participation in Drafting the Guidelines for Private Sector Engagement in Biodiversity

The Ministry of the Environment drafted the Guidelines for Private Sector Engagement in Biodiversity (Ver. 1) in 2009 for business proprietors as a means to advance biodiversity conservation and sustainable use with recognition that corporate activities play a vital role in those efforts. Sumitomo Forestry was involved in drafting these guidelines as a member of the investigative committee.

The Guidelines for Private Sector Engagement in Biodiversity brings together basic information and approaches necessary to conserve biodiversity and reduce loss in a way that is easy for private sector organizations not yet addressing biodiversity issues to understand while also offering a means for business proprietors already engaged in efforts to play an even more effective role.

In December 2017, the second version was released in light of growing interests and expectations about conserving biodiversity driven by the SDGs and other international targets. These guidelines presented the sustainable timber procurement of Sumitomo Forestry as one excellent example initiative.

Biodiversity Conservation in Company-Owned Forests in Japan and Plantation Forests Overseas

Biodiversity Conservation in Company-Owned Forests in Japan

The Policy on Biodiversity Conservation for Company-owned forests in Japan calls for efforts to promote diversity of ecosystems through proper management of protected areas and consideration toward the continuity of forests, diversity of species through protection of rare flora and fauna, and genetic diversity through the maintenance of populations. In keeping with these policies, forests are subject to appropriate zoning and management according to certain criteria, such as the increment of trees. Sumitomo Forestry is also making efforts to create endangered species lists and manuals and conduct monitoring surveys of wildlife.

Policy on Biodiversity Conservation in Company-Owned Forests in Japan(Excerpt) (Formulated June 2006)

1. **Diversity of ecosystems**
   We will properly manage strictly protected areas designated under the Natural Parks Law of the Japanese government and other legislation in a manner stipulated by the law. In other areas, we will ensure continuity of forests by limiting the area of forest harvested, particularly when clear cutting is conducted.
2. **Diversity of species**
   We will work to prevent a decline in the number of species existing in natural forests by refraining from expansive planting projects and other extreme activities involving the replacement of species that would have a major impact on existing ecosystems. We will also give the utmost consideration to the protection of rare flora and fauna in all operations, making reference to the Sumitomo Forestry Red Data Book.
3. **Genetic diversity**
   Genetic variation and the maintenance of populations to support them will become issues in the future. However, analysis is complicated and therefore we will closely watch monitoring activities carried out by government and public institutions and their findings.

Red Data Book and Riparian Forest Management Manual

Sumitomo Forestry creates a Sumitomo Forestry Red Data Book listing flora and fauna at threat of extinction which may exist in Company-owned forests and distributes it to employees and contractors involved in forest management. By carrying the book with them during operations, personnel can refer to the opinions of specialists when they come across flora and fauna included in the book and take action. While using the latest version of this book today, we will continually advance measures focused on biodiversity and update the content of the text as necessary.

The Company has also created the Riparian Forest Management Manual to ensure the appropriate management and preservation of areas around bodies of water that are rich in biodiversity.

Sumitomo Forestry Red Data Book

Wildlife Monitoring Surveys

Sumitomo Forestry monitored wildlife inhabiting Company-owned forests. Every year, surveys are conducted in one of four areas — Mombetsu (Hokkaido), Niihama (Shikoku), Hyuga (Kyushu) and Hyogo/Mie (Honshu). Data for each area is therefore accumulated in four-year cycles. This is used to create basic reference materials relating to biodiversity and to ascertain the impact of forestry on the surrounding environment over the long-term.

Monitoring surveys conduct nine times up until now have clearly shown diverse life being maintained through the production of a habitat environment and a change in the number of mammals and birds during the gradually transition from a clear-cut area to forest.

While a number of species decline temporarily, the clear-cut areas have been shown to distribute places suitable for umbrella species such as hawks and land appropriate for hunting in a mosaic shape in addition to realizing a favorable environment for life such as the species above to thrive.

In the future, we will consider monitoring results to date as we work to properly sustain functions such as maintaining environmental conservation and biodiversity in company-owned forests.

Species of Mammals and Birds Confirmed by Past Surveys

	Managed Area (ha)		Verified mammal and avian species								
			2008	2009	2010	2011	2012	2013	2014	2015	2016
Company-owned forests in Shikoku	14,782	Mammals	14				11				10
		Birds	31				34				24
Company-owned forests in Kyushu	9,182	Mammals		11				12			
		Birds		33				29			
Company-owned forests in Hokkaido	18,199	Mammals			10				9		
		Birds			38				40		
Company-owned forests in Honshu * 2013 acquisitions in Okayama, Hyogo, and Mie * 2015 additional acquisitions in Wakayama	5,804	Mammals				12				(Wakayama)10 (Hyogo) 6	
		Birds				25				(Wakayama)29 (Hyogo) 21	
Total	47,967										

* Conducted in two areas in 2015; Wakayama and Hyogo

Japanese deer confirmed in Niihama (Shikoku) forests in 2016

Japanese monkeys confirmed in Niihama (Shikoku) forests in 2016

Appropriate Control of the Deer Population

In recent years, the rising deer population throughout Japan is increasing concerns about damage caused to young plants, peeled bark, and other harm to forestry in addition to soil runoff and the loss of biodiversity caused by the animals eating herbaceous plant on the forest floor, which decreases the variety of vegetation.

The Sumitomo Forestry Group identifies the living conditions and moving patterns of the deer in company-owned forests and mitigates damage to seedlings to encourage forest growth by trapping and ridding the deer in order to ensure proper forest management.

Properly controlling the deer population contributes to comprehensive forest management of next generation through promotion of forest growth, biodiversity conservation by sustaining diverse vegetation on the forest floor, and prevention of local disasters by preventing soil runoff.

Biodiversity Conservation in Plantation Forests Overseas

More than half of living species throughout the world live in rainforests, which are said to be the treasure troves of life. However, rainforests are slowly disappearing today due to a variety of issues from disordered development and illegal logging to forest fires. Sumitomo Forestry Group affiliated companies PT. Wana Subur Lestari and PT. Mayangkara Tanaman Industri conduct industrial forestation operations in the West Kalimantan province of Indonesia with the aim to balance biodiversity and economic interests.

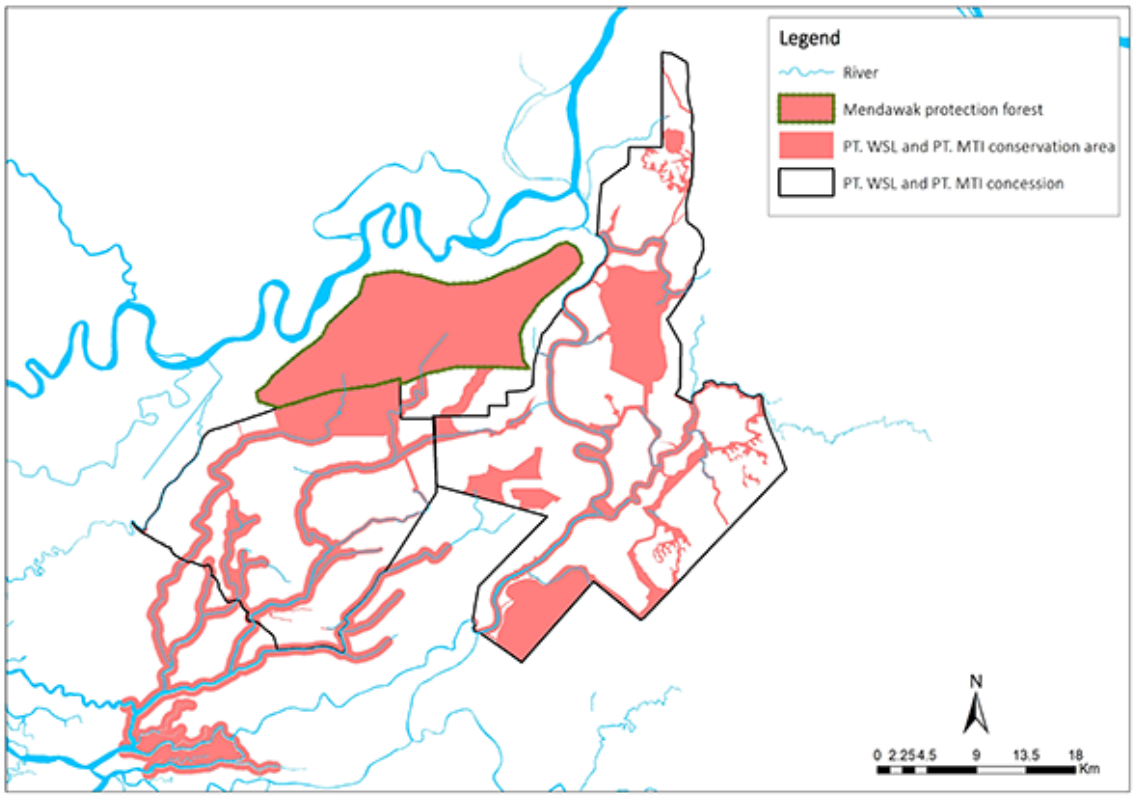
After thorough animal and plant surveys, the companies formulate a land use plan that appropriately divides protected zones from plantation zones. Protected zones are subject to regular animal surveys and in addition to population monitoring of orangutans and Proboscis monkeys, which are rare animals, studies are conducted on fruit-bearing trees, their source of food. In addition, we consult with neighboring companies to construct a conservation network of mesh-shaped green corridors to ensure that habitats do not become isolated. In fiscal 2019, a camera trap set up inside the protected area photographed for the first time an orangutan mother and baby, providing evidence that the orangutan population inside the operation site was increasing.

Conservation networks, which the Company advocates, are a new concept that is gaining attention both in Japan and overseas. At the Indonesia Pavilion at the 25th United Nations Climate Change Conference (COP25) held in 2019, we were the only private company representative to give a presentation, which won high acclaim.

We not only work to conserve ecosystems on land but also check the water quality of rivers flowing through the plantation and survey marine life of rainforest peatlands.

In the future, the Sumitomo Forestry Group will further strive to engage in biodiversity conservation from the standpoint of a private organization and economically-viable, sustainable business searching for greater harmony between the global environment and local communities.

Conservation Network



Efficient Use of Water Resources

Reduction of Water Consumption in Business Activities

Around the world, there is a growing sense of crisis over water shortages. It is expected that this problem will become more and more urgent as the demand for water rises with population increase and economic growth in developing countries.

The primary businesses of the Sumitomo Forestry Group include the Timber & Building Materials Business and the Housing Business, which operate on a business model that does not use high-volume of water. However, our businesses are expanding into sectors that do use water as a valuable resource. Our policy is to reduce the amount of water used with emphasis on these businesses while conducting risk assessments and examining countermeasures for problems that arise.

In addition to manufacturing plants inside and outside Japan, since fiscal 2012, the Sumitomo Forestry Group began examining the consumption of water and the associated sources at bases where actual water usage is measurable, such as at buildings owned by the Sumitomo Forestry Group. In fiscal 2017, we discovered 91.8% of water use is at eight group companies which make up 7.2% of the consolidated net sales by analyzing the water use of all Group companies in fiscal 2016. Therefore, we have positioned these eight companies as important water management companies and conducted risk assessments for water use at five companies in Japan as well as brought together specific measures to address any cases of insufficient water. The Sumitomo Forestry Group has also begun to grasp the actual state of water use even at three overseas companies.

From fiscal 2016 to fiscal 2018, Sumitomo Forestry Group water consumption increased due to the operation of the Mombetsu Biomass Power Plant and Hachinohe Biomass Power Plant. Biomass power generation leads to increased water usage because power is generated by burning wood and other biomass fuel to boil water and create steam for powering turbines.

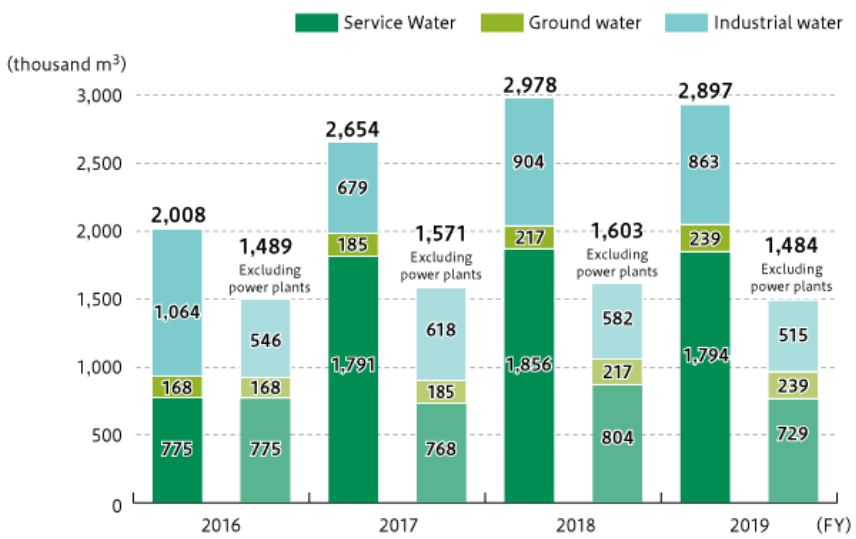
The Sumitomo Forestry Group has set conservation and effective utilization of water resources as a target in the Mid-Term Sustainability Targets announced in May 2019 with specific water consumption targets for entire Group for conducting progress management.

In fiscal 2019, the entire group used 2,897,000 m³ of water, which achieved our target of 2,981,000 m³ or less. Water saving measures for circular use of industrial water at the Sumitomo Forestry Crest Imari Plant was a major factor in reaching this target. Overseas manufacturing plants reduced their water use in fiscal 2019 by 6.2% compared to fiscal 2018 because of water-saving activities, such as the use of rainwater.

Sumitomo Forestry conducts sample surveys of water used by partner companies at on-site construction of houses in fiscal 2015 to grasp the water consumption in the supply chain, which found the volume of water used per 1 m² of floor area is approximately 0.0887 m³.

▶ Material Issue 3: The Reduction of the Environmental Impact of Our Business Activities > Management of Each Target

Water Usage over the Past Four Years*1



▶ About symbol for Independent assurance

Water Usage per Department*1

	Office Departments in Japan, etc. (Unit: 1,000m³)			Plants and Power Generation Business Departments in Japan (Unit: 1,000m³)			Overseas Plants (Unit: 1,000m³)			Total (Unit: 1,000m³)
	FY2017	FY2018	FY2019	FY2017	FY2018	FY2019	FY2017	FY2018	FY2019	FY2019
Service Water	73	79	78	1,258	1,302	1,324	460	475	392	1,795
Ground water	0	29	37	10	14	12	175	174	190	239
Industrial water	119	235	114	263	470	432	297	310	318	863
Total	192	232	230	1,531*2	1,786	1,768	932	959	900	2,897

*1 Covers sites where actual water usage is measurable, such as at buildings owned by the Sumitomo Forestry Group.

*2 A portion of the industrial water for fiscal 2016 was calculated as public water in fiscal 2017 due to a revision in the data collection category.

Efforts at Sumitomo Forestry Crest

The Imari Plant of Sumitomo Forestry Crest, which manufacturers such products as synthetic resin adhesives, uses industrial water to cool its manufacturing equipment. Afterwards, this water is reused to dilute factory wastewater and for other purposes as a water-conservation measure. In addition, from fiscal 2018, wastewater (coagulation sedimentation treated water) is further treated biologically to control the amount of water necessary for dilution for factory wastewater water quality management. This and other new water-saving measures led to an industrial water usage of 84,100 m³ in fiscal 2019, a 43% decline compared to fiscal 2018.

Biological processing facility (aeration blower)

Biological processing facility (aeration tank)

Measuring the COD of effluent

Measures Used at the Sumitomo Forestry Crest's Imari Plant for Saving Water

1. Subjecting waste water (after processing for coagulating sedimentation) to further[*1] biological processing makes it possible to restrict the water used for dilution in plant waste water quality management (approximately 350m³/day).
2. Maintain water-quality control by measuring COD[*2] and treat wastewater using only the minimum amount of water necessary.
3. After water is used to cool manufacturing equipment, it is used to dilute plant waste water.
4. Improve the proportion of rainwater used, such as by upgrading the pumps used for collecting rainwater.

*1 Beneficial microorganisms are supplied with air (oxygen), whereupon they absorb and break down organic substances, lowering COD values.

*2 Chemical Oxygen Demand (COD): An indication of the amount of oxygen required to oxidize an organic compound in water; one of the most important indicators of water quality.

Participation in Relevant Incentives

The Sumitomo Forestry Group provides answers to the CDP Water questions and discloses more detailed information about efforts on risks related to water since fiscal 2017.

Environment Related Data

Environmental Data of Group Companies in Japan

The Sumitomo Forestry Group reports information about its environmental impact of each company and each plant for domestic manufacturers and power plants that have a large influence on the environment.

Sumitomo Forestry Crest Co., Ltd.

Item (unit)	Kashima Plant	Shizuoka Plant	Niihama Plant	Imari Plant	Subtotal
Energy Input (GJ)	30,517	28,499	26,605	16,760	102,381
Raw Material Input (t)	7,377	34,335	4,488	7,817	54,017
Water Resource Use (m³)					
Service Water	3,318	5,023	4,005	102	12,448
Main Water Source	Lakes -- Lake Kitaura in Kasumigaura (Protected region: A portion is part of Suigo-Tsukuba Quasi-National Park)	Groundwater -- Oi River Basin	-	Reservoirs	-
Industrial water	-	-	-	84,100	84,100
Main Water Source	-	-	Groundwater (water authority in Niihama City)	River -- Arita-gawa River basin (partly Mt. Kurokami mammal and avian species wildlife refuge)	-
Greenhouse gas emissions (t-CO_2)					
Carbon dioxide (CO_2)	1,178	1,373	1,725	941	5,217
Methane (CH_4)*	8.3	4.8	6.8	-	19.9
Dinitrogen oxide (N_2O)*	1.9	0.5	0.6	-	3.0
Waste generations (t)	2,108	2,150	700	331	5,288
Water discharge (m³)					
Sewerage	2,012	0	4,005	0	6,017
Ocean	0	0	0	76,730	76,730
Rivers	0	5,023	0	0	5,023
Lakes	0	0	0	0	0
Emissions to the air (kg)					
Sulfur oxides (SOx)	-	-	375	1,399	1,774
Nitrogen oxides (NOx)	-	-	1,357	-	1,357
Soot and dust	-	-	42	-	42

* Methane and dinitrogen oxide are converted and calculated as carbon dioxide

▶ About symbol for Independent assurance

The Agro-Products Division of Sumitomo Forestry Landscaping

Item (unit)	Tobishima Plant	Shinshiro Plant	Subtotal
Energy Input (GJ)	2,345	5,857	8,202
Raw Material Input (t)	13,365	6,523	19,888
Water Resource Use (m³)			
Service Water	538	1,217	1,755
Main Water Source	River -- Kiso-gawa River Basin	River -- Toyokawa Prefectural Water System	-
Industrial water	-	-	-
Main Water Source	-	Well water	-
Greenhouse gas emissions (t-CO_2)			
Carbon dioxide (CO_2)	133	366	499
Methane (CH_4)*	-	-	-
Dinitrogen oxide (N_2O)*	-	-	-
Waste generations (t)	31	35	66
Water discharge (m³)			
Sewerage	0	0	0
Ocean	0	0	0
Rivers	1,217	538	1,755
Lakes	0	0	0
Emissions to the air (kg)			
Sulfur oxides (SOx)	-	31	31
Nitrogen oxides (NOx)	-	709	709
Soot and dust	-	554	-

* Methane and dinitrogen oxide are converted and calculated as carbon dioxide

▶ About symbol for Independent assurance

Power Plants

Item (unit)	Mombetsu Biomass Power Generation	Hachinohe Biomass Power Generation	Okhotsk Bio Energy Co. Ltd.	Japan Bio Energy Co., Ltd.	Michinoku Bio Energy Co., Ltd.	Subtotal
Energy Input (GJ)	5,236,808	1,483,270	17,918	11,465	7,523	6,756,984
Raw Material Input (t)	4,589	37	87,773	63,656	87,157	243,212
Water Resource Use (m³)						
Service Water	1,055,090	9,990	326	4,753	256	1,070,415
Main Water Source	Shokotsu River System	Mount Haku Water System Service Reserve	Shokotsu River System	Lake Sagami, Sagami River System, and Miyagase Dam	Mount Haku Water System Service Reserve	-
Industrial water	-	347,780	-	-	-	347,780
Main Water Source	-	Mabechi River	-	-	-	-
Greenhouse gas emissions (t-CO_2)						
Carbon dioxide (CO_2)	91,954	394	1,166	256	509	94,279
Methane (CH_4)*	5,754	2,279	-	-	-	8,034
Dinitrogen oxide (N_2O)*	83,985	23,756	-	-	-	107,741
Waste generations (t)	13,611	2,364	1	771	-	16,687
Water discharge (m³)						
Sewerage	418,132	-	265	-	-	418,397
Ocean	-	96,935	-	-	-	96,935
Rivers	-	-	-	-	-	-
Lakes	-	-	-	-	-	-
Emissions to the air (kg)						
Sulfur oxides (SOx)	115,153	663	-	-	-	115,816
Nitrogen oxides (NOx)	264,852	65,090	-	-	-	329,942
Soot and dust	2,718	0	-	-	-	2,718

* Methane and dinitrogen oxide are converted and calculated as carbon dioxide

▶ About symbol for Independent assurance

Total for All Plants in Japan

Item (unit)	Total
Energy Input (GJ)	6,867,567
Raw Material Input (t)	317,116
Water Resource Use (m³)	
Service Water	1,084,618
Main Water Source	As indicated above
Industrial water	431,880
Main Water Source	As indicated above
Greenhouse gas emissions (t-CO_2)	
Carbon dioxide (CO_2)	99,995
Methane (CH_4)*	8,054
Dinitrogen oxide (N_2O)*	107,744
Waste generations (t)	22,041
Water discharge (m³)	
Sewerage	424,414
Ocean	173,665
Rivers	6,778
Lakes	0
Emissions to the air (kg)	
Sulfur oxides (SOx)	117,621
Nitrogen oxides (NOx)	332,008
Soot and dust	3,314

* Methane and dinitrogen oxide are converted and calculated as carbon dioxide

Environmental Data of Group Companies Overseas

The Sumitomo Forestry Group reports information about its environmental impact for each plant for overseas manufacturers that have a large influence on the environment.

Overseas Manufacturers 1/2

Item (unit)	PT. Rimba Partikel Indonesia (RPI)	PT. AST Indonesia (ASTI)	PT. Kutai Timber Indonesia (KTI)	PT. Sinar Rimba Pasifik (SRP)
Energy Input (GJ)	457,032	84,040	1,401,077	25,897
Raw Material Input (t)	97,928	20,970	588,467	5,166
Water Resource Use (m³)				
Service Water	-	690	-	-
Industrial water	-	35,094	282,519	-
Ground water	64,301	-	122,549	-
Greenhouse gas emissions (t-CO_2)				
Carbon dioxide (CO_2)	19,352	6,450	49,492	1,987
Methane (CH_4)*	362	-	1,353	-
Dinitrogen oxide (N_2O)*	34	-	126	-
Waste generations (t)	19,756	3,494	89,572	1,164
Water discharge (m³)				
Sewerage	0	6,825	0	-
Ocean	0	0	7,200	-
Rivers	60,676	0	0	-

* Methane and dinitrogen oxide are converted and calculated as carbon dioxide

Overseas Manufacturers 2/2

Item (unit)	Nelson Pine Industries Ltd. (NPIL)	Vina Eco Board Co., Ltd. (VECO)	Canyon Creek (CCC)	Total
Energy Input (GJ)	1,668,244	378,014	59,083	4,073,387
Raw Material Input (t)	684,287	201,192	7,206	1,605,216
Water Resource Use (m³)				
Service Water	279,258	108,549	3,553	392,050
Industrial water	-	-	-	317,613
Ground water	-	-	3,215	190,065
Greenhouse gas emissions (t-CO_2)				
Carbon dioxide (CO_2)	12,864	12,252	2,796	105,193
Methane (CH_4)*	1,265	96	-	3,076
Dinitrogen oxide (N_2O)*	229	9	-	398
Waste generations (t)	104,132	23,133	1,622	242,873

Item (unit)		Nelson Pine Industries Ltd. (NPIL)	Vina Eco Board Co., Ltd. (VECO)	Canyon Creek (CCC)	Total
Water discharge (m³)					
	Sewerage	236,647	38,732	3,553	285,757
	Ocean	0	0	0	7,200
	Rivers	0	0	0	60,676

* Methane and dinitrogen oxide are converted and calculated as carbon dioxide

Environmental Accounting Results for Fiscal 2019

Sumitomo Forestry publicizes aggregated data of environmental protection costs and effects and also economic impact of its activities for the purpose of promoting environmentally sound management.

* The basis of calculation includes Sumitomo Forestry on a non-consolidated basis and certain Group companies

Environmental Protection Costs

Cost Category		Main Activities	Total Cost (Million yen)
Costs within operational area	Global environmental protection costs*1	Sustainable forestry cultivation	678
		Environment-related business (Overseas consulting, REDD+ business, etc.)	128
		Carbon offset	22
	Resource recycling costs*2	Promotion of appropriate treatment, reduction, and recycling of industrial waste	5,879
		Waste wood chip distribution operations	155
		Volume sold of potting mix using recycled sediment from water purification	296
Upstream / Downstream costs*3		Green purchasing	25
Management activity costs*4		Operation and promotion of environmental management activities (ISO14001 certification, environmental education, LCA surveys, etc.)	200
		Monitoring of environmental impact	1
		Disclosure and administration of environmental information (Sustainability Report, environment-related advertising, environment-related exhibitions, etc.)	26
R&D costs*5		R&D activities related to environmental protection	987
Social contribution costs*6		Management and operation of Mt. Fuji Manabi no Mori	14
		Management and operation of Forester House	9
		Other social contribution activities	2
		Donations to the Keidanren Nature Conservation Fund	2
		Donations to Organization for Landscape and Urban Green Infrastructure	15

Cost Category	Main Activities	Total Cost (Million yen)
Total		8,439

*1 Global environmental protection costs: Expenditures for preservation and management of Company-owned forests to foster sustainable forestry, expenditures in Japan and overseas relating to the environmental business, and overseas reforestation expenses for implementing carbon offset.

*2 Resource recycling costs: Expenditures on waste wood distribution operations and sorting, recycling, appropriate treatment, transportation and management of construction waste, as well as costs incurred in the recycling of potting mix.

*3 Upstream/Downstream costs: Expenditures for green purchasing.

*4 Management activity costs: Office expenses and auditing costs relating to maintenance of ISO 14001 certification; expenditures relating to disclosure of environmental information through advertising, environment-related exhibitions and sustainability reports; expenditures relating to lectures on environmental education; and costs for LCA inspections and environmental impact oversight.

*5 R&D costs: Expenditures for environment-related research conducted at the Tsukuba Research Institute

*6 Social contribution costs: Expenditures related to operating the Mt. Fuji Manabi no Mori natural forest restoration project, and maintaining and operating Forester House; expenditures related to other social contribution activities; donations to the Keidanren Nature Conservation Fund; and provision of financial assistance to the Keidanren Nature Conservation Fund commissioned by the Keidanren Committee on Nature Conservation.

▶ Link to the Keidanren Committee on Nature Conservation

Environmental Benefits

Category	Effects	Benefits
Benefits from costs within operational area	Volume of recycled waste wood from distribution operations(converted into chip equivalents)	1,009 m³
	Volume sold of potting mix using recycled sediment from water purification	15 kt
Benefits from Upstream/Downstream costs	Green procurement ratio	68.3%
Benefits from management activity costs	Employees designated as internal environmental auditors	195
Benefits from R&D costs	Acceleration of medium-to large-scale wooden structures Development of Original Wooden Beam and Pillar Components with Two-Hour Fire Resistance	-
	Completion of New Research Building at Tsukuba Research Institute Research Base for W350 Plan and the Scientific Study of Wood and Greenery	-
	Sumitomo Forestry Home Tech Development of original construction methods for seismic-resistance renovation Acquisition of certified disaster prevention technologies	-
	Co-development of the industry's highest level of sound insulation flooring Implementation in Forest Maison rental homes	-
	Launched FRD roadway design support software Supported more efficient development of better roadways to contribute to the revitalization of the forest industry	-

Category	Effects	Benefits
Benefits of social contribution costs	Volunteers who participated in Mt. Fuji Manabi no Mori project	186
	Children participating in the Environmental Education Program at Mt. Fuji Manabi no Mori project	1,101
	Visitors to Forester House	2,720
	Sumitomo Forestry Group Sustainability Report 2019 Presented the Excellence Award at the 23rd Environmental Communication Awards	-