# Environmental Management

## Sumitomo Forestry Group's Environmental Management

### Sumitomo Forestry Group's Environmental Management

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 Policy in 2000.

Moreover, in 2015, the Group has initiated the Sumitomo Forestry Group Environmental Policy, bringing together the Environmental Philosophy, the Environmental Policy, the Sumitomo Forestry Group Declaration of Biodiversity, and the Sumitomo Forestry Group's Biodiversity Action Guidelines. The Environmental Policy 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 sustainability procurement survey is conducted for the selection and evaluation of suppliers based on the Sumitomo Forestry Group Environmental Policy 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 Environmental Policy among Group employees, they are reflected in employee handbooks, on the website and posters, etc. as well as read at new employee training sessions, ISO 14001 internal environmental auditor training courses and departmental meetings. The environmental Policy are also posted in meeting rooms, and the environmental approach of the Sumitomo Forestry Group has been shared with business partners.

Sumitomo Forestry Group Code of Conduct applies to not just the Group enterprises but also to 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 addition, in 2022, Sumitomo Forestry established Mission TREEING 2030, a long-term vision that integrates a long-term business framework to realize a decarbonized society and Sumitomo Forestry Group's ideal state, towards the goal year for of 2030 for the SDGs. We have also unveiled “Mission TREEING 2030 Phase 1” (2022-2024), a three-year Mid-Term Management Plan that will build the groundwork for future growth and decarbonization. As "Further integration of business operations and ESG" is one of the five basic policies, we set Medium-Term Management Plan Sustainability 2024 which includes the sustainability strategy as well as nine newly identified material issues. We will improve our environmental management based on this target.

Click here for related information

- Corporate Philosophy and Sustainability Management
- Material issue 3 To realize a circular bioeconomy by leveraging forests and wood resources
- 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 policy and initiatives and pursue activities that convey the wonders of trees and forests and the importance of nature.

President and Representative Director Toshiro Mitsuyoshi

# Environmental Management

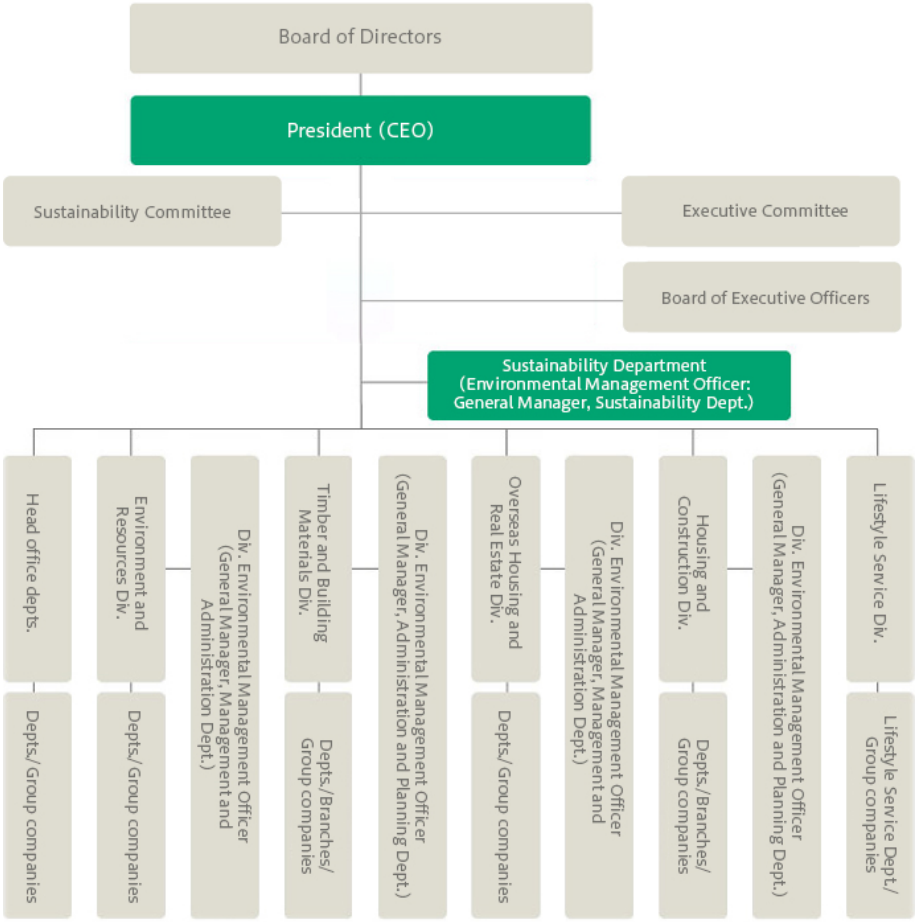
## Environmental Management Structure

### Environmental Management Structure

To ensure that management is practiced in accordance with the Environmental Policy, 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 and Representative Director 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.

## Environmental Management Structure

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Mid-Term Sustainability Targets 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. Subsequently, other divisions of Sumitomo Forestry also promoted the acquisition of certification, and in fiscal 2002, all divisions of Sumitomo Forestry in Japan had acquired this certification.

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.

The scope of consolidated companies to be certified focuses on companies that are engaged in manufacturing business and other businesses that have a large influence on the environment. In fiscal 2021, the certification rate of consolidated organizations was 94.7% (based on sales).

ISO14001 Certification Rate (Based on Sales)

94.7%

## Sumitomo Forestry Group ISO 14001 Certification

| Group companies | | Date acquired | Date renewed (valid for three years) |
|---|---|---|---|
| Multi-site 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 | |
| Cohnan Kensetsu Inc.*3 | | March 2011 | March 2020 |
| Kutai Timber Indonesia (KTI) | | August 2001 | February 2020 |
| Nelson Pine Industries Ltd. (NPIL) | | July 2003 | October 2019 |
| PT. Rimba Partikel Indonesia (RPI) | | October 2005 | December 2020 |
| PT. AST Indonesia (ASTI) | The first factory | January 2007 | January 2022 |
| | The second factory | January 2022 | January 2022 |
| 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

*3 Joined the Sumitomo Forestry Group in January 2021

## Audits by External Certification Bodies

Companies covered by the multi-site integrated ISO 14001 certification in Japan undergo routine reviews conducted once a year by the certification body JIC Quality Assurance Ltd. In fiscal 2021, 39 departments at five companies underwent surveillance and transition reviews for the ISO 14001: 2015 (JISQ 14001: 2015).

As a result of these reviews, no incompatibilities and 46 points of advice for improvement were identified as matters to be observed. On August 5, 2021, the companies under review were approved to sustain their registration after the assessment.

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. In particular, when preparing Environmental Impact Assessment Sheet, it was stressed that special attention shall be paid to whether environmental aspects were extracted for each business process and whether impact assessments were conducted (i.e., whether the lifecycle was taken into account), and whether the causes of improvement cases, including those that failed to meet targets, were investigated and corrective measures (measures to prevent recurrence) were taken. The audits are performed with these considerations in mind.

The impact of Coronavirus disease (COVID-19) delayed assessment periods for some overseas manufacturing companies, but the certifications were updated without problems.

## Internal Environmental Audits

In addition to reviews conducted by external certification bodies, companies covered by the multi-site 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 1,490 (as of the end of fiscal 2021).

Internal Environmental Audits were conducted in 108 departments, focusing on departments that were often highlighted in Internal Environmental Audits in fiscal 2020. With respect to observed nonconformities and improvement proposals, the audited department shall take corrective actions and submit a corrective report to the audit department and the Sustainability Department compiled the audit results and reviewed them with the management rank.

Each of our overseas manufacturing companies has acquired the certification and conducts internal environmental audits. The Sumitomo Forestry Group has a system in which any serious problems or irregularities that occur as a result of these internal environmental audits are reported to Sumitomo Forestry through the management team at each company.

## Compliance and Violations of Environmental Laws

The Sumitomo Forestry Group had 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

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# Environmental Management

## 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.

Click here for related information

> 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 Sumitomo Forestry 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.

Click here for related information

> Adaption to Climate Change

## Responding to Changes in the Wood Cultivation and Procurement Regulations

Because Sumitomo Forestry Group 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 Group 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.

Click here for related information

Distribution Business Initiatives

## 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.

Click here for related information

Mid-Term Sustainability Targets 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. We also engage in dialogues with our stakeholders as necessary and provide opportunities for these stakeholders to share their opinions with Sumitomo Forestry Group.

Click here for related information

> 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 2021, 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 Sumitomo Forestry 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 2021, managers from the Housing and Construction Division conducted approximately 482 on-site checks at roughly 537 waste treatment plants run by 363 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 2021, 100% 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 2021, around 100 persons participated online training at Group companies in Japan, including newly appointed personnel in charge of industrial waste treatment operations and those responsible for industrial waste management. 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.

Click here for related information

Waste Reduction and Recycling Management

## 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.
In addition, water is also sampled and inspected by the prefecture once a year and by the city three times a year. Through these measures, 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.

Click here for related information

Pollution Prevention

## 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.

Click here for related information

› Pollution Prevention

## Noise and Vibrations

Sumitomo Forestry Group 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 2021.

## 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 as tenants in buildings, therefore, 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.

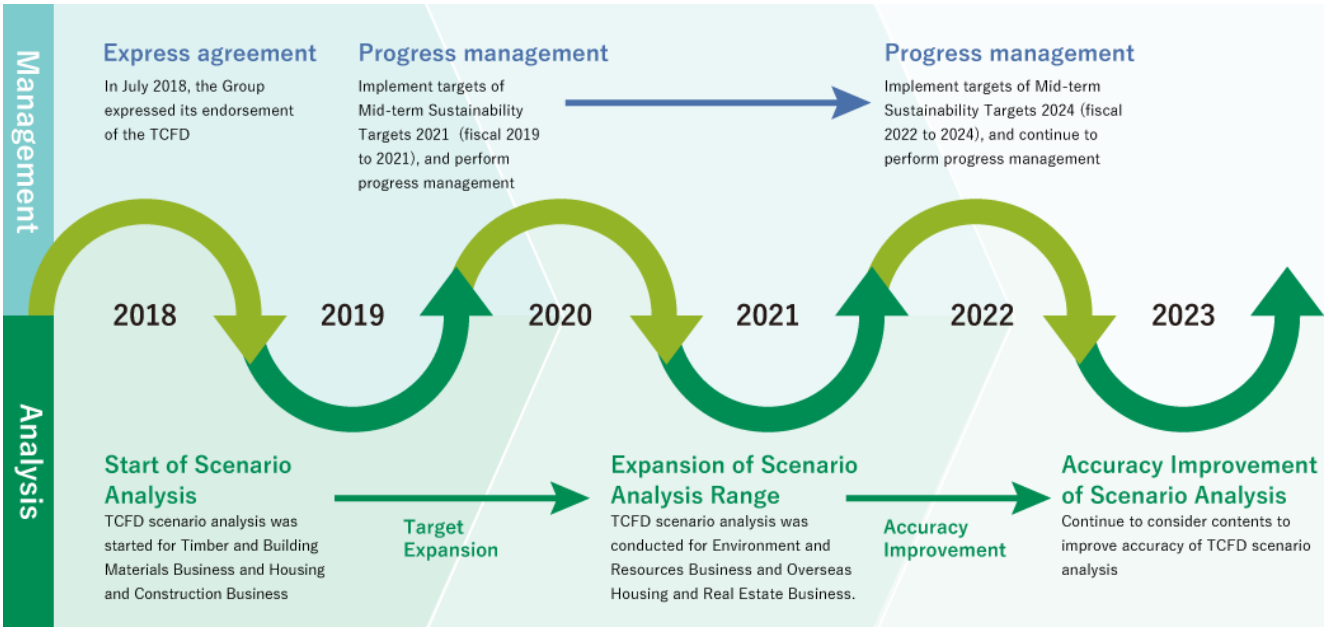
# Responding to Climate Change

## Responding to TCFD

### Express its support of the TCFD recommendations

In July 2018, Sumitomo Forestry Group recognized the risks and opportunities associated with climate change and expressed its support for the recommendations from TCFD (Task Force on Climate-related Financial Disclosures) established by the Financial Stability Board. In the same year, we conducted an initial scenario analysis for the Timber and Building Materials Business and the Housing and Construction Business based on the TCFD recommendations, assessing the risks and opportunities that climate change issues pose to society and businesses, as well as the resilience of their strategies, and in the following year 2019, we began disclosing information with reference to the framework recommended by the TCFD. In addition, we conducted scenario analysis for the Environment and Resources Business and the Overseas Housing and Real Estate Business in 2021 to improve the degree of transparency of Sumitomo Forestry Group's scenario analysis.

#### Sumitomo Forestry Group Disclosure of TCFD Scenario Analysis




Click here for related information

Material issue 9 To establish a robust business structure

## Governance

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. It also reports all proceedings at committee meetings to the Board of Directors.

In February 2022, we revised some contents of the Executive Remuneration System in order to further integrate business with ESG. We have included remuneration linked to rate of achievement of sustainability indicators during Executive Remuneration. In the event that Sumitomo Forestry fails to meet its long-term greenhouse gases emissions reduction target based on Science Based Targets (SBT), amount of remuneration paid will be reduced from the regular stock remuneration amount in accordance with the degree of target performance.

Click here for related information

> Sustainability Committee

> Executive Remuneration

## Strategy

The Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) states unequivocally that human activity causes climate change, that it causes extreme weather and increases the frequency of occurrence, and that greenhouse gases emissions are strongly related to changes in ice sheets and sea levels. In light of this, society's expectations of the $CO_2$ absorption and carbon storage functions of forests, the carbon stock and $CO_2$ emissions reduction from wood products and wooden construction, and the unused forest resource for biomass power generation. Sumitomo Forestry Group contributes to the realization of a decarbonized society, by effectively utilizing forest resources, which are renewable natural capital, and providing "shared benefit" through forest management, manufacturing and distribution of timber and building materials, and wooden construction and renewable energy businesses.

In February 2022, we unveiled Mission TREEING 2030, our long-term vision for decarbonization. As one of our business policies in Mission TREEING 2030, we set "promoting decarbonization and circular bioeconomy to maximize the value of forests and trees" and contribute to the decarbonization of society through our business by promoting the benefits of forests and wood resources in all areas in Japan and abroad, such as $CO_2$ absorption, storage, and reduction. As for the first phase of our long-term vision Mission TREEING 2030, we have announced a three-year Mission TREEING 2030 Phase 1 (2022-2024) of Mid-Term Management Plan, which provides the groundwork for our future growth and contribution to decarbonization. One of our five basic policies is "Further integration of business operations and ESG".

## Risk Management

Sumitomo Forestry Group has established the Risk Management Committee, which is chaired by the President and CEO and consists of all other executive officers. The Sustainability Committee, which is chaired by the President and CEO, composed of executive officers concurrently serving as directors, and the divisional managers of each business unit. Each of these committees meets four times a year, and each department decides on specific countermeasures and evaluation indicators for risks that may arise in the short term in daily operations, and reports progress to the Risk Management Committee on a quarterly basis. The Sustainability Committee discusses social, environmental, and governance medium and long-term risks, including climate change comprehensively for the entire value chain.

Click here for related information

› Risk Management Framework

## Metrics and Targets

Sumitomo Forestry Group has formulated long-term targets related to climate change and is promoting initiatives while incorporating them into its annual planning. In 2017, the Group declared its intention to formulate SBTs and formulated new Group-wide greenhouse gases emissions reduction target, which were approved as SBTs in July 2018. In September 2021, we submitted an application to the SBT Initiative secretariat to enhance our Scope 1 and 2 greenhouse gases emissions reduction target for 2030 from the previous 21% to 54.6% reduction, which is in line with a 1.5°C reduction in order to expedite our initiatives. Furthermore, we joined RE100, an international initiative aiming for 100% renewable energy for electricity consumption, in March 2020. We are accelerating our initiatives to cut greenhouse gases emissions toward achieving the goal of using 100% renewable energy for electricity used in the Group's business activities and fuel for power generation in our power generation business by 2040. According to the Mid-Term Sustainability Targets (2022-2024) announced in February 2022, each division will set its own target for the ratio of renewable energy procurement and take necessary budgetary measures, including capital investment, to steadily promote initiatives toward achieving RE100.

Click here for related information

› Progress Towards the SBT

› Progress Towards the RE100 Goal

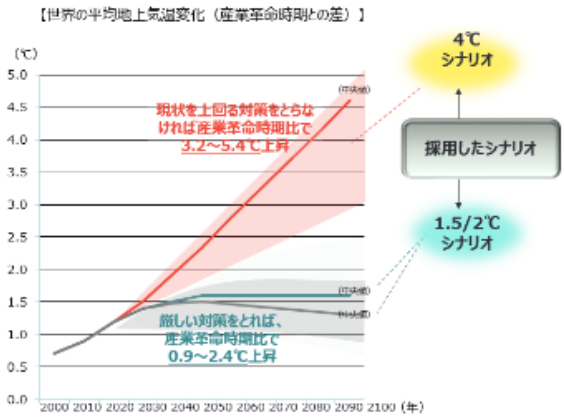
› Mid-Term Sustainability Targets and Material Issues

# TCFD Scenario Analysis

## Identifying and Evaluating Risks and Opportunities

In the first scenario analysis conducted in 2018, we analyzed the business risks and opportunities posed by climate change for the Timber and Building Materials Business and the Housing and Construction Business, using two scenarios in which average global temperature increases are below 2°C and 4°C, respectively, compared to that of pre-industrial times, and disclosed relevant information. For 2021, we conducted scenario analysis for the Environment and Resources Business, as well as the Overseas Housing and Real Estate Business. In order to enhance transparency, we considered the situation in 2030 using two scenarios: the 4°C scenario, in which no progress is made in tackling climate change, and the 1.5/2°C scenario, in which progress is made in transitioning the company toward decarbonization. The relevant departments and each division of our company collaborated to identify risks and opportunities, conducted financial impact assessments, and discussed countermeasures for items that were identified as significant risks and opportunities. In 2018 and 2021, the subject businesses for which scenario analysis was conducted accounted for approximately 98% (as of FY2021) of the net sales of Sumitomo Forestry Group. Results of the scenario analysis are presented to the Sustainability Committee and the Board of Directors, and additional initiatives are outlined in the Mid-Term Sustainability Targets.

In the future, we will increase the accuracy of our scenario analyses and discuss how to reflect them in our Mid-Term Management Plan and other business planning, while moving forward with the creation of business strategies for the resilience that will see us through into an uncertain future.




Source: IPCC, SR1.5, etc.

## Timber and Building Materials Business

In the Timber and Building Materials Business, where timber is the main material and commercial product, major transition risks is the increase in timber procurement costs because of tightening regulations such as forest protection policies and felling regulations in various countries. As for physical risks, rising average temperatures would raise the cost of wood procurement because of forest fires, tree diseases, and pest damage, etc. If fossil fuels are further regulated, however, this will provide a tailwind (opportunity) for the biomass power generation business that Sumitomo Forestry is pursuing, as well as for demand for wood chips as fuel.

## Risk Assessment in Timber and Building Materials Business

| Risk category | | Impact on operations | Risk level | Measures Initiated |
|---|---|---|---|---|
| Transition Risks | Carbon emission targets, policies in each country | • Increased timber procurement costs due to policies related to forest carbon sinks. | Large | ○ |
| | Forest conservation policies | • Increased timber procurement costs due to logging taxes, logging fees and other. | Large | ○ |
| | Energy conservation and other subsidy policies | • Increased revenues from the promotion of wood biomass operations.<br>• On the other hand, if subsidy policies are abolished, decreased revenues. | Large | ○ |
| | Changes in energy mix | • Increased revenues if biomass is incorporated into each country's sustainability criteria.<br>• On the other hand, higher costs of biomass fuel (wood chips) with an increase in demand. | Large | ○ |
| | Economic stagnation with global warming regulations | • A fall in demand for wood building materials and a decrease in revenues if construction is suppressed. | Large | ○ |

| Risk category | | Impact on operations | Risk level | Measures Initiated |
|---|---|---|---|---|
| | Increase / decrease in demand for important products and increase / decrease in product price | | Small to medium | |
| | Advances in next-generation technologies | | Small to medium | |
| | Popularization of renewable energy/energy conservation technologies | | Small to medium | |
| | Changes in investor evaluation | | Small to medium | |
| Physical Risks | Rise in average temperatures | • Increased timber procurement costs with forest fires and tree diseases, insects and other.<br>• On the other hand, rising temperatures and increased precipitation will lengthen the growth period. This will increase productivity, which may reduce timber procurement costs. | Large | ○ |
| | Changes in rainfall and climate patterns | • Increased timber procurement costs with changes in the regions where we can plant and procure trees. | Large | ○ |
| | Intensification of abnormal weather | • A fall in revenues due to factory shutdowns. Increased timber procurement costs with a decline in forest resources. | Large | ○ |

## Housing and Construction Business

In the Housing and Construction Business, transition risks include increased lumber procurement costs because of tighter regulations, including forest protection policies and felling regulations in various countries. With respect to physical risks, greater costs in home building are expected; these are incurred by decreased efficiency with rising temperatures, more severe natural disasters and extreme weather events, and the construction schedule delays. On the other hand, demand for environmentally conscious housing such as ZEH housing is expected to increase because of tougher laws and regulations for decarbonization and growing market demand for decarbonized products.

## Risk Assessment in the Housing and Construction Business

| Risk category | | Impact on operations | Risk level | Measures Initiated |
|---|---|---|---|---|
| Transition Risks | Carbon emission targets, policies in each country | • Increased timber procurement costs due to policies related to forest carbon sinks. | Large | ○ |
| | Forest conservation policies | • Increased timber procurement costs due to logging taxes, logging fees and other. | Large | ○ |
| | Policies related to buildings | • Additional investments and renovation costs to comply with policies.<br>• A continuation of the subsidy program will create a monetary incentive. Depending on the policy, this may impact market competitiveness and revenues. | Large | ○ |
| | Changes in customer evaluation | • If customer awareness of climate change increases, customer preference will move toward the use of certified timber, increasing procurement costs. | Large | ○ |
| | Energy conservation and other subsidy policies | | Small to medium | |
| | Fossil fuel subsidy program | | Small to medium | |
| | Changes in energy mix | | Small to medium | |

| Risk category | | Impact on operations | Risk level | Measures Initiated |
|---|---|---|---|---|
| | Changes in investor evaluation | | Small to medium | |
| 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.<br>• An increase in extremely hot days will lower outdoor work productivity. Increased costs due to construction delays and maintaining and enhancing worker health. | Large | ○ |

## Overseas Housing and Real Estate Business

In the Overseas Housing and Real Estate Business, transition risks include the imposition of a carbon tax and higher expenses of complying with tougher environmental regulations. Physical risks include the possibility of higher expenditures for land acquisition, construction and development as a result of more severe natural disasters, as well as a shift in demand to less disaster-prone locations. Wooden construction, on the other hand, is expected to grow as decarbonization and other rules tighten.

## Risk Assessment in the Overseas Housing and Real Estate Business

| Risk category | | Impact on operations | Risk level | Measures Initiated |
|---|---|---|---|---|
| Transition Risks | Carbon emission targets, policies in each country | • Increase in operating costs because of imposition of carbon tax | Large | ○ |
| | | • Increase in construction costs because of tougher building standards | Large | ○ |
| | Changes in the market | • Increased insurance and repair cost estimates for damage to buildings under construction | Large | |
| Physical Risks | Intensification of abnormal weather | • Increase in warranty rates because of more severe storms and floods | Large | |
| | | • Increase in financing costs because of extended construction periods / Increase in Materials Procurement cost because of higher purchase prices | Large | ○ |
| | | • Soaring land prices because of natural disasters | Large | ○ |
| | Rise in average temperatures | • Decrease in sales in existing business areas | Large | ○ |

## Environment and Resources Business

In the Environment and Resources Business, transition risks include increased operational costs because of the imposition of carbon taxes, environmental regulations and tougher felling regulations, as well as a decrease in timber harvest volume. As physical risks, the risk of forests being damaged by frequent typhoons, floods, forest fires, etc. will increase. Disease, insect, and animal damage may become more common, leading to fewer sales prospects and greater replanting expenses. Wood, on the other hand, uses less energy to make and process than steel, concrete, and other materials, contributing to lower greenhouse gases emissions, which can be expected to increase sales prices because of rising demand for wood. Wood biomass power generation will also see a rise in demand. In addition, credit income is expected to increase as a result of active trading of forest carbon credits.

## Risk Assessment in Environment and Resources Business

| Risk category | | Impact on operations | Risk level | Measures Initiated |
|---|---|---|---|---|
| Transition Risks | Policy and Regulations | • Increased burdens and costs because of regulations and taxation of $CO_2$ and greenhouse gases | Large | ○ |
| | Forest conservation policies | • Lost opportunities because of increased resource conservation regulations | Large | ○ |
| | Changes in energy mix | • Increased operating costs because of higher fuel prices | Large | ○ |
| | Economic stagnation with global warming regulations | • Deterioration of Labor Environment | Large | ○ |
| | Popularization of renewable energy/energy conservation technologies | • Increased costs related to more efficient resource use and production, development and implementation of low-carbon technologies | Medium | ○ |
| Physical Risks | Intensification of abnormal weather | • Damage to forests because of frequent storms and rainstorms | Large | ○ |
| | | • Increased risk of business shutdowns because of frequent windstorms and rainstorms | Large | ○ |
| | Changes in rainfall and climate patterns | • Damage to forests because of reduced precipitation | Large | ○ |
| | Rise in average temperatures | • Damage to forests because of higher average temperatures | Large | ○ |
| | | • Changes in growing conditions because of temperature increase and changes in rainfall | Large | ○ |
| | Intensification of abnormal weather | • Damage to forests because of increased insect and animal damage | Medium | ○ |
| | | • Disruption of supply chain because of increased precipitation | Medium | ○ |

## Climate Change Related Opportunities and Strategies

### Expanding Housing Sales in Concert with Government ZEH Promotion

In the Global Warming Prevention Plan and The Sixth Basic Energy Plan approved by the Cabinet in October 2021, the Japanese government declared that "the government will raise energy conservation standards in stages and raise inducement standards and top-runner standards for Housing and Construction to ensure the level of energy conservation performance of ZEH and ZEB standards for new Housing and Construction to be built in fiscal 2030 and after", and "the government will ensure the level of energy conservation of ZEH and ZEB standards for the stock average of housing and buildings by 2050".

Received orders of ZEH
Target (%)*
(FY2024)

80%

* Include Nearly ZEH, Small ZEH Oriented and ZEH Oriented in Snow Area

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. Sumitomo Forestry has also adopted 360° TRIPLE Insulation as a standard that enhances the thermal insulation performance of custom-built detached homes (excluding fireproof specifications). In addition to offering high-performance thermal insulation materials, the standard provides all-around insulation for buildings as a whole from structural materials to windows with high thermal performance. 360° TRIPLE Insulation creates a living space that stays cool in the summer, warm in the winter and increases energy-saving performance.

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.

Click here for related information

› Promotion of Net Zero Energy House (ZEH) Specifications

› Material issue 2 To realize carbon neutrality by leveraging forests and wood resources

## 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.

Amount of biofuel material used (such as wood chips and pellets)
Target (t)
(FY2024)

1,640,964t

The Sumitomo Forestry Group wood biomass power generation business expanded to four domestic locations by March 2019. The Kanda Biomass Energy in Fukuoka Prefecture is set to start operations in June 2021 while the Morinomiyako Biomass Energy in Miyagi Prefecture should be up and running by November 2023. These two power generation plants will give the Group a total power generation capacity of roughly 251.6 MW, which will supply electricity to approximately 274,366 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.

Click here for related information

- Material issue 1 To enhance the value of forests and wood through sustainable forest management
- Material issue 2 To realize carbon neutrality by leveraging forests and wood resources
- Material issue 3 To realize a circular bioeconomy by leveraging forests and wood resources

## Promoting the medium -to large-scale wooden constructions overseas

Sumitomo Forestry is developing medium-to large-scale wooden constructions overseas in order to achieve net zero carbon emissions and realize a decarbonized society. In Mid-Term Sustainability Targets (FY2022~2024), Sumitomo Forestry set goals for the development of medium-to large-scale wooden constructions business (in the U.S., Australia, and Europe), and confirmed its involvement in a 15-story wooden office construction project in Melbourne Australia, in October 2021, and a 6-story wooden eco-friendly office development project in London in February 2022. In the future, we will improve our understanding of advanced environmental response and medium-scale wooden constructions in Australia and Europe and expand "Net Zero Carbon Architecture" globally.

Click here for related information

- Material issue 7 To create new markets with forests and wood

### Expanding Interest in Forest Carbon Credits

In accordance with the Paris Agreement, governments, companies, and investors are accelerating their efforts to achieve carbon neutrality by 2050, including the Japanese government's declaration to do so in order to realize a decarbonized society. In addition, the Japanese government has announced that it will increase its greenhouse gases emissions reduction target by 2030 from 26% to 46% below 2013 levels. Forests, unlike other carbon-reduction methods, can absorb and repair their own $CO_2$. Forests play an even more important role in achieving carbon neutrality. Scenario analysis reveals that forest carbon credits might become a new source of revenue for forest enterprises as the carbon credit market advances toward decarbonization, as carbon credit expands.

Sumitomo Forestry's long-term vision Mission TREEING 2030 includes establishing a forestry fund to safeguard forest assets including $CO_2$ credits and other new value, and expanding business through forest management and asset management, with the target of all contributing to societal carbon offsetting. As one of its initiatives, Sumitomo Forestry will perform advanced forest management to avoid peat fires through highly accurate water level management, merging the forest management technology it has developed in Japan and overseas with IHI's satellite-based observation technology. Utilizing this knowledge, we plan to start a consulting business for government agencies in countries and regions that combat deforestation and peatlands destruction, as well as corporations contemplating forest ownership for carbon offsets. Furthermore, we have set such target items as "establishing a method for calculating forest absorption and improving its accuracy" and "increasing the ratio of profit/loss and revenue from new forest value creation business" in Mission TREEING 2030 Phase 1 (2022-2024) of our Mid-Term Management Plan and will promote these initiatives.

# Responding to Climate Change

## Mitigation of Climate Change

### 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 submitted a commitment letter to SBTi* to set an SBT for the entire Group in June 2017. The new set of long-term greenhouse gas reduction targets has been approved as SBT by SBTi in July 2018. In October 2018, the IPCC (Intergovernmental Panel on Climate Change) published the "1.5 ℃ Special Report," which illustrates the latest scientific findings on global warming. It became clear that there are big differences in the impact on the global environment between suppressing the rise in average temperature of the earth from before the Industrial Revolution to 2℃ and 1.5℃ in the latter half of this century. In April 2019, the SBT Initiative changed itts certification standard to two types of greenhouse gas emissions reduction targets; to the level of global average temperature rise by 1.5℃ and well below 2℃ compared to pre-industrial revolution in response to the trend of the "1.5℃ Special Report" (applicable from October 2019). In September 2021, we submitted an application to the SBT Secretariat to enhance our Scope 1 and 2 greenhouse gases emissions reduction targets from the previous 21% reduction to a 54.6% reduction, with 2030 as the target year, in order to expedite our initiatives. Its progress and results are explained below.

SCIENCE BASED TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

**2°C target (SBT approved)**

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

**1.5℃ target (SBT application pending)**

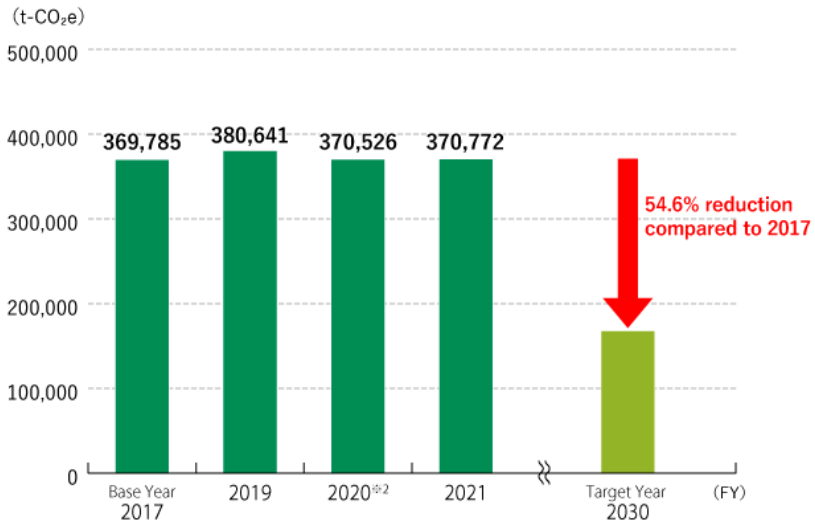
- Scope 1&2: 54.6% reduction of greenhouse gas emissions compared to 2017 (base year) by 2030.
- Scope 3: 16% reduction of total greenhouse gas emissions from Category 1 and Category 11 compared to 2017 (base year) by 2030.

Sumitomo Forestry Group is striving to reduce greenhouse gas emissions and take measures to mitigate climate change based on SBT such as thorough energy saving activities and promotion of renewable energy use.

## Progress Towards the SBT

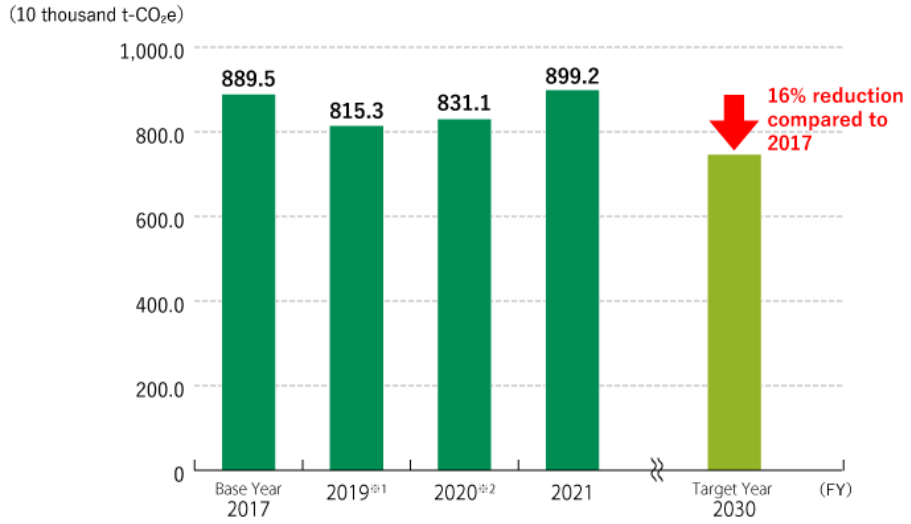
In fiscal 2021, scope 1 and 2 emissions increased by 0.1% from fiscal 2020 due to the fact that the manufacturing sites resumed the operation in fiscal 2021 after the suspension over the spread of COVID-19 and also the average emission factor in Vietnam increased significantly. Scope 3 emissions increased by 3% from fiscal 2020 due to an increase in the number of units sold and delivered in the Overseas Housing and Real Estate Business, and Cohnan Kensetsu, a general constructor in Osaka, joined Sumitomo Forestry Group.

### Progress toward our science-based reduction target: Scope 1 and 2



## Progress toward our science-based reduction target: Scope 3 (Category 1 and 11)

16% reduction of total greenhouse gas emissions from Category 1 and 11 compared to 2017 by 2030




*1 The calculation method for Category 1 emissions of Scope 3 was revised to apply Accounting Standards for Revenue Recognition (Corporate Accounting Standard No. 29) as of fiscal 2019.

*2 Data collection period for total emissions from fiscal 2020 is January to December of each year, while data collection period for emissions before fiscal 2019 is April of each year to March of the following year.

Click here for related information

〉 Sumitomo Forestry Group Mid-Term Sustainability Targets Achievements in 2021

## 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.**

* RE100 is an international initiative run jointly by The Climate Group, a global environmental NGO, and the CDP. As of February 2022, 290 companies worldwide are members, of which 50 companies are Japanese.

## Progress Towards the RE100 Goal

In fiscal 2021, amount of renewable energy introduced in the electricity used in Sumitomo Forestry Group's business activities resulted in 17.2 % which is the total amount of electricity used by the entire Group such as solar panels installed in model homes and for private use of power generated by biomass power plants (including adjacent wood chip manufacturing plants for fuel), etc. In addition, ratio of biomass-derived fuel to the fuel consumption of the power generation business is 88.5% (calorific value conversion).

Renewable energy consumption rate within the power consumption of the entire group (FY 2021)

17.2%

In the Mid-Term Sustainability Targets 2024 announced in February 2022, we have set a goal of reaching a renewable energy introduction rate of 35.1%* in power consumption of the Group's business activities in fiscal 2024. While the officially declared RE100goal is by 2040, we aim to complete all of our own efforts by 2030.

* Excludes self-consumption from biomass power generation projects and establishments located in New Zealand aiming for RE100 nationwide in 2035 (Achievement in fiscal 2021 is 2.6%).

Click here for related information

About symbol for Independent assurance

## Approach to Use 100% Renewable Energy

In order to achieve 100% renewable energy for the electricity for Sumitomo Forestry Group's operations, we are utilizing Sumirin Denki, which we started in 2019. We are also planning to install 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 while aiming to use 100% renewable energy.

### Utilizing Sumirin Denki Solar Power Generation for Domestic Electricity Use

Sumitomo Forestry started the "Sumirin Denki" service in November 2019 for owners of Sumitomo Forestry and Sumitomo Forestry Home Tech's homes. The service offers surplus electricity purchase and power supply agency sales for owners whose solar power generation purchase period expires under the feed-in tariff (FIT) for renewable energy.

We are working to allocate this "Sumirin Denki" to the total amount of electricity used by Sumitomo Forestry Group in Japan. We promote the RE100 initiative by utilizing the surplus solar power purchased from the owners with "Sumirin Denki" at our offices and model homes. As of December 2021, the number of contracts was 1,539, and we started supplying electricity purchased from the owners to 34 model homes in the Kinki area. In the future, we will accelerate the promotion of the "Sumirin Denki" services to the owners and aim to allocate the renewable energy in all areas in 2022.

## Expanding Solar Power in Our Factories

As Sumitomo Forestry Group, our manufacturing facilities account for about 30% of our total greenhouse gas emissions. To achieve RE100, it is vital that we conserve energy and expand the use of renewable energy in our factories.

Exterior view of the Kashima Factory

In September 2020, Sumitomo Forestry Crest Kashima Plant, which manufactures interior materials for houses, introduced solar power generation under the PPA (Power Purchase Agreement) model*. In addition, since April 2021, Kashima Plant procured the renewable energy menu electricity and replaced all the electricity with renewable energy and achieved RE100. Following this, the Shizuoka Plant of the same Sumitomo Forestry Crest is also expected to procure renewable energy menu electricity from April 2021 and achieve RE50. In the Mid-Term Sustainability Targets 2024 up to 2024, we plan to expand the procurement of renewable energy menu electricity at the Shizuoka and Imari plants to achieve RE100. Sumitomo Forestry Group's overseas factories will also promote introduction of the solar power generation, and by 2024, we plan to procure about 20% of renewable energy from both domestic and overseas factories and aim to reduce greenhouse gas emissions by 26,000 tCO2 compared to fiscal 2017.

Both in Japan and overseas, Sumitomo Forestry Group is considering the installation and expansion of solar power panels in our manufacturing sites in an ongoing effort to increase the ratio of renewable energy.

* PPA Model: A system whereby a host loans out factory rooftop space to a power generation company to install solar power generation panels and then purchases the electricity generated from these panels for its own use

## Approaches to Realizing RE100 at Overseas Manufacturing Sites

Nelson Pine Industries (NPIL), which manufactures and sells MDF (medium density fiberboard), single plate, and LVL (laminated veneer lumber) in New Zealand uses the most electricity in the Sumitomo Forestry Group. In New Zealand, a high ratio of power composition is from hydropower, geothermal power and other forms of renewable energy, and was approximately 80% as of 2016. The New Zealand government has set out a goal for 100% renewable energy by 2035, which is when we forecast to achieve RE100.

With the momentum for implementing renewable energy growing in Southeast Asia, we are considering the installation of solar power generation systems at our other manufacturing sites in Indonesia and Vietnam. In the United States and Australia where we are primarily involved in the housing business, we plan to steadily transition to renewable energy thanks to the ability to procure renewable energy at low cost and the issuance of sufficient renewable energy certificates.

## Promotion of the Renewable Energy Business

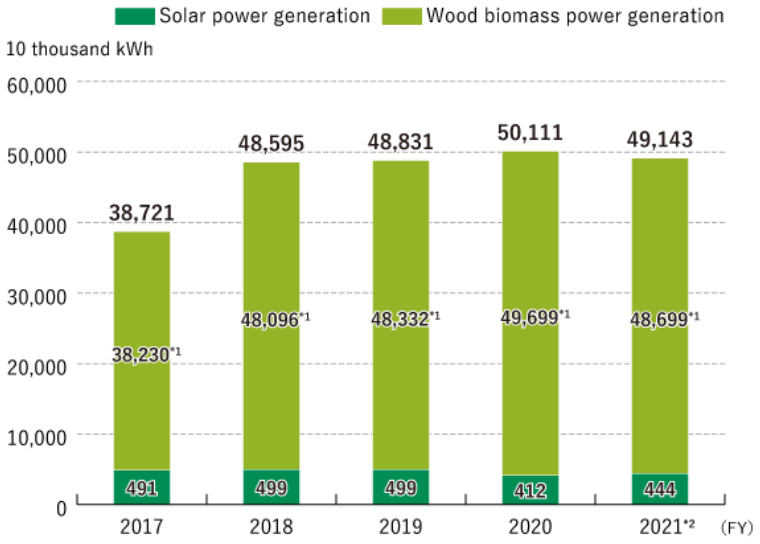
The Sumitomo Forestry Group is advancing renewable energy generation businesses, including solar power generation as well as biomass power generation that chips and uses scrap construction wood in addition to unused forest resources and other such materials as fuel. Total power generation in 2021 is 491,432 MWh.

Effect of $CO_2$ emission reduction through power generation in fiscal 2021

**52,784$t\text{-}CO_2e$**

* $CO_2$ emission reductions compared to the electricity purchased from power companies. These emissions are calculated using the $CO_2$ emission coefficients of mainly Hokkaido Electric Power and Tohoku Electric Power.

### Trends in the Amount of Renewable Energy Generation




*1 Amount of electricity generated from wood biomass power generation covers only consolidated subsidiaries of Sumitomo Forestry and includes the amount of power generated by coal, which is used as an auxiliary fuel for smooth operation and maintenance.

*2 An aggregation period after fiscal 2020 is from January to December of each year, and the aggregation period of the discharge amount before fiscal 2019 is from April of each year to March of the following year.

Click here for related information

〉 Sumitomo Forestry Group Mid-Term Sustainability Targets Achievements in 2021

## Wood Biomass Power Generation Business

The Sumitomo Forestry Group operates wood biomass power generation facilities that are fueled by recycled chips primarily using leftover from construction as raw materials, wood not suitable as a building material, and thinning leftover in forests and other unused forest resource.

The $CO_2$ emitted by burning wood does not contribute to $CO_2$ in the atmosphere as part of the life cycle of the trees because the $CO_2$ in the atmosphere is absorbed through photosynthesis as the trees grow (concept of carbon neutrality). Therefore, the Group has been engaged in wood biomass power generation as a type of business that contributes greatly to the advancement of forestry, such as the effective use of wood, mitigation of $CO_2$ emission and furthermore, the maintenance of local forest environments.

In February 2011, the Sumitomo Forestry Group entered this sector with the operation of the urban-oriented Kawasaki Biomass Electric Power (generation capacity: 33 MW), which primarily uses scrap construction wood as fuel. The Mombetsu Biomass Electric Power Co., Ltd. with a power generation scale of 50 MW utilizing unused wood from domestic forests as its main fuels commenced operation in December 2016, the 6.2 MW Tomakomai Biomass Power Co., Ltd. in April 2017, and 12.4 MW Hachinohe Biomass Electric Power Co., Ltd. in April 2018, and the 75MW Kanda Biomass Energy K.K. in June 2021, respectively.

When the 75 MW Morinomiyako Biomass Energy K.K. commences operation in November 2023, the total power generation scale of the Sumitomo Forestry Group related facilities will be approximately 251.6 MW, which is equivalent to electricity supply for approximately 555,000 households.

Drawing on past experience in the wood biomass power generation business, the Group will continue to expand renewable energy business operations suited to local conditions and other requirements.

Mombetsu Biomass Electric Power

Hachinohe Biomass Electric Power

## Sumitomo Forestry Group's wood biomass power generation business

| Business | Location | Power generation capacity | Start of operations | Main features |
|---|---|---|---|---|
| **Kawasaki Biomass Power Generation Business** (Joint investment with Sumitomo Joint Electric Power Co., Ltd. and Fuluhashi EPO Corporation) | Kanagawa Prefecture Kawasaki City | 33MW | February 2011 | • Largest biomass power generation facility in Japan that primarily burns scrap wood as fuel<br>• Utilizes recycled chips produced from construction debris and waste pallets from Tokyo and surrounding suburbs, as well as pruned branches<br>• Equipped with environmental mechanisms, such as flue gas desulfurization equipment, an exhaust gas denitrizer and a bag filter, the urban-sourced biomass power generation plant clears Kawasaki City's strict environmental standards |
| **Mombetsu Biomass Electric Power Business*** (Joint investment with Sumitomo Joint Electric Power Co., Ltd.) | Hokkaido Mombetsu City | 50MW | December 2016 | • Unused wood and forest material is primarily procured from within a 75km radius of the power plant and turned into chips at an adjacent plant before being used as fuel.<br>• Palm kernel shell, plus some coal is also partially used as an auxiliary fuel |
| **Tomakomai Biomass Power Generation Business** (Joint investment with Mitsui & Co., Ltd., Iwakura Corporation and Hokkaido Gas Co., Ltd.) | Hokkaido Tomakomai City | 6.2MW | April 2017 | • All of the fuels are from unused forest resource in Hokkaido. |
| **Hachinohe Biomass Power Generation Business*** (Joint investment with Sumitomo Osaka Cement Co., Ltd. and East Japan Railway Company) | Aomori Prefecture Hachinohe City | 12.4MW | April 2018 | • Unused forest resource from forestlands in the Sanpachi-Kamikita-Shimokita region of Aomori Prefecture, timber offcuts, and railway forest thinnings from the nearby railway lines will be used as the main source of fuel<br>• Some palm kernel shell will be used |

| Business | Location | Power generation capacity | Start of operations | Main features |
|---|---|---|---|---|
| **Kanda Biomass Power Generation Business**<br>A joint capital venture between RENOVA Inc., Kyuden Mirai Energy Co. Inc., and Mihara Group K.K. | Fukuoka Prefecture Miyako District | 75MW | June 2021 | • Fuel uses thinnings and unused forest resource from northern Kyushu in addition to American pellets and Indonesian palm kernel shell |
| **Morinomiyako Biomass Energy Generation Business**<br>Joint venture with RENOVA Inc., United Corporation, Mizuho Leasing Company, Limited and RenoDa Partners G.K. | Miyagi Prefecture Sendai City | 75MW | November 2023 | • Fuel uses pellets produced mainly in North America and palm kernel shell from Indonesia and Malaysia |

* A consolidated subsidiary of Sumitomo Forestry

## Solar Power Generation Business

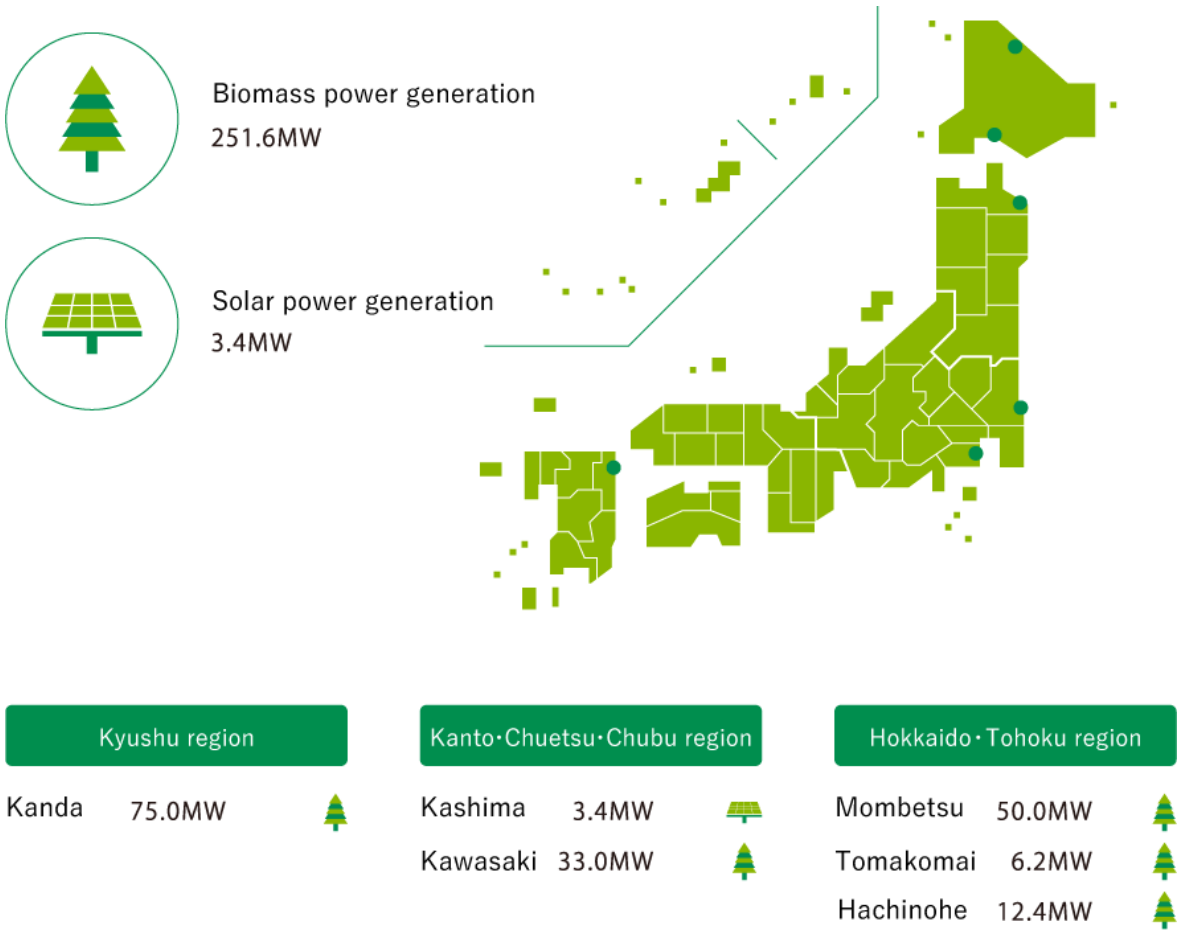
Sumitomo Forestry owns a solar power generation facility that can generates 3.4 MW in Kashima City, Ibaraki Prefecture.

For some solar panel mounts, we have adopted original wooden mounts mainly made of domestically produced cedar wood to reduce the environmental load of power generation facilities and expand the use of wood.

In fiscal 2021, the combined output of power generation was 4,440MWh.

Solar panels and environmentally conscious wooden frames

### Power plant location for renewable energy business



## Promoting the Use of Unused Forest Resource

Unused forest resource is left-over wood biomass generated from logging or thinning of standing trees in forests. Wood biomass power generation plants are operating in each area and the demand for wood biomass is growing following the adoption of the FIT law (Feed-in Tariff for Renewable Energy). By using unused forest resource, we can expect an effective increase in the value of forests while also promoting renewable energy. In fiscal 2021, the Group used 371,000 tons of unused forest resource. We will continue to work on building up systems for the efficient, stable collection of unused forest resource.

Amount of unused forest resource from domestic forest (2021)

**371,000 tons**


Unused forest resource

## Adoption of High-Performance Silviculture Machines

### Effectively Extracting Unused Forest Resource

Mombetsu Forestry Office introduced Scandinavian harvesters and forwarders able to turn in small circles in 2015 to begin efforts to deliver log harvest/thinning (unused forest resource) as Mombetsu Biomass Electric Power fuels.

Moreover, by selecting forestry equipment with high-level driving performance in narrow forest areas, operators are able to execute all harvesting and transport operations while on the machine. We consider this is an initiative that improves safety and will play a role even in eliminating occupational injuries.

Scandinavian harvester*1

Scandinavian forwarder*2

*1 Self-propelled high-performance forestry machine that brings together each operation to cut, de-limb, and vertically cross-cut*3 timber, which had traditionally been done with a chainsaw

*2 Self-propelled high-performance forestry machine that collects and feeds vertically cross-cut timber on a cargo bed

*3 To cut crude wood to a standard length

## Promotion of Net Zero Energy House (ZEH) Specifications

The household sector in Japan still has high level emission of $CO_2$ although the trend has slowed down. In the Plan for Global Warming Countermeasures and the Sixth Strategic Energy Plan approved by the Cabinet in October 2021, the Japanese government declared that "the government will raise energy conservation standards in stages and raise inducement standards and top-runner standards for Housing and Construction to ensure the level of energy conservation performance of ZEH and ZEB standards[*1] for new Housing and Construction to be built in fiscal 2030 and after", and "the government will ensure the level of energy conservation of ZEH and ZEB standards for the stock average of housing and buildings by 2050".

For new custom-built detached houses
Actual ZEH order ratio [*3]
(FY 2021)

67.4%

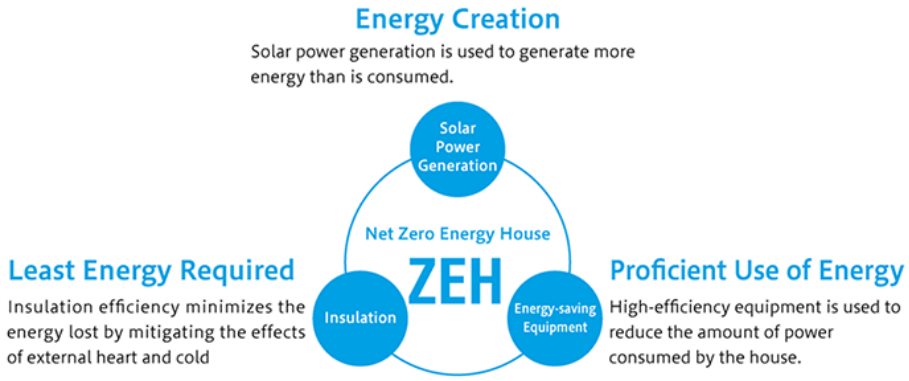
ZEH is a scheme for housing to provide less than zero annual net primary energy consumption by combining equipment to generate energy such as high thermal insulation efficiency, energy-saving equipment, and solar energy creation.

This standard responds to many of the Sustainable Development Goals, including not only Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all and Goal 13: Take urgent action to combat climate change and its impacts but also Goal 3: Ensure healthy lives and promote well-being for all at all ages and Goal 12: Ensure sustainable consumption and production patterns. The standardization of ZEH will contribute to building a sustainable society.

Sumitomo Forestry has long used "wood," which are renewable natural resources and absorb and fix $CO_2$ in the process of growth, as the principal structural members, and adopted a unique design method, "Ryoonbo," that utilizes the blessings of nature such as the wind and the sun and provided housing where people can live comfortably throughout the year. The Company's expertise in utilizing these unique characteristics of wood and blessings of nature together with its technologies for the reduction of energy consumption, such as improvements in thermal insulation as well as the adoption of energy-saving equipment, and its technologies for the smart use of energy, such as equipment for generating and storing energy and HEMS[*2].

The Mid-Term Sustainability Targets has set a target for the ZEH order ratio for newly built custom-built homes, which was 67.4% in fiscal 2021.
With respect to new custom-built detached houses, we will promote the spread of ZEH with the basic specifications of further strengthening heat insulation performance of buildings and its openings and installing a solar power generation system.

*1 Compliant with reinforced hull standards and 20% reduction from the current energy conservation standards excluding renewable energy.
*2 Home Energy Management System. A system whereby residents can visualize the amounts of energy they generate and use
*3 Including Nearly ZEH, Small ZEH Oriented, Heavy Snow ZEH Oriented

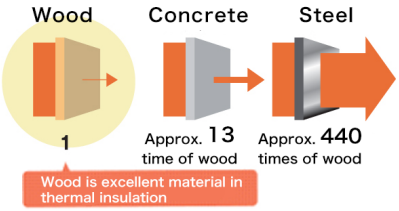



Click here for related information

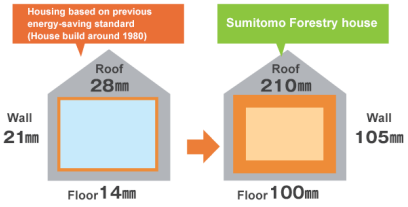
- Ryouonbou Design Concept (in Japanese)
- Sumitomo Forestry Group Mid-Term Sustainability Targets Achievements in 2021

## Wooden Houses with Superior Insulation

If the thermal conductivity of wood is 1, the thermal conductivity of concrete would be almost 13 and steal upwards of 440. Wood as a material is a superior insulator to mitigate the transfer of heat. In addition, Sumitomo Forestry uses high-performance 24K glass wool thermal insulator (high-end product) based on its own unique standards.




Comparison of Materials by Thermal Conductivity




Unique Standards of Thermal Insulators of Sumitomo Forestry

### Adoption of "360° TRIPLE Insulation Standards"

Sumitomo Forestry has adopted 360° TRIPLE Insulation as a standard that enhances the insulation efficiency of new custom-built detached houses (excluding fireproof specifications). In addition to offering high-performance thermal insulation materials, the standard provides all-around insulation for buildings as a whole from structural members to windows with high thermal performance to realize affordable yet comfortable lifestyles.

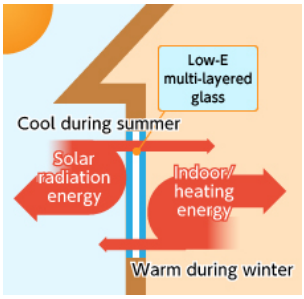
360° TRIPLE Insulation creates a living space that stays cool in the summer, warm in the winter and increases energy-saving performance. This insulation option, as a standard, corresponds to 5 stars, which is the highest rank of the Building-Housing Energy-efficiency Labeling System (BELS)* promoted by the government, as a standard.

Sumitomo Forestry applies for BELS for all of new custom-build detached houses. BELS is a labeling system with which a third party evaluation organization evaluates and certifies the energy efficiency of new and existing structures using an index indicating the energy performance and asset value of each building. Our initiative strives to make Sumitomo Forestry the first major housing manufacturer to have every building BELS-certified. In fiscal 2021, the BELS certification rate (at the start of construction of the main unit) was 99.5%. Sumitomo Forestry homes enhancing insulation efficiency deliver assured safety and comfort proven by the BELS certification.

* BELS is one third-party evaluation system based on the Building-Housing Energy-Efficiency Labeling Guidelines (evaluation standards on labeling of the energy consumption performance for buildings) defined by the Ministry of Land, Infrastructure, Transport and Tourism. This certification is run by the Association for Housing Performance Evaluation & Labeling. The system objectively evaluates energy efficiency to display a five-tier star rating. BELS stands for the Building-Housing Energy-efficiency Labeling System.

## Limiting Energy Loss with Highly Insulating Glass

Windows cause the greatest loss of heat in living spaces. Shielding interior spaces from heat in the summer and preventing heat from escaping in the winter is vital. As windows cause the largest heat loss, Sumitomo Forestry uses low-E multi-layered glass with argon gas inside. Argon gas is injected between the multi-layers of glass to mitigate heat transfer to the air while the panes are coated with special metal film. The superior thermal insulation and insulation properties shield interior spaces from heat in the summer and prevent heat from escaping in the winter.




Insulation using low-E multi-layered glass

Click here for related information

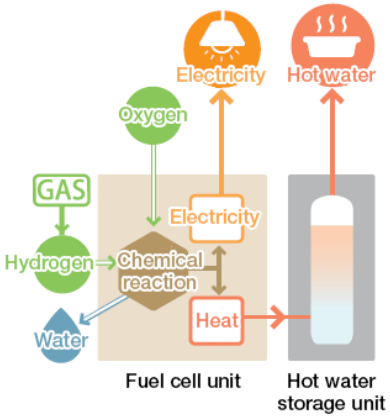
Insulation of Sumitomo Forestry Home houses (in Japanese)

## Double Power Generation

Sumitomo Forestry recommends the installation of storage battery for family use, in addition to solar power generation system. Double power generation can generate the necessary electricity for daily life in the home. Furthermore, Home Energy Management Systems (HEMS) realize zero energy house (ZEH specifications) by proficiently managing energy consumption throughout the home.

**Ene-Farm** + **Solar power generation system**

### Water heaters that also generate electricity




Heat and water are generated during the generation of electricity. That generated heat is not wasted and is collected to be used for making hot water and heating floors, greatly improving the efficiency of primary energy usage.

Combining solar power generation system and Ene-Farm further reduces utility costs and $CO_2$ emissions compared to using just either one. It can be more economical by using electricity generated by Ene-Farm during the day when use of electricity is low and selling excess electricity generated by solar power generation system.

## Trends in Installation Rates of Environmentally-conscious Equipment (based on number of houses)[*1 *2]

| | FY2018 | FY2019 | FY2020 | FY2021 |
|---|---|---|---|---|
| Solar power generation systems | 51% | 56% | 57% | 68.9% |
| Ene-Farm units | 35% | 36% | 27% | 25.5% |
| Eco One[*3] | 16% | 17% | 15% | 19.4% |
| Environmentally conscious equipment installation rate | 72% | 75% | 70% | 78.2% |

*1 The aggregation period of fiscal 2020 is from April 2020 to December 2020

*2 The aggregation period before fiscal 2019 is from April of each year to March of the following year

*3 Hybrid electric and gas hot water and central heating systems

## Renovating to Improve Function and Asset Value

Sumitomo Forestry Home Tech promotes renovations from energy-saving point of view. We propose the installation of energy-efficient equipment alongside better insulation efficiency as well as new life styles that decrease the energy consumed in daily life, realize reductions to the environmental impact, and decrease lifetime heating and lighting costs.

The insulation renovations can also mitigate health risks from heat shock.

We also continue to focus on "seismic resistant retrofitting" proposals. In particular, the need to create comfortable and safe homes to enhance relaxing and fulfilling time spent at home including the improvement of the telework environment is increasing due to effects of the COVID-19. Recently, we are actively promoting seismic resistance and structural reinforcement work in consideration of the response to intermittent earthquakes.

We actively strive to bring about excellent long-term housing in existing properties as well as long-term excellent extension and alteration standards by improving the performance in thermal efficiency, energy-savings and seismic retrofitting.

Sumitomo Forestry Home Tech has set the goal of "improving the rate of orders for environmentally conscious renovations" in Mid-Term Sustainability Targets 2021 with fiscal 2021 as target year.

In fiscal 2021, we aimed for a total order ratio of 60 % for the four works of seismic construction, structural reinforcement work, heat insulation renovations, and smart material installation on, standard property (other than owners of Sumitomo Forestry homes), and the actual result was 58.9%.

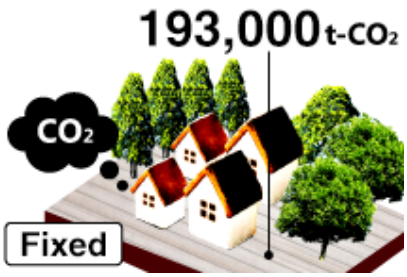
In terms of battery storage, we hold seminars and campaigns to share the benefits of resilience renovation using solar power plus battery storage (iedenchi-NX) with owners of Sumitomo Forestry Homes equipped with solar power generation systems. These campaigns facilitate non-face-to-face estimates while seminars are conducted in an online format as full measures to prevent the spread of the COVID-19.

Needs for Environmentally-conscious renovations will continue to grow in the future in order to ready properties for potential natural disasters.

## Carbon Stock in the Housing and Construction Business

Trees retain $CO_2$ as carbon even after they are turned into products. Constructing wooden houses can therefore be likened to building forests in the city. The total domestic carbon stocks*1 in timber that was used in construction of the houses in the MOCCA (timber solutions) business in fiscal 2021 reached 193,000 t-CO2. Sumitomo Forestry Group is contributing to a decarbonized society by increasing carbon stock in forests and cities.

*1 $CO_2$ fixation is calculated by categorizing the actual amounts of timber used per tree species for new custom-build detached houses, rental properties, and MOCCA business, and calculating carbon content from the specific gravity of each tree species.




Carbon stock of the timber used in the construction of houses and MOCCA (timber solutions) business in Japan in fiscal 2021

## Sales of Environmentally-conscious Housing Overseas

Henry Properties of Australia has been a driving force in efforts to improve energy-saving performance in the Australian housing industry, such as setting the 5 stars of the energy-saving performance standard Energy Rating*1 as its own standard specifications ahead of other companies. Efforts toward the environment accelerated further after the involvement of the Sumitomo Forestry Group. Henley Properties conducted a variety of initiatives to reduce the environmental impact, including the development of the first zero emission house*2 for the general consumer as a major home builder company in the country.

More than 80% of new homes built in Australia uses veneer glass because multi-layered glass has not become as popular for use in homes as in Japan due to cost. However, since 2018, Henley Properties was the first in Victoria to make multi-layered glass a standard specification in order to increase the insulation efficiency of homes*3.

Furthermore, Henry Properties has led the industry in efforts to improve airtightness. A survey conducted in 2019 showed homes built by Henley Properties have shown airtightness roughly three times higher than the average home in Australia*4. This level of airtightness can reduce the power consumption necessary for heating and cooling the average home by approximately 25%.

Henley Properties is not only improving environmental performance but is also pioneering the development of residential properties that consider the health of the people living there. The Company is also developing a system to provide ventilation while mitigating construction, lighting, and heating costs to improve

Ventilation System Development

VCoatings Containing Low VOC Percentage

the air quality inside the home. Moreover, Henley Properties reviewed primary construction and finishing materials and adopted interior coatings with ultra-low VOC*5 in accordance with the advice from the National Health and Medical Research Council of Australia. These measures achieve housing that suppresses rising costs, maintains high quality, and protects the health of the people living there.

*1 An evaluation metric of the energy burden for heating and cooling the inside of a building in Australia. Insulation, windows, the type, size and orientation of the building, and the climatic zone are all items included in this metric. Currently, a six-star rating is the standard specification.
*2 Environmentally-conscious housing expected to have an energy-saving effect of more than 70% compared to conventional housing.
*3 Multi-layered glass is effective in improving insulation efficiency of homes by limiting the thermal reflux to approximately 35% less compared to veneer glass.
*4 The average value for Henley Properties is 5.9 ACH where the average housing in Australia is 15.4 ACH (ACH is an index that indicates the air leakage per hour at a 50 Pa indoor-outdoor air pressure difference. The lower the value the higher the airtightness).
*5 Volatile Organic Compounds (VOCs) are organic chemical substances volatile in the air at ordinary temperatures and pressures. Many construction coatings and adhesives contain these organic chemicals and have the potential to cause sick house syndrome or impact human health in other ways when dispersed in large quantities.

## Research and development on visualization of $CO_2$

Sumitomo Forestry clarifies "shared benefit" of wooden buildings and wood-based materials and promotes research on $CO_2$ emissions (embodied carbon) from raw material procurement to processing, transportation, construction, demolition, and disposal, $CO_2$ emissions during building operation (operational carbon), and a visualization and calculation method of life cycle $CO_2$ ($LCCO_2$) that combines both in order to increase value of wood and contribute to realization of a decarbonized society.

In addition to investigating reductions of $CO_2$ emissions related to construction, such as differences of emissions due to the type of structure and identifying major factors influencing emissions, we are also advancing research to further contribute to an environment by promoting initiatives across Sumitomo Forestry divisions from forest management to material procurement and improvements. In the future, we plan to begin development of a system that can evaluate $CO_2$ emissions during the construction planning stage.

In addition, "Tsukuba Research Institute New Research Building" was completed in 2019. By using an air conditioning system that uses wood pellets, which are renewable energy fuel and energy creation using solar panels on the roof and natural energy such as daylight and natural ventilation, we have achieved a reduction in $CO_2$ emissions during operation and aim to further reduction by continuing to verify the effectiveness. In the future, we aim to further reduce $CO_2$ emissions through various efforts within the laboratory.

# Responding to Climate Change

## Adaption to Climate Change

### Basic Policy

In recent years, large-scale natural disasters triggered by earthquakes, tsunamis and typhoons have increased and are causing significant economic damages, ultimately threatening our society and living.

By providing safe and reliable housing, Sumitomo Forestry wants to contribute to protecting people's lives and lifestyles.

### Building Internal Systems to Adapt to Climate Change

#### Initiatives of the Disaster Prevention Department

Disaster Recovery Guidelines were put in place in the Housing and Construction Division and measures and action guidelines for operations were defined to quickly and accurately respond to damages from natural disasters to our customers' houses as they become more prevalent due to climate change. As one of measures, the Disaster Prevention Department has instructed each branch and group companies to implement disaster prevention measures on a regular basis. In the event of an emergency, we will direct relevant departments and affiliated companies and work to minimize the damage caused by disasters.

In 2021, we cooperated with the disaster-stricken branch office in the Fukushima prefecture offshore earthquake with a maximum seismic intensity of upper 6 in February and contacted the home owners about their safety while inspecting the damaged houses to support the prompt recovery. In addition, during the heavy rains in August that occurred in western Japan, the Disaster Prevention Department gave instructions to the branches in the disaster stricken area and provided disaster response stockpiles to support emergency responses.

#### Developing Disaster Recovery Support Services Using IoT

**Issue of the Time It Takes to Assess Disaster**

While Japan have experienced many earthquakes, in recent years, climate change has made natural disasters more severe with intense rainstorms, typhoons and other natural disasters causing extensive and frequent damage. In monetary terms, the total cost of damage caused by natural disasters in Japan from 1991 to 2018 reached $446.63 billion*.

The bigger the disaster, the longer the recovery efforts, and it now takes more time to assess the situation as well. For the Kumamoto earthquake that occurred in April 2016, it took about one and a half months for the government to conduct emergency safety assessment of buildings aimed to prevent secondary disasters. Disaster victims expressed their anxieties as "it takes too much time to get the information we need", which highlights one of the biggest hurdles in speedy recovery efforts.

* Created by The Small and Medium Enterprise Agency using the Centre for Research on the Epidemiology of Disasters database (EM-DAT)

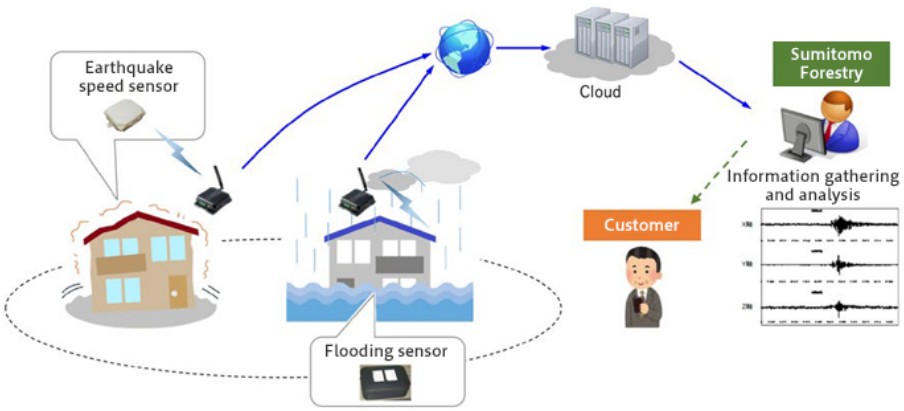
### Quickly Gathering Data About Damaged Homes Using Sensing Technologies

Sumitomo Forestry is responding to such issues by developing services that promote quick recovery after disasters. Since 2017, we have been working on proving test of an IoT service that utilizes the analysis technology using sensor to measures, collects, and analyzes the condition of buildings. We place several sensors throughout a house to acquire data, such as the magnitude of an earthquake's tremors, flooding or other conditions, and gather this data through a network to analyze. At our Tsukuba Research Institute, we combine this data with the vast amount of seismic resistance data of wooden houses to facilitate high-precision analysis.

A sensor installed inside a wall of a house

We have expanded the proof of concept that began in the Kanto region to nationwide 93 sites as of December 2021. In fiscal 2022, we will further improve the decision accuracy for service provision and aim to engage in initiatives to ready infrastructure to ensure comprehensive collection and processing of enormous amounts of data while striving toward actual implementation to ensure customer peace of mind and safety in the event of a disaster.

## Overview of How Data Is Collected

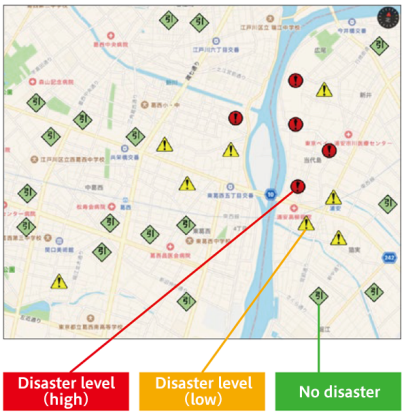


### Supporting the Speedy Recovery of Home Owners and Regions Affected by Disasters

If sensors installed in homes can be used remotely to determine the level of damage, we will be able to more quickly grasp, report and respond to the situation and arrange for repairs or other work to provide our customers the support they need. As engineers would no longer have to check each and every house on site, it would resolve the problem of taking too much time and can even be used for areas made inaccessible after a major disaster.

In addition, by utilizing this gathered data in different ways, we can develop new services that would give more people a sense of security. For example, we could collaborate with casualty insurance companies to provide quick damage assessments necessary for insurance benefits, which would help people rebuild their lives more quickly.

In addition, we could provide data to customers and local municipalities for emergency risk assessments that would help prevent secondary disasters. Furthermore, our data analysis results could promote development of technologies that enhance earthquake resistance and durability.




One example of how gathered data can be utilized

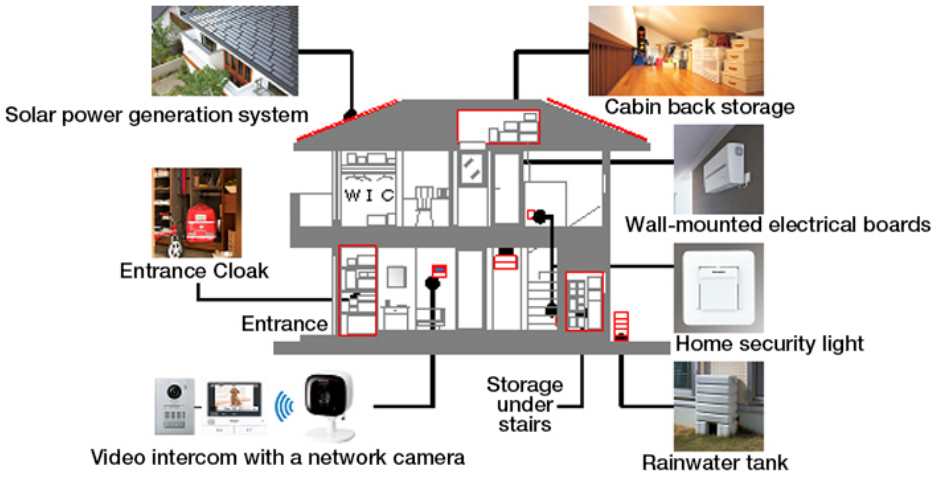
## Housing Sales Adapted to Climate Change

### Sumitomo Forestry Homes - Resistant to Earthquakes, Fires and Typhoons

Sumitomo Forestry's wooden houses are characterized by their unique BF construction method. The construction method uses the principal structural members, which are about five times thicker than a regular pillar and fixed with strong metal, and has high seismic and wind resistance. In the seismic resistance experiment with a full-scale model of a three-story house, we have confirmed that it withstands the same level of the Great East Japan Earthquake and aftershocks that repeatedly strike. In addition, our houses can withstand winds of 88m/second, much higher than Typhoon Faxai (highest wind speed: 57.5m/second) that hit the Tokyo metropolitan area in 2019. Furthermore, in terms of fire resistance, the standard specifications are compatible with "houses with a semi-fireproof structure under the ministerial ordinance".

We ensure the safety of residents with our proprietary BF construction method that boasts outstanding strength, and with attached facilities such as a solar power generation system and rainwater tank, etc., and satisfying stockpile space which enable to live for a certain period of time until restoration even when the lifeline is interrupted. By selecting a video door phone with a network camera, residents are able to check the situation of their houses remotely in the event of a disaster. In addition, securing of stockpile space is useful for organizing belongings in the daily life, and the original built-in furniture ensures safety by preventing falls in the event of an earthquake, and can also make the room a harmonious and organized space.

# Housing Using the BF Construction Method Stands Up to Disasters and Enhances Daily Comfort




## The Thinking Behind Taking Evacuation life at Home

Many people who come through a large-scale disaster often find themselves falling ill due to the stress of living in an evacuation shelter even if they survive the disaster. And sometimes it takes days before utilities such as electricity and running water are restored.

What is important during times like these is the thinking behind "taking evacuation life at home".

Sumitomo Forestry provides various preparations based on the ZEH performance for houses with a highly seismic resistant BF construction method so that residents can live at home even after the disaster. The high heat insulation performance of the ZEH specifications enables an energy-saving life that suppresses the effects of the outside temperature, while securing electricity of solar power generation systems, household fuel cells, storage battery systems, etc. In addition, it supports "evacuation life at home" with various resilience-compatible specifications such as a slate roof that can handle strong winds, a short circuit fire alarm that prevents fires from a short circuit, a home security light that can also be used as a flashlight in the event of a power outage, a rainwater storage tank that can be used as domestic water when water is cut off.

With high insulation properties and energy-saving housing equipment, these ZEH properties not only help in the event of a disaster but also offer residents a comfortable lifestyle they can enjoy while reducing their energy consumption. In addition, Sumitomo Forestry's high-insulation wooden ZEH houses can protect the health of the residents by preventing violent fluctuations in blood pressure due to sudden changes in room temperatures when bathing or getting out of bed in the winter.

## Strengthening of Resilience

Sumitomo Forestry Homes have continued to demonstrate further resilience against unprecedented natural disasters with technologies leveraging the properties of wood and performance backed by a wide range of testing. Our recommended settings are with resilient materials to allow residents easier livng at home after disaster strikes.

### The Three Keys of Strengthening Resilience

- Seismic Resistant BF Construction Method
- Ministerial ordinance on semi-fireproof houses for fire resistance (prevents catching fire from outside or spreading fires inside rooms with wall and ceiling materials that have high fire resistance as well as a fire-stop structure)
- Roof construction with specifications to stand up to strong winds and sleeves with basal tunnels for disasters are set to ensure readiness against unprecedented disasters for its "strong rain and wind resistance".

In 2020, we included the specifications below as part of our recommendations to improve resilience performance.

- Rainwater Tank
- Slate roofs with specifications for strong winds
- Drain sleeves with basal tunnels for disaster (allows for initial recovery by putting in place a sleeve to drain water pooling in the foundation in case of below floor and above floor level flood)
- Home security lights (night lights to use as security lights during power outages, or can be removed and used as portable lights in an emergency)
- Short circuit fire alarms (sounds an alarm to alert residents of an abnormality in the event of a short circuit)

We will continue to provide safer Sumitomo Forestry Homes for home owners to feel peace of mind.

# Proof testing for adaptation to climate change

## Start "proof of concept on advanced green infrastructure"

Due to the climate change, heat island phenomenon in urban areas and flood damage caused by torrential rain have become social issues. The development of the green infrastructure that utilizes the functions of nature is expected to be one of the solutions, but in the coastal areas, chloride damage to plants and fallen trees due to strong winds swirling up seawater are occurring frequently. To address these issues, in October 2021, we started the proof test for "selection of salt tolerant plants and wind resistant plants" and "plant growth method for efficiently using surplus water from rainwater and irrigation" by using the planting tray with a water tank used in the development of the rooftop greening field. These proof tests were adopted in the "proof test at Yumeshima, the venue for the Osaka-Kansai Expo in 2025", which was publicly solicited by Japan Association for the 2025 World Exposition and the Osaka Chamber of Commerce and Industry.

Utilizing the results of this verification, we plan to work to solve social issues through advanced green infrastructure technology, while enabling coexistence with nature in urban areas and coastal areas. We will contribute to the realization of a decorbonized society by realizing a Timberized Eco City with wooden structure and abundant greenery.

# Responding to Climate Change

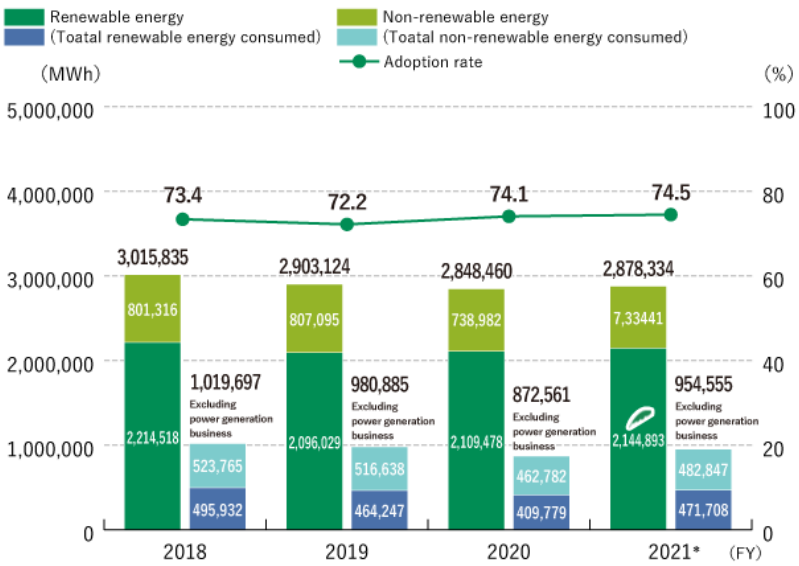
## Energy Used in Business Activities and the Adoption of Renewable Energy

### Energy Used in Business Activities and the Adoption of Renewable Energy

Energy consumption in fiscal 2021 for Sumitomo Forestry Group was 2,878,334 MWh*, the same level as the previous year. The energy consumption in business other than the power generation business has declined by various energy-saving activities. In 2021, total renewable energy accounted for about 74.5% 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 and the adoption trend of renewable energy in the past 4 years




* An aggregation period after 2020 is from January to December of each year, and the aggregation period before 2019 is from April to March of the following year.

Click here for related information

Aiming for 100% Renewable Energy and Joining the RE100

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# Responding to Climate Change

## Greenhouse Gas Emissions from Business Activities

### 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 light of the increasing demand for renewable energy in recent years, the Sumitomo Forestry Group entered the biomass power generation business in 2011. As a consolidated subsidiary company, the Mombetsu Biomass Electric Power has dramatically increased Scope 1 and Scope 2 emissions of the Group since starting operations in 2016 because coal is used as a secondary fuel to ensure smooth operation and maintenance. Scope 1 and 2 emissions in fiscal 2021 are on a par with fiscal 2020. When looking by business, our plants in Japan and the power generation business make up 56.7% while our plants overseas compose 30.8%.

We also started to calculate Scope 3 in fiscal 2013 and the targets for this calculation largely expanded in fiscal 2015 and fiscal 2017. We are aware that the impact of category 11 "Emissions during occupancy of sold detached houses" is particularly significant, and we are working to reduce $CO_2$ emissions during occupancy by promoting ZEH (Net Zero Energy House) in our housing and building business.

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

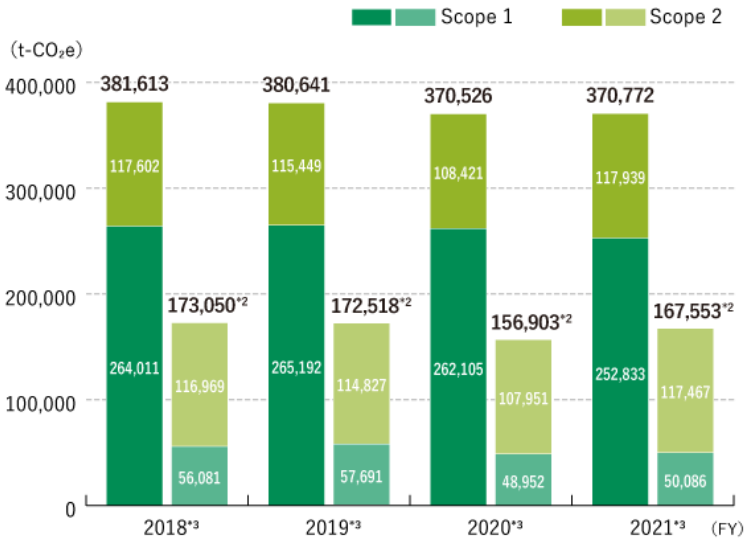
* The GHG Protocol requires businesses to disclose their greenhouse gas emissions according to the following categories.
Scope 1: Direct GHG emissions of a company, including emissions from fuel consumption. e.g.: Emissions from the use of gasoline for company vehicles.
Scope 2: Indirect GHG emissions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

Click here for related information

› Establishment and Certification of Science Based Targets (SBT)

› Promotion of Net Zero Energy House (ZEH) Specifications

## Scope 1 and Scope 2 $CO_2$ Emission Trends*1




*1 Assured Scope 1 and Scope 2 emissions including power generation projects.

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

*3 Data collection period for total emissions from fiscal 2020 is January to December of each year, while data collection period for emissions before fiscal 2019 is April of each year to March of the following year.

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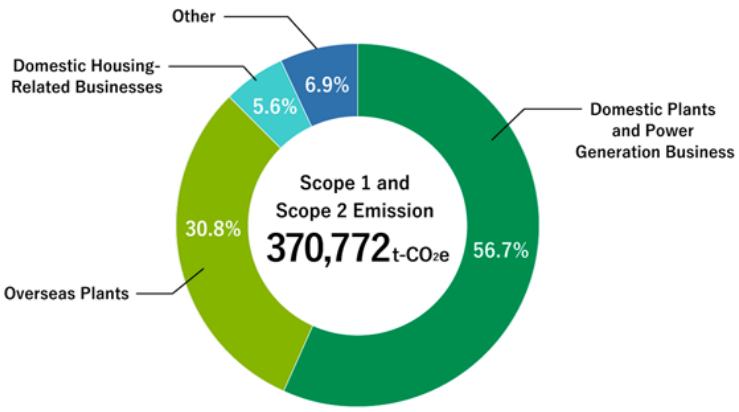
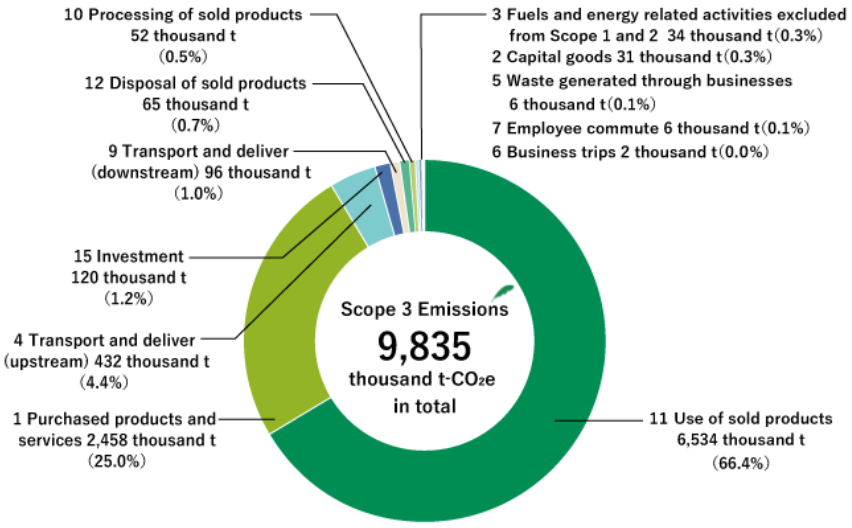
## Scope 1 and 2 Breakdown by Business (FY2021)



## Scope 3 Emissions by Category

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## Scope 3 Emissions by Category (three years)

(thousand t-$CO_2$e)

| Category | Boundary of Emissions included in the Category | FY2019*2 | FY2020*2 | FY2021*2 |
|---|---|---|---|---|
| 1 Purchased products and services*1 | Emission from upstream of products and services purchased by Sumitomo Forestry | 2,130 | 2,160 | 2,458 |
| 2 Capital goods*3 | Emissions from upstream of purchased equipment | 35 | 40 | 31 |
| 3 Fuels and energy related activities excluded from Scope 1 and 2 | Emissions from the upstream of purchased fuels, electricity, heat capacity, and water | 29 | 33 | 34 |

| Category | Boundary of Emissions included in the Category | FY2019*2 | FY2020*2 | FY2021*2 |
|---|---|---|---|---|
| 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 | 445 | 410 | 432 |
| 5 Waste generated through businesses | Emissions from waste treatment and its transport | 7 | 6 | 6 |
| 6 Business trips | Emissions related to business trips of employees such as use of public transportation and accommodation | 3 | 3 | 2*3 |
| 7 Employee commute | Emissions from employee commuting | 5 | 6 | 6*4 |
| 8 Leased property (Upstream) | (Emissions from use of upstream leased property such as office building, heavy machinery, vehicles, and facilities are included in Scope 1 or 2) | - | - | - |
| 9 Transport and deliver (downstream) | Emissions during transport of products sold | 103 | 99 | 96 |
| 10 Processing of sold products | Emissions from processing of logs into plywood as well as of sold precut processing of sold lumber | 43 | 41 | 52 |
| 11 Use of sold products | Emissions during use of detached houses sold | 6,437 | 6,580 | 6,534 |
| 12 Disposal of sold products | Emissions from demolition and disposal of detached houses sold by the Company | 50 | 55 | 65 |
| 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) | 114 | 115 | 120 |

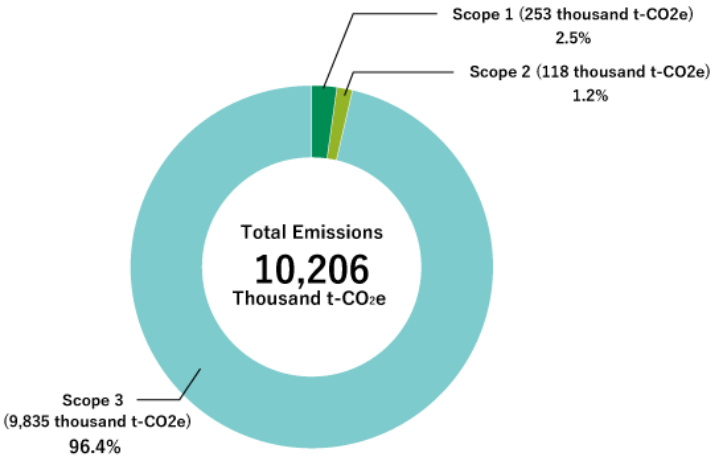
*1 The calculation method for Category 1 emissions of Scope 3 was revised to apply Accounting Standards for Revenue Recognition (Corporate Accounting Standard No. 29) as of fiscal 2019 (retroactively reflected in the values for fiscal 2019). In fiscal 2021, the scope of application of the Accounting Standard for Revenue Recognition was reviewed and the method of calculating Scope 3 Category 1 was revised again (values for fiscal 2019 and 2020 were retrospectively adjusted).

*2 Data collection period for total emissions from fiscal 2020 is January to December of each year, while data collection period for emissions before fiscal 2019 is April of each year to March of the following year.

*3 In fiscal 2021, a percentage decrease in travel costs was applied to reflect the impact of coronavirus disease (COVID-19) in the calculation.

*4 In fiscal 2021, a percentage decrease in attendance was applied to reflect the impact of the COVID-19 in the calculation.

## FY2021 Total Greenhouse Gas Emissions Accrued from Corporate Activities




* Data collection period for the total emissions during fiscal 2021 is from January to December 2021.

Click here for related information

Boundaries and Methods of Greenhouse Gas Emissions Calculation

About symbol for Independent assurance

# Reducing Greenhouse Gas Emissions

## Promoting Adoption of Fuel-efficient Vehicles at Each Office

All business sites of Group companies in Japan disposed of standard settings for gasoline vehicles in fiscal 2019 and have been advancing the introduction of fuel-efficient vehicles. To date, 362 of the 383 company-owned vehicles introduced during 2021 were fuel-efficient vehicles (for an 94.5% 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 greenhouse gas emissions by such means as reducing prolonged working hours and raising awareness among employees.

## Reducing greenhouse gas 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, Sumitomo Forestry Crest and Sumitomo Forestry Wood Products 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 and Sumitomo Forestry Wood Products also set targets to reduce per-unit energy consumption compared to the previous year.

In fiscal 2020, Sumitomo Forestry's per-unit energy consumption was 110.4% compared to the previous year and Sumitomo Forestry Crest's was 110.1%. Sumitomo Forestry Wood Products was 109.5%.

In the future, we will work with transporters to further reduce $CO_2$ emissions by improving loading efficiency, modal shift from trucks to rail and ship transport, and waste transport using return trips for building material deliveries.

*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 and Sumitomo Forestry Wood Products measure energy consumption per unit of volume handled. Sumitomo Forestry Crest measures energy consumption per unit of net sales.

## Energy Consumption, Emissions, and Energy Consumption Per Unit from Transportation (FY2020 Performance)

| | Energy Use (Crude Oil Equivalent) | $CO_2$ Emissions | Energy Consumption Per Unit |
|---|---|---|---|
| Sumitomo Forestry | 1,581kL | 4,208t-$CO_2$ | 0.00192kL/$m^3$ (Ratio to Previous FY: 110.4%) |
| Sumitomo Forestry Crest Co., Ltd. | 1,854kL | 4,926t-$CO_2$ | 0.000063kL/1,000 Yen (Ratio to Previous FY: 110.1%) |
| Sumitomo Forestry Wood Products Co., Ltd. | 1,751kL | 4,697t-$CO_2$ | 0.00067kL/$m^3$ (Ratio to Previous FY: 109.5%) |

## Establishment of an Efficient Delivery

Sumitomo Forestry is reducing the $CO_2$ emissions in its transportation processes by bringing together materials for Sumitomo Forestry Homes 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 70 logistics contractors as of December 2021, excluding the Sumitomo Forestry Group. Furthermore, we are providing consulting for more efficient internal warehousing operations and inventory management rationalization. In fiscal 2021, no new construction materials companies contracted our consulting services during the COVID-19 pandemic, but we continue consulting for the two construction material companies who contracted our services during the previous fiscal year.

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.

# Responding to Climate Change

## Boundaries and Methods of Greenhouse Gas Emissions Calculation

The data collection period for fiscal 2021 is from January to December 2021.

### Boundary of Greenhouse Gas Emissions (Organizational Range)

Unless otherwise noted, the greenhouse gas emissions presented in this report are for domestic and foreign consolidated subsidiaries and affiliates with substantial influence on management decision-making. Furthermore, the boundaries of calculating the greenhouse gas emissions by scope are as shown below.

- Scope 1, 2 and 3
- Domestic and foreign consolidated subsidiaries and affiliates with substantial influence on management decision-making.

* In fiscal 2017, the boundary for Scope 3 which previously included only emissions in Japan was expanded to include the entire Sumitomo Forestry Group.

Click here for related information

› List of Applicable Companies

### Types of Greenhouse Gases Subject to Data Collection

The types of greenhouse gases collected for this report are carbon dioxide, methane and dinitrogen oxide. Moreover, hydrofluorocarbons are not subject to data collection if in trace amounts (less than 1%).

### Scope 1 Emissions

The greenhouse gas emissions both inside and outside of Japan are calculated by using heat conversion factor and carbon dioxide emission coefficients stipulated in the Act on Promotion of Global Warming Countermeasures, and the heat conversion factor measured at the biomass power generation 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 Emissions

The greenhouse gas emissions caused by use of purchased electricity in Japan are calculated by the carbon dioxide emission coefficient for each power provider stipulated in the Act on Promotion of Global Warming Countermeasures. In addition, the performance of January to December 2021 is calculated using the emission coefficient for each power provider for submission in 2022.

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

The greenhouse gas emissions caused by use of purchased electricity overseas in fiscal 2021 are calculated by the latest emission coefficient (2019) of each country according to the IEA Emission Factors 2021 issued by the International Energy Agency (IEA). However, Canyon Creek in the United States uses market-based emission coefficient.

Click here for related information

> Ministry of the Environment Calculation and Reporting of Greenhouse Gases (in Japanese)

## Scope 3 Emissions

### Category 1. Purchased goods and services

**■ Portion of outside contracts during construction of wooden detached houses**

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

**■ Purchased products**

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

Overseas companies handling housing sales: 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 and Building Materials Business is calculated and multiplied to the sales of each affiliate company.

Furthermore, following the early adoption of Accounting Standards for Revenue Recognition, emission calculations have been excluded from fiscal 2019 for any sales of the Timber and Building Materials Division recognized as revenue made only from fees when arranging goods or services provided through another interested party.

### Category 2. Capital goods

∑ (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**

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

■ **Transport from retailers**

* The target of calculations is the use on operational sites such as plants

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

* Calculation based on transportation scenario

## Category 4. Upstream transportation and distribution

■ **Transport in Japan**

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

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**

∑ (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

∑ (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 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 × emissions coefficient)

* Calculation based on transportation scenario

## Category 10. Processing of sold products

■ Plywood work and Precut factories

∑ (Sales volume of log and timber × 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

■ Emissions during habitability

∑ (Annual energy use per household × Emissions coefficient by energy source) × Years of residence period × Number of houses completed by construction method and region 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

■ Emissions during demolition

∑ (Fuel use during demolition per household × Emissions coefficient by fuel type) × 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

■ 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 2006 is calculated by converting the equivalent building weight of the standard plan (floor area:147$m^2$) 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

# Sustainable Forest Management

## Sustainable Forest Management

### Basic Policy

In addition to supply function of producing wood, forests have diverse public benefits such as water source recharge, prevention of landslides, $CO_2$ absorption and fixation as a countermeasure to global warming, preservation of biodiversity, and recreation.

The Sumitomo Forestry Group advances sustainable forest management both in Japan and overseas to ensure that wood resources will be available in perpetuity while preserving these public benefits of forests. Sumitomo Forestry Group's Business is also promoting the acquisition of SGEC forest management certification, which is mutually certifiable with FSC forest management certification and PEFC forest management certification in Japan and overseas, in its upstream forest management, midstream wood distribution and manufacturing, and downstream wooden construction.

In our domestic forestry business, we will pursue profitability through wood production in Company-owned forests, while at the same time practicing sustainable forest management that ensures legality and takes biodiversity and local culture into consideration, and obtain and maintain 100%* forest certification in forests subject to certification.

*Except for land leased to Kawanokita Development and surrounding forests.

As for the overseas forestry acquisition, below are the guiding principles for selection when obtaining new forests areas.

1. Forests areas that have good relationships with surrounding villages and local communities.
2. Forest areas where HCVA*1, HCSA*2 and FPIC*3 can be implemented, no environmental problems were identified in the past, and environmental risks can be eliminated.
3. Forest areas where third-party forest certification can be obtained (FSC®-FM is preferable and FSC-CW and PEFC certification are acceptable as well).(FSC-C113957)

*1 High Conservation Value Assessment: inspection and assessment to establish conservation policies for areas specified as having high conservation value, such as rare flora and fauna habitat.

*2 High Carbon Shock Assessment: inspection and assessment to specify and restrict development in areas with high carbon absorption volumes so that the volume of carbon retained by forests does not decline when forest land is converted to other uses.

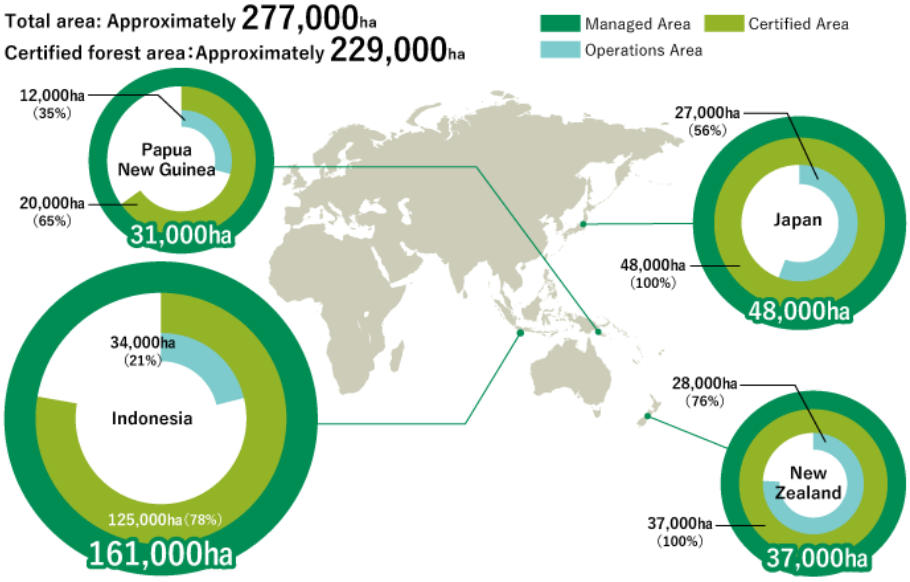
*3 Free Prior Informed Consent: Prior sharing of information and consensus formation with indigenous people and others in cases where there is likelihood that operations could impact the lands, territories or resources of indigenous people.

Click here for related information

Sumitomo Forestry Group Human Rights Policy

## Forest Management and Wood Usage

## Forest management, certification, and operations area in FY2021



Company owned forests in Shikoku

Planted forest in New Zealand

Planted forest in Papua New Guinea

Planted forest in Indonesia

## Area of Forest Managed and Owned by the Sumitomo Forestry Group

As of December 31, 2021

| Country | Managed Area (ha) | Certified Area (ha) | Operations Area (ha) | Forest certification system *1 | Certification Number | Certification Issuing Body | Afforestation Area for Social Forestry※3 (ha) |
|---|---|---|---|---|---|---|---|
| Japan | **47,965** | **47,736** | **27,161** | - | - | - | **0** |
| Sumitomo Forestry | 47,965 | 47,736 | 27,161 | JAFTA-010 | SGEC | Japan Forest Technology Association (JAFTA) | 0 |
| Indonesia | **161,068** | **124,890** | **34,057** | - | - | - | **8,594** |
| PT. Mayangkara Tanaman Industri (MTI) | 104,664 | 74,870 | 10,534 | PHPL*2 | 015.4/EQC-PHPL/IX/2018 | PT. Equality Indonesia | 0 |
| PT. Wana Subur Lestari (WSL) | 40,750 | 40,750 | 11,451 | PHPL*2 | 10-PHPL-006 | PT. Almasentra Sertifikasi | 0 |
| PT. Kubu Mulia Forestry (KMF) | 9,270 | 9,270 | 5,688 | PHPL*2 | IMS-SPHPL-009 | PT. Inti Multima Sertifikasi | 0 |
| PT. Kutai Timber Indonesia (KTI) | 6,384 | 0 | 6,384 | - | - | - | 5,816 |
| Koperasi Serba Usaha Alas Mandiri KTI (KAM KTI) | 0 | 0 | 0 | - | - | - | 1,005*4 |

| Country | Managed Area (ha) | Certified Area (ha) | Operations Area (ha) | Forest certification system*1 | Certification Number | Certification Issuing Body | Afforestation Area for Social Forestry※3 (ha) |
|---|---|---|---|---|---|---|---|
| Koperasi Bromo Mandiri KTI (KBM KTI) | 0 | 0 | 0 | - | - | - | 1,330*5 |
| PT. Rimba Partikel Indonesia (RPI) | 0 | 0 | 0 | - | - | - | 443 |
| **Vietnam** | **0** | **0** | **0** | - | - | - | **254** |
| Vina Eco Board Co., Ltd. | 0 | 0 | 0 | - | - | - | 254 |
| **Papua New Guinea** | **31,260** | **19,920** | **11,618** | - | - | - | **0** |
| Open Bay Timber Ltd. (OBT) | 31,260 | 12,854 | 11,618 | FSC® | NC-FM/COC-005600 | Preferred by Nature | 0 |
| | | 7,066 | | FSC® | NC-CW/FM-003093 | Prefferd by Nature | |
| **New Zealand** | **36,599** | **36,599** | **27,922** | - | - | - | **0** |
| Tasman Pine Forests Ltd. (TPF) | 36,599 | 36,599 | 27,922 | FSC® | SGS-FM/COC-010806 | SGS South Africa (Pty) Ltd | 0 |
| Total | 276,892 | 229,145 | 100,758 | - | - | - | 8,848 |

*1 Forest Management (FM) certification authenticates sustainable forest management by having a third-party inspect based on objective indicators with focus on: (1) compliance with laws and system frameworks, (2) forest ecosystem and biodiversity maintenance and conservation, (3) respect for rights of indigenous people and local communities, (4) maintenance and enhancement of forest productivity.

*2 Pengelolaan Hvtan Produksi Lestari (PHPL) is an Indonesian certification of sustainable production forest maintenance.

*3 Area of planted forest was calculated using the actual number of seedlings distributed and the number of seedlings planted per hectare. (The number of trees planted per hectare is planned annually for each tree species)

*4 [Forest certification system] FSC® [Certification number] SA-FM/COC-002083 [Certification body] Soil Association

*5 [Forest certification system] FSC® [Certification number] SA-FM/COC-005493 [Certification body] Soil Association

## Seedling Farming and Cultivation: A First Step Toward Sustainable Forest Management

Securing superior seedlings is a crucial first step toward sustainable forest management. Stable production of superior seedlings enables appropriate forest establishment. Sumitomo Forestry was the first to modernize seedling production. We are contributing to the sustainability of forest resources and active resource production through efforts such as the construction of greenhouse-type cultivation facilities with proper environmental management. In Japan, in fiscal 2019, we opened our sixth production facility in Minamiaizu Town, Fukushima Prefecture, which is capable of producing 1.9 million seedlings per year and supplying them to our own company-owned forests as well as to national forests and privately-owned forests throughout Japan. Overseas, in Indonesia and Papua New Guinea, we produce our own seedlings for planting. Our sustainable forest management garden vegetation, cultivates, harvests, and reforestation in New Zealand and every other region where we do business.

## Cultivation: Preserving the Public Benefits of Forests Through Appropriate Management

The Sumitomo Forestry Group manages a total of approximately 48,000 hectares of company-owned forests in Japan and a total of around 229,000 hectares of company-owned planted forest area overseas. We strive to maintain and improve the forest's public benefits by implementing appropriate management for forest growth in these forests, such as afforestation, clear underbush, pruning, and thinning.

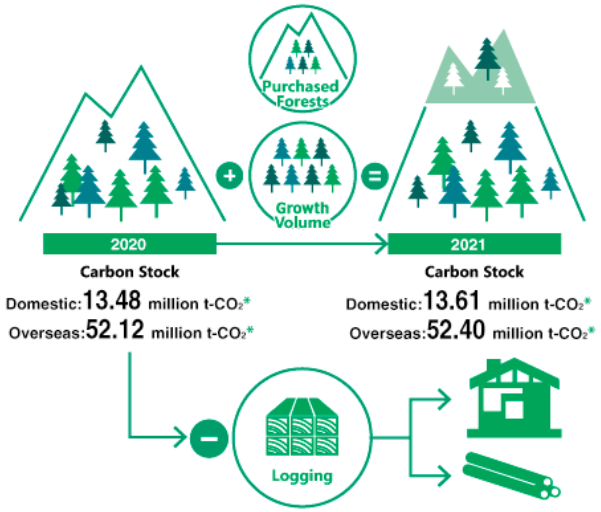
Carbon stocks* of company-owned forests in Japan at the end of fiscal 2021 were 13.61 million t-$CO_2$ (+130,000t-$CO_2$ from the previous fiscal year). Carbon stocks at overseas planted forests were 52.40 million t-$CO_2$ (+280,000t-$CO_2$).

* Formula to Calculate Carbon Stock

Stem volume per hectare of forest × biomass expansion factor × (1 + ratio of underground area to aboveground area) × volume density × carbon content ×$CO_2$ conversion factor

Parameters such as Stem volume and expansion factor are based on own plot data for domestic forests, WSL, and MTI, while OBT and TPF refer to standard values of each country, etc. For protected forests in overseas forests, carbon fixation is assumed to be zero for non-forested and low accumulation areas such as rivers, lakes, roads, etc. , and degraded forests in WSLs and MTI.

### Carbon Stock of Forests in Japan and Overseas




* Carbon stock as of the end of each fiscal year

## Logging and Transport: Supplying Raw Materials for Wood Products Through Systematic Logging

The Sumitomo Forestry Group logged approximately 60,000 $m^3$ of trees in Japan and approximately 900,000 $m^3$ of trees overseas in fiscal 2021 in forests it owns or manages based on long-term logging plans. Harvested wood are milled and processed before finally reaching the market as products such as housing and furniture. In the case of wood turned into structural members for housing, the products are used for several decades. Even after being dismantled or at the end of their product life, wooden construction and timber and wood products can be reused as fiberboard or other wood materials in construction or as raw material for making paper, and all that time it will continue to retain $CO_2$. The $CO_2$ released when wood is ultimately burned as a wood fuel is what has been absorbed from the atmosphere as trees grow, and therefore it does not represent an increase in $CO_2$ in the atmosphere over the life cycle of the tree.

Click here for related information

Carbon Stock in the Housing and Construction Business

## Site Preparation and Planting: Garden Vegetation for the Next Cycle

Harvesting and using wood alone will lead to a diminishing of forest resources that will be used to produce wood products. The Sumitomo Forestry Group therefore promotes sustainable forest management by always planting new trees after logging.

In fiscal 2021, we planted forests on 160 hectares in Japan, and on 6,979 hectares overseas. The newly planted trees will absorb $CO_2$ during their growth and retain it as carbon.

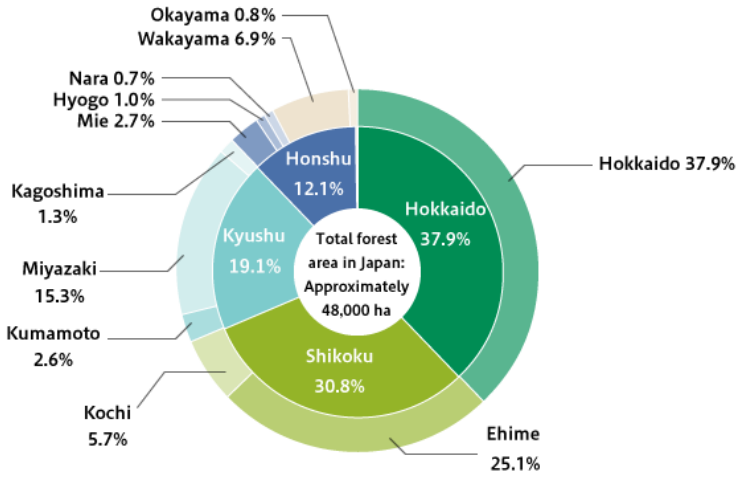
# Sustainable Forest Management

## Protecting Domestic Forest Resources

### Basic Policy

In recent years, there has been concern in Japan that the deterioration of planted forests such as Japanese cedar and Japanese cypress throughout the country is impairing shared benefit of forests, such as water source recharge. It is said that the profitability of the forestry industry has deteriorated due to low lumber prices, which has made it impossible to properly care for the forests, such as by thinning. In order to prevent further devastation of forests by revitalizing the forestry industry, the government of Japan has set a goal of raising wood self-sufficiency rate to roughly 50% by 2025. Sumitomo Forestry will contribute to the Japanese government's goal by expanding the area of managed forests, introducing smart forestry, propagating fast-growing trees, developing afforestation and silviculture technologies, expanding its container nursery business, and promoting solution businesses that utilize ICT.

#### Breakdown of Company-Owned Forests



## Preserving and Increasing Forest Resources Through Management of Company-Owned Forests

The Sumitomo Forestry Group owns a total of approximately 48,000 ha (about 1/800 of the national land area) of forest land area. Company-owned forests are categorized as either "working forests", where the production of timber is the priority, or "conservation forests", where conservation of the environment is the focus.

Sumitomo Forestry acquired a forestry certification from Japan's Sustainable Green Ecosystem Council (SGEC) *1 for all company-owned forests*2 in 2006 and third-party evaluations have confirmed that the forests are being properly managed, including with regard to measures to conserve biodiversity. New forest purchases after the acquisition of the forest certification have each been under evaluation for certification and our certification rate is 100%.

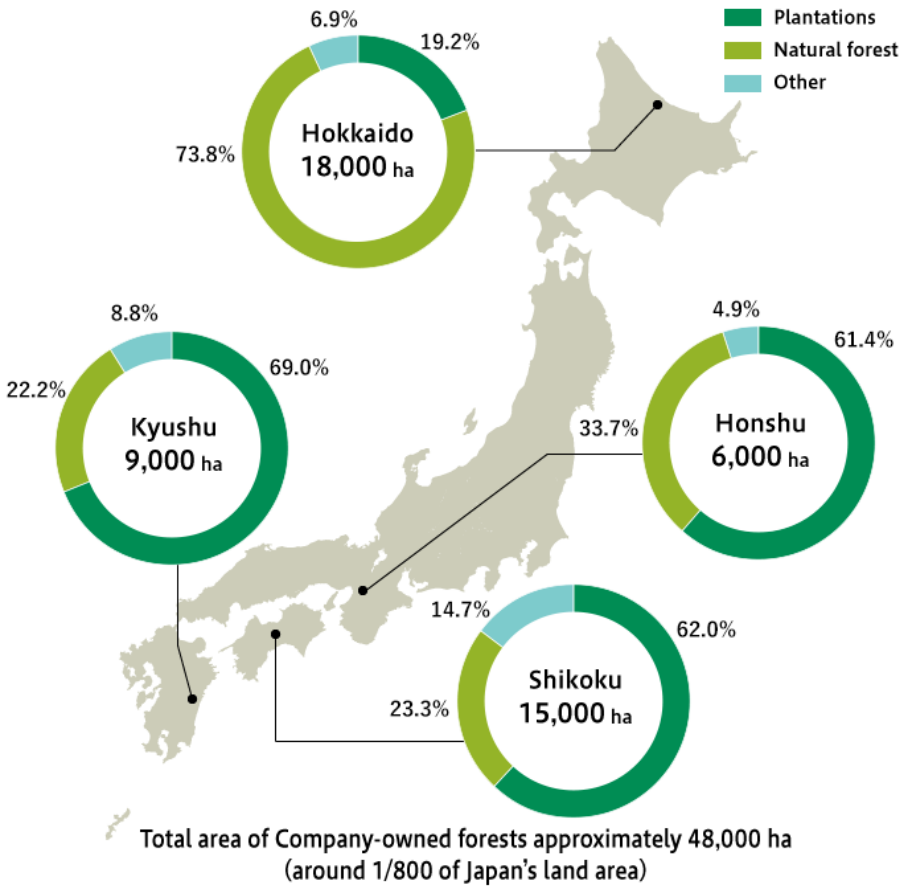
Forest operations include appropriate thinning, which helps to preserve and increase forest resources, while taking into consideration the surrounding environment including the ecosystem. Sumitomo Forestry also aims for highly productive management of its forests based on operational plans that follow the principle of performing the appropriate management for the appropriate tree species on the suited land.

*1 Japan's own forestry certification system through which forest management is verified as sustainable by third parties. Certification is based on seven criteria that include the preservation of biodiversity and the conservation and maintenance of soil and water resources. Due to the June 2016 approval of mutual recognition of the PEFC*3 international forest certification system, international recognition has increased.

*2 The forests owned by Sumitomo Forestry exclude the lands leased to Kawanokita Development Co., Ltd., which is a Group company responsible for operating a golf course, and the surrounding forest. Newly purchased forests are excluded because they underwent expanded inspections during the subsequent fiscal year.

*3 The programme for the Endorsement of Forest Certification Schemes is an international NGO that mutually authenticates certification standards created in each country and region as criteria to be shared internationally. 55 forest certification schemes are members of PEFC, of which 47 are mutually certified (as of September 30, 2021).

## Distribution and Area of Company-Owned Forests (as of December 31, 2021)




## Forest Revitalization Initiatives

### Seedling Production for Regional Revitalization

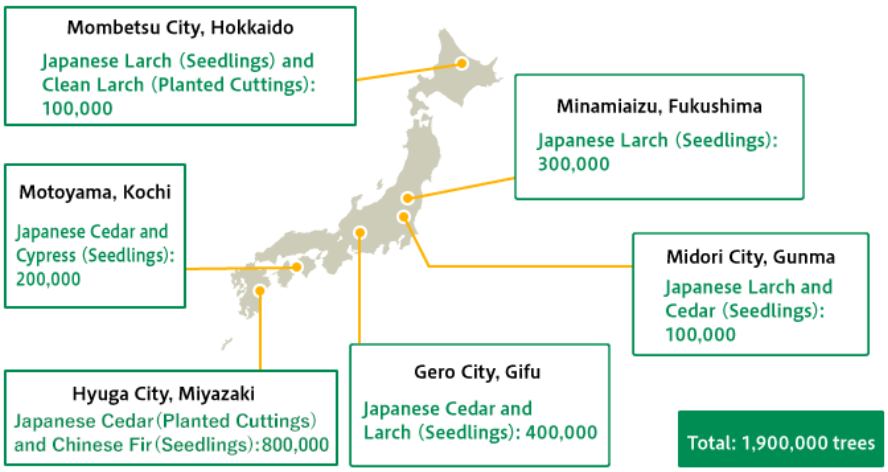
Increasing number of municipalities are working to foster forest resources that are not yet effectively utilized as one part of regional revitalization measures. In addition, Japanese cedar, Japanese cypress, and Japanese larch planted after World War II have entered the harvest season, and the area of clear-cut forests has been increasing in recent years. As the area of reforestation increases after clear cutting, it is desirable to establish a stable supply system for seedlings, but it is expected that the supply will become insufficient in the future due to a decrease in the number of growers.

Sumitomo Forestry was one of the first companies to begin modernizing its containerized seedling production. Utilizing its independently researched and developed production technologies, Sumitomo Forestry will contribute to the sustainability of forest resources and active resource production through the operation of facility-based production facilities with appropriate environmental management.

Specifically, we opened an environmentally controlled nursery tree production facility in Hyuga City, Miyazaki Prefecture in 2012, followed by another facility in Mombetsu City, Hokkaido. By controlling temperature and humidity in the facilities, we are able to produce seedlings year-round, dramatically increasing production per unit area compared to conventional open-air seedling production. We opened production facilities in Gero City, Gifu Prefecture in fiscal 2016, Motoyama Town, Kochi Prefecture in fiscal 2017, Midori City, Gunma Prefecture in fiscal 2018, and Minamiaizu Town, Fukushima Prefecture in fiscal 2019. We have established a system capable of producing 1.9 million seedlings per year nationwide.

In addition to production at our own facilities, in fiscal 2020 we began outsourcing production in Gifu Prefecture, and in fiscal 2021 Sumitomo Forestry will provide technical assistance in Nichinan Town, Tottori Prefecture. We are also linking to local municipalities to contribute to the revitalization of the region by establishing greenhouses with local employment as well as the development and standardization of new technology related to seedling cultivation in addition to as well.

## Cultivating Sumitomo Forestry Seedlings Throughout Japan



## Efforts in Fast-Growing Trees

Sumitomo Forestry has begun efforts in fast-growing tree forests that are gaining more attention in recent years. Fast-growing trees are trees that grow faster than Japanese cedar and Japanese cypress and can be harvested in a shorter felling season, and include China fir, bead tree, and willow trees.

The Hyuga Forestry Office is conducting test plantings of China fir in company-owned forests in Kumamoto and Miyazaki prefectures. This test monitors aspects that include the reduction in weeding and a growth comparison with Japanese cedar through growth surveys and other research to examine the potential as a new tree species for garden vegetation.

In addition, the Forestry Department and the Tsukuba Research Institute are cooperating to test the planting of fast-growing broadleaf trees suitable for fuel wood.

Chinese fir

## Development of Forestry Drones to Transport Seedlings to Reduce the Labor of Planting Work

Workers are currently carrying seedlings weighing roughly 10 kg on their back when planting Japanese cedar, Japanese cypress and other tree species. Particularly in Japan, the terrain is quite hilly and places a huge physical burden on workers, which makes it difficult to secure a labor force.

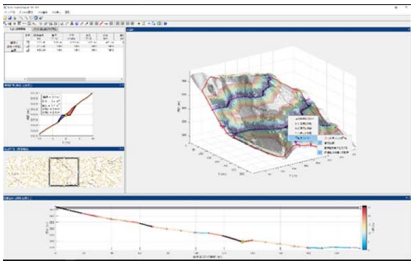
That is why Sumitomo Forestry has been advancing the development of drones to transport these seedlings jointly with drone manufacturers and distribution companies that have proven themselves in the agricultural field. This project has conducted repetitive proof-of-concept tests in company-owned forests by flying drones safely over complex terrain and in harsh weather to deliver the seedlings safely. Based on these tests and various improvements, sales of the Morito Forestry Drone to transport seedlings began throughout Japan in fiscal 2020.

In the course of our sales activities, we have learned that there is a growing need in the field to transport not only saplings, but also heavy materials such as those used to prevent damage by animals, which has been on the rise in recent years. We are therefore working to improve the working environment in the forestry industry in general by promoting improvements with an eye toward the transportation of forestry materials.

Forestry transport drone "morito"

## Launch of FRD Forestry Roadway Design Support System

Forests in Japan often have insufficient forest roads or strip roads in place which prevent smooth management of forests and transport of the timber that is harvested. Currently, when constructing forest roads or strip roads, lines are drawn by hand over a paper topographical map before visiting the site to see if that plan for the road network can be executed as is. This process of examination is usually done over and over again. The work to create these line drawn plans as well as check and verify the site rely heavily on individual intuition and experience as well as cost a vast amount of time and labor.



Automatic Design Screen (Image)

This software takes advantage of precise topographical data obtained from aerial laser and other measurements to design forestry road networks such as forest roads and strip roads. The main feature is a function for automatic design able to automatically create the line drawings by inputting the site of departure and destination in the operation screen. This feature creates line drawn plans based on parameters, including requirements such as longitudinal slope and the curvature radius, width, and operation costs specified in advance. In addition, we have devised a way for software to recognize dangerous terrain. This software packs more features than necessary for the job, such as allowing the design of safety lines that reflect areas which should be avoided due to potential collapse and other circumstances when creating a plan. The on-site exploration of the line drawn plans for roadways designed in the software offers efficient on-site verification.

## Spreading the Use of the "Tether" Winch-Assist Type Forestry Work Equipment

Sumitomo Forestry plans to use a grant from the Forestry Agency in fiscal 2022 to improve the Tether winch-assist work equipment developed jointly with Nippon Caterpillar LLC and Sun-earth Inc. and to conduct demonstrations of the equipment at forestry enterprises throughout Japan.

Work using a tether

We will continue to use the machine to improve the safety of forestry operations on sloping terrain and to realize environmentally friendly forestry.

## Improvement and diffusion of remote undergrowth cutters f remote undergrowth cutters or forestry

In collaboration with the Japan Federation of Forestry Cooperative Associations and the Norinchukin Bank, we are conducting demonstration tests of remote clear underbush cutters for the forestry industry.

The remote type clear underbush cutters reduces the workload of clearing the ground and cutting the undergrowth at the time of planting, and improves work safety by replacing the conventional hand-held type clear underbush cutters. The aim of the project is to promote reforestation and to secure the support of forestry leaders. The company will conduct repeated experiments, including improvement of clear underbush cutters made overseas and devising new work methods, with the aim of commercializing and spreading the technology by fiscal 2022.

Work view of remote clear underbush cutters

# Sustainable Forest Management

## Forest Management Overseas

### Basic Policy

With growing interest in the SDGs and other sustainable initiatives, Sumitomo Forestry Group is expanding its forestry business in consideration of local communities and the environment. The Group contributes to a stable supply of wood and regional economic development while maintaining the wider environment through management of "Economic Forests" which are planted forests for wood production, the preservation of "Protected Forests", which are responsible for ecosystem conservation and $CO_2$ absorption and fixation, and coexistence with surrounding "Local Communities".

### FY2021 Overseas Managed afforestation Area(Unit: ha)

| Country | Name of Forestry Business | Managed Area | Operations Area | afforestation Area in FY2021 | Logged Area in FY2021 |
|---|---|---|---|---|---|
| Indonesia | PT. Mayangkara Tanaman Industri (MTI) | 104,664 | 10,534 | 2,238 | 2,815 |
| | PT. Wana Subur Lestari (WSL) | 40,750 | 11,451 | 1,820 | 2,311 |
| | PT. Kubu Mulia Forestri (KMF) | 9,270 | 5,688 | 0* | 0* |
| | PT. Kutai Timber Indonesia (KTI) | 6,384 | 6,384 | 1,295 | 235 |
| | Subtotal | 161,068 | 34,057 | 5,353 | 5,361 |
| Papua New Guinea | Open Bay Timber Ltd. (OBT) | 31,260 | 11,618 | 370 | 250 |
| New Zealand | Tasman Pine Forests Ltd. (TPF) | 36,599 | 27,922 | 840 | 753 |
| Total | | 228,927 | 73,597 | 6,563 | 6,364 |

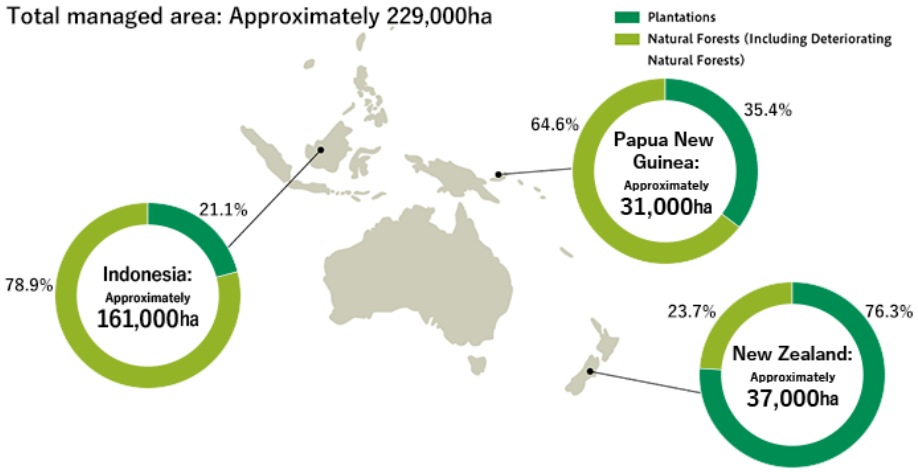
* Harvesting and afforestation to begin in the first half of 2022

## Forest Management Overseas

The Sumitomo Forestry Group is expanding three approaches to conducting forestry business; industrial tree plantation, environmental reforestation, and social forestry. The purpose of industrial tree plantation is to produce wood and increase the supply of afforestation timber (raw material). By zoning its managed land appropriately, the Group aims to achieve both the conservation of valuable ecosystems and the development of local communities through forestry business.

In addition, the Group also conducts environmental reforestation, planting trees for environmental conservation. It aims to contribute to environmental conservation through the expansion of forested areas and the fulfillment of the ecosystem services function of forests, by actively planting trees on land where natural regeneration would otherwise be difficult. The Group has also been engaged in "social forestry" which shares the economic benefits of afforestation with local communities while enlisting the cooperation of local residents.

### Distribution and Area of Overseas Planted Forests (as of December 31, 2021)




## Sustainable Forestry Business by Leveraging Forestry Certification System

Of an approximately 30,000-hectare planted forest owned and managed by Open Bay Timber (OBT), about two-thirds, or 20,000 hectares, has received FSC® forest certification*. Under the goal to plant on the 400-hectare land a year, OBT practices sustainable forest management that lays basis for communities and environment to function in harmony. The area planted in fiscal 2021 was 370 hectares.

The entire area of approximately 37,000 hectares managed by Tasman Pine Forests Ltd. (TPF) has been FSC®-FM certified. In fiscal 2021, they planted approximately 840 hectares of forest, carrying out sustainable forest management in harmony with the local community and environment.

* OBT: CW certification FSC-C019117, FM certification FSC-C103694, TPF: FM certification FSC-C132002

# Forestry Business in West Kalimantan, Indonesia (Industrial Tree Plantation)

Sumitomo Forestry has been undertaking large-scale forestry business operations at Mayankara Tanaman Industri (MTI) and Wana Subul Lestari (WSL) since 2010, after receiving "Permission to Utilize Industrial Plantation Forest Products[*1]" from Indonesia's Ministry of Environment and Forestry.

## Background

The project covers areas in which forest degradation has advanced due to commercial harvesting from the 1960s to the mid-1990s in addition to repeated illegal logging and slash-and-burn farming practices.

In these types of lands, we not only engage in economic and sustainable forestry business but also take responsibility to protect forests with high conservation value. We also believe this business is very significant in providing an economic infrastructure to local communities from the perspective of ESG.

The land used in these operations exists in tropical peatland which plays an extremely vital role in the carbon and water cycle on a global scale.

## Sustainable Forest Management

We launched these operations by conducting detailed typographical surveys and boring tests over five years to understand the peat distribution and depth. We also entered into an advisory agreement with the International Finance Corporation (IFC), the World Bank's group institute, in 2012. In accordance with the concept of High Conservation Values Forests (HCVF)[*2], Sumitomo Forestry conducted assessments on its operational properties with the IFC and investigated whether the property use plan is implemented as stated and adequate consideration is made for biodiversity and livelihood of local residents. The reports of the investigation results were audited by a third-party organization, and valuable comments made by stakeholders on the report were adapted in the business plan. Our Group also held public hearings in 2013 where stakeholders such as local residents, companies in the communities, academics, NGOs, and government officers were invited to share the results of the investigations. Obtained the PHPL certification, formally called Sertifikat Pengelolaan Hutan Produksi Lestari issued by Ministry of Forestry (Departemen Kehutanan) on sustainable forest management.

Our employees unified and consistent efforts since the start of business have succeeded in building a unique peatland management model that stabilizes the underground water level throughout the year. As a result, it has made great contributions to the measure against climate change on a global scale by mitigating greenhouse gas emissions and forest fires as well as sustaining the proper water cycle. Our management model has been highly praised as a successful example of peatland management worldwide.

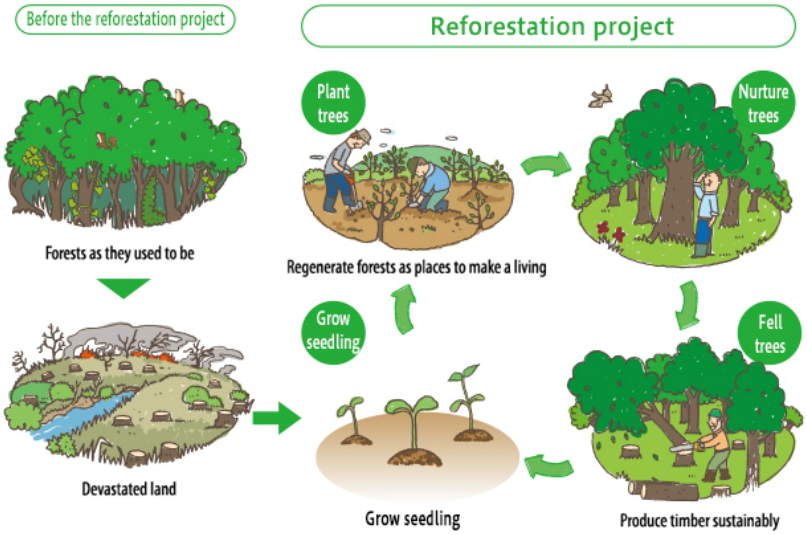
These and surrounding areas also isolate ecosystems where rare plant and animal species live in an island-like shape. To prevent this type of isolation, Sumitomo Forestry works together with neighboring local business proprietors to preserve the entirety of the ecosystem.

To promote integrated business operations and environmental conservation initiatives with WSL and MTI, Sumitomo Forestry acquired planted forests adjacent to WSL and MTI and established Kubu Mulia Forestry (KMF), a wholly owned subsidiary of Sumitomo Forestry, in fiscal 2020.

Sumitomo Forestry Group captures tropical peatlands and the ecosystems living throughout the peatlands as one type of important natural capital. In the future, businesses achieving a balance between industrial tree plantations and environmental protection will enhance value as natural capital and help resolve global issues.

*1 Issued by the Indonesian government, this is a business license to engage in industrial tree plantation operations in Indonesia.

*2 In considering the value of forests, it goes beyond their value as absorbers of greenhouse gases, outlining methods of extracting each one of the many aspects of value forests contain. These aspects include their value as habitats of rare, endangered animal species, as water resources, as providers of essential natural services such as soil erosion control, and as land that has an intimate relationship with the lifestyles and cultures of local communities.




Click here for related information

Biodiversity Conservation in Planted Forests Overseas

## History of Enhancing the Value of Natural Capital

| | |
|---|---|
| 2017 | • Entered into a Memorandum of Understanding (MOU) with the Indonesian Ministry of Environment and Forestry for a pilot project that aims to examine unique water level management technologies to sustainably manage peatlands and establish peatland management models in Indonesia. The term of this project is set for five years. The project is being conducted with the cooperation of the Ministry of the Environment and Forestry as well as the Peatland Restoration Agency.<br>• The peatland management technology from this project was introduced as an example of excellent, leading-edge peat management at the November 2017 United Nations Climate Change Conference (COP23) held in Bonn, Germany. |
| 2018 | • In 2018, the Group formulated a grievance mechanism with the help of the IFC. Together with the University of Indonesia, we also conducted a social survey of operational and surrounding areas on a three-year plan.<br>• We reported on peatland management technology at the December 2018 United Nations Climate Change Conference (COP24) held in Poland. |
| 2019 | • We announced initiatives related to WSL peatland management and forestry business at The Seventh Tokyo International Conference on African Development (TICAD7) held in Yokohama in August. We introduced that tropical peatland forest not only acts as the lungs of the Earth but also a heart that circulates water around the globe.<br>• We also announced a peatland management system that prevents fires at a side event of the United Nations Climate Action Summit held in New York in September.<br>• At the United Nations Climate Change Conference (COP25) held in Madrid in December, we presented water management technologies and the preservation of rare species. |
| 2020 | • The Global Landscape Forum held by the United Nations Environment Programme introduced the Sumitomo Forestry peatland management concept to not only address the issue of carbon emissions in peatland management but also consider forest, agricultural and food shortage issues as a main theme.<br>• We contributed essays about the expertise in peatland management which we have cultivated thus far and took charge of organizing the technical peatland management guidebook published by the International Peat Society (April 2021).<br>• Sumitomo Forestry also launched a counsel together with the IDH - The Sustainable Trade Initiative, an international organization, to improve assessment methods of natural capital and enhance added value. |
| 2021 | • We gave presentations at the Japan Pavilion, Indonesia Pavilion, and Peat Pavilion at the 26th Conference of the Parties (COP26) of the United Nations Framework Convention on Climate Change (UNFCCC) in Glasgow in November, introducing tropical peatland management technologies, as well as the natural capital value of tropical peatlands and their evaluation and monitoring technologies. |

# Forest Fire Prevention Measures at Each Work Site

## Indonesia

Wana Subur Lestari (WSL) and Mayangkara Tanaman Industri (MTI) Conventionally, reforestation in peatlands* was done by managing the water level with drainage to push water out of the soil. This meant digging many drainage routes to rivers in order to dry the land for planting. However, drying-out land results in the decomposition of organic matter in the peat soil and acts to heighten global warming due to the emission of greenhouse gases. Fire in dried peat, once ignited, spreads even underground and is very difficult to extinguish, creating the risk of large-scale peat fires.

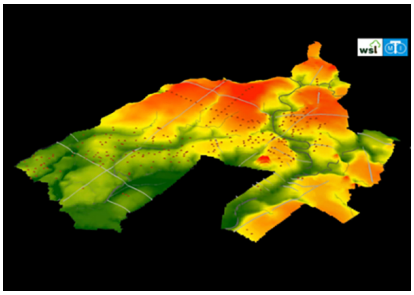
To address this issue, WSL and MTI manage the storage water level. These companies first take detailed measurements and peatland survey necessary for zoning and infrastructure construction plans. Using the measurement results, WSL and MTI then (1) zone out protected and riparian forest with rare and highly valuable water storage properties, (2) set buffer zones to prevent any impact of afforestation zones on protected forest and (3) determine afforestation zones.

The success of our work so far since starting real-time measurements of the peat thickness has clearly shown sustained long-term peat thickness even while repeatedly shrinking in the short term from days to weeks and months. In other words, it reduces peat-related greenhouse gas emissions while also helping to avoid fires.

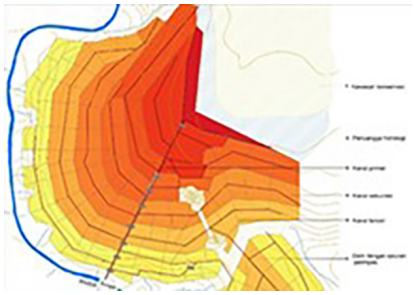
The Sumitomo Forestry Group has also continued to develop the infrastructure technology necessary to manage peatlands since launching the business. The concept is simple, low cost and easy maintainability, which aims to establish management technology that can be broadly expanded in rainforest peatlands throughout Indonesia and the rest of the world. As an alternative means to carry out massive amounts of surveys when launching Sumitomo Forestry businesses, we are striving to develop technology to collect and analyze data using drones and AI (Artificial Intelligence).

Regions where peatlands thrive, such as the Amazon, the Congo Basin, and Indonesia, have the most rainfall throughout the world. The soil of peatlands is made up of 80% to 90% water. Tropical forests and peatlands act as a pipeline dispersing water into the air from a large amount of rainwater accumulated in the ground during the monsoon season through evaporation. The tremendous evaporation from these tropical forests and peatlands has the potential to act as a necessary water cycle function not only locally but at a continental and global scale. The collapse of the world's water cycle will result in abnormal weather and adversely impact agriculture, which will cause even greater food shortage issues. Sumitomo Forestry recognized this fact in its peatland operations from an early stage and advocated the importance of proper tropical forest and peatland management because these regions act as the heart of the Earth circulating water throughout the planet at our presentation at The Seventh Tokyo International Conference on African Development (TICAD7) held in Yokohama in August 2019.

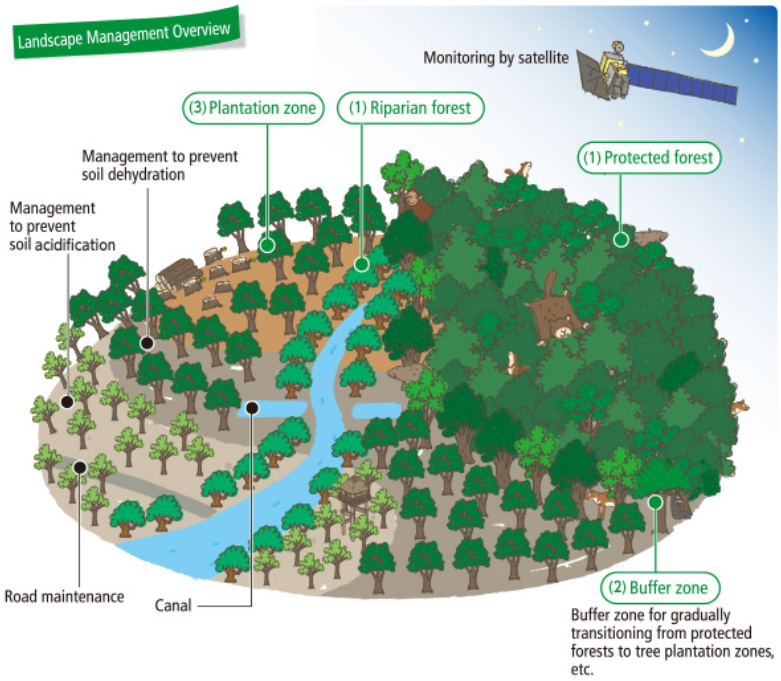
* Definition of peatlands: Characteristics of the peat soil found in the peat swamps is known to emit enormous amounts of greenhouse gases, typically carbon dioxide and methane gas, if the soil was inappropriately exploited. Owing to joint researches by Japanese and Indonesian academic institutes, our operations takes consideration to minimize greenhouse gas emissions that accrue as the peaty soil dissolves during exploitations.



Landscape management of forestry business designed based on detailed data



Monitoring the water level in peatlands




## Papua New Guinea

Open Bay Timber (OBT) keeps track of the fire hazard levels by analyzing temperature, rainfall, and humidity every day, as well as by preparing firebreaks and organizing forest residues to prevent the spread of fire on the planted forest. In areas with a high risk of fire, patrols of work sites are increased from once to twice a day to meticulously check for signs of fire. We have had no cases of forest fires in 2021 thanks to these initiatives.

## New Zealand

TPF is working with Fire and Emergency New Zealand (FENZ), local municipalities, neighboring forestry associations and other relevant agencies to continuously conduct awareness-raising activities about fire in the local community in addition to taking other proactive fire prevention measures. Specific measures include setting up a Fire Index bulletin board that shows the fire risk level, distribution of leaflets to evoke caution in the local community, the creation of a system to always have fire-fighting helicopters on standby when the risk of fire is high, stockpiling of fire extinguishing agent, appropriate placement and management of water ponds, focused pruning of wood edges to prevent the spread of fires, fire-fighting equipment acquisition and training, conducting patrols, and preparation of forest roads. On days with a significantly high risk of fire, we also implement a wide range of regulations from time restrictions for harvesting work to rules on when people have recreational access to the mountains.

# Sustainable Forest Management

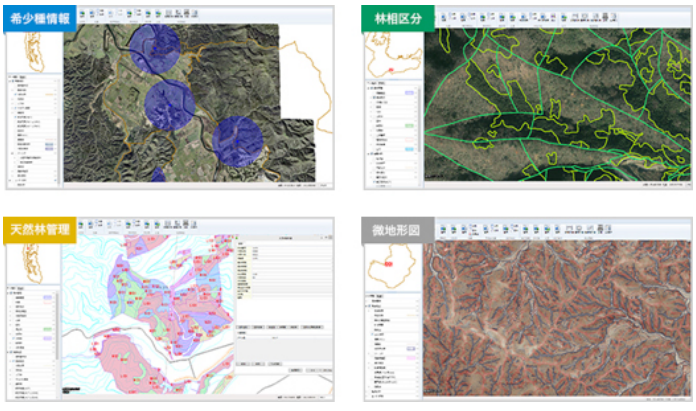
## Afforestation Consultancy

### Domestic Case Example

#### Supporting Municipalities in Introducing Forestry ICT Platforms

While quantitative forest resources are analyzed through aerial surveys and forest resource data systems are prepared in some advancing areas, many of the forests in Japan do not have sufficient forest resource information. Sumitomo Forestry built the Forestry ICT Platform together with AS Locus Corporation as a measure to address this situation. The Forestry ICT Platform is a holistic system with a wide range of functionality related to advance forest resource information as well as forests and forestry that has been provided to municipalities throughout Japan and organizations in the forestry business since fiscal 2013. The key distinctive feature of this platform is that it is provided in regionally customized form, with a variety of forest and forestry-related data and functions optimized for local characteristics. We have supported 16 municipalities with the platform as of the end of fiscal 2021.

Forestry ICT Platforms



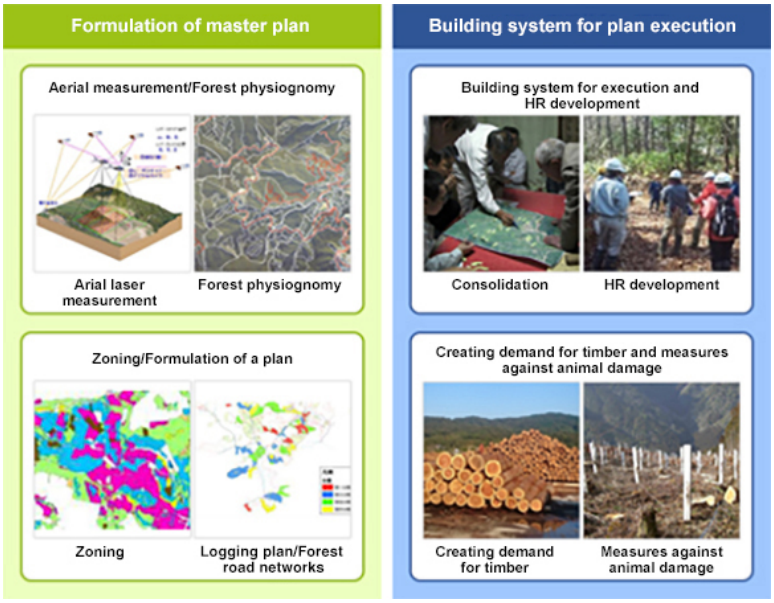
## Supporting the Creation of a Forest and Forestry Master Plan for Itoshima City, Fukuoka Prefecture

Sumitomo Forestry is providing consulting in planning of forest maintenance and forestry development conducted by local municipalities by taking advantage of its wealth of knowledge in forest management cultivated in company-owned forests over a long period of time. As part of these efforts, we supported the creation of a Forest and Forestry Master Plan in Itoshima City, Fukuoka Prefecture as an initiative to use local forest resource since January 2016.

This plan is the foundation for measures related to proper forest maintenance and effective use of locally produced timber in Itoshima, which is positioned as the basic plan under which businesses are to build supply chains for city use of timber that takes advantage of ICT promoted by Itoshima.

As methods to create this master plan, we are zoning areas that consider attributes such as the growth rate and accessibility of forests as well as the environmental conservation functions after grasping the amount of forest resources within the city limits through aerial laser measurement. Sumitomo Forestry formulated a harvesting plan and a plan for a forest road networks that would be optimal to haul timber cultivated in the forest out by defining policies for conducting operations in the forest for each zone. Moreover, we also examined the systems to build to execute measures that follow this master plan.

The Forestry Agency's "Model Project for Creating Regions for Forestry Growth Industry" is currently being used to assist in the development of a framework for implementing the plan, and we will continue to provide an assistance so that this master plan will contribute to regional forestry promotion.



## Comprehensive Partnership Agreement to Turn Forestry to a Growth Industry with Nagato City, Yamaguchi Prefecture

Sumitomo Forestry entered into a comprehensive partnership agreement to turn forestry and timber industry to a growth industry with Nagato City, Yamaguchi Prefecture in September 2019 for the purpose of promoting development of the forest and timber industry in Nagato City in order to revitalize the local economy.

In April 2017, the Forestry Agency selected Nagato City was selected as a region to turn forestry and timber industry to a growth industry by the Forestry Agency and has worked toward that goal. The Nagato City launched a committee to promote turning forestry and timber industry to a growth industry with various subcommittees to conduct repeated assessments through local representatives and experts toward revitalization of forestry. As a result, Nagato City and other local relevant bodies took the lead in establishing Refore Nagato in July 2020 as a general incorporated association to handle local forest management.

The partnership agreement between Sumitomo Forestry and Nagato City aims to increase local production of logs, secure and train forestry workers, and expand timber demand. By treating the forests throughout Nagato City as a single entity, we will also execute efficient forest maintenance and promote sustainable forest management to further turn forestry to a growth industry.

In 2021, the Company conducted on-site proof of concept, surveys, and proposals to support the establishment of an intra-regional supply chain for locally produced timber, expanding material production, and insuring demand for lumber.

### Partnership Agreement Overview

- Promote harvest and replanting
- Stably produce and use container seedlings
- Develop and standardize container seedling production technology and train business operators
- Establish and manage organizations central to forest management
- Identify the quantity of forest resources and the intention of forest owners
- Adopt and effectively utilize ICT in forestry and timber industries
- Adopt and effectively utilize forestry machinery in forest
- Take advantage of business approaches that heighten motivation of forest owners and forestry businesses
- Secure human resources and support their retention in forestry and timber industries
- Build a cooperative supply chain with local city sawmills and other forestry businesses
- Drive demand for locally produced timber both inside and outside of the city

## Comprehensive Partnership Agreement with Nishiawakura Village, Okayama Prefecture and Sumitomo Mitsui Trust Bank

Sumitomo Forestry entered into a comprehensive partnership agreement with Nishiawakura Village, Okayama Prefecture and Sumitomo Mitsui Trust Bank in August 2020 to promote regional redevelopment measures with focus on the forest industry.

This partnership agreement assigns roles to each of the three parties. Sumitomo Mitsui Trust Bank is entrusted by forest owners through forest trust agreements while Sumitomo Forestry provides management support as a forestry expert from driving efficiency in forest management procedures and operations handled by firms specializing in forest to marketing and promotion of wood. Nishiawakura Village offers support from a governmental stance and deliberates on building road network, forest information and other infrastructure.

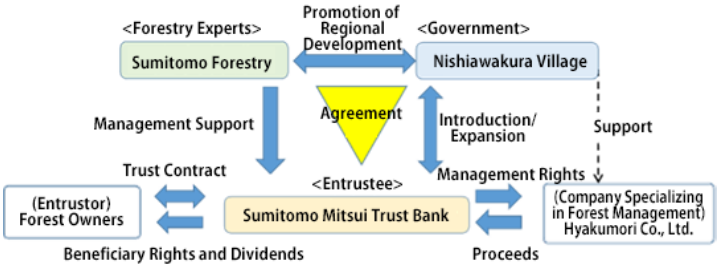
Japan's forestry is currently in the midst of a period of utilization of its abundant forest resources while at the same time facing the challenges: timber prices have fallen to one-fourth of their peak levels, forest owners have less motivation, and there is a shortage of forest management and forest operation leaders. To resolve these issues, a trend of outsourcing forest management to local municipalities and motivated forest management companies has begun. Forest trusts are one of these measures. We will expand the forest trust initiatives both inside and outside Nishiawakura Village with our two partners by leveraging each of our individual strengths. The Sumitomo Forestry Group will contribute to work to promote regional revitalization founded in forestry.

In 2021, we conducted research, analysis, and recommendations to Nishiawakura Village and Hyakumori Corporation, a company specializing in forest management, with respect to improving operational productivity and reducing distribution costs.

### Specific Items of the Partnership Agreement

1. Items on Forestry and Regional Development Emphasizing Forestry Underway in Nishiawakura Village
   (1) Provide forest information to forest owners and enhance the efficiency of forest management through the use of forest information
   (2) Promote cyclical forest management friendly to the environment and improve the supply capabilities and increase demand for timber produced in the village
   (3) Create a new service industry using forests (including special-use forest products)
2. Items on Business and Management of Forestry Businesses in Nishiawakura Village
   (1) Improve various services for forest owners in forestry businesses
   (2) Lower costs of forest management and forestry and facilitate effective marketing of materials for forestry businesses
   (3) Strengthen the management structure of forestry businesses
3. Items on the Introduction and Expansion of Forest Trusts
   (1) Identify problems and investigate solutions to expanding forest Trusts
   (2) Standardize forest management and forest management procedures through the use of forest Trusts
   (3) Effectively use timber produced from forests related to forest Trusts
   (4) Promote the expansion of forest trusts to other regions

## Partnership Agreement Scheme




## Overseas Case Example

Corporate needs for forest management are diverse. In recent years, a considerable number of companies have been conducting forest conservation and planting activities in developing countries to mitigate the impact on forests in overseas countries and regions where they engage in business activities, and to otherwise fulfill their corporate social responsibilities.

Drawing on its knowledge of forest management in Japan and overseas, Sumitomo Forestry implements its consulting business for the restoration of degraded forests in tropical regions, the rehabilitation of biodiversity, and for the protection and cultivation of forests that takes into account local communities.

### Mitsui Sumitomo Insurance's Paliyan Wildlife Sanctuary Reforestation Project (Conservation Forest/ Social Forestry)

Mitsui Sumitomo Insurance has been involved since 2005 in efforts to restore the devastated forests in the Paliyan Wildlife Sanctuary (Gunung Kidul Regency in the Special Region of Yogyakarta) in Indonesia. Sumitomo Forestry has provided associated consulting services.

During the first phase of activities to March 2011, around 300,000 trees were planted on 350 hectares of land. As a second phase of activities since April 2011, with a goal of creating a framework for local people to voluntarily protect their abundant forest areas, Sumitomo Forestry has been organizing agricultural societies to improve the livelihoods of the local people, providing support for an agricultural guidance program aimed at improving the livelihoods of local residents, the establishment of an inclusive organization to examine ways of managing protected forests, and an environmental education program in cooperation with local schools. As a third phase of activities since April 2016, we have been supporting additional planting in areas with few trees in protected forests as well as social forestry through local communities around protected forests. We are also growing seedlings to distribute as social forestry. Mitsui Sumitomo Insurance Co., Ltd. also received a letter of gratitude from the


Local Agricultural Society Members Cultivating Seedlings to Distribute as Social Forestry

Indonesian Ministry of Environment and Forestry praising these activities at a National Nature Conservation Day event in Indonesia in September 2020.

As part of this project, the Company has also opened the doors to its plantation forests, seminar house and other related facilities in a positive effort to make information on its experiences and know-how on forest restoration available to the public.

## Toward the Commercialization of "Tropical Peatland Consulting" and "Quality Carbon Credits"

Sumitomo Forestry and IHI Corporation have signed a business partnership agreement for "Forest Management Consulting Business" and "Development of the Sustainable Business that Optimizes the Value of Natural Capital". The two companies will collaborate to establish a consulting business specialized in the appropriate management of tropical peatlands. The two companies will also collaborate to create and sell high-quality carbon credits[*1] by appropriately assessing the value of natural capital such as carbon storage in forests and soil.

Sumitomo Forestry's major strengths include forest management technologies it has created in Japan and abroad, as well as the tropical peatland management technologies it has developed in Indonesia and the data it has accumulated on the ground. IHI Group's strengths lie in its satellite data utilization technology, weather observation and forecasting technology, which it has developed over many years of space research. By combing strengths of the two companies, we are aiming to establish a way for extensively disseminating tropical peatland management technology across the world, and to start growing it as a consulting business by 2022. We will also develop a method for precisely evaluating and monitoring amount of $CO_2$ absorbed by vast forests. In addition to the value of carbon absorption as a measure against climate change, we will also aim to create "High-quality Carbon Credits" by adding value as "Natural Capital[*2]" such as biodiversity and water cycle conservation, as well as contribute to local communities.

*1 A tradable Greenhouse Gases Emissions Reduction Certificate. Emissions are considered as credits when dispersed within enterprises or globally, and the trade unit is 1t-$CO_2$.

*2 For example, trees absorb $CO_2$ and provide clean water, and nature as a stock (capital) that provides valuable services.

# Sustainable Forest Management

## Reforestation Activities Contributing to the Society

### Reforestation Activities Contributing to the Society

#### Distribution of Free Seedlings and Buy Back Guarantee of Logs

Our Group companies KTI and VECO distribute free tree seedlings to local communities guaranteeing that the companies will buy logs as raw materials at the current market value once the seedlings grow into harvestable woods. In November 2015, KTI's aforementioned operations were recognized by the Indonesia Ministry of Environment and Forestry and awarded the Minister's Prize for contributing to local communities by generating stable income while protecting communal societies as well as environments.

Local KTI Staff Celebrate the Minister's Prize

#### Number of Seedlings Given to Local Communities

| Company Name | FY2021 result |
|---|---|
| KTI | 550,000 trees |
| VECO | 330,000 trees |

#### Promoting Certification of Forests Together With Local Communities

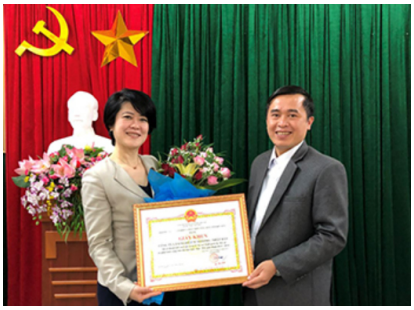
KTI organized Koperasi Serba Usaha Alas Mandiri KTI (KAM KTI)*, which is a community forestation cooperative association. In 2008, KTI obtained the first FSC®-FM certificate for the 152-hectare planted forest and has expanded its certification to 1,005 hectares in 2015. Koperasi Bromo Mandiri-KTI (KBM KTI)*, which is a second reforestation cooperative with the same certification, acquired a certificate for 206 hectares in January 2017. In 2021, the area expanded to 1,330 hectares and it has been supplying logs to KTI. The area of certified forest has reached a total of 2,335 hectares. These certified forests will strengthen the manufacture and sale of products with high environmental value based on a growing supply of certified timber.

View of Planted Forest

* KAM KTI: FSC-C023796, KBM KTI: FSC-C133562

## Contributing to Reforestation in Collaboration with Governments

Since 2013, Sumitomo Forestry has teamed up with the Japan International Cooperation Agency (JICA) to engage in forest management activities with Dien Bien Province in Vietnam, including forest conservation and planting of deforested areas. Our comprehensive support has also included livelihood assistance to help reduce excessive dependency on forests. Among Vietnam's poorest areas, Dien Bien has suffered severe forest depletion due to practices by local residents such as expansion of farmland and burning of fields. Given its importance as the location of a hydroelectric generator dam and sources of water crucial for all of Vietnam, however, we assist with a portion of the support that JICA provides to the province, such as the formation of organizations to protect forests, conservation activities, forest planting, fruit tree and vegetable cultivation support, as well as helping to provide feed for fish and livestock. This project ended in fiscal 2020, and Sumitomo Forestry supported it for approximately seven years. Our work, such as providing a total of roughly 45,000 seedlings to the local people, contributed to the revitalization and conservation of forests in the region, including about 29 ha of reforestation across six sites.



Award ceremony

In Dien Bien Province, where open livestock grazing has been the local custom, the resulting damage to planted tree seedlings has become an issue as it prevents them from taking root and growing. Sumitomo Forestry is therefore promoting a forestation model that introduces the use of protective barriers. The seedling survival rate has increased compared to previous forestation models, thus confirming the effectiveness of the forestation model using protective barriers. The results have been acknowledged by the provincial Rural Agricultural Development Bureau, and received an award in October 2018.

# Utilization of Sustainable Forest Resources

## Utilization of Sustainable Forest Resources

### Timber and Building Materials Business Initiatives

#### Promotion for Sales of Environmentally-conscious KIKORIN-PLYWOOD

Sumitomo Forestry Group has set a target for the percentage of procurement of imported wood board products, such as plywood, that are made of certified forest timber and planted forest wood, and has been working to expand sales of these products. Among these products, JAS Plywood that uses 50% or more FSC-certified or PEFC-certified timber and sustainable planted forest wood is marketed as "KIKORIN-PLYWOOD," and some of its revenue is invested in forestry business implemented in Indonesia. This product made using 50% or more certified timber or planted forest wood, was praised as being environmentally conscious. It received an encouragement prize in the 1st EcoPro Awards* on September 12, 2018. Sales performance in fiscal 2020 (April to December) are 42,051 $m^3$. From fiscal 2021, the definition of "KIKORIN-PLYWOOD" has aligned with Sumitomo Forestry Group's Wood Procurement Standards as "plywood using 100% of sustainable certified timber," and we will strive to further expand sales. Sales performance in fiscal 2021 (January to December) under new definition are 313,280 $m^3$.


KIKORIN-PLYWOOD

エコプロアワード 2018
EcoPro Awards

* Hosted by the Japan Environmental Management Association for Industry. It was established in fiscal 2004 in order to help further develop and spread the use of Japanese eco-products by broadly communicating information about eco-products among current and prospective clients while also supporting the efforts of the relevant suppliers. The EcoProducts Awards were renovated in fiscal 2018, now presented as the EcoPro Awards

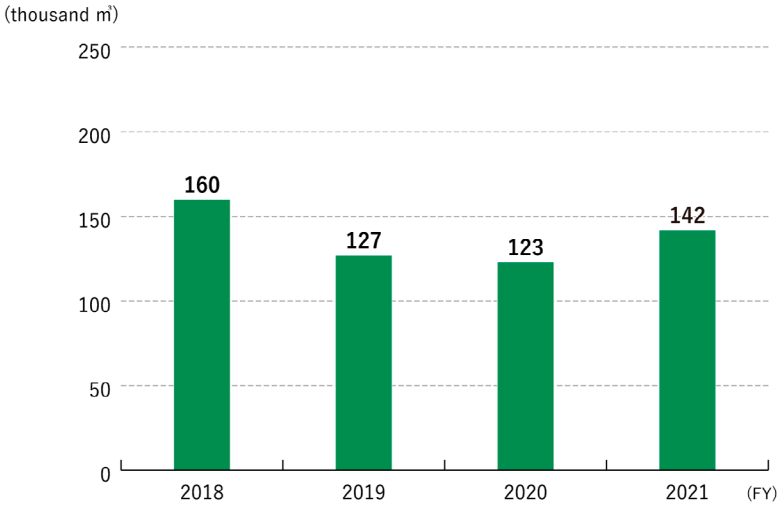
## Exporting Japanese Timber

Overseas demand for wood is forecast to grow in emerging countries including China propelled by economic development and population growth. Under these circumstances, Japanese timber exports have also been on the rise in recent years, and a target of 300,000 $m^3$ has been set for Japanese timber export volume to be reached in fiscal 2025 as we explore overseas market opportunities for Japanese timber.

In fiscal 2021, the second half of the year was significantly affected by demurrage at Chinese ports due to coronavirus disease(COVID-19), power shortages in China, and the real estate development economic decline caused by the Evergrande Group management crisis issue, but in the first half of 2021, we were able to take over the recovery of market conditions in the Chinese market in fiscal 2020 due to the early cessation of infectious diseases. As a result, the exports of Japanese timber increased by 15.7% from the last half to 142,000 $m^3$.

In fiscal 2022, although problems such as the demurrage problem and soaring container freight rates will still be apparent, China's trade situation is such that the U.S. market is their largest target, and if the quarantine system is improved as a border control after the Beijing Winter Olympics, more export volume is expected than that in fiscal 2021.

### Export Results of Japanese Timber*




* The aggregation period for fiscal 2021 is from January to December 2021, the aggregation period for fiscal 2020 is from April to December 2020, and the aggregation period before fiscal 2019 is from April of each year to March of the following year.

## Promoting the Use of Certified Timber

The most important aspect of selling certified timber is managing the procurement of certified timber separately from other types of timber. With CoC certification, because we are inspected by a third party, we are able to guarantee that timber and other products are from certified forests and sell them to our customers.

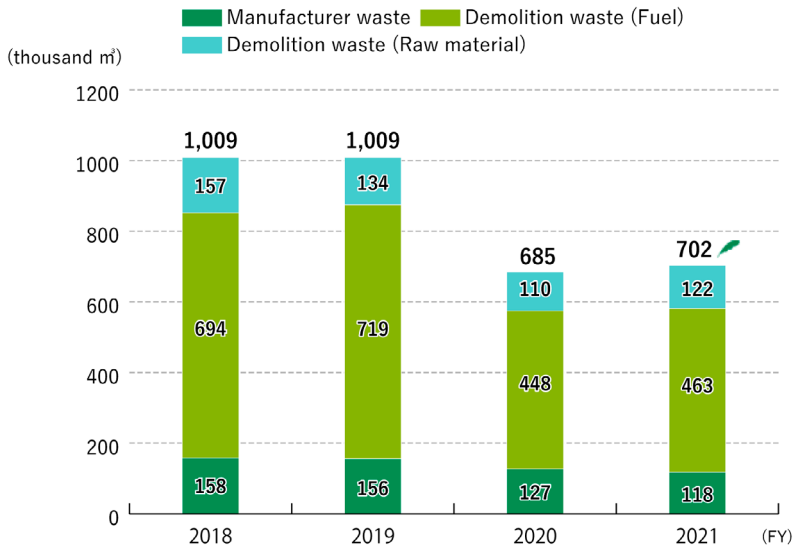
The Sumitomo Forestry Group is working to expand the amount of certified timber it handles with the goal of handling only sustainable timber and timber products by the end of 2021. Sales performance in fiscal 2021 was 284,494 $m^3$, a 31% increase over fiscal 2020 in terms of average monthly sales volume.

## Recycling of Wood Resources into Chips

The Sumitomo Forestry Group contributes to resource recycling through its wood chip operations, whereby offcuts generated during the wood 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 the future, 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*




* The aggregation period for fiscal 2020 onwards is January to December of each year, and the aggregation period before fiscal 2019 is April of each year to March of the following year.

Click here for related information

About symbol for Independent assurance

# MOCCA (Timber Solutions) Business Initiatives

Sumitomo Forestry has been engaging in forest management for more than 330 years. In addition, we create living spaces which take advantage of wood through our expertise in the various properties of wood worldwide. The development of a truly broad scope of experience, knowledge and technology promotes the MOCCA (Timber Solutions) Business specialized in proposing wooden non-residential medium- to large-scale construction. In 2017, Sumitomo Forestry entered into a business and capital alliance with Kumagai Gumi Co., Ltd., which possesses a proven track record in numerous construction results worldwide in the civil engineering and construction fields. In 2020, we welcomed Cohnan Kensetsu Inc. with expertise in order and construction management of steel frame and steel concrete construction to the Sumitomo Forestry Group. These partnerships will expand medium- to large-scale non-residential wooden construction by building on the strengths of Sumitomo Forestry, such as wood construction and technologies to more broadly use wood for both interiors and exteriors. The MOCCA (Timber solutions) business will also contribute even more to the realization of a sustainable society in harmony with the environment and economy by sharing a culture of wood and revitalizing forestry.

## Medium- to large-scale Wooden Constructions Brand "with TREE"

In 2021, Sumitomo Forestry and Kumagai Gumi launched the "with TREE," a brand of medium- to large-scale wooden constructions. The concept is "architecture good for both the environment and your health." We provide new value created by "wood" in urban architecture and promote MOCCA (Timber Solutions) business in medium- to large-scale constructions. The project will combine Sumitomo Forestry's knowledge of forests and wood with Kumagai Gumi's knowledge of steel frame, RC, and large-scale construction to strengthen the cooperative framework. We have launched this brand as an initiative in the field of medium- to large-scale wooden constructions, which has been the mainstay of our collaboration since the business and capital alliance in 2017, and we will propose to enhance "environmental value" and "health value" from material procurement to construction and consulting.

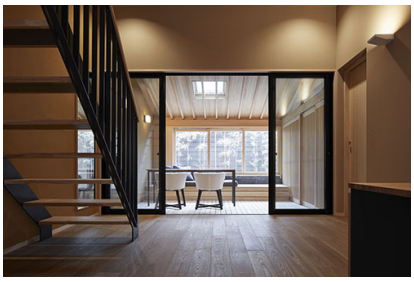
## Initiative Examples

**Co-starring of Hospitality with Natural Wood and Fresh Hot Spring Water Katsuragi Koto no Niwa Onsen Ryokan (Japanese-style Hotel)**

Located adjacent to the Dogo Onsen Honkan , a national important cultural property, this hotel inherits the history and culture of Dogo region and focuses on the natural blessings of wood and hot springs. The architectural concept is "namaki" meaning natural wood. All 10 rooms were designed as guest rooms with open-air baths, aiming co-starring of the wish to offer authentic feel and scent of the wood and "namayu" (fresh hot spring water) flowing directly from the source.

We use an abundance of high-quality domestic cypress and cedar trees grown in Ehime Prefecture, and we also carefully pass down the culture of local production for local consumption.

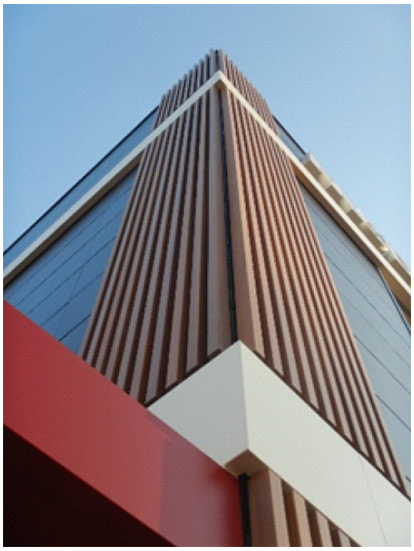
The Dogo Onsen Honkan began reconstruction work in 1890 by the first mayor with the belief of creating something that could not be imitated even 100 years later. We call it the texture of "Tokimi-iro" color tone, based on the idea of the wood's beauty over time. We hope that this facility will be "Tokimi-iro" in color tone and texture in a hundred years, and assimilate as part of the stately scenery of Dogo.



### Wooden Construction and Wood Conversion of Fast Food Stores

Sumitomo Forestry performed wooden construction of 17 fast food stores in fiscal 2021.

In accordance with Sumitomo Forestry's proposal, the pillars of the structural frame are made of laminated cedar wood, utilizing domestic timber. We were in charge of structural design and wooden frame construction, such as utilizing laminated veneer lumber (LVL) manufactured by Nelson Pine Industries (NPIL) in New Zealand for the beams. In addition, the wood louvers installed on the exterior were treated with Sumitomo Forestry's original S-100 paint (silicone-based strong water-repellent paint) and AZN dry-type wood preservation treatment to improve weather resistance and durability. As of December 2021, a cumulative total of 316 retail properties have been performed wood construction with such proposals.



S-100 Preservative-treated Wooden Lattice

Even after becoming a product, wood continues to fix $CO_2$ as carbon. Compared to the use of steel frames or reinforced concrete for pillars and beams, it also leads to a reduction in $CO_2$ emitted from the store over its entire life cycle, from material procurement to construction, renovation, demolition, and disposal.

Sumitomo Forestry will further promote the expansion of wood utilization by providing integrated services from wood procurement to supply and construction.

Fast Food Restaurant Construction

Exterior of Wooden Fast-Food Restaurant

## Participated in the 15-story Wooden Office Development Project, which is the Tallest Building in Melbourne, Australia

Sumitomo Forestry, together with NTT Urban Development Corporation, has launched initiatives to realize net zero carbon buildings*1 through Hines, a leading global developer.
The project that will serve as a stepping stone to this goal is a large-scale wooden office to be constructed in Collinwood, a suburb of Melbourne, Australia. The building is a mixed structure of RC and wood with 15 floors above ground and two floors below (all floors above the 6th floor to be made of wood), and is expected to be the tallest*2 wooden office building in Melbourne, Australia. Construction is scheduled for completion in 2023.

Through this project, in addition to achieving the highest level of Green Star environmental certification in Australia (6 stars), we aim to obtain Net Zero Carbon certification based on the Carbon Neutral Standard for Building, an Australian standard. We also estimate that approximately 4,000 $m^3$ of wood will be used in the structural frame, fixing approximately 3,000 tons of carbon (on a $CO_2$ basis). Including this fixed amount, the $CO_2$ (Embodied Carbon) emitted during the construction of the building (in the process of raw material procurement, manufacturing, construction, demolition, etc.) is equivalent to a reduction of approximately 40% compared to the case where the entire structure is made of RC (reinforced concrete).

This project is an advanced development that combines the effective utilization of wood, which has carbon-fixing functions, with energy conservation, energy creation, and renewable energy use in buildings to achieve the WGBC*3 goal of zero operational carbon in all new buildings by 2030, seven years ahead of schedule.

*1 The building is designed to save or create energy, and $CO_2$ (operational carbon) emissions from building use are reduced to virtually zero through a combination of renewable energy use and offsets using carbon credits.
*2 Based on research by Wood Solutions, an organization affiliated with the Australian Government (as of June 2021)
*3 WGBC: World Green Building Council, a member of the UN Global Compact and a global action network of about 70 green building councils around the world

## Toward the Future -Aiming for the Timberized Eco City with W350 Plan

Sumitomo Forestry Group announced its W350 Plan in 2018. The W350 Plan is a research and technological development roadmap aiming to realize a Timberized Eco City symbolized by a wooden high-rise building by 2041, the 350th anniversary of the company's foundation, in which the city is transformed into a forest. This plan is intended to realize future technologies such as building construction methods, environmentally conscious technologies, and the development of wood for building materials and resources that contribute to people's lives, society, and the global environment.

The new three-story wooden research building completed in 2019 at the Tsukuba Research Institute will help further this plan as a research and development base.

### Toward Realizing Timberized Eco City

Managed mainly by Tsukuba Research Institute, a research and development center of Sumitomo Forestry, the W350 Research and Technological Development Plan is a roadmap for future technologies including the development of building construction methods, environmentally conscious technologies, and wood for building materials and resources, to expand the possibilities of wood as a natural resource as well as wooden structures.

This plan of realizing Timberized Eco City will revitalize the forestry industry with increased demand of wood and mitigate climate change with increased $CO_2$ fixation, etc.; thus, we will contribute to invigorate the community and to realize coexistence with the global environment.

Image of "Timberized Eco City" (Created by Tsukuba Research Institute)

## Partially Implementing the Results of the W350 Plan in Society

Sumitomo Forestry's Post Tension Earthquake Resistance Technology*, one of the new technologies related to wood structures used in the new research building at the Tsukuba Research Institute, has been adopted in Building 15 at Sophia University, which Sumitomo Forestry was contracted to design and construct.

Sophia University Building No. 15 adopted load-bearing walls with this post-tensioning earthquake-resistant technology and reduced the wall length to 1/4 of the original plan, thereby contributing to the realization of an open space and cost reduction. In addition, since the load-bearing walls do not bear vertical loads, the wood of the frame can be exposed, contributing to the comfort and productivity of users through wood interiors. This three-story fireproof wooden structure made of Japanese timber reduces $CO_2$ emitted during construction and other processes, including the procurement of raw materials, their transportation, and the processing of materials. The construction of this facility will lead to the "transform cities into forests," contributing to the achievement of the SDGs and the realization of a decarbonized society.

As a future development, we will expand our knowledge by participating in a shaking table test of a full-scale 10-story wooden building with post-tensioning seismic technology to be conducted in the United States in 2022.

* Technology to increase the fixation degree between members by applying tensile force to high-strength steel rods or wire ropes that are passed through load-bearing members.

### Outline of Building No. 15, Yotsuya Campus, Sophia University

- Location: parts of 6-16, 6-17, and 6-18, respectively, Kojimachi, Chiyoda-ku, Tokyo
- Building area: 163.05$m^2$
- Floor area: 478.35$m^2$ 1F: 154.43$m^2$ 2F: 163.05$m^2$ 3F: 160.87$m^2$
- Structure: 3-story wooden structure, fireproof *post-tensioning earthquake-resistant technology, "Kigurumi FR" is adopted.
- Application: Schools, restaurants and stores
- Design: Building Market Development Department (currently Building Division), Sumitomo Forestry Co., Ltd.
- Construction: Building Market Development Department (currently Building Division), Sumitomo Forestry Co., Ltd.
- Construction period: Start of construction May 2021 Completion April 2022

## Use of Japanese timber in housing products of housing and construction business

Sumitomo Forestry houses are mainly built using the BF (Big Frame) and MB (Multi-balance) construction methods. In fiscal 2021, the percentage of domestically produced structural members and hagarazai (relatively small-diameter lumber used to supplement or underlay structural members) per building for these two construction methods was 50% for the BF construction method and 71% for the MB construction method (calculated based on model plans).

# Biodiversity Conservation

## 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.

Click here for related information

Sumitomo Forestry Group Environmental Policy

### 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

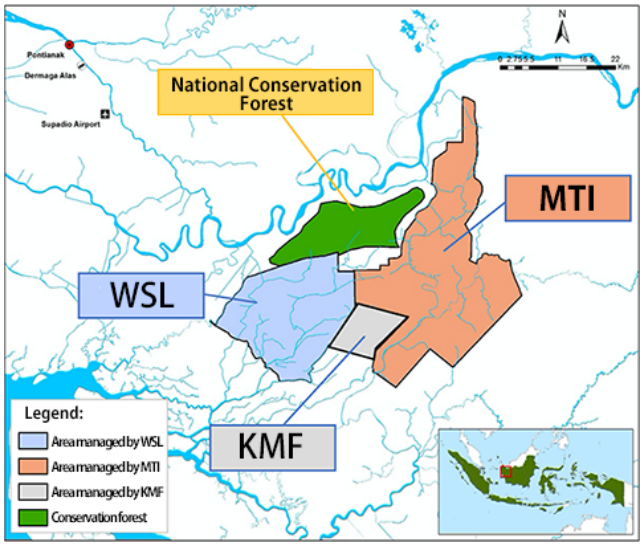
To manufacture and secure timber resources, Sumitomo Forestry Group owns or manages many forests both in Japan and overseas. None of these forests is located in areas designated as world heritage sites. Furthermore, we have not and will not operate in areas designated as world natural heritage sites. 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.

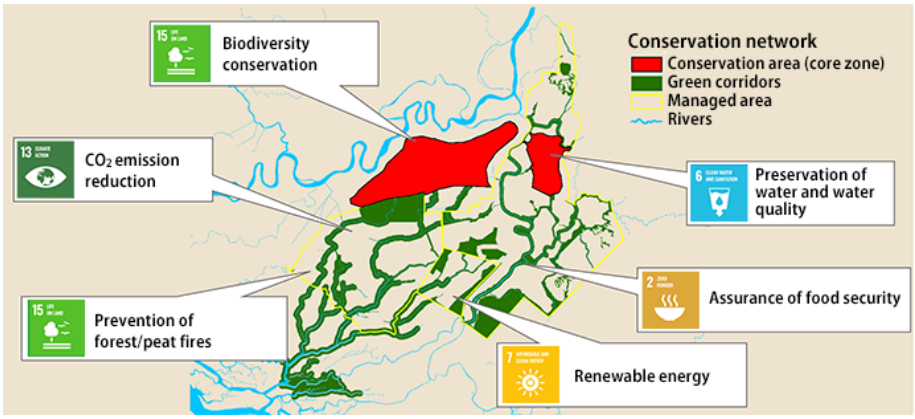
We manage approximately 48,000 hectares of Company-owned forests in Japan and approximately 230,000 hectares of forests overseas. These managed forests are categorized as "Conservation Forests" and "Working Forests" etc. In both Japan and overseas, "Conservation Forests" are, in principle, natural protection areas where no operations are carried out.

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), PT. Mayangkara Tanaman Industri (MTI), and Kubu Mulia Forestry (KMF) 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.

### Managed Area of WSL/MTI/KMF



## Conservation Network




## Stakeholder's Evaluation of 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. In June 2020, Sumitomo Forestry committed to the Keidanren Declaration of Biodiversity and Action Policy (Revised Edition) proposed by the Keidanren Declaration on Biodiversity Initiative. 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).

In addition, Sumitomo Forestry Landscaping Co., Ltd. is actively striving toward the registration of "Ikimono Kyozon Jigyousho®" certification 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.

* Until fiscal 2019 Temporary Staffing

Click here for related information

› 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 wood procurement of Sumitomo Forestry as one excellent example initiative.

Click here for related information

› Guidelines for Private Sector Engagement in Biodiversity (Second Edition)

## Signing of Commitment to the Business for Nature's Call to Action

Business for Nature is a global business coalition founded in July 2019 for the purpose of bringing together the voices of business and conservation organizations and forward-thinking companies as one to amplify their call to governments. In May 2020, the Coalition devised a Call to Action to encourage the adoption of legislation to reverse nature loss in this decade when formulating the Post-2020 Global Biodiversity Framework. Sumitomo Forestry signed its commitment to the Call to Action in September 2020.

Click here for related information

Business for Nature "Full list of Call to Action signatories"

# Biodiversity Conservation

## Biodiversity Conservation in Company-Owned Forests in Japan and Planted 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. We also strive to prepare an endangered species list and a waterside forest management manual, and check for rare species when clear-cutting and opening work roads.

#### Policy on Biodiversity Conservation in Company-Owned Forests in Japan (Excerpt) (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.

Sumitomo Forestry Red Data Book

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.

## Wildlife Monitoring Surveys

Sumitomo Forestry monitored wildlife inhabiting company-owned forests. Every year, surveys are conducted in four areas—Mombetsu (Hokkaido), Niihama (Shikoku), Hyuga (Kyushu) and Hyogo/Mie (Honshu). 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.

* Consumers at the top of the food chain, the ecological pyramid structure in the area

## 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<br>* 2013 acquisitions in Okayama, Hyogo, and Mie<br>* 2015 additional acquisitions in Wakayama | 5,804 | Mammals | | | | 12 | | | | (Wakayama) 10<br>(Hyogo) 6 | |
| | | Birds | | | | 25 | | | | (Wakayama) 29<br>(Hyogo) 21 | |
| Total | 47,967 | | | | | | | | | | |

* Conducted in two areas in 2015; Wakayama and Hyogo

Japanese deer confirmed in Niihama (Shikoku) forests in fiscal 2016

Japanese monkeys confirmed in Niihama (Shikoku) forests in fiscal 2016

## Appropriate Control of the Deer Population

In recent years, the rising deer population throughout Japan is increasing concerns about feeding damage caused to young leaves and 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.

In order to properly manage forests, Sumitomo Forestry Group catches and exterminates deer and installs tree shelters and protective nets that protect planted trees to control feeding damage and prompt the growth of healthy forests.

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

# Biodiversity Conservation in Planted Forests Overseas

## Wana Subur Lestari (WSL) and Mayangkara Tanaman Industri (MTI) Initiatives

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 (WSL) and PT. Mayangkara Tanaman Industri (MTI) conduct operations balancing working forests and environmental protection in the West Kalimantan province of Indonesia.

Each operation begins with detailed measurements and surveys to determine conservation areas, buffer zones and forestation areas. Conservation forests 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.

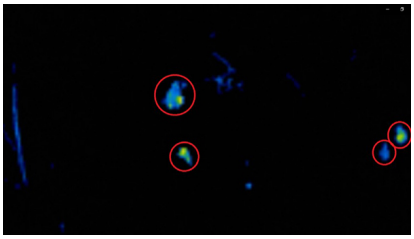
Observations in the dark for the numerous animals active in the early morning or late at night require veteran skills. Sumitomo Forestry succeeded in the direct observation of Proboscis monkeys and orangutans in the early morning and night by setting up automatic photography using camera traps or drones equipped with heat sensors.

Camera traps set up in these conservation areas captured a total of 1,016 animals from 40 different species (photographed between the beginning of August 2019 to the beginning of December 2021).

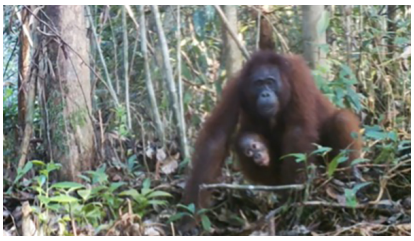
We captured an adult orangutan with its child for the first time in fiscal 2019 and confirmed a higher population density than in surrounding areas in fiscal 2020. These results verify the growing orangutan population.

Peatlands store a tremendous amount of water. Sumitomo forestry surveys not only ecosystems on land but also in aquatic habitats due to concerns about the impact of our operations on rivers. In the lower basin of an area managed by WSL, we have discovered a habitat of Irrawaddy dolphins, which are an endangered species. Examples of monitoring surveys of aquatic creatures in rainforest peatlands are few and far between. These Sumitomo Forestry surveys are pioneering the work worldwide.


List of Aquatic Creatures Discovered Through the Survey



Direct Observation of Animals Using Heat Sensors



Adult Orangutan with Its Child (October 2019)

## Tasman Pine Forests (TPF) Initiatives

Sumitomo Forestry strives to protect Kea (Large Parrot Species), which isa parrot unique to the South Island of New Zealand. Kea is the only parrot in the world to live in mountainous areas, and it is considered one of the smartest birds on the planet. It is a bird that is protected as an endangered species (about 5,000 birds throughout New Zealand), and adored by the people. It has been confirmed that nesting is carried out in the drainage clay pipe in the forest of TPF. In cooperation with the Kea Conservation Trust, we strive to set up traps and fences around the area to protect eggs from natural enemies. As a result, it has been confirmed that one chick has successfully hatched.

We will continue to make efforts so that the birds can leave the nest in the future.

Kea (Large Parrot Species)

Click here for related information

New Zealand Nature Conversation Agency Homepage

# Biodiversity Conservation

## Contributions to Eco Cities Through Greening

### Basic Policy

The use of as many plants as possible which are native to the region in property development is a growing trend as society shifts toward a goal to co-exist with nature.

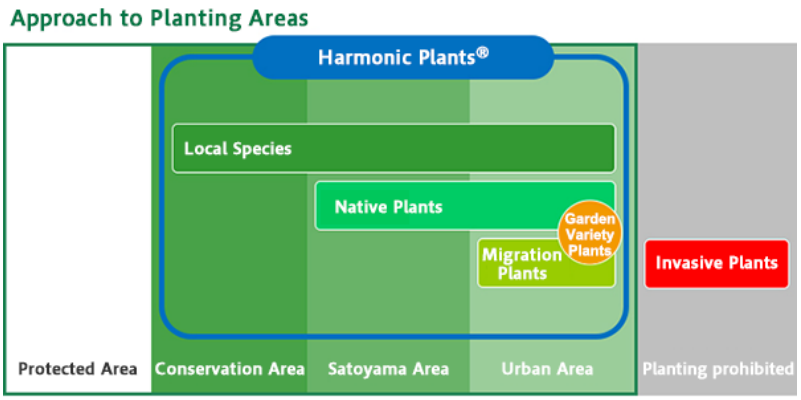
In the midst of these trends, Sumitomo Forestry Landscaping has defined Harmonic Plants® guidelines for selecting plants species based on greening areas with the concept that using indigenous and local species in greening plans is in the best interest of natural revitalization. The Company has been promoting this model up until now.

There are plants that have grown in Japan since long ago (native plants) and plants that have come to Japan from abroad (migration plants) for trees. Among these migration plants, there are species that will overrun areas where native plants live due to their characteristics, which endanger the biodiversity of the region (invasive plants*).

Garden vegetation plans are separated into four areas that take into account the conservation level (protected areas, conservation areas, satoyama areas, urban areas) to select plant species based on these areas. For example, in urban areas when building gardens for residences, the colorfulness is represented by selecting a balance of greening plants from non-invasive migration plants around a main selection of native plants, including garden variety plants. In addition, the Group has in place a policy of not using invasive plants that clearly have an adverse impact on local ecosystems and a division responsible for coordinating technology at Sumitomo Forestry Landscaping Co., Ltd. checks that such species are not used.

* Specified alien species and alien species requiring caution as stipulated by the Invasive Alien Species Act

#### Approach to Planting Areas



## Contributions to Property Development

### Forest Garden Hadano Receives the First ABINC Certification As a Detached Housing Complex

Sumitomo Forestry strives in the residential property development business by providing roughly 300 high-quality single-family spec homes each year through technical expertise accumulated in new custom-built housing and landscaping businesses. We develop long-lasting properties by taking advantage of nature with the goal of realizing a sustainable and prosperous society.

Property Design of Forest Garden Hadano

Forest Garden Hadano, a detached housing complex in Hadano City, Kanagawa Prefecture, received the first ABINC (Association for Business Innovation in harmony with Nature and Community) certification under the detached housing complex and city area category in 2018. The ABINC certification system certifies results of biodiversity preservation activities of companies to promote coexistence of nature and people. The certification began the certification of office buildings and commercial facilities from 2014 and has expanded its scope to include housing complexes and factories. Furthermore, detached housing complex and city area category and logistic facilities have been newly added.

The property design of Forest Garden Hadano is green property that coexists with life. It realizes rich greenery through the use of local tree species and Harmonic Plants®. Consideration toward sustainable circulation of water utilizing spring water was one of the major factors of receiving the certification.

## A High-Rise Japanese Garden That Conveys the Beauty of Nature and Harmony

Hotel Yaenomidori Tokyo opened in the Yaesu Hatchobori area of Tokyo in 2020. The hotel's concept is to present the multiple aspects of Japan's beauty. On the very top floor is a Japanese garden for guests to experience a spiritual, Japanese-style, sophisticated calm despite being in the middle of the Tokyo business district. By using Shishiodoshi (water-filled bamboo tubes that clack against stones when emptied to frighten the wild) away, water basins and other waterscape devices, by planting trees that respond to the change in seasons, Sumitomo Forestry Landscaping carefully designed and constructed a space that conveyed the beauty of nature and Japanese culture through the five senses.

It harnessed its experience and technology to secure trees both below and above ground, to consider load limits of high-rise buildings, and to commit to planting native species.

A High-Rise Japanese Garden

# Tokiwadaira Danchi (Apartment Complex) of the UR Urban Renaissance Agency is the first green space for residential usage approved by the "Sodateru-green" of SEGES (Social and Environmental Green Evaluation System)

The SEGES (Social and Environmental Green Evaluation System) (Sponsored by: Organization for Landscape and Urban Green Infastruction) has certified the green space in the UR Tokiwadaira Urban Renaissance Agency's Tokiwadaira Danchi as an Excellent Stage 2 green space in the category of "Sodateru-green", which evaluates green spaces that contribute to society and the environment. This is the first green certification for residential areas.

On August 5, 2020, the independent administrative Urban Renaissance Agency and Sumitomo Forestry signed a "Research Agreement on Effective Utilization of Residential Outdoor Space with Environmental Certification System", and have been conducting research on effective outdoor space utilization in apartment complexes. Tokiwadaira Danchi's green space was certified as Excellent Stage 2 in the SEGES "Sodateru-green" category in April 2021.

UR and Sumitomo Forestry are studying methods to utilize the rich green space that has been fostered over the years and has become a natural asset for the community, using the SEGES evaluation.

We aim to accomplish a town development in harmony with nature, where diverse generations can continue to live actively and safely, by utilizing the results of the research and supporting local activities and communication among residents of the complex.


the green space of Tokiwadaira Danchi　Related SDGs

## Received the Minister of Land, Infrastructure, Transport and Tourism Award in the Housing Townscape Contest

Sumitomo Forestry Landscaping's Forest Garden Hadano and Queen Forest Nagareyama Ootakanomori won the Minister of Land, Infrastructure, Transport and Tourism Award and the Townscape Award, respectively, in the 16th Housing Townscape Contest in FY 2020.

The Foundation for Promotion of Housing Production's "Housing Townscape Contest" aims to promote districts and groups that have achieved a desirable townscape via the efforts of local inhabitants, especially residents, in maintaining and managing their homes. One project got the Minister of Land, Infrastructure, Transport and Tourism Award, and four projects obtained the Residential Townscape Award, two of which were awarded to Sumitomo Forestry Landscaping-constructed properties, out of the many entries received in the competition this year.

This is a result of Sumitomo Forestry Landscaping's contribution to attractive town planning that takes advantages of local characteristics. Sumitomo Forestry Landscaping will continue to expand its business domain to realize the goal of "Creation of a complete town."

* Sumitomo Forestry Landscaping did not receive the award directly, but applied through the local community association or the management association.

# Education for Biodiversity Conservation

## Publish of Biodiversity Handbook Vol. 2: Local Vegetation

We are receiving a wide range of concerns for information about what the local vegetation is to the production, distribution and consumption of native plants and the cultivation plans for native plants in addition to future trend of local vegetation required for greening that consider biodiversity.


Sumitomo Forestry Landscaping has responded to these concerns by publishing the Biodiversity Handbook Vol. 2:Local Vegetation in 2018.

This handbook offers explanations while interweaving cutting-edge examples that use locally cultivated plants to address primarily the information below.

1. Reconstruction projects for the Great East Japan Earthquake using local plants
2. The development of large-scale test driving course using local plants in
3. Beach plant revitalization project using local plants
4. Urban redevelopment using local plants from the Edo period
5. Regeneration of thickets by inhabiting areas on large-scale artificial grounds

# Publish of an Illustrated Guide to Home Trees Revised Edition


Sumitomo Forestry Landscaping restructured its own criteria for alien species, taking further effects on the ecosystem into consideration, and published the revised edition in A revised edition was published in March 2017,replacing some of the tree species previously listed in the "An Illustrated Guide to Home Trees Revised Edition", in response to the establishment of the "Forestry and Fisheries of Japan newly released a list of alien species which harm biodiversity of Japan (list of potentially harmful alien species for biodiversity)" by the Ministry of the Environment and the Ministry of Agriculture, Forestry and Fisheries. A revised edition was released in response to changes to the Plant Variety Protection and Seed Act and the addition of original species in March 2021. The revised edition contains 508 species, including 6 original varieties. The main revisions are as follows.

**(1) Revision of descriptions in response to the revision of the Plant Variety Protection and Seedling Law.**

The "Variety Registration Number" and other information were added to the original trees for sale and the trees registered as varieties in the illustrated book in compliance with the modification of the Seed and Seedling Law, as registered varieties are now obliged to be labeled.

**(2) SDGs (Sustainable Development Goals) initiatives were added.**

Through its green business, Sumitomo Forestry Landscaping Co., Ltd. is implementing initiatives in line with the SDGs, such as protecting biodiversity through the concept of "Harmonic Plants" in the consideration of sustainability, and creating comfort, enjoyment, and beauty in society by constructing homes and communities that harness the "Power of Greenery". We are putting these initiatives into action. These initiatives have been included in this revision.

## Overseas Landscaping Businesses

In North Melbourne, Australia, we are leveraging our expertise in a design partnership with Tract Landscape, a local landscape design firm, for the Annadale estate project (1,087 total lots for sale), which is a joint residential development project between Sumitomo Forestry and NTT Urban Development.

In this design partnership that began in 2017, Sumitomo Forestry Group proposed a concept, Growing Wellness Life & The Five Sense, for the basic design of Tract. Tract highly evaluated this proposal as a fantastic reference because a story is not usually incorporated into standard design plans in Australia and playground equipment using natural stone and logs was employed to better the motor skills of the children as well as the vegetation plans. Sumitomo Forestry Group proposed basic concepts even in the second stage of park planning conducted thereafter and completed the basic design founded upon this idea in November 2020. In 2021, Sumitomo Forestry also collaborated on concept proposals and drafting work for a local government public park project in Sydney.

Green zones in Australia and the U.S. is imperative to raise the value of the estate development and pursue the creation of efficiently green open spaces. Sumitomo Forestry Group has just begun our efforts in the overseas landscaping business, but will continue to further these businesses in the future with the aim of creating beautiful and comfortable spaces loved by residents overseas.

Nature Play Equipment Using Natural Stone (First Stage of the Annadale Estate Project Park)


(Left) Concept Proposal for the Second Stage of the Annadale Estate Project Park

(Right) Completed Project

# Resource Conservation and Waste Reductions

## Waste Reduction and Recycling Management

### Basic Policy

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. In the Mid-Term Sustainability Targets announced in May 2019, the Sumitomo Forestry Group sets protecting resources, reducing the generation of waste and achieving zero emissions as critical targets to achieve by fiscal 2021. In order to achieve these targets, the Sumitomo Forestry Group established key measures in each division and confirms their progress each fiscal year. In the final year of fiscal 2021, the Group achieved the overall final disposal amount at 21,050t, surpassing the planned 54,087t. As main achievement factors, promotion of effective utilization of incinerator ash in Mombetsu Biomass Electric power and review of calculation method in demolition work* were conducted.

In the new Mid-Term Sustainability Targets until fiscal 2024, we will strive to effectively utilize resources to reduce generated waste and achieve zero emissions.

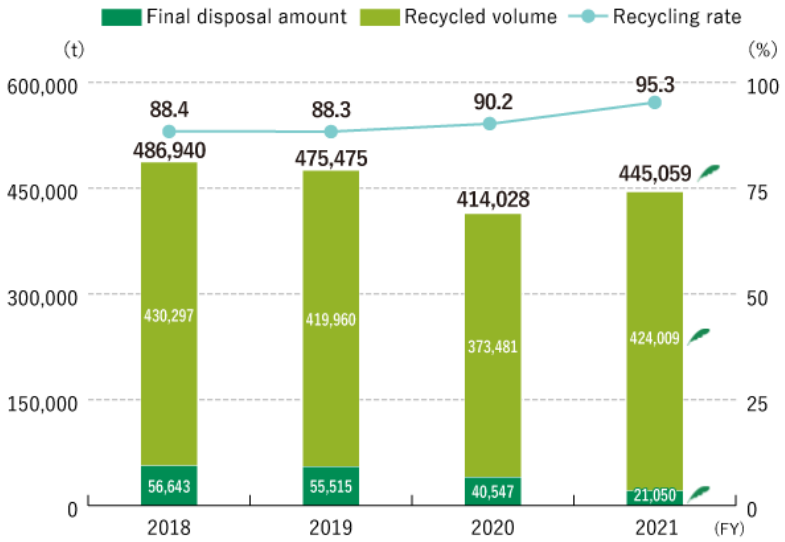
* With respect to final disposal amount at the housing demolition site, we changed the aggregation method based on the electronic manifest from the actual results in fiscal 2021. The impact of the change in the aggregation method is recognized as -19,415t.

Click here for related information

Material issue 3 The Reduction of the Environmental Impact of Our Business Activities

Material issue 3 To realization a circular bioeconomy by leveraging forests and wood resources

## Trends in Waste Generated and Recycling Rate Over the Last Four Years*1 *2




*1 Does not include figures for Cohnan Kensetsu Inc., which joined the Sumitomo Forestry Group in January 2021 (total emissions based on Company baseline: 66,044t; final disposal amount: 1,779t; recycling rate: 97.3%).

*2 Aggregation period for emissions after fiscal 2020 is from January to December of each year, and aggregation period for emissions for fiscal 2019 and before is from April of each year to March of the following year.

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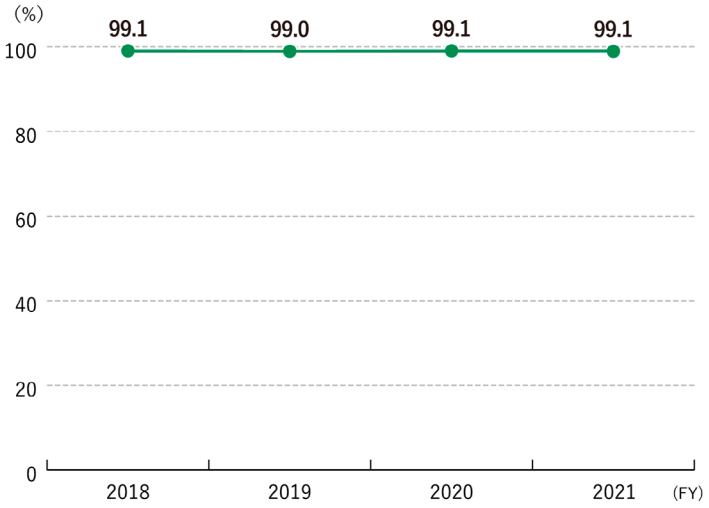
## Initiatives at Domestic Manufacturing Facilities

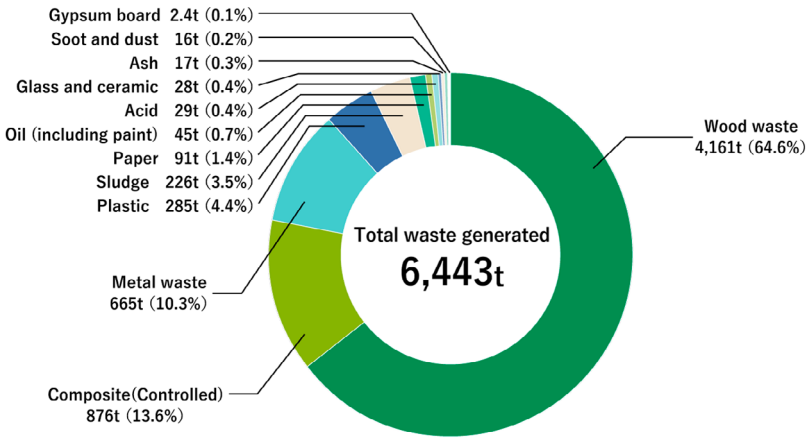
Sumitomo Forestry Group managed to achieve a recycling rate of 99.1% against the target of 97.3% while zero emissions (recycling rate of 98% or more) were achieved at Sumitomo Forestry Crest and Sumitomo Forestry Landspaing Agricultural Products Division in fiscal 2021 as a result of ongoing efforts 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)




*Aggregation period for emissions after fiscal 2020 is from January to December of each year, and aggregation period for emissions before fiscal 2019 is from April of each year to March of the following year.

## Breakdown of Waste Generated at Domestic Manufacturing Plants (FY2021)

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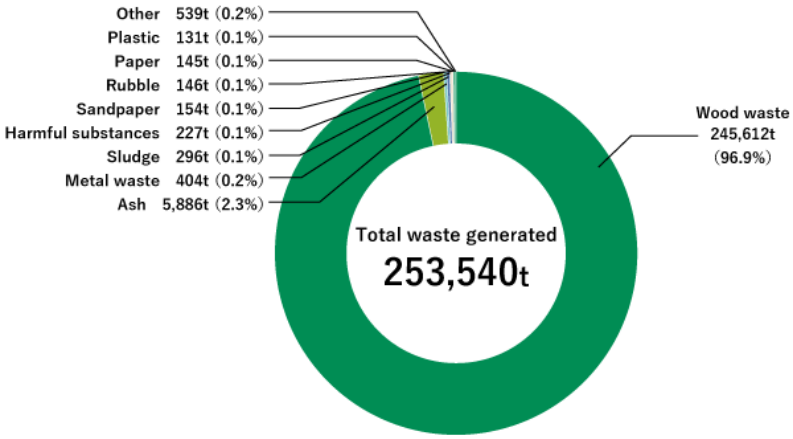
## Initiatives at Overseas Manufacturing Plants

We are working toward zero emissions with two new Group companies from fiscal 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 2021, the total volume of waste produced was 253,540t, with a final waste processing volume of 3,816t and a recycling rate of 98.5% against the 98.0% target set by the Mid-Term Sustainability Targets. The Mid-Term Sustainability Targets until fiscal 2024 set the target of a 99% recycling rate for fiscal 2021.

* Indonesia: 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 (FY2021)

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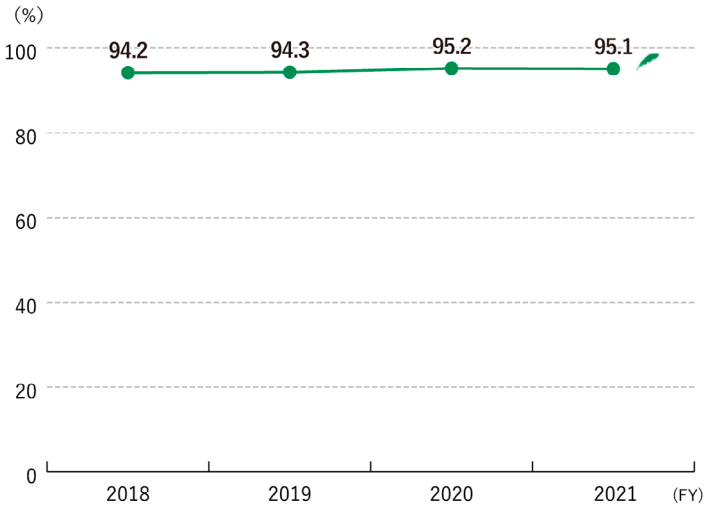
› Manufacturing Business Initiatives

## Efforts at New Housing Construction Sites

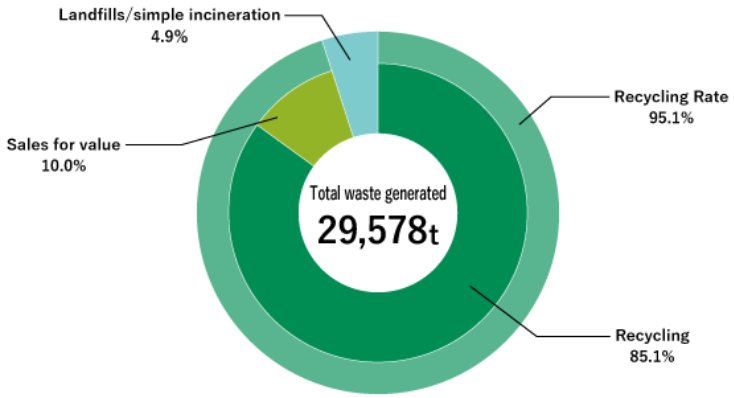
We work to reduce waste generated at Sumitomo Forestry's new housing construction sites. At monthly meetings of our Waste Reduction Working Group, leaders of sub-groups raise and share issues while managing progress toward meeting targets. Efforts to reduce waste have included the use of the bare minimum necessary packaging materials and reusable protective material for flooring. 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. The recycling rate was 95.1% in fiscal 2021 with respect to 98%, which is the target of Mid-Term Sustainability Targets by fiscal 2021. From now on, we will work to improve the recycling rate by expanding the precut of roof slate and exterior wall siding, which has a large waste reduction effect, adopting new recyclable treatment plants, and promoting manufacturer collection routes.

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

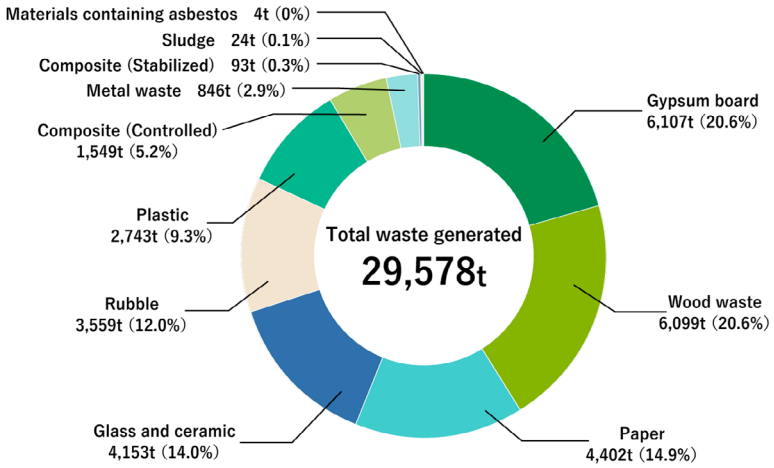



*Aggregation period for emissions after fiscal 2020 is from January to December of each year, and aggregation period for emissions before fiscal 2019 is from April of each year to March of the following year.

## Breakdown of Waste Generated by Disposal Process for New Housing Construction Sites (FY2021)




## Breakdown of Waste Generated at New Housing Construction Sites (FY2021)

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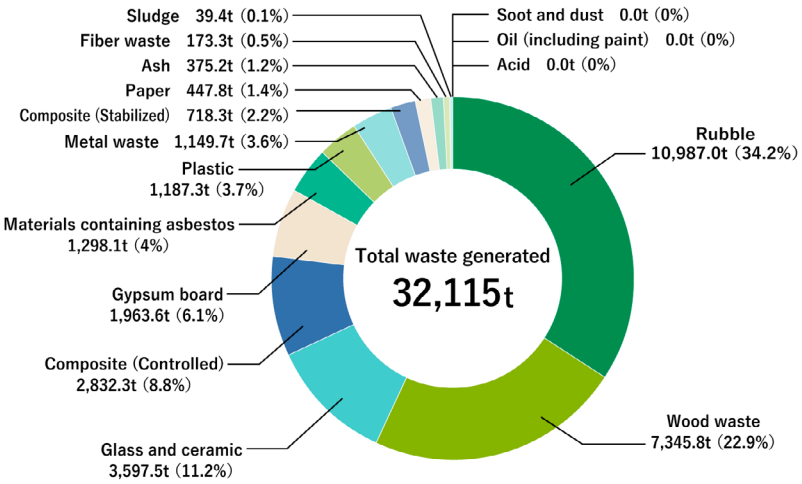
## Renovation Business Initiatives

We are working to reduce waste generated by renovation sites by using protective materials as well as other measures to mitigate waste generation. Sumitomo Forestry Home Tech recycles 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 2021 was 79.7% against our target of 84.0%.

In the three major metropolitan areas with high volumes of generated waste, we have established construction departments to supervise the entire area and provide guidance and education to improve their recycling rate. We will also outsource to contractors with high-level recycling capabilities for glass and ceramic waste.

### Breakdown of Waste Generated at Renovation Business Operations (FY2021) (Sumitomo Forestry Home Tech)

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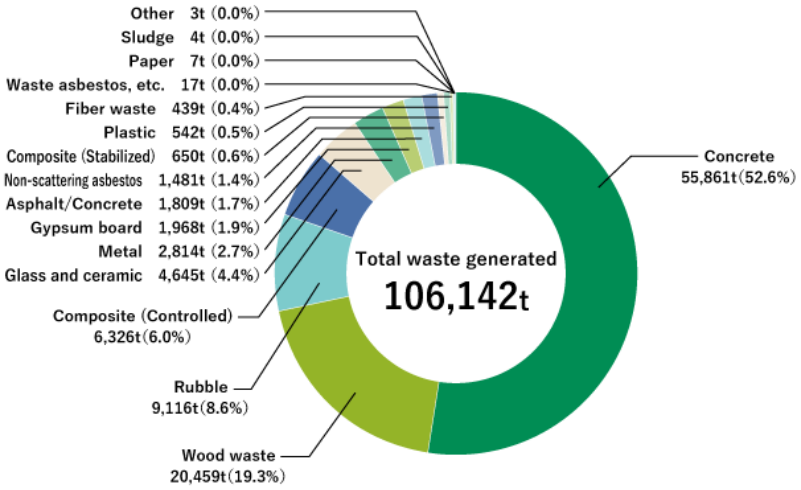
Housing and Construction Business Initiatives

## 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 was almost 100% in fiscal 2021, as it was the previous year. We also maintain a high recycling rate for wood waste by removing extraneous matter. In the Mid-Term Sustainability Targets from fiscal 2022, we have set the target of a 100% recycling rate based on the Construction Waste Recycling Law, including for construction projects that fall outside the scope of the Law (total floor area of 80 $m^2$ or less).

### Breakdown of Demolition Waste Generated (FY2021)

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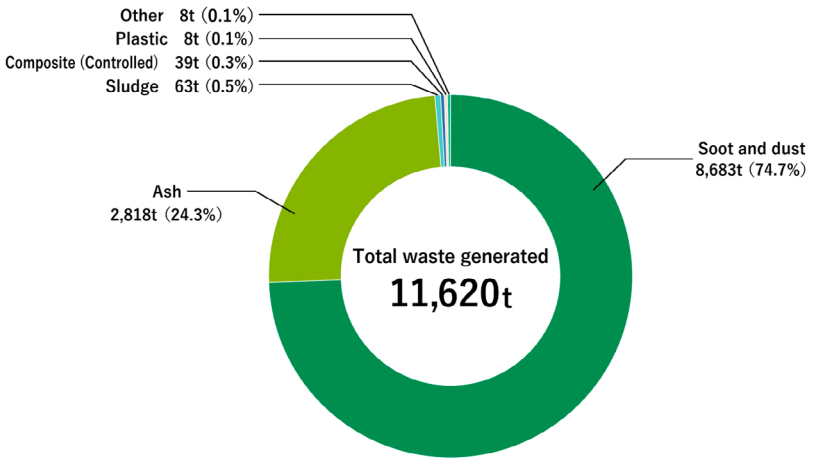
Housing and Construction Business Initiatives

## 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. In fiscal 2021, the actual recycling rate was 99.3%, achieving the target of 56.5% by a wide margin due to the effective use of incinerator ash. We also achieved zero emissions (recycling rate of 98% or more) for the first time in the power generation business.

### Breakdown of Waste Generated at Power Generation Business Operations (FY2021) (Mombetsu Biomass Electric Power, Hachinohe Biomass Electric Power)

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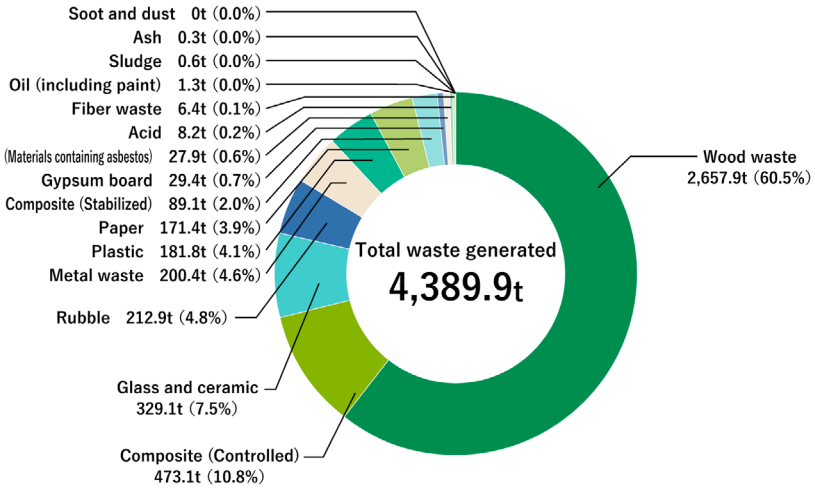
Biomass Power Generation Business Initiatives

## Initiatives at Lifestyle Service Business, Housing-Related Materials Sales[*1], 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.

### Breakdown of Waste Emissions at Lifestyle Service Business, Housing-related Materials Sales, etc.[*2] (FY2021)




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

*2 Does not include figures for Cohnan Kensetsu Inc., which joined the Sumitomo Forestry Group in January 2021 (total emissions based on Company baseline: 66,044t).

## 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 "Sumitomo Forestry Group Green Purchasing Guidelines".

# Resource Conservation and Waste Reductions

## Initiatives to Achieve Zero Emissions

### The Basic Concept of Zero Emissions

The Sumitomo Forestry Group defines achievement of zero emissions as a recycling rate of 98% or more using no simple incineration or landfill for all industrial waste produced by each business site*. Based on this definition, domestic manufacturing facilities achieved zero emissions in fiscal 2009 while new housing construction sites achieved zero emissions in metropolitan areas in fiscal 2012. Our overseas manufacturing plants achieved zero emissions in fiscal 2020.

Mid-Term Sustainability Targets from fiscal 2019 to fiscal 2021 set a target of 15% reduction in the amount of final disposal throughout the entire Sumitomo Forestry Group compared to fiscal 2017 to promote further reduction of environmental impact in our business activities. As a result, the final disposal amount was reduced by 66.9%. In addition, we aimed to achieve zero emissions through more detailed management than the conventional medium-term plan by dividing them into seven categories of new construction sites, domestic manufacturing plants, power generation business, remodeling and renovation business, lifestyle service business, etc., overseas manufacturing plants, and demolition work site in consideration of status of business activities and waste generated. As a result, we achieved zero emissions at our power generation plants in addition to our domestic and overseas manufacturing plants.
In the Mid-Term Sustainability Targets, which newly set the target year from fiscal 2022 to fiscal 2024, we will continue to set targets such as for the final disposal volume of industrial waste and the recycling rate, and to reduce our environmental impact.

* Includes new housing construction sites, domestic manufacturing plants, power generation plants, remodeling and renovation businesses, lifestyle service businesses, etc., overseas manufacturing plants, and demolition work sites

### Manufacturing Business Initiatives

#### Initiatives at Domestic Manufacturing Facilities

Sumitomo Forestry Group managed to achieve a recycling rate of 99.1% against the target of 99.5% while zero emissions (recycling rate of 98% or more) were achieved at Agro-Products division of Sumitomo Forestry Landscaping and Sumitomo Forestry Crest in fiscal 2021* as a result of ongoing efforts to reduce waste emissions, for example by tightening the sorting of industrial waste at each manufacturing plant, effective use as resources (thermal use) without simple incineration, and selling it for a profit.

## Initiatives at Overseas Manufacturing Plants

We are working toward zero emissions with two new Group companies from fiscal 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*. For example, Kutai Timber Indonesia is advancing zero emissions activities from the collection of wood waste generated during the particle board manufacturing process to reuse as boiler fuel or in wood building materials as well as the use of offcuts produced in manufacturing products as novelty goods.

The recycling rate in fiscal 2021 achieved zero emissions at 98.5% against our target of 98.0%.

* 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.

Recycling by sorting waste

Recycling by sorting waste manufacturing as raw materials for novelty goods

# Housing and Construction Business Initiatives

## Efforts at New Housing Construction Sites

**Initiative for Reduction of Industrial Waste Generated at New Housing Construction Sites**

**Reduction Rate of Industrial Waste Generated at New Housing Construction Sites**

From 2014, Sumitomo Forestry has launched a "waste reduction working" by personnel in charge of product development, material procurement, production control, and environment department, and has devised and implemented many measures to reduce waste at new construction sites.

We discovered two-thirds of all our waste is made up of wood waste, gypsum board and cardboard from detailed data about the waste that is produced aggregated from the industrial waste management system used under this inter-region certification, which has been in operation since 2012. We are working to reduce waste by concentrating on these three primary forms of waste.

Sumitomo Forestry Group Mid-Term Sustainability Targets has set a goal of reducing the amount of industrial waste generated from new construction sites by 18% per building until fiscal 2021 compared to fiscal 2017. Although emission of industrial waste per new-constructed building was stagnated at a 10% reduction in fiscal 2020, compared to fiscal 2017, pre-cutting of scratch panels and roof slate, which have started operation, has progressed smoothly, and a great effect has begun to appear in reducing industrial waste emissions.

This initiative has been operating at all offices and branches throughout Japan since fiscal 2021. With respect to roof slate material, it is expected to reduce 170 kg per building. We have also started to pre-cut siding in some areas and are gradually expanding this to others. Since the weight of waste from siding is 550 kg per building, we expect to further reduce industrial waste emissions through expanded operation in the future.

Due to differences in the amount of industrial waste emissions originating from factors such as the location, region and specifications of each construction site in fiscal 2021, we calculated the appropriate amount of industrial waste emissions and created the targets of appropriate amount of industrial waste emission for each branch. By setting proper industrial waste emission targets, Sumitomo Forestry will work to reduce waste emissions by renewing the thinking on construction sites, engaging in awareness-raising initiatives and analyzing the amount of industrial waste emissions while also planning and executing improvement plans.

## Reduction Rate of Industrial Waste Generated at New Housing Construction Sites (Per Household)

| | Total Emissions (kg) | Reduction Rate |
|---|---|---|
| FY2017 (Baseline) | 3,325 | - |
| FY2019 result | 3,002 | -10% |
| FY2021 result | 2,977 | -10% |
| FY2021 result | 2,736 | -18% |

### Initiative for Recycling of Industrial Waste Generated at New Housing Construction Sites

Sumitomo Forestry meticulously sorts waste produced on new housing construction sites. We will raise awareness through mediums such as posters including specific waste information to make sorting of the 11 categories of waste easier. We have also engaged in efforts to reuse rather than dispose of wood base and packing materials used when transporting precut structural and other materials.

Because of effects of soaring processing costs and labor shortages due to the spread of coronavirus disease(COVID-19), the recycling rate at the treatment facilities declined in fiscal 2021, resulting in a stagnation of 95.1% against the recycling rate target of 98%.

The Sumitomo Forestry Group set a goal of achieving 98.0% waste recycling rate for new construction sites by fiscal 2021 as part of the Mid-Term Sustainability Targets.


Posters About Sorting Industrial Waste

In fiscal 2022, we will work to increase the recycling rate by newly adopting treatment plants where recycling is possible, and expanding the promotion of manufacturer collection routes.

## Waste Recycling Rate at New Housing Construction Sites

| | Recycling Rate |
|---|---|
| FY2017 (Baseline) | 92.5% |
| FY2019 result | 94.3% |
| FY2020 result | 95.2% |
| FY2021 target | 95.1% |

### Acquisition of the Inter-Region Recovery and Recycling Certification by the Ministry of Environment

Sumitomo Forestry has been certified by the Ministry of the Environment under Inter-Region Recovery and Recycling Certification. This certification makes it possible for non-industrial waste companies to transport industrial waste, and we have built our own industrial waste recycling system.

Our industrial waste management system for new housing construction sites helps contribute to the rationalization of waste disposal by using returning transportation for collecting waste while also securing traceability by applying bar codes to waste and collecting accurate data about the volume of waste generated.

### Operations at the Metropolitan Area Recycling Center

Sumitomo Forestry has used the acquisition of the inter-region recovery and recycling certification to establish the Metropolitan Area Recycling Center in Kazo, Saitama Prefecture for advanced sorting and data collection.

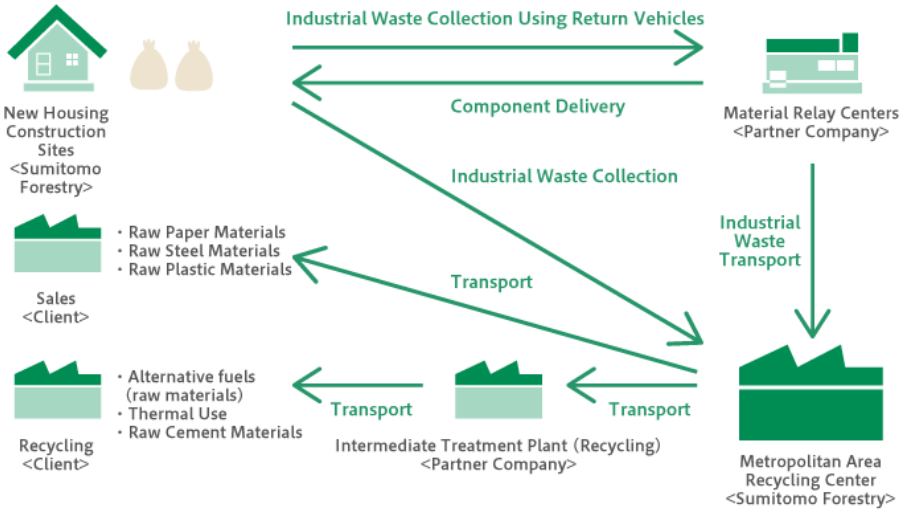
Metropolitan Area Recycling Center

The Metropolitan Area Resource Recovery Center collects detailed data regarding waste generation conditions and trends by specification, construction contractor, and region, and utilizes the data in product development, material procurement, and production management departments for use in waste reduction initiatives.

The Metropolitan Area Resource Recovery Center collects detailed waste generation status and trend data for each specification, construction shop, and region, and uses the data for product development, material procurement, feedback to production management departments, and waste reduction efforts.

This initiative works to expand operation under the certification even in regions outside the metropolitan area. Currently, the system is in operation at branches except for in Kagoshima Prefecture and the Sanin area. In the same way data is collected by the Metropolitan Area Recycling Center, we can also gather data on the level of waste produced throughout Japan. The analysis of this data helps us reduce waste because we can discover trends in the amount and type of waste according to building specifications and construction conditions in each region.

## Flow of Industrial Waste Collection Using the Inter-Region Recovery and Recycling Certification




## 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. In recent years, demolition work of housing built using construction materials containing asbestos has increased, and revised law related to asbestos were also enacted in 2020. Sumitomo Forestry especially strives for uncompromising compliance to removal method, processing guidance and management of construction materials containing asbestos.

### Waste Management for Demolition Work

We are strengthening management by building a system able to confirm the type, quantity and packaging of waste to transport from demolition work sites using mobile phones and smartphones which is adopted by our demolition partners.

### Launch of Industrial Waste Management Centers

Sumitomo Forestry opened three industrial waste management centers throughout Japan in fiscal 2021. Managers specializing in industrial waste management make every effort to eliminate industrial risks throughout Japan by consolidating highly accurate management processes.

These management processes include precise process confirmations and deadline management from electronic manifest registration of industrial waste produced throughout Japan through the final disposal obligations of the entity producing the emissions. These management practices strictly adhere to laws and regulations, such as checking information registered in the electronic manifest against the outsourcing contract and updates to outsourcing contracts.

## Remodeling and Renovation Business Initiatives

We are working to reduce waste generated on remodeling and renovation sites by using reusable protective materials.

Our Group also strives to effectively use resources, such as the initiative to operate a material recycling route to reclaim wood waste from metropolitan areas as raw materials for particle board that started in fiscal 2014.

In the three major metropolitan areas with the most emissions, we have established construction departments to supervise the entire area and provide guidance and education on overall industrial waste management and ways to improve their recycling rate.

The recycling rate in fiscal 2021 was 79.7% due to the start of new deliveries of glass and ceramic waste to processing contractors with high-level recycling capabilities.

## Work with Construction Contractors

Sumitomo Forestry publishes monthly safety, environment and quality inspection information that includes information and topics about safety and the environment to help avoid industrial waste-related risks by repeatedly raising awareness at branches and construction contractors.

### Education for New Construction and Demolition Contractors

Sumitomo Forestry provides education to new construction contractors and conducts comprehension tests about industrial waste. Demolition contractors report about industrial waste to each office and branch from the start of demolition work to its completion as a construction management record according to a manual. Each office and branch verifies these construction management records and provides guidance for corrective actions if any inconsistencies are found.

## Biomass Power Generation Business Initiatives

### Maintenance of Forest Roads, etc. Using Rovander Foundation Filler Made with Incineration Ash

At Mombetsu Biomass Electric Power Co., Ltd., incinerator ash emitted by the biomass boiler is used to manufacture foundation fill material (product name "Rovander") for forest roads. This environmentally-conscious product is aimed at building a cyclical operation in which the amount of waste is controlled, reducing environmental impact by helping maintain forests using a by-product of power generated with timber resources.

In addition, Rovander has been recognized as meeting environmental safety standards, and is a Hokkaido Government-certified Recycled Product.

Road Laid with Rovander Wood from Log Storage


The Hokkaido Government-certified Recycled Product mark

### Japan Bio Energy Co., Ltd. Recognized as Superior Industrial Waste Disposal Operator

Japan Bio Energy Co., Ltd., which manufactures and sells wood biomass chips, has been recognized as a superior industrial waste disposal operator in May 2016 by Kawasaki City.

The system to recognize superior industrial waste disposal operators evaluates and certifies superior industrial waste disposal operators through the prefecture or city. In order to receive this recognition, the business must satisfy a full set of criteria including legal compliance, business transparency, efforts in environmental conscious, and a healthy financial strength. The validity of certification in industrial waste disposal is extended from five to seven years by receiving recognition through this system.

In addition, it was awarded as an excellent business establishment by Resource Circulation Kanagawa in fiscal 2020. Excellent business establishments are selected by recommendation from each area, but it was recognized for solid business activities for more than five years.

# Pollution Prevention

## Pollution Prevention

### 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 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 (FY2021)

| 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 | Water | Soil | Landfill Disposal | Sewerage | Outside Plant Premises | |
| Sumitomo Forestry Crest | Kashima Plant | 186 | Methylene chloride (dichloromethane) | 6,498 | 4,693 | 0 | 0 | 0 | 0 | 1,804 | 1 |
| | | 448 | Methylenebis (4,1-phenylene) diisocyanate | 1,304 | 0 | 0 | 0 | 0 | 0 | 29 | 0 |
| | Subtotal | | | 7,802 | 4,693 | 0 | 0 | 0 | 0 | 1,833 | 1 |
| | Niihama Plant | 186 | Methylene chloride (dichloromethane) | 3,835 | 2,747 | 0 | 0 | 0 | 0 | 1,087 | 0 |

| 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 | Water | Soil | Landfill Disposal | Sewerage | Outside Plant Premises | |
| Sumitomo Forestry Crest | Subtotal | | | 3,835 | 2,747 | 0 | 0 | 0 | 0 | 1,087 | 0 |
| | Imari Plant | 4 | Acrylic acid and water-soluble salts | 13,430 | 0 | 0 | 0 | 0 | 0 | 0 | 13,430 |
| | | 7 | n-Butyl acrylate | 8,048 | 0 | 0 | 0 | 0 | 0 | 21 | 8,027 |
| | | 84 | Glyoxal | 2,500 | 0 | 0 | 0 | 0 | 0 | 5 | 2,495 |
| | | 134 | Vinyl acetate | 2,171,377 | 2,361 | 96 | 0 | 0 | 0 | 53 | 2,168,828 |
| | | 349 | Phenol | 55,800 | 0 | 0 | 0 | 0 | 0 | 15 | 55,785 |
| | | 395 | The water-soluble salts of peroxy disulfuric acid | 3,407 | 0 | 0 | 0 | 0 | 0 | 9 | 3,398 |
| | | 407 | Poly (Oxyethylene) = Alkylether (alkyl group: C12 ~ C15) | 4,212 | 0 | 24 | 0 | 0 | 0 | 12 | 4,176 |
| | | 411 | Formaldehyde | 146,472 | 43 | 0 | 0 | 0 | 0 | 220 | 146,209 |

| 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 | Water | Soil | Landfill Disposal | Sewerage | Outside Plant Premises | |
| Sumitomo Forestry Crest | Imari Plant | 448 | Methylenebis (4,1-phenylene) diisocyanate | 10,080 | 0 | 0 | 0 | 0 | 0 | 56 | 10,024 |
| | Subtotal | | | 2,415,326 | 2,404 | 120 | 0 | 0 | 0 | 390 | 2,412,372 |
| Total | | | | 2,426,963 | 9,844 | 120 | 0 | 0 | 0 | 3,311 | 2,412,373 |

* Results for January to December 2021

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## 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 (FY2021)

| Applicable Company | Country | Name of Chemical Substance | Total Use (t/year) | Total Released (t/year) | | Total Transferred (t/year) |
|---|---|---|---|---|---|---|
| | | | | Air | Waters, etc. | Waste Processing |
| KTI | Indonesia | Adhesives at MA, UA, etc. | 20,059 | - | - | 50 |
| ASTI | Indonesia | Styrene, xylene, solvents | 325 | - | 15 | 62 |
| RPI | Indonesia | Isocyanate/Formaldehyde | 512 | - | - | 0 |
| NPIL | New Zealand | Formaldehyde | 339 | - | - | 0 |
| VECO | Vietnam | Isocyanate/Formaldehyde, etc. | 390 | - | - | 0 |
| CCC | United States of America | MEK, alcohols, etc. | 273 | 263 | - | 12 |
| Total | | | 21,898 | 263 | 15 | 124 |

## 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 2021, emissions concentration testing results were all within the relevant standard values.

## Management Table of Air Pollutants at Plants in Japan (FY2021)

| Applicable Company | Applicable Department | Measured Substances | Unit | (Baseline) | Measured Concentration | Emissions to the Air (mg-TEQ) |
|---|---|---|---|---|---|---|
| Sumitomo Forestry Crest | Kashima Plant | Dioxin | ng-TEQ/$m^3$ | 5 | 0.011 | 0.5 |
| | Shizuoka Plant | Dioxin | ng-TEQ/$m^3$ | 5 | 1.1 | 3 |

| Applicable Company | Applicable Department | Measured Substances | Emissions to the Air (kg/year) | Unit | (Baseline) | Measured Concentration | Dry gas flow rate ($Nm^3$/h) |
|---|---|---|---|---|---|---|---|
| Sumitomo Forestry Crest | Niihama Plant (Wood Waste Boiler) | Sulfur oxides (SOx) | 244 | ppm | 0.47 | 0.05 | 8,500 |
| | | Nitrogen oxides (NOx) | 1,388 | ppm | 350 | 150 | 8,500 |
| | | Soot and dust | 26 | g/$Nm^3$ | 0.3 | 0.002 | 8,500 |
| | Niihama Plant (Heavy Oil Boiler) | Sulfur oxides (SOx) | 1 | ppm | 0.1 | 0.029 | 460 |
| | | Nitrogen oxides (NOx) | 1 | ppm | 180 | 76 | 460 |
| | | Soot and dust | 0 | g/$Nm^3$ | 0.3 | 0.034 | 460 |
| | Imari Plant | Sulfur oxides (SOx) | 766 | ppm | - | - * 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) | 27 | ppm | 0.49 | Less than 1.2 | 8,470 |
| | | Nitrogen oxides (NOx) | 896 | ppm | 200 | 56 | 8,470 |
| | | Soot and dust | 382 | g/$Nm^3$ | 0.2 | 0.049 | 8,470 |

| Applicable Company | Applicable Department | Measured Substances | Emissions to the Air (kg/year) | Unit | (Baseline) | Measured Concentration | Dry gas flow rate ($Nm^3/h$) |
|---|---|---|---|---|---|---|---|
| Mombetsu Biomass Power Plant | | Sulfur oxides (SOx) | 86,804 | ppm | 373 | 4.6 | 189,000 |
| | | Nitrogen oxides (NOx) | 270,818 | ppm | 250 | 89.2 | 189,000 |
| | | Soot and dust | 4,796 | $g/Nm^3$ | 0.1 | 0.0078 | 189,000 |
| Hachinohe Biomass Power Generation Plant | | Sulfur oxides (SOx) | 540 | ppm | 32.3 | 0.02 | 58,000 |
| | | Nitrogen oxides (NOx) | 77,332 | ppm | 250 | 66.4 | 58,000 |
| | | Soot and dust | 309 | $g/Nm^3$ | 0.3 | 0.05 | 58,000 |

* Results for January to December 2021

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## 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 2021, emissions concentration testing results were all within the relevant standard values.

## Management Table of Air Pollutants at Plants Overseas (FY2021)

| Applicable Company | Country | Measured Substances | Unit | (Baseline) | Measured Concentration |
|---|---|---|---|---|---|
| KTI | Indonesia | CO (Carbon monoxide) | μg/Nm$^3$ | 10,000 | 4,537 |
| | | Sulfur oxides (SOx) | μg/Nm$^3$ | 150 | 41 |
| | | Nitrogen oxides (NOx) | μg/Nm$^3$ | 200 | 33 |
| | | Pb (lead) | μg/Nm$^3$ | 2 | 0.2 |
| | | HC (hydrocarbon) | ppm | 160 | 17 |
| | | $O_3$(Ozone) | ppm | 150 | 28 |
| | | Soot and dust | mg/Nm$^3$ | 230 | 26 |
| RPI | Indonesia | Sulfur oxides (SOx) | mg/Nm$^3$ | 800 | 34 |
| | | Nitrogen oxides (NOx) | mg/Nm$^3$ | 1,000 | 119 |
| | | Soot and dust | mg/Nm$^3$ | 350 | * |
| ASTI | Indonesia | CO (Carbon monoxide) | μg/Nm$^3$ | 10,000 | 1,716 |
| | | $SO_2$(sulfur dioxide) | μg/Nm$^3$ | 150 | < LoD |
| | | $NO_2$(nitrogen dioxide) | μg/Nm$^3$ | 200 | 61.6 |
| | | $H_2S$ (Hydrogen sulfide) | μg/Nm$^3$ | 0.02 | < LoD |
| | | $NH_3$(Ammonia) | ppm | 2 | 0.07 |
| | | TSP (Debu Total) | μg/Nm$^3$ | 230 | 138.6 |
| | | Total Suspended Particulate Matter | | | |
| VECO | Vietnam | Sulfur oxides (SOx) | mg/Nm$^3$ | 500 | 0 |
| | | Nitrogen oxides (NOx) | mg/Nm$^3$ | 850 | 100.85 |
| | | Soot and dust | mg/Nm$^3$ | 200 | 49.2 |
| CCC | United States of America | Volatile organic compounds (VOCs) | 1bs | 200,000 | 163,816 |

* Confirmation of the dryer status and its adjustment are in process. The measurement will be made in April 2021 after adjustment.

# Management of Water Pollutants

## Management of Water Pollutants in Japan

The Sumitomo Forestry Group conducts periodic water quality concentration tests of waste water at the Tsukuba Research Institute, all plants of Sumitomo Forestry Crest (Kashima Plant, Shizuoka Plant, Niihama Plant, Imari Plant), Mombetsu Biomass Power Plant and Hachinohe Biomass Power Generation Plant in accordance with the Water Pollution Control Act of Japan. In fiscal 2021, the concentration measured at the Kashima Plant exceeded the statutory limit due to the effect of the soil on its grounds, but all other Sumitomo Forestry plants were within the statutory limit.

## Management Table of Water Quality at Plants in Japan (FY2021)

| Applicable Company | Applicable Department | Test Items | Unit | (Baseline) | Measured Concentration |
|---|---|---|---|---|---|
| Sumitomo Forestry | Tsukuba Research Institute | pH | - | 5 ~ 9 | 7.4 |
| | | BOD (Biochemical Oxygen Demand) | mg/L | < 600 | 9 |
| | | COD (Chemical Oxygen Demand) | mg/L | - | - |
| | | SS (Suspended Solids) | mg/L | < 600 | 10 |
| | | Normal hexane extracts (mineral oils) | mg/L | ≦ 5 | < 1 |
| | | Normal hexane extracts (animal and vegetable oils and fats) | mg/L | ≦ 30 | < 2 |
| | | Iodine consumption | mg/L | ≦ 220 | < 5 |
| | | Phenol content | mg/L | ≦ 5 | < 0.025 |
| | | Cyanogen compound | mg/L | ≦ 1 | < 0.1 |
| | | Copper content | mg/L | ≦ 3 | < 0.02 |
| | | Zinc content | mg/L | ≦ 2 | 0.03 |
| | | Soluble iron content | mg/L | ≦ 10 | 0.08 |
| | | Soluble manganese content | mg/L | ≦ 10 | < 0.02 |
| | | Benzene | mg/L | ≦ 0.1 | < 0.001 |
| | | Boron and other compounds | mg/L | ≦ 10 | 0.12 |
| | | Fluorine and other compounds | mg/L | ≦ 8 | < 0.17 |

| Applicable Company | Applicable Department | Test Items | Unit | (Baseline) | Measured Concentration |
|---|---|---|---|---|---|
| Sumitomo Forestry Crest | Kashima Plant | pH | - | 5.8 ~ 8.6 | 12.4 |
| | | BOD (Biochemical Oxygen Demand) | mg/L | - | 1.4 |
| | | COD (Chemical Oxygen Demand) | mg/L | 5 | 3.4 |
| | | SS (Suspended Solids) | mg/L | 5 | < 1 |
| | | Normal hexane extracts | mg/L | 1 | < 0.5 |
| | Shizuoka Plant | pH | - | 5.8 ~ 8.6 | 6.8 |
| | | BOD (Biochemical Oxygen Demand) | mg/L | ≦ 160 | 68 |
| | | COD (Chemical Oxygen Demand) | mg/L | - | - |
| | | SS (Suspended Solids) | mg/L | ≦ 200 | 9.8 |
| | Niihama Plant | pH | - | 5.8 ~ 8.6 | 6.8 |
| | | BOD (Biochemical Oxygen Demand) | mg/L | - | - |
| | | COD (Chemical Oxygen Demand) | mg/L | 160 | 9.8 |
| | | SS (Suspended Solids) | mg/L | 200 | 80 |
| | Imari Plant | pH | - | 5.8 ~ 8.6 | 7.7 |
| | | BOD (Biochemical Oxygen Demand) | mg/L | - | - |
| | | COD (Chemical Oxygen Demand) | mg/L | 70 | 13 |
| | | SS (Suspended Solids) | mg/L | 70 | 8 |
| Mombetsu Biomass Power Generation Plant | | pH | - | 5 ~ 9 | 7.8 |
| | | BOD (Biochemical Oxygen Demand) | mg/L | 1,000 mg/L or less over five days | 2.8 |
| | | SS (Suspended Solids) | mg/L | 1000 | 2 |

| Applicable Company | Applicable Department | Test Items | Unit | (Baseline) | Measured Concentration |
|---|---|---|---|---|---|
| Hachinohe Biomass Power Generation Plant | | pH | - | 5.8 ~ 8.6 | 7.8 |
| | | BOD (Biochemical Oxygen Demand) | mg/L | 30 mg/L or less (Daily average of 20 mg/L or less) | 0.8 |
| | | SS (Suspended Solids) | mg/L | 40 mg/L or less (Daily average of 30mg/L or less) | 7.5 |
| | | Normal hexane extracts | mg/L | ≦ 5 | < 1 |

## 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 2021, emissions concentration testing results were all within the relevant standard values.

## Management Table of Water Quality at Plants Overseas (FY2021)

| Applicable Company | Country | Test Items | Unit | (Baseline) | Measured Concentration |
|---|---|---|---|---|---|
| KTI | Indonesia | pH | - | 6 ~ 9 | 7.87 |
| | | BOD (Biochemical Oxygen Demand) | mg/L | 75 | 4 |
| | | COD (Chemical Oxygen Demand) | mg/L | 125 | 22 |
| | | TSS (Suspended Solids) | mg/L | 50 | 2 |
| | | $NH_3$-N (Ammonia concentration) | mg/L | 4 | 0.1 |
| | | Fenol (Fenol concentration) | mg/L | 0.25 | 0.002 |
| RPI | Indonesia | pH | - | 6 ~ 9 | 7.8 |
| | | BOD (Biochemical Oxygen Demand) | mg/L | 75 | < 7 |
| | | COD (Chemical Oxygen Demand) | mg/L | 125 | < 12.4 |
| | | TSS (Suspended Solids) | mg/L | 50 | < 8 |
| | | $NH_3$-N (Ammonia concentration) | mg/L | 4 | < 0.09 |
| | | Fenol (Fenol concentration) | mg/L | 0.25 | < 0.1 |
| ASTI | Indonesia | pH | - | 6 ~ 9 | 7.88 |
| | | BOD (Biochemical Oxygen Demand) | mg/L | 500 | 31 |
| | | COD (Chemical Oxygen Demand) | mg/L | 1,600 | 93 |
| | | Soluble iron content | mg/L | 5 | 0.23 |
| | | Soluble manganese content | mg/L | 2 | 0.02 |
| | | Copper content | mg/L | 2 | 0.05 |
| | | Zinc content | mg/L | 5 | 0.35 |
| | | Chromium hexavalent compound | mg/L | 0.1 | < 0.005 |
| | | Chromium compound | mg/L | 0.5 | < 0.108 |

| Applicable Company | Country | Test Items | Unit | (Baseline) | Measured Concentration |
|---|---|---|---|---|---|
| ASTI | Indonesia | Cadmium compound | mg/L | 0.05 | 0.0041 |
| | | Lead compound | mg/L | 0.1 | 0.038 |
| | | Hydrogen sulfide compound | mg/L | 0.05 | 0.0005 |
| | | Nitrate compound | mg/L | 20 | 0.015 |
| | | Nitrite compound | mg/L | 1 | 0.035 |
| | | Mercury | mg/L | 0.002 | 0.0005 |
| | | Fenol (Fenol concentration) | mg/L | 0.5 | < 0.005 |
| VECO | Vietnam | Rainwater Treatment in Logyard | | | |
| | | pH | - | 5 ~ 9 | 7.97 |
| | | BOD (Biochemical Oxygen Demand) | mg/L | 200 | 35.4 |
| | | COD (Chemical Oxygen Demand) | mg/L | 300 | 116 |
| | | SS (Suspended Solids) | mg/L | 200 | 30.7 |
| | | Nitrogen compound | mg/L | 60 | 4.74 |
| | | Phosphate compound | mg/L | 10 | 3.29 |
| | | Wastewater treatment plant | | | |
| | | pH | - | 5 ~ 9 | 7.28 |
| | | BOD (Biochemical Oxygen Demand) | mg/L | 200 | 59.6 |
| | | COD (Chemical Oxygen Demand) | mg/L | 300 | 147 |
| | | SS (Suspended Solids) | mg/L | 200 | 13 |
| | | Nitrogen compound | mg/L | 60 | 40.75 |
| | | Phosphate compound | mg/L | 10 | 3.44 |
| NPIL | New Zealand | pH | - | 6 ~ 9 | Within standard values |
| | | BOD (Biochemical Oxygen Demand) | mg/L | 2,350 | 1,901 |
| | | COD (Chemical Oxygen Demand) | mg/L | 6,400 | 4,678 |
| | | SS (Suspended Solids) | mg/L | 650 | 360 |

## 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.

## Storage and Proper Disposal Polychlorinated Biphenyl Waste

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 FY2019 (kg)*1 | Total Disposal in FY2020 (kg)*1 | Total Disposal in FY2021 (kg)*1 |
|---|---|---|---|---|
| Sumitomo Forestry Crest | (Former) Nagoya Plant*2 | 0 | 0 | 0 |
| ASTI | ASTI Plants | 0 | 0 | 0 |
| Subtotal | | 0 | 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 | FY2021 Onward Estimated Processing (Units) | Management Status |
|---|---|---|---|
| Sumitomo Forestry Crest | (Former) Nagoya Plant*2 | 513 Units | Stabilizers in storage |
| ASTI | ASTI Plants | 17kg | 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 in accordance with the Act on Rational Use and Proper Management of Fluorocarbons enacted April 2015. There were no leaks of fluorocarbons in fiscal 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 by FY2021 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. In March 2020, the Burning Field®, an enhanced variety of Japanese lawn-grass was registered with the Ministry of Land, Infrastructure, Transport and Tourism's New Technology Information System (NETIS). NETIS is a new technology information system designed by the Ministry

of Land, Infrastructure, Transport and Tourism to share and provide information for use of new technologies. The use of NETIS-registered technology scores additional points for general evaluation at the bidding stage or construction performance evaluation during the usage stage, which is expected to raise awareness and standardize these new technologies at contractors involved in public works projects.

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.

# Efficient Use of Water Resources

## 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 and Building Materials Business and the Housing and Construction Business, which operate on a business model that does not use a 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. 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, our water consumption increased significantly due to the operation of the Mombetsu Biomass Power Generation Plant and Hachinohe Biomass Power Generation 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.

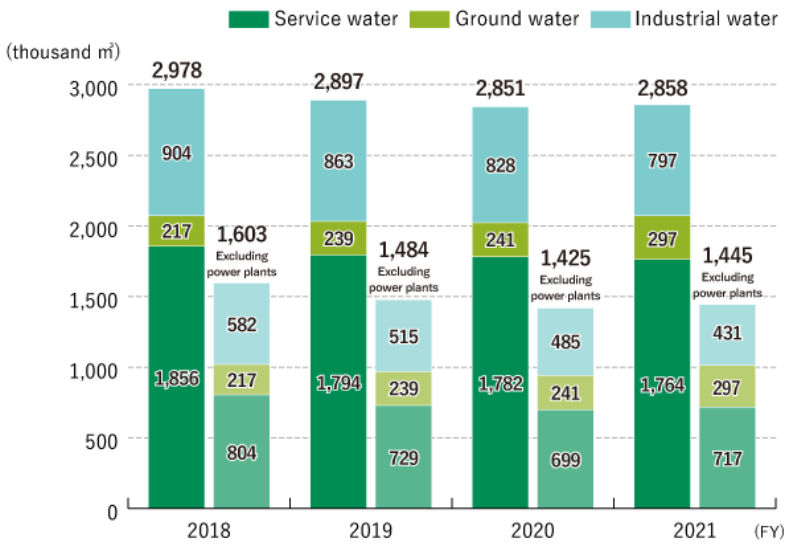
The Sumitomo Forestry Group has set conservation and effective utilization of water resources as a target in the Mid-Term Sustainability Targets announced with specific water consumption targets for entire Group for conducting progress management. In fiscal 2021, the entire group used 2,858 thousand $m^3$ of water, which achieved our target of 3,011 thousand $m^3$ or less. Sumitomo Forestry Crest's Imari Plant, which uses recycled industrial water, has successfully implemented water conservation measures and replaced wastewater treatment equipment, resulting in a constant reduction in water use. We also set a goal of reducing water use in production activities and improved water consumption monitoring and management at the Mombetsu Biomass Power Plant. In comparison to fiscal 2020, the fiscal 2021 data showed a decline of 3.3% (35 thousand $m^3$).

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.

Click here for related information

Sumitomo Forestry Group Mid-term Sustainability Targets Achievements in 2021

## Water Consumption over the Past Four Years*

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## Water Consumption per Department*

| | Office Departments in Japan, etc. (Unit: 1,000m$^3$) | | | Plants and Power Generation Business Departments in Japan (Unit: 1,000m$^3$) | | | Overseas Plants (Unit: 1,000m$^3$) | | | Total (Unit: 1,000m$^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| | FY2019 | FY2020 | FY2021 | FY2019 | FY2020 | FY2021 | FY2019 | FY2020 | FY2021 | FY2021 |
| Service water | 78 | 81 | 87 | 1,324 | 1,359 | 1,337 | 392 | 342 | 340 | 1,764 |
| Ground water | 37 | 42 | 52 | 12 | 10 | 8 | 190 | 189 | 238 | 297 |
| Industrial water | 114 | 120 | 113 | 432 | 419 | 431 | 318 | 288 | 253 | 797 |
| Total | 230 | 243 | 252 | 1,768 | 1,788 | 1,776 | 900 | 820 | 831 | 2,858 |

* Covers sites where actual water consumption is measurable, such as at buildings owned by the Sumitomo Forestry Group.
* The aggregation period for water consumption in fiscal 2020 onwards is January to December of each year, and the aggregation period before fiscal 2019 is April of each year to March of the following year.

## Efforts in 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 65,600m$^3$ in fiscal 2021, a 56% 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

Subjecting waste water (after processing for coagulating sedimentation) to further biological processing[*1] makes it possible to restrict the water used for dilution in plant waste water quality management (approximately 350m$^3$/day).

Maintain water-quality control by measuring COD[*2] and treat wastewater using only the minimum amount of water necessary.

After water is used to cool manufacturing equipment, it is used to dilute plant waste water.

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 Security questions and discloses more detailed information about efforts on risks related to water since fiscal 2017.

# Environmental Related Data

## 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 2021 Sumitomo Forestry Group Balance of Input & Output*

**INPUT**

| Energy Input (TJ) | 12,035 |
|---|---|
| Purchased electricity (1,000MWh) | 264 |
| Petroleum (1,000kL) | 14 |
| Gas (1,000m$^3$) | 4,498 |
| Coal (1,000t) | 35 |
| Wood waste (1,000t) | 473 |
| Palm kernel shells (PKS, etc.) (1,000t) | 27 |
| Non-industrial steam (TJ) | 4 |
| Water consumption (1,000m$^3$) | 2,858 |

| Raw materials (1,000t) | 2,599 |
|---|---|
| Timber | 1,863 |
| Metal | 29 |
| Plastic | 18 |
| Paper | 1 |
| Adhesives, coatings, drugs | 92 |
| Concrete | 371 |
| Other | 225 |
| Seedlings (1,000) | 1,456 |

## BUSINESS ACTIVITIES

### Product

| | | | |
|---|---|---|---|
| Building, housing materials (1,000t) | 66 | Kitchen cabinets (1,000) | 117 |
| Chips (1,000t) | 247 | Woodworking / others (1,000t) | 38 |
| MDF (1,000m$^3$) | 300 | Quantity harvested at company owned forests (1,000m$^3$) | 43 |
| PB (1,000m$^3$) | 440 | Seedling production (1,000) | 1,959 |
| LVL, plywood (1,000m$^3$) | 70 | Unused wood resources (1,000m$^3$) | 16 |
| Lumber / laminated engineered wood (1,000m$^3$) | 39 | | |

Generated energy (1,000MWh) 487

Number of delivered domestic household sales 8,347

Number of delivered overseas household sales 14,399

## OUTPUT

### Waste (1,000t)

| | |
|---|---|
| Total generated | 445 |
| Final disposal amount | 21 |
| Greenhouse Gas (1,000t-$CO_2$e) (Scope 1,2) | 371 |

Chemical substance waste released (t) 15

Waste water discharge (1,000m$^3$) 970

Greenhouse Gas (1,000t-$CO_2$e) (Scope 3) 9,835

* The period of data collection for fiscal 2021 is from January 1 to December 31, 2021

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## Research & Development*

| INPUT | | | |
|---|---|---|---|
| Energy input (TJ) | 27 | Water consumption (1,000m$^3$) | 10 |
| Purchased electricity (1,000MWh) | 2 | | |
| Petroleum (1,000kL) | 0.02 | | |
| Gas (1,000m$^3$) | 81 | | |
| Wood waste (1,000t) | 0.0213 | | |

R&D flow

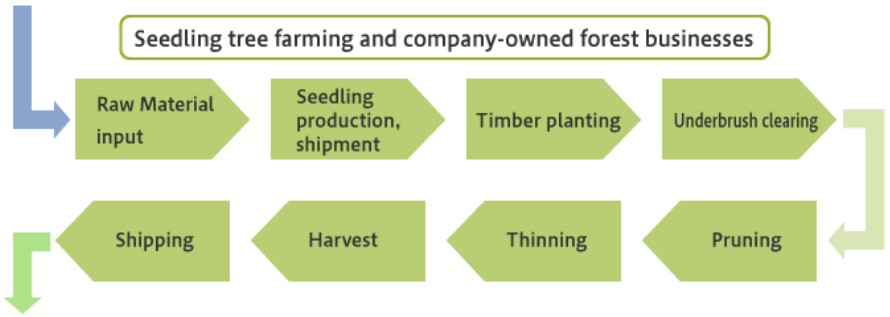
Design and development → Prototype production → Testing → Patent application, productization

| OUTPUT | | | |
|---|---|---|---|
| Generated energy (1,000MWh) | 0.086 | Chemical substance waste released (t) | 0.025 |
| Waste (1,000t) | | Greenhouse Gas (1,000t-$CO_2$e) | 1 |
| Total generated | 0.15 | Waste water discharge (1,000m$^3$) | 11 |
| Final disposal amount | 0.004 | | |

* Subject: Tsukuba Research Institute

## Forest Management*

| INPUT | | | |
|---|---|---|---|
| **Energy input (TJ)** | **7** | **Raw Materials** | |
| Purchased electricity (1,000MWh) | 0.2 | Domestic forest raw materials (seedling shipment [1,000]) | 1,456 |
| Petroleum (1,000kL) | 0.1 | **Water consumption (1,000m$^3$)** | **63** |
| Wood pellet (1,000t) | 0.03 | | |




| OUTPUT | | | |
|---|---|---|---|
| **Product** | | **Greenhouse Gas (1,000t-$CO_2$e)** | **0.4** |
| Quantity harvested at company owned forests (1,000m$^3$) | 43 | | |
| Seedling production (1,000) | 1959 | | |
| Unused wood resources (1,000m$^3$) | 16 | | |

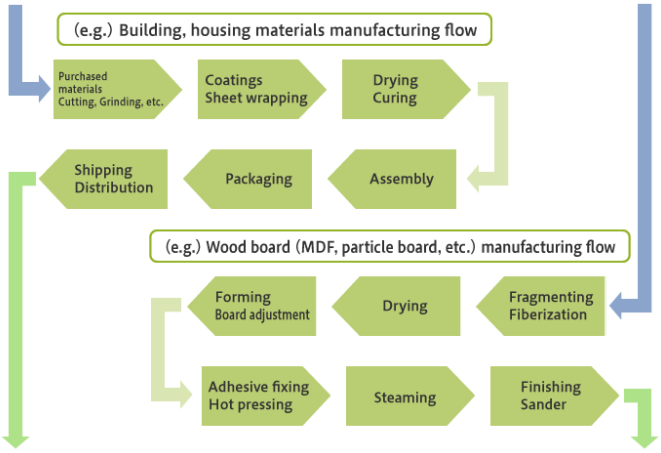
* Subjects: Forestry offices (Hyuga, Niihama, Osaka, and Mombetsu); seedling tree farming centers (Togo, Motoyama, Gifu, Watarase, and Mombetsu)

## Manufacturing Business*

### INPUT

| Energy Input (TJ) | 4,216 |
|---|---|
| Purchased electricity (1,000MWh) | 218 |
| Petroleum (1,000kL) | 4 |
| Gas (1,000m$^3$) | 2,750 |
| Wood waste (1,000t) | 85 |
| Waste plastic (1,000t) | 0.0015 |
| Water consumption (1,000m$^3$) | 923 |

| Raw materials (1,000t) | 1,868 |
|---|---|
| Timber | 1,748 |
| Metal | 4 |
| Plastic | 5 |
| Paper | 1 |
| Adhesives, coatings, drugs | 87 |
| Purified soil others | 19 |
| Other | 4 |




### OUTPUT

| Product | |
|---|---|
| Building, housing materials (1,000t) | 66 |
| Chips (1,000t) | 247 |
| MDF (1,000m$^3$) | 300 |
| PB (1,000m$^3$) | 440 |
| LVL, plywood (1,000m$^3$) | 70 |
| Lumber / laminated engineered wood (1,000m$^3$) | 39 |
| Kitchen Cabinets (1,000) | 117 |
| Woodworking / others (1,000t) | 38 |

| Chemical substance waste released (t) | 13 |
|---|---|
| Waste (1,000t) | |
| Total generated | 260 |
| Final processing amount | 4 |
| Greenhouse Gas (1,000t-$CO_2$e) | 120 |
| Waste Water discharge (1,000m$^3$) | 450 |

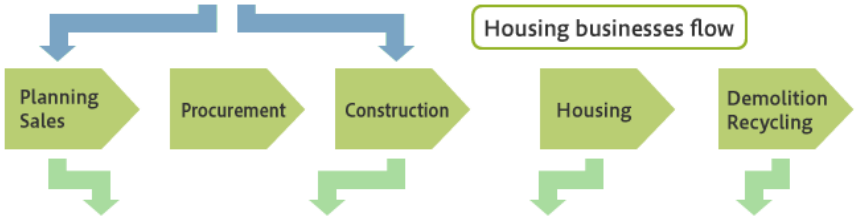
* Subjects: Sumitomo Forestry Crest Co., Ltd. (Kashima Plant, Shizuoka Plant, Niihama Plant and Imari Plant), Sumitomo Forestry Landscaping (Shinshiro Plant and Tobishima Plant of Agro-Products Division), Kutai Timber Indonesia (KTI, Indonesia), Rimba Partikel Indonesia (RPI, Indonesia), Sinar Rimba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

## Housing Business (Domestic)*

### INPUT

| Energy Input (TJ) | 358 |
|---|---|
| Purchased electricity (1,000MWh) | 16 |
| Petroleum (1,000kL) | 5 |
| Gas (1,000m$^3$) | 159 |
| Non-industrial steam (TJ) | 1 |
| Water consumption (1,000m$^3$) | 50 |

| Raw materials (1,000t) | 727 |
|---|---|
| Timber | 115 |
| Metal | 26 |
| Plastic | 13 |
| Concrete | 371 |
| Other | 202 |




### OUTPUT

| Greenhouse Gas (1,000t-$CO_2$e) (Scope 1,2) | 20 |
|---|---|
| Generated energy (1,000MWh) | 0.17 |

| Facilities completed in 2021 (buildings) | 8,347 |
|---|---|
| Average total floor area (m$^2$) | 122.34 |
| Waste from new housing construction (1,000t) | |
| Total generated | 27 |
| Final processing amount | 1 |

| Greenhouse Gas (1,000t-$CO_2$e) (Scope 3) | 1,701 |
|---|---|

| Demolition waste (1,000t) | |
|---|---|
| Total generated | 106 |
| Final disposal amount | 6 |

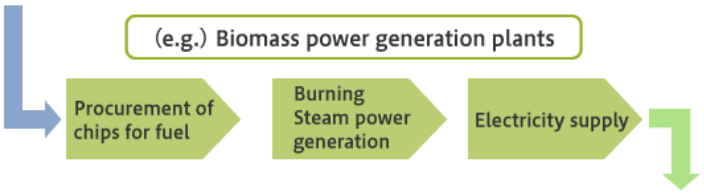
* Subjects: Sumitomo Forestry Housing and Construction Division and Sumitomo Forestry Home Engineering

## Renewable Energy Business*

### INPUT

| Energy Input (TJ) | 6,932 |
|---|---|
| Purchased electricity (1,000MWh) | 1 |
| Petroleum (1,000kL) | 0.3 |
| Gas (1,000m$^3$) | 0.0 |
| Wood waste (1,000t) | 388 |
| Palm kernel shells (PKS, etc.) (1,000t) | 27 |
| Coal (1,000t) | 35 |

| Raw materials (1,000t) | |
|---|---|
| Adhesives, coatings, drugs | 4 |
| Water consumption (1,000m$^3$) | 1,413 |




### OUTPUT

| Generated energy (1,000MWh) | 487 |
|---|---|
| Chemical substance waste released (t) | 2 |
| Greenhouse Gas (1,000t-$CO_2$e) | 203 |
| Waste water discharge (1,000m$^3$) | 510 |

| Waste (1,000t) | |
|---|---|
| Total generated | 12 |
| Final disposal amount | 0.08 |

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

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

# Environmental Related Data

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

* The period of data collection on the balance of input and output in fiscal 2021 is from January 1 to December 31, 2021.

### Boundaries (Organizational Range)

| Classification | Boundary |
|---|---|
| All Business Activities | All Sumitomo Forestry Group Companies |
| Research & Development | Tsukuba Research Institute |
| Environment and Resources Business (Forest Management) | Forestry offices (Hyuga, Niihama, Osaka, and Mombetsu);<br>Seedling tree farming centers (Hyuga, Motoyama, Gero, Midori, Mombetsu, and Minamiaizu)<br>Japan Bio Energy, Okhotsk Bio Energy, and Michinoku Bio Energy |
| Timber and Building Materials Business (Manufacturing Business) | Sumitomo Forestry Crest (Kashima Plant, Shizuoka Plant, Niihama Plant and Imari Plant), Rimba Partikel Indonesia, AST Indonesia, Kutai Timber Indonesia, Nelson Pine Industries, Vina Eco Board, Sinar Rimba Pasifik and Canyon Creek Cabinet Company |
| Environment and Resources Business (Renewable Energy Business) | Mombetsu Biomass Electric Power, Hachinohe Biomass Electric Power |
| 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, and Sumitomo Forestry Landscaping (Shinshiro Plant and Tobishima Plant) |
| Offices and other sites | Sumitomo Forestry and Group companies other than the above |

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All Sumitomo Forestry Group Companies

## Prerequisites

| Classification | Prerequisites | |
|---|---|---|
| Research & Development | Energy and Greenhouse Gases | Energy use and greenhouse gas 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 |
| Environment and Resources Business (Forest Management) | Energy and Greenhouse Gases | Energy use and greenhouse gas emissions from harvesting and seedling production at Company-owned forests |
| | Raw Materials | Raw material used during harvesting and seedling production at Company-owned forests |
| | Water | Water used during harvesting and seedling production at Company-owned forests |
| | Waste | Waste produced during harvesting and seedling production at Company-owned forests |
| Timber and Building Materials Business (Manufacturing Business) | Energy and Greenhouse Gases | Energy use and greenhouse gas emissions at each plant |
| | Raw Materials | Raw material used during production of wood products and construction materials |
| | Water | Water used during production of wood products and construction materials |
| | Waste | Waste produced during production of wood products and construction materials |
| Environment and Resources Business (Renewable Energy Business) | Energy and Greenhouse Gases | Energy use and greenhouse gas 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 and Greenhouse Gases | Energy use and greenhouse gas emissions for business sites (including model homes) related to the housing business |
| | Raw Materials | Materials invested in housing construction |

| Classification | Prerequisites | |
|---|---|---|
| | Water | Water used at business sites related to the housing business |
| | Waste | Waste emitted from housing construction (including renovations) and demolition |
| Offices and other sites | Energy and Greenhouse Gases | Energy use and greenhouse gas 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 used 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 emitted 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

Greenhouse gases: Refer to the pages below

Click here for related information

Boundaries and Methods of Greenhouse Gas Emissions Calculation

Waste: Calculating Emissions with Data Collected from Manifests

# Environmental Related Data

## Environmental 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) | | 37,237 | 29,490 | 28,957 | 16,257 | 111,940 |
| Raw Material Input (t) | | 8,316 | 24,650 | 3,673 | 16,050 | 52,689 |
| Water Resource Use ($m^3$) | | | | | | |
| | Service water | 6,655 | 5,795 | 5,942 | 131 | 18,523 |
| | 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 | - | - | - | 65,600 | 65,600 |
| | Main Water Source | - | - | Groundwater (water authority in Niihama City) | River -- Arita-gawa River basin (partly Mt. Kurokami mammal and avian species wildlife refuge) | - |

| Item (unit) | | Kashima Plant | Shizuoka Plant | Niihama Plant | Imari Plant | Subtotal |
|---|---|---|---|---|---|---|
| Greenhouse gas emissions (t-$CO_2$) | | | | | | |
| | Carbon dioxide ($CO_2$) | 274 | 951 | 1,644 | 917 | 3,786 |
| | Methane ($CH_4$)* | 28 | 5 | 13 | - | 45 |
| | Dinitrogen oxide ($N_2O$)* | 4 | 0 | 1 | - | 6 |
| Waste generations (t) | | 2,364 | 1,950 | 907 | 365 | 5,586 |
| Water discharge ($m^3$) | | | | | | |
| | Sewerage | 5,310 | - | 4,754 | - | 10,064 |
| | Ocean | - | - | - | 59,240 | 59,240 |
| | Rivers | - | 4,636 | - | - | 4,636 |
| | Lakes | - | - | - | - | - |
| Emissions to the air (kg) | | | | | | |
| | Sulfur oxides (SOx) | - | - | 245 | 766 | 1,011 |
| | Nitrogen oxides (NOx) | - | - | 1,389 | - | 1,389 |
| | Soot and dust | - | - | 26.4 | - | 26.4 |

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

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## The Agro-Products division of Sumitomo Forestry Landscaping

| Item (unit) | Tobishima Plant | Shinshiro Plant | Subtotal |
|---|---|---|---|
| Energy Input (GJ) | 2,416 | 5,860 | 8,276 |
| Raw Material Input (t) | 12,405 | 6,683 | 19,088 |
| Water Resource Use ($m^3$) | | | |
| Service water | 666 | 504 | 1,170 |
| 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 ($CO_2$) | 125 | 356 | 481 |
| Methane ($CH_4$)* | - | - | - |
| Dinitrogen oxide ($N_2O$)* | - | - | - |
| Waste generations (t) | 50 | 36 | 86 |
| Water discharge ($m^3$) | | | |
| Sewerage | - | - | - |
| Ocean | - | - | - |
| Rivers | 666 | 504 | 1,170 |
| Lakes | - | - | - |
| Emissions to the air (kg) | | | |
| Sulfur oxides (SOx) | - | 27 | 27 |
| Nitrogen oxides (NOx) | - | 896 | 896 |
| Soot and dust | - | 382 | 382 |

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

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## Power Plants

| Item (unit) | | Mombetsu Biomass Electric Power Co.,Ltd. | Hachinohe Biomass Electric Power Co.,Ltd. | Okhotsk Bio Energy Co. Ltd. | Japan Bio Energy Co., Ltd. | Michinoku Bio Energy Co., Ltd. | Subtotal |
|---|---|---|---|---|---|---|---|
| Energy Input (GJ) | | 5,227,441 | 1,704,473 | 15,427 | 10,755 | 9,444 | 7,156,384 |
| Raw Material Input (t) | | 3,643 | 806 | 69,678 | 55,401 | 117,602 | 247,130 |
| Water Resource Use ($m^3$) | | | | | | | |
| | Service water | 1,038,358 | 9,155 | 555 | 6,502 | 217 | 1,054,787 |
| | 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 | - | 365,683 | - | - | - | 365,683 |
| | Main Water Source | - | Mabechi River | - | - | - | - |
| Greenhouse gas emissions (t-$CO_2$) | | | | | | | |
| | Carbon dioxide ($CO_2$) | 87,198 | 1,493 | 966 | 246 | 637 | 90,539 |
| | Methane ($CH_4$)* | 7,333 | 3,005 | - | - | - | 10,338 |
| | Dinitrogen oxide ($N_2O$)* | 78,056 | 26,135 | - | - | - | 104,191 |
| Waste generations (t) | | 9,567 | 2,058 | 1 | 567 | - | 12,193 |
| Water discharge ($m^3$) | | | | | | | |
| | Sewerage | 409,184 | - | 555 | - | 217 | 409,956 |
| | Ocean | - | 100,576 | - | - | - | 100,576 |
| | Rivers | - | - | - | - | - | - |
| | Lakes | - | - | - | - | - | - |

| Item (unit) | | Mombetsu Biomass Electric Power Co.,Ltd. | Hachinohe Biomass Electric Power Co.,Ltd. | Okhotsk Bio Energy Co. Ltd. | Japan Bio Energy Co., Ltd. | Michinoku Bio Energy Co., Ltd. | Subtotal |
|---|---|---|---|---|---|---|---|
| Emissions to the air (kg) | | | | | | | |
| | Sulfur oxides (SOx) | 86,804 | 540 | - | - | - | 87,344 |
| | Nitrogen oxides (NOx) | 270,818 | 77,332 | - | - | - | 348,150 |
| | Soot and dust | 4,796 | 309 | - | - | - | 5,105 |

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

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## Total for All Plants in Japan

| Item (unit) | | Total |
|---|---|---|
| Energy Input (GJ) | | 7,276,600 |
| Raw Material Input (t) | | 318,907 |
| Water Resource Use ($m^3$) | | |
| | Service water | 1,074,480 |
| | Main Water Source | As indicated above |
| | Industrial water | 431,283 |
| | Main Water Source | As indicated above |
| Greenhouse gas emissions (t-$CO_2$) | | |
| | Carbon dioxide ($CO_2$) | 94,806 |
| | Methane ($CH_4$)* | 10,383 |
| | Dinitrogen oxide ($N_2O$)* | 104,197 |
| Waste generations (t) | | 17,865 |
| Water discharge ($m^3$) | | |
| | Sewerage | 420,020 |
| | Ocean | 159,816 |
| | Rivers | 5,806 |
| | Lakes | - |
| Emissions to the air (kg) | | |
| | Sulfur oxides (SOx) | 88,381 |
| | Nitrogen oxides (NOx) | 350,435 |
| | Soot and dust | 5,513 |

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

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## 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) | | 505,134 | 94,063 | 1,303,926 | 30,232 |
| Raw Material Input (t) | | 100,512 | 24,782 | 520,468 | 5,556 |
| Water Resource Use ($m^3$) | | | | | |
| | Service water | - | 803 | - | - |
| | Industrial water | - | 41,527 | 211,611 | - |
| | Ground water | 58,585 | - | 176,804 | - |
| Greenhouse gas emissions (t-$CO_2$) | | | | | |
| | Carbon dioxide ($CO_2$) | 20,194 | 7,161 | 47,454 | 2,301 |
| | Methane ($CH_4$)* | 39 | - | 113 | - |
| | Dinitrogen oxide ($N_2O$)* | 420 | - | 1,212 | - |
| Waste generations (t) | | 23,306 | 4,491 | 86,767 | 1,055 |
| Water discharge ($m^3$) | | | | | |
| | Sewerage | - | 8,065 | - | - |
| | Ocean | - | - | 21,966 | - |
| | Rivers | 57,925 | - | - | - |

* 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) | | 1,693,439 | 370,720 | 56,214 | 4,053,728 |
| Raw Material Input (t) | | 732,094 | 169,520 | 7,991 | 1,560,923 |
| Water Resource Use ($m^3$) | | | | | |
| | Service water | 284,736 | 49,897 | 4,255 | 339,691 |
| | Industrial water | - | - | - | 253,138 |
| | Ground water | - | - | 2,429 | 237,818 |
| Greenhouse gas emissions (t-$CO_2$) | | | | | |
| | Carbon dioxide ($CO_2$) | 13,726 | 18,570 | 1,254 | 110,659 |
| | Methane ($CH_4$)* | 241 | 15 | - | 408 |
| | Dinitrogen oxide ($N_2O$)* | 1,275 | 159 | - | 3,066 |
| Waste generations (t) | | 115,355 | 20,571 | 2,026 | 253,571 |
| Water discharge ($m^3$) | | | | | |
| | Sewerage | 264,571 | 17,464 | 4,256 | 294,356 |
| | Ocean | - | - | - | 21,966 |
| | Rivers | - | - | - | 57,925 |

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

## Environmental Accounting Results for Fiscal 2021

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 | 623 |
| | | Environment-related business (Overseas consulting, REDD+ business, etc.) | 46 |
| | Resource recycling costs*2 | Promotion of appropriate treatment, reduction, and recycling of industrial waste | 7,098 |
| | | Waste wood chip distribution operations | 197 |
| | | Volume sold of potting mix using recycled sediment from water purification | 296 |
| Upstream / Downstream costs*3 | | Green purchasing | 23 |
| Management activity costs*4 | | Operation and promotion of environmental management activities (ISO14001 certification, environmental education, LCA surveys, etc.) | 178 |
| | | Monitoring of environmental impact | 1 |
| | | Disclosure and administration of environmental information (Sustainability Report, environment-related advertising, environment-related exhibitions, etc.) | 30 |
| R&D costs*5 | | R&D activities related to environmental protection | 1,068 |
| Social contribution costs*6 | | Management and operation of Mt. Fuji Manabi no Mori | 16 |
| | | Management and operation of Forester House | 9 |
| | | Other social contribution activities | 3 |
| | | Donations to the Keidanren Nature Conservation Fund | 2 |
| Total | | | 9,588 |

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

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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) | 702,000 $m^3$ |
| | Volume sold of potting mix using recycled sediment from water purification | 14,000 t |
| Benefits from Upstream/Downstream costs | Green procurement ratio | 66.9% |
| Benefits from management activity costs | Employees designated as internal environmental auditors | 103 |
| Benefits from R&D costs | Exhibition of the Culture Samples and Seedlings of Japanese Apricot Bonbai Successfully Propagated Through Tissue Culture Unveiled at Bonsai Exhibition of Ume Trees with Blossoms | - |
| | Completion of Toho Gakuen Munetsugu Hall, the first use of CLT structural materials with wood texture and acoustic effects | - |
| | Wood member "Wooden CT" obtained minister certification for three hours fireproof structure<br>Enabling medium- and large-scale wooden construction of 15 floors or more | - |
| | Starting construction of "Sophia University Building No. 15" with wooden fireproof structure<br>Contributing to decarbonization society with the latest technology from Sumitomo Forestry | - |

| Category | Effects | Benefits |
|---|---|---|
| Benefits from R&D costs | Joint research with Kobe University on high temperature resistant tree species<br>Research on resistance and adaptability of domestic trees to urban warming is published in the international scientific magazine "TREES." | - |
| | Sumitomo Forestry donates "Taiko Weeping Cherry Tree," which grew seedlings through tissue culture, to the Yamatane Museum of Art, to Daigoji Temple | - |
| | Wood hybrid laminated lumber perforated beam obtained minister certification for one hour fireproof structure<br>Improvement of freedom of design and creativity, and cost reduction in total construction cost | - |
| Supported more efficient development of better roadways to contribute to the revitalization of the forest industry | Volunteers who participated in Mt. Fuji Manabi no Mori project | 79 |
| | Children participating in the Environmental Education Program at Mt. Fuji Manabi no Mori project | 1,101 |
| | Visitors to Forester House | 2,603 |
| | Sumitomo Forestry Group Sustainability Report 2021 | - |