## Fiscal 2011 Activity Plans and Results

### Reducing CO₂ Emissions

<table>
<thead>
<tr>
<th>Key Initiatives</th>
<th>FY2011 Plan</th>
<th>FY2011 Results</th>
<th>Self-Assessment</th>
<th>FY2012 Plan</th>
<th>Unit</th>
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</thead>
<tbody>
<tr>
<td><strong>Reduction of CO₂ emissions</strong></td>
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<tr>
<td>Offices: By FY2010, achieve a 12% reduction in overall emissions compared with FY2006, and maintain this level to 2014</td>
<td></td>
<td>In offices, the amount of electricity used in Japan declined due to post-earthquake power saving measures. However, similar progress was not made in reducing gasoline consumption and the overall reduction of 10.6% was below the target. Nonetheless, the result was an improvement on the previous fiscal year.</td>
<td>-</td>
<td>-</td>
<td>Sumitomo Forestry Group</td>
</tr>
<tr>
<td>Subsidiaries in manufacturing businesses in Japan: By FY2014, achieve an 8% reduction in base units* compared with FY2006 Each plant independently sets its own base units for targets. In addition, as a means to collectively manage progress toward achieving targets, the plants use the rate of decrease in their CO₂ emissions relative to the base year of FY2006. Subsidiaries in manufacturing businesses outside Japan: Set targets for each plant in consideration of local laws and regulations, including overall emissions, emissions per unit sold, and / or other targets as appropriate to each facility.</td>
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<td><strong>Reduce total emissions at branches nationwide by 9.5% compared with FY2006</strong></td>
<td>Switched to energy-saving lighting in showrooms and model homes and use of fuel-efficient Company-owned vehicles. As a result, achieved a large decrease in CO₂ emissions of 15.3% compared with FY2006.</td>
<td>Continue efforts to reduce consumption of electricity and gasoline</td>
<td>-</td>
<td>-</td>
<td>Housing Division</td>
</tr>
<tr>
<td><strong>Introduction of LCA</strong></td>
<td>Conducted LCA surveys and revised carbon footprint data displayed on Particle Board manufactured</td>
<td>Continue implementing LCA surveys and revising carbon footprint data</td>
<td>-</td>
<td>-</td>
<td>RPI</td>
</tr>
<tr>
<td><strong>Decreasing the environmental impact of housing</strong></td>
<td>Installed residential storage batteries in monitor homes and verified their use. Launched Smart Solabo.</td>
<td>Construct the LCCM model home and provisionally calculate LCCO₂ by using the LCCM assessment tool</td>
<td>-</td>
<td>-</td>
<td>Housing Division</td>
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<tr>
<td><strong>Proposal of energy self-sufficient-type homes</strong></td>
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</table>

* Target: Achieved △ Target: Almost Achieved × Target: Not Achieved
### Zero Emissions

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<tr>
<th>Key Initiatives</th>
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<tbody>
<tr>
<td>Attainment of zero emissions</td>
<td>Continue efforts to achieve zero emissions at domestic manufacturing plants and new housing construction sites based on the scope and definition of zero emissions as reevaluated in FY2010.</td>
<td>Advanced zero emission initiatives and achieved 89.3% recycling.</td>
<td>★★★</td>
<td>Continue efforts to achieve zero emissions at domestic manufacturing plants and new housing construction sites, aiming for zero emissions in the Tokyo metropolitan area by December 2012.</td>
<td>Sumitomo Forestry Group</td>
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<td></td>
<td>Aim for 87% recycling in order to achieve zero emissions.</td>
<td>Despite efforts at each branch, target was not achieved</td>
<td>△</td>
<td>Continue efforts to achieve zero emissions through recycling at recycling centers utilizing the inter-region recovery and recycling certification system</td>
<td>Housing Division</td>
</tr>
<tr>
<td></td>
<td>Engage in zero emissions efforts with a target of 99.8% recycling at all plants.</td>
<td>A 3% reduction achieved through visualization of separation of management, and implementation of environmental education, which raised consciousness of industry waste management. Efforts were made to achieve further reductions by searching for and implementing new processing methods for difficult-to-recycle waste products; but despite these efforts, the recycling rate was 0.1% below the target.</td>
<td>★★★</td>
<td>Continue efforts to achieve zero emissions at all plants</td>
<td>Sumitomo Forestry Crest Co., Ltd.</td>
</tr>
<tr>
<td>Re-use of waste materials</td>
<td>Create wood pellets from unusable dust generated in Particle Board preparation processes.</td>
<td>Because the volume of dust generated in the rainy season was less than expected, the result was slightly below the target volume.</td>
<td>△</td>
<td>Continue with machine improvements to increase pellet production</td>
<td>RPI</td>
</tr>
</tbody>
</table>

### Sustainability of Timber Resources

<table>
<thead>
<tr>
<th>Key Initiatives</th>
<th>FY2011 Plan</th>
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<th>FY2012 Plan</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promotion of green procurement</td>
<td>Confirm legal compliance of all suppliers outside Japan, continuing on from FY2009.</td>
<td>Conducted legal compliance survey.</td>
<td>★★★</td>
<td>Continue confirming legal compliance of suppliers and create systems for verifying legal compliance in the future</td>
<td>Timber &amp; Building Materials Division</td>
</tr>
<tr>
<td>Sustainable timber and certified timber initiatives</td>
<td>Increase share of imported certified timber products to 95% of total imported wood products handled.</td>
<td>Although the volume handled has increased, there was a slight shortfall in the ratio</td>
<td>△</td>
<td>Continue working towards 91% ratio for certified timber materials handled.</td>
<td>Timber &amp; Building Materials Division</td>
</tr>
<tr>
<td></td>
<td>Increase share of certified and plantation timber in log transactions to 100% used in all products.</td>
<td>100% of target achieved</td>
<td>★★★</td>
<td>Maintain share of certified and plantation timber in log transactions to 100% used in all products.</td>
<td>Kowa Lumber Co., Ltd.</td>
</tr>
</tbody>
</table>
### Preserving Biodiversity

<table>
<thead>
<tr>
<th>Key Initiatives</th>
<th>FY2011 Plan</th>
<th>FY2011 Results</th>
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<th>FY2012 Plan</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preserving biodiversity</td>
<td>Set plans for monitoring of biodiversity and conduct surveys.</td>
<td>Conducted monitoring surveys at Company-owned forests in Wakayama and the Shikoku region (Mominokiyama)</td>
<td>★★★</td>
<td>Conduct monitoring surveys at Company-owned forests in the Shikoku region (Mominokiyama).</td>
<td>Forestry &amp; Environment Division</td>
</tr>
</tbody>
</table>

### Management of Hazardous Materials

<table>
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<tr>
<th>Key Initiatives</th>
<th>FY2011 Plan</th>
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<th>FY2012 Plan</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehensive soil contamination countermeasures</td>
<td>Strict enforcement of soil contamination countermeasure rules when land is acquired.</td>
<td>Confirmed no soil contamination in all applicable projects.</td>
<td>★★★</td>
<td>Strict enforcement of soil contamination surveys and compliance with survey procedures in accordance with the Group’s guidebook on soil contamination risk countermeasures created in FY2010.</td>
<td>Real Estate Business Division</td>
</tr>
<tr>
<td>Appropriate management of toxic chemicals</td>
<td>Zero contamination of shipped products with toxic chemicals</td>
<td>Achieved target</td>
<td>★★★</td>
<td>Continue implementing thorough checks on receipt of raw materials and maintain zero contamination.</td>
<td>AST</td>
</tr>
</tbody>
</table>

### Effective Use of Water Resources

<table>
<thead>
<tr>
<th>Key Initiatives</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Reduction of industrial water used</td>
<td>Achieve a 3% reduction in the amount of industrial water used compared with FY2010.</td>
<td>An 11% increase compared to FY2010, which was a result of taking into account the stabilization of the COD(^1) value</td>
<td>×</td>
<td>Achieve a 5% reduction compared with FY2011.</td>
<td>Sumitomo Forestry Crest Co., Ltd. (No. 2 Kyushu plant)</td>
</tr>
</tbody>
</table>

1 COD: Chemical Oxygen Demand. This shows the amount of oxygen required to oxidize an organic compound in water and is considered one of the most important indicators of water quality.
## Environmental Management

<table>
<thead>
<tr>
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<th>FY2012 Plan</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Enhancement and promotion of environmental education</td>
<td>Implement environmental education for employees of the Housing Division through e-learning.</td>
<td>Implemented e-learning on the subject of the environment a total of six times.</td>
<td>⭐⭐</td>
<td>Aim to strengthen knowledge through e-learning and training</td>
<td>Housing Division</td>
</tr>
<tr>
<td></td>
<td>Implement comprehensive training that incorporates environmental topics</td>
<td>Implemented five times for branch general managers and branch managers</td>
<td>⭐⭐</td>
<td>Implement six times comprehensive training that incorporates environmental topics</td>
<td>Housing Division</td>
</tr>
<tr>
<td></td>
<td>Set green purchasing ratio targets in each division and department and implement measures to achieve them</td>
<td>Achieved a green purchasing ratio of 71.8% (Sumitomo Forestry)</td>
<td>-</td>
<td>Continue with initiatives to set green purchasing ratio targets for each division, department, and Group company and continue with measures to achieve them.</td>
<td>Group-wide</td>
</tr>
</tbody>
</table>

## Promotion of Environmental Businesses

<table>
<thead>
<tr>
<th>Key Initiatives</th>
<th>FY2011 Plan</th>
<th>FY2011 Results</th>
<th>Self-Assessment</th>
<th>FY2012 Plan</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective utilization of used activated carbon from water purification plants</td>
<td>Achieve 2% increase in the amount of used activated carbon utilized, compared to previous year.</td>
<td>A 2.2% increase compared with the previous year, achieving the target.</td>
<td>⭐⭐</td>
<td>Commercialize products that utilize used activated carbon, such as landscaping soil and soil improvement materials, expand routes to market, and aim for 2% increase of the amount used compared to the previous year.</td>
<td>Sumirin Agro-Products Co., Ltd.</td>
</tr>
<tr>
<td>Effective use of wood leftover from logging</td>
<td>Sale of furniture made from timber from forest thinnings in Monbetsu, Hokkaido.</td>
<td>Achieved 118% of target sales volume</td>
<td>⭐⭐</td>
<td>Expand sales proactively to major interior design fairs held across the nation.</td>
<td>Housing Division</td>
</tr>
<tr>
<td>Conduct environment-focused R&amp;D</td>
<td>• Develop plantation technologies and tree species for marshes and develop elite trees(^1) • Develop materials recycling technologies for construction waste materials • Develop Smart House technologies</td>
<td>Initiatives for a range of themes were progressed, and an overall rate of progress of 76% was achieved.</td>
<td>△</td>
<td>Continue with initiatives for each of these R&amp;D themes</td>
<td>Sumitomo Forestry Tsukuba Research Institute</td>
</tr>
</tbody>
</table>

\(^1\) Trees with superior characteristics in terms of growth speed, timber quality, tree form, etc.
Environmental Vision
The Sumitomo Forestry Group is tackling global environmental issues head-on and promoting solutions based on its Policies & Plans.

Environmental Philosophy and Environmental Policies

Environmental Philosophy
With many years of practical experience in silviculture, the Sumitomo Forestry Group has an appreciation of the wonderful renewable resource that forests represent and the benefits that nature provides. Environmental protection is imperative in the 21st century. As a corporate group with a close affinity with nature, the Group is aware of the potential impact of its activities on the environment, and it contributes to society through the vigorous pursuit of business operations in harmony with conservation principles.

Environmental Policies
As a positive contribution to the creation of a sustainable society that achieves a balance between the environment and economy and gives due consideration to such issues as biodiversity and the prevention of global warming, the Sumitomo Forestry Group shall ensure conformance of its business operations to the following policies.

1. **Develop a business domain centered on trees and wood**
   - Cultivate forests as a way to preserve and enhance natural environments and forest functionality while seeking to actively utilize those timber resources.

2. **Develop and sell environmentally friendly products**
   - Pursue the development, design and sale of products and technologies that are environmentally superior in terms of the entire product lifecycle.

3. **Minimize environmental impact**
   - Make efforts to prevent environmental pollution through accurate assessment of direct and indirect influences on the environment.
   - Promote green procurement of timber and other building materials and green purchasing of office products and other goods.
   - Achieve and maintain zero emissions through proper waste treatment and 3R (reduce, reuse, and recycle) initiatives.

4. **Make ongoing improvements to environmental activity and the environmental management system**
   - Establish environmental budgets to ensure implementation of the Environmental Policies.
   - Make ongoing improvements to environmental budgets and the environmental management system through reviews conducted at least once a year.
5. Ensure strict legal compliance
   Adhere to all environmental laws, rules and regulations, voluntary standards, accords with stakeholders and other environmental conventions.

6. Promote environmental education
   Provide environmental education for all people involved in the business operations of the Sumitomo Forestry Group and encourage voluntary environmental activities.

7. Place emphasis on communication
   Actively disclose information and respect the opinions of stakeholders while pursuing environmental initiatives.

8. Publicly disclose and ensure implementation of the Environmental Policies
   Make the Environmental Policies available to the general public and ensure familiarization with the policies by all people involved in the business operations of the Sumitomo Forestry Group.

   Akira Ichikawa President and Representative Director
   (Revised April 1, 2010)

Stakeholder Comment

- It is important that Sumitomo Forestry effectively communicate its vision to society. (Expert)
Medium-Term Environmental Management Plan

In December 2009, the Sumitomo Forestry Group set forth the Medium-Term Environmental Management Plan, including specific guiding principles and targets for the Group's environmental management going forward, replacing the previous plan that was established in December 2005. The plan takes the medium-term perspective, examining specific quantitative targets to define the vision of where Sumitomo Forestry should be in five years' time, setting out shared targets for the Group as well as targets for each division, and major affiliated company.

Measures to achieve the targets are set forth by various perspectives: product (customer), business process innovation (internal, business partners), human resource development (employees, business partners), communication (industry, general public), etc. By advancing efforts to achieve the targets below, the Group will realize true environmental management.

Medium-Term Environmental Management Plan (Excerpt of Major Objectives)

<table>
<thead>
<tr>
<th>Unit</th>
<th>Responsible</th>
<th>Area of Environmental Impact</th>
<th>Basic Strategy (Objectives)</th>
<th>Evaluation Metrics / Targeted Values</th>
<th>FY2011 Results</th>
<th>FY2014 Targeted Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sumitomo Forestry Group (shared targets)</td>
<td>Environmental Management Department</td>
<td>Global warming</td>
<td>Reduction of CO₂ emissions (offices; excluding manufacturing companies)</td>
<td>Percentage of reduction of total CO₂ emissions compared with FY2006 (%)</td>
<td>-10.6%</td>
<td>-12% (2010 target value continues)</td>
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<td>Reduction of CO₂ emissions (manufacturing companies in Japan)</td>
<td>Percentage of reduction of CO₂ emissions per sales unit compared with FY2006 (%): All manufacturing companies in Japan, including offices</td>
<td>15.2%</td>
<td>-8% (each plant)</td>
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</tbody>
</table>

* Each plant uses voluntarily-set base units
* The percentage reduction of total CO₂ emissions compared with FY2006 (%) is used concurrently as a progress management indicator.

Emission volume percentage reduction guidelines for capital investment and emission volume transactions:

- Sumitomo Forestry Crest Co., Ltd. (total for Kashima / Shizuoka / Niihama) -10%
- Sumitomo Forestry Crest Co., Ltd. (total for Nagoya / Kyushu / No. 2 Kyushu) -20%
- Sumirin Agro-Products Co., Ltd. -10%
<table>
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<td>FY2011 Results FY2014 Targeted Values</td>
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<tr>
<td>Resource consumption, resource recycling, and industrial waste</td>
<td>Reduction of CO2 emissions (manufacturing companies outside Japan)</td>
<td>Set for each company in consideration of national policy on CO2 reduction targets, etc., in each country.</td>
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<tr>
<td>Forestry &amp; Environment Division</td>
<td>Forestry &amp; Environment Department</td>
<td>Resource consumption, resource recycling, biodiversity, and others</td>
<td>Attainment of zero emissions * Definition: No incineration of industrial waste generated by domestic manufacturing facilities, as well as no incineration or landfill for new construction sites. * Target units: Housing Division, Sumitomo Forestry Landscaping Co., Ltd. (residential landscaping), Sumirin Sash Co., Ltd., Sumikyo Co., Ltd, Sumikyo Wintec Co., Ltd., Sumitomo Forestry Crest Co., Ltd., Sumirin Agro-Products Co., Ltd.</td>
<td>89.3% Achieve zero emissions</td>
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<td>International Marketing Department</td>
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<td>Resource consumption, and biodiversity</td>
<td>Increase sustainable timber handled</td>
<td>Percentage of certified timber handled and percentage of plantation timber handled. Products 88% Products 95%</td>
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<td>Timber and Building Materials Department</td>
<td></td>
<td>Global warming, resource consumption, and resource recycling</td>
<td>Increase utilization of environmentally sound building materials</td>
<td>Volume of environmentally sound building materials handled 4,039 EcoCute units 6,000 EcoCute units</td>
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<tr>
<td>Sumitomo Forestry Crest Co., Ltd. (Kashima/ Shizuoka/ Niihama plants)</td>
<td>Resource consumption, and global warming</td>
<td>Promote use of Japanese timber</td>
<td>Volume of Japanese timber handled Log 479,000 m³ Lumber 262,000 m³ Log 1,300,000 m³ Lumber 500,000 m³</td>
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<tr>
<td>Timber &amp; Building Materials Division and Major Affiliated Companies</td>
<td></td>
<td>Resource consumption, and global warming</td>
<td>Promote use of sustainable timber</td>
<td>Green procurement rate (Compliance with Sumitomo Forestry Timber Procurement Standards) (m³ basis) 81% 100%</td>
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<tr>
<td>Unit</td>
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<td>FY2011 Results</td>
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<td>Overseas Business Division and Major Affiliated Companies</td>
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</tr>
<tr>
<td></td>
<td>Overseas Resources &amp; Manufacturing Department</td>
<td>Resource consumption, resource recycling, and biodiversity</td>
<td>Expand use of sustainable raw materials * Sustainable raw materials: plantation timber, certified timber, and waste wood</td>
<td>Percentage of sustainable timber used for wooden raw materials (\text{total for NPL, Alpine, KTI, RPI, FSW})</td>
</tr>
<tr>
<td></td>
<td>Overseas Housing &amp; Real Estate Department</td>
<td>Resource consumption, resource recycling, and living environments (others)</td>
<td>Promote environmentally friendly housing</td>
<td>Percentage of houses sold that meet certain environmental standards (\text{total for SFC Homes, Paragon, DSH, Henley}) * Certain environmental standards: North America, Australia: Standards in each country China, South Korea: Company's own standards</td>
</tr>
<tr>
<td></td>
<td>Building Materials Procurement &amp; Logistics Department Marketing Strategy Department Product Development Department</td>
<td>Global warming, resource consumption, resource recycling, and others</td>
<td>Promote and expand the use of Japanese timber</td>
<td>Percentage of Japanese timber used in all products (\text{based on the total volume of timber used})</td>
</tr>
<tr>
<td></td>
<td>Residential Property Development Department</td>
<td>Resource consumption, resource recycling, and global warming</td>
<td>Promotion of environmentally symbiotic property development</td>
<td>Percentage of housing units using next-generation energy-conservation standards (\text{Base: construction starts})</td>
</tr>
<tr>
<td></td>
<td>Sumitomo Forestry Landscaping Co., Ltd.</td>
<td>Biodiversity, and living environments (\text{residential greening})</td>
<td>Promotion of residential greening that is considerate to biodiversity</td>
<td>No. of garden vegetation species that are native to the region</td>
</tr>
<tr>
<td></td>
<td>Sumitomo Forestry Home Service Co., Ltd.</td>
<td>Resource consumption, resource recycling, and industrial waste</td>
<td>Promotion of re-use of housing</td>
<td>Number of SumStock house transactions</td>
</tr>
</tbody>
</table>
Environmental Management

Based on periodical environmental audits, Sumitomo Forestry aims to improve its risk countermeasures and the education of its employees.

Environmental Management System

- Environmental Management Structure
  
  With the goal of contributing to the creation of a sustainable society, all companies in the Sumitomo Forestry Group base their activities on Environmental Policies created by the Company. Based on this and in accordance with the relevant business activities of each division and department, a system is in place with the President at its head to progress environmentally sound business activities within the Group.

  Sumitomo Forestry Group companies create and manage environmental budgets, including affiliated companies that are outside of the scope of ISO14001 certification.
ISO14001 Certification

ISO14001-Certified Organizations

In fiscal 1995, Sumitomo Forestry adopted an environmental management system (EMS), and in fiscal 1997, its Housing Division was the first organization in Japan's housing industry to acquire ISO14001 certification. In fiscal 2002, the certification was upgraded to encompass the entire Company. Efforts were taken to extend this certification to Group companies, and by the end of fiscal 2011, three companies were included in the integrated ISO14001 certification: Sumitomo Forestry Landscaping Co., Ltd.; Sumitomo Forestry Home Service Co., Ltd.; and Sumitomo Forestry Crest Co., Ltd.

Companies that have also obtained ISO14001 certification independent of the Group-wide integrated ISO14001 certification are: Alpine MDF Industries Pty Ltd. (Alpine); Nelson Pine Industries Ltd. (NPIL) (http://www.nelsonpine.co.nz/); PT. Kutai Timber Indonesia (KTI) (http://www.kti.co.id/); PT. Rimba Partikel Indonesia (RPI); and PT. AST Indonesia (AST).
Audits by External Certification Bodies

Policy & Plans
ISO14001 certification reviews are conducted annually and renewal examinations are held every three years by external certification bodies.

Results
In fiscal 2011, the Company underwent a surveillance review. The audit indicated one minor area of irregularity and also recommended 14 proposals for improvement. This minor irregularity and proposals were studied by the relevant departments, which decided on appropriate actions to take, and internal environmental audits were conducted to determine the effectiveness of initiatives.

▶ Link in this report: "Preventing Air Pollution" (P.148)

Internal Environmental Audits

Policy & Plans
Different departments of Group companies conduct audits of each other to reliably and efficiently advance environmental conservation efforts. Employees are qualified as internal environmental auditors by passing an examination upon completion of a training course held in-house. The results of internal audits are reported to management, which prescribes improvements as needed.

Results
In fiscal 2011, 81 departments conducted internal environmental audits. The Group's internal environmental auditors evaluated initiatives, proposed improvements, and checked compliance frameworks. In the fiscal year under review, two training courses were administered to certify internal environmental auditors. As of the end of fiscal 2011, a total of 1,192 employees including 446 from Group companies have qualified as such auditors.
The main items on the Sumitomo Forestry Group’s environmental management yearly schedule

<table>
<thead>
<tr>
<th>Month</th>
<th>Environmental budget</th>
<th>ISO14001</th>
</tr>
</thead>
<tbody>
<tr>
<td>April</td>
<td>Report summarizing the results in the previous full fiscal year</td>
<td>Internal-Company notifications about the management review*</td>
</tr>
<tr>
<td>May</td>
<td>Internal-Company notifications about the management review*</td>
<td></td>
</tr>
<tr>
<td>June</td>
<td></td>
<td></td>
</tr>
<tr>
<td>July</td>
<td>Report summarizing the results in the first fiscal quarter</td>
<td>Audit by an external certification body</td>
</tr>
<tr>
<td>August</td>
<td>Internal-Company notification of the results of the external audit</td>
<td></td>
</tr>
<tr>
<td>September</td>
<td></td>
<td></td>
</tr>
<tr>
<td>October</td>
<td>Report summarizing the results in the first half of the fiscal year</td>
<td>Training course for internal environmental auditors</td>
</tr>
<tr>
<td>November</td>
<td></td>
<td></td>
</tr>
<tr>
<td>December</td>
<td></td>
<td>Arrangement of the internal environmental audit and the corrective actions</td>
</tr>
<tr>
<td>January</td>
<td>Preparing the report for the next fiscal year</td>
<td></td>
</tr>
<tr>
<td>February</td>
<td>Report summarizing the results in the third fiscal quarter</td>
<td></td>
</tr>
<tr>
<td>March</td>
<td></td>
<td>Management review</td>
</tr>
</tbody>
</table>

Note: The President confirms that the Group’s environmental management system is functioning correctly; specifically, that the organizational objectives are appropriate for the actual conditions and that the results are in-line with objectives. Then, if required, the President indicates the necessary improvements to be carried out.
Environmental Management

Based on periodical environmental audits, Sumitomo Forestry aims to improve its risk countermeasures and the education of its employees.

Promoting Environmental Management
Promoting Environmental Education and Training
Environmental Risk Management
Promoting Green Purchasing

Promoting Environmental Education and Training

Policy & Plans

The Company conducts environmental education programs to foster awareness of environmental issues among employees and to encourage them to take action of their own accord.

Results

Environmental Email Newsletter

Sumitomo Forestry sends an email newsletter on environmental topics to all employees once, sometimes twice, a month and also posts in-depth information on an intranet portal for environmental understanding. The portal encourages employees to educate themselves about the environment through a wide array of information, ranging from familiar environmental topics to expert knowledge.

Internal Training

During training for new employees joining the Company, they are given a lecture on the Group's environmental initiatives. In addition to this, they are taken on a training trip to the Besshiyama Company-owned forest in the city of Niihama, Ehime Prefecture. They are provided an opportunity to think about the environment while experiencing a regenerated forest firsthand. The Company also gives lectures on proper treatment and recycling to employees in charge of industrial waste, and provides technical environmental education, including courses to train internal ISO14001 environmental auditors.

Establishing an Education & Training Department in the Housing Division and Providing e-learning

The Company has been strengthening its system for improving employee capabilities. In April 2011, it established the Training & Education Department, which was tasked with providing practical education and training to improve the skills of employees in the Housing Division.

As part of a series of training programs, each year it runs an e-learning course for all employees that have joined the Housing Division in the last three years. The aim of the course is to reinforce the fundamental knowledge required of housing sales personnel, and content ranges from general topics to specific initiatives on the environment underway at the Company. In addition, practically every month it runs a comprehensive training course for manager-level home-sales employees. Within these courses during fiscal 2011, environmental topics were included in the training content on seven occasions; the goal is for a "trickle-down effect" to increase awareness of environmental issues from management down to personnel at the lower levels.
Efforts to Reduce Environmental Risks

**Policy & Plans**

Sumitomo Forestry identifies important environmental risks relating to its business activities, such as risks associated with industrial waste, soil contamination, and illegal logging, and develops appropriate countermeasures. In particular, the Sumitomo Forestry Group regards industrial waste from its various business activities as its most serious environmental risk, and accordingly continues to ensure proper disposal.

**Results**

In fiscal 2011, there were no significant violations of any environment-related laws or ordinances.

Proper Treatment of Industrial Waste

**Policy & Plans**

It is said that approximately 70% of illegally dumped industrial waste in Japan is construction waste. The Sumitomo Forestry Group makes sure it disposes of waste in an appropriate and responsible manner. The Company has reviewed its management systems, appointed personnel in charge of industrial waste treatment, provided training in industrial waste for those newly appointed to this position, and carried out voluntary compliance audits concerning industrial waste at each company as well as comprehensive site inspections of intermediate treatment plants at third parties on a regular basis.

**Results**

**Electronic Manifest System Monitors Conditions at Industrial Waste Processors**

All of the waste treatment contractors working with the Housing Division's branches and new housing construction sites have adopted electronic manifest systems (JWNET). During fiscal 2011, 99.9% of all manifests, including those for housing demolition waste, were electronic.

**Acquisition of Permits as Industrial Waste Processors**

Group companies Sumirin Agro-Products Co., Ltd's Asuka Plant and the Sakura Plant and Japan Bio Energy Co., Ltd obtained permits to operate as intermediary industrial waste disposal companies, and started operations. Related laws and regulations state that companies have a responsibility to circulate manifests and store records after intermediary processing even if secondary treatment and residual landfill disposal does not occur. The Sumitomo Forestry Group appropriately processes industrial wastes which are generated from its own manufacturing activities, and industrial wastes from consignment waste treatment services to other companies.
Going forward, soil testing will continue and use of the purification cake will remain suspended until the samples have returned to safe levels.

Future Plans

The Sumitomo Forestry Group will continue to ensure proper disposal of industrial waste by carrying out independent audits of industrial waste processing and management at the division and Company levels and by inspecting disposal sites. In addition, it will continue with the gradual shift to the e-manifest ‘JWNET,’ including at divisions other than the Housing Division and also at Group companies.

Stakeholder Comment

- The descriptions of environmental risk and the measures to address this risk were easy to understand. (Employee)

Preventing the Use of Illegally Logged Timber

Policy & Plans

Sumitomo Forestry performs checks of all overseas suppliers of logs, timber, and wood products to confirm legal compliance and to ensure that the Group does not handle any illegally logged timber. To improve reliability, the Group sends local Sumitomo Forestry representatives and inspectors to visit logging sites and confirm compliance when necessary.
**Results**

**All Wood Suppliers Passed Legal Checks**

Surveys conducted over the three years from fiscal 2006 to fiscal 2009 show the Company achieved 100% compliance for all timber directly imported from overseas suppliers. In fiscal 2011, in accordance with the Action Plan, which is based on Timber Procurement Philosophy and Policy, the Sumitomo Forestry Group is continuing to confirming legal compliance, including for new suppliers, in order to maintain 100% compliance for all directly imported timber and wood products. From fiscal 2012, the Company conducts a CSR survey at all of its overseas business partners, which will encompass such topics as human rights and labor practices. In addition, from fiscal 2012 and based on requests from its client paper manufacturing companies, it has independently launched an initiative to confirm the legality of the wood chips that it handles within Japan. These wood chips include in their raw materials industrial waste other than Japanese timber and also imported timber.

- Link in this report: “Action Plan for Timber Procurement” (P.20)

**Countermeasures against Soil Contamination**

**Policy & Plans**

Soil contamination is difficult to discover because unseen contaminants can build up in places underground over a wide area. Since there is the potential risk of soil contamination in various places at businesses that buy and sell land, rent and lease land, and handle chemical substances, the Sumitomo Forestry Group has standardized procedures for inspecting soil contamination prior to the purchase of new land in the spec home business, in addition to soil contamination countermeasures for land owned and managed by the Company.

**Results**

**Management of Guidebook on Soil Contamination Risk Countermeasures**

In April 2010, the Revised Soil Contamination Countermeasures Act was enacted, increasing the frequency of inspections and notifications for soil contamination. A more diverse range of soil contamination problems are likely to be discovered as a result. In response, Sumitomo Forestry created the Guidebook on Soil Contamination Risk Countermeasures in fiscal 2010 as a basic tool for countering the risk of soil contamination and then released a revised version in April 2011. Using this revised guidebook as a baseline reference, the Sumitomo Forestry Group will take specific and effective action to address the risk of soil contamination, with any actions actually carried out being guided by the advice of designated investigative organizations and government agencies with expert knowledge.

**Voluntary Soil Cleanup at Sumitomo Forestry Crest Co., Ltd's Kashima Plant**

In fiscal 2008, Sumitomo Forestry Crest Co., Ltd's Kashima Plant conducted a soil contamination survey on its grounds as a voluntary initiative. As a result, the groundwater was found to slightly exceed the standards set for volatile organic compound (VOC) contamination. The plant cleaned up the soil in fiscal 2009. Subsequent analysis of water samples in November 2011 found no values exceeding the relevant standard and to be below the measurement threshold.
Countermeasures against Water Pollution

Policy & Plans

At facilities designated under the stipulations of the Water Pollution Control Law, the Company conducts regular water quality surveys of discharged water, and strictly manages quality in accordance with baseline values.

Results

The Water Pollution Control Law was revised in May 2010, establishing fines for improper recordkeeping of pollution measurements for discharged water, and others. It also obligates companies to take measures necessary to prevent water pollution caused by sewage and effluent. The Sumitomo Forestry Group has thoroughly complied with this revised law and taken measures to address water pollution.

Link in this report: “Effluent Water Quality Survey Results (P.223)"

Appropriately Managing and Reducing the Use of Hazardous Chemical Materials

Sumitomo Forestry Group endeavors to identify, appropriately manage, and reduce the amount of hazardous chemical materials used and emitted in its business operations. In November 2008, the Pollutant Release and Transfer Register (PRTR) Act was revised, including the target substances that must be identified by the emitted or transported amount beginning in fiscal 2010. The Sumitomo Forestry Group reports to the authorities in compliance with the revised law.

Internal Link: “Management of Hazardous Materials” (P.221)

Preventing Air Pollution

Policy & Plans

At facilities equipped with boilers, which are compliant with the Air Pollution Control Law, emissions and concentrations of NOx, SOx, and soot and dust are regularly measured to ensure that strict compliance with concentration standards is maintained.

The revised Air Pollution Control Act of May 2010 established a system of fines for violations to the legal requirement of recording and reporting of measurements of pollution levels, such as the volume of smoke and soot emitted. In addition, the revised law prescribed the legal requirements of those responsible for “Implementing the measures required to control emissions of smoke and soot.” The Sumitomo Forestry Group is working to ensure compliance with the revised law and is implementing measures to prevent air pollution.

Results

The ISO14001 surveillance review conducted by an external certification body in fiscal 2011 indicated one slight area of irregularity, which was at the Sumitomo Forestry Crest’s Niihama Plant. A vent had become blocked, which resulted in dust concentrations in a waste wood boiler exceeding the legally designated level. Despite this being recorded and reported, there was a delay in reporting it to the supervising department. The Company examined the measures implemented in response to the review’s indication and confirmed whether or not their implementation was appropriate.
### Future Plans

The review conducted by an external certification body in fiscal 2011 indicated one slight area of irregularity at the Sumitomo Forestry Crest’s Niihama Plant. In response, the plant immediately reported on this irregularity in accordance with the prescribed reporting route, conducted an inspection and took measurements to determine the optimum combustion conditions to minimize the generation of smoke, and is currently preparing an operations manual, which up to the present time has not been completed. In addition, during fiscal 2012 it completed work to repair the blocked boiler vent and intends to re-measure dust concentrations in the near future.

- Link in this report: “Amount of Air Pollutant Emitted (P.223)
- Link in this report: “Audits by External Certification Bodies” (P.142)

### Reducing Inconvenience to Local Residents

#### Policy & Plans

The Company makes efforts to prevent noise and vibrations during construction of houses to reduce inconvenience to nearby residents.

#### Results

**Development of Masking Method for Improved Sound Insulation**

Sumitomo Forestry Home Tech Co., Ltd. has developed a method that suppresses noise generated during renovation projects. Noise levels are reduced with the use of a soundproof and insulating masking sheet made of layers of special noise-masking felt and a special coating film. This new method provides customers with a higher level of comfort when living at home during a renovation.

Promoting Green Purchasing

Policy & Plans

Sumitomo Forestry promotes its offices to conduct green purchasing—the priority purchasing of products that have a low environmental impact. Office Product and Company Vehicle Purchasing Guidelines were established in 2006, laying down a clear set of standards for progressing with green purchasing. High fuel-efficiency vehicles have been selected based on Group standards to be the standard model vehicles leased and operated by Group companies, and the changeover to these vehicles is progressing gradually. The re-evaluation of these standard model vehicles will be conducted at least once a year from the perspective of both cost and environmental considerations.

Results

Company-Owned Vehicle Initiatives

The share of standard models among new vehicles leased was 87.8% in fiscal 2011, making the share of high fuel-efficiency vehicles among the Group’s total vehicles leased, including existing vehicles, 62.7% as of March 2012, an improvement over the previous fiscal year. In March 2012, a re-evaluation of the standard model vehicles was conducted, as set forth in the guidelines. Following this re-evaluation, in addition to hybrid vehicles on its list of models to be used as fleet cars, it included a highly fuel efficient gasoline powered vehicle, which is now called the third Eco Car, to its list.

Moreover, The Group is switching over to Dunlop ENASAVE EC202 high fuel-efficient tires for its Group-owned vehicles (all passenger vehicles except freight vehicles).

Office Supplies Procurement Initiatives

The Group’s green purchasing ratio in fiscal 2011 was 71.8%, an improvement on the 69.8% in fiscal 2010.
Balance of Input and Output
Sumitomo Forestry calculates the balance of input and output of resources and energy in each business to develop effective means of reducing the emissions and waste.

Environmental Impact of Business Activities

Environmental Report > Balance of Input and Output

1 Gigajoules

Sumitomo Forestry “CSR Report 2012”
Environmental Impact from the Construction of a New House

INPUT

<table>
<thead>
<tr>
<th>Energy</th>
<th>25,192 MJ$^1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity</td>
<td>282.1 kWh</td>
</tr>
<tr>
<td>Gasoline</td>
<td>415.6 L</td>
</tr>
<tr>
<td>Light oil</td>
<td>213.7 L</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Raw materials</th>
<th>76.13 t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timber</td>
<td>15.07 t</td>
</tr>
<tr>
<td>Metal</td>
<td>2.49 t</td>
</tr>
<tr>
<td>Plastic</td>
<td>1.08 t</td>
</tr>
<tr>
<td>Paper/fiber</td>
<td>0.18 t</td>
</tr>
<tr>
<td>Concrete</td>
<td>44.75 t</td>
</tr>
<tr>
<td>Glass/ceramic</td>
<td>12.27 t</td>
</tr>
</tbody>
</table>

OUTPUT

| CO$_2$ | 1,631 kg-CO$_2$ |

<table>
<thead>
<tr>
<th>Waste from new housing construction</th>
<th>4.79 t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plastic</td>
<td>0.48 t</td>
</tr>
<tr>
<td>Paper</td>
<td>0.61 t</td>
</tr>
<tr>
<td>Wood</td>
<td>0.99 t</td>
</tr>
<tr>
<td>Metal</td>
<td>0.10 t</td>
</tr>
<tr>
<td>Glass/ceramic</td>
<td>0.72 t</td>
</tr>
<tr>
<td>Rubble</td>
<td>0.78 t</td>
</tr>
<tr>
<td>Gypsum board</td>
<td>0.07 t</td>
</tr>
<tr>
<td>Composite waste (inert)</td>
<td>0.01 t</td>
</tr>
<tr>
<td>Composite waste (controlled)</td>
<td>0.26 t</td>
</tr>
<tr>
<td>Sludge</td>
<td>0.01 t</td>
</tr>
</tbody>
</table>

$^1$ Megajoules

Stakeholder Comment

- All the data on environmental impacts is on a single year basis, so it is impossible to know how it compares to the previous year. (Customer)
The Sumitomo Forestry Group has been carrying out life cycle assessments (LCA) since fiscal 2006 to identify the environmental impact of all of its business activities. LCA is a method of comprehensively evaluating the environmental impacts of a product throughout its life cycle, including raw material procurement, manufacture, transportation, sale, use, re-use and disposal, and is carried out with the cooperation of Tokyo University of Agriculture and Technology.

### Results

**Launch of Display of Carbon Footprint of Products**

PT. Rimba Partikel Indonesia (RPI) conducts LCA surveys for the particle board (PB) it manufactures and sells, from production and transportation of the raw materials through to manufacturing of the product. Based on the results of these surveys, in October 2009, RPI began voluntarily displaying carbon footprint of products on its PB. This marks the first time that an Indonesian company has labeled timber products, and in both 2010 and 2011, 90% of products were labeled. RPI’s products make effective use of resources, using wood leftover from logging, wood waste, and timber from Company-owned plantations. Further, RPI’s products are manufactured using low carbon emission methods, including the use of electricity from a wood biomass power generation facility.

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1. Greenhouse gases emitted during the entire life cycle of the product and service, from procurement of raw materials to disposal and recycling are converted to CO₂ to present the data in a more understandable manner.
Comparison of Carbon Footprints of Products Before and After Installation of Wood Biomass Power Generation Facility (PB Manufactured by RPI)

Inventory Analysis\(^4\) of Housing Materials

In fiscal 2007, Sumitomo Forestry carried out an inventory analysis of structural plywood, staircases and countertops to raise the accuracy of LCA for a single house (single product.) The analysis demonstrated that structural plywood made from Japanese timber emitted less CO\(_2\) from procurement, transportation and processing than imported timber. In fiscal 2011, it began inventory inspections for when wood was used to produce sashes, siding, and heat insulating materials.

Creation of LCA Database Related to Harvesting & Transportation of Logs

A body of inventory data showing the average environmental impact of Japanese logs has now been accumulated. Utilizing this data and with the goal of acquiring fundamental knowledge on methods to reduce the environmental impact of Japanese logs, in fiscal 2011 Sumitomo Forestry collaborated with the Dr. Hattori’s Laboratory in the Graduate School of the Tokyo University of Agriculture and Technology to conduct an inventory analysis of the production of Japanese logs.

Environmental Impact Assessment of Japanese Timber – A Case Study of the Production of Resources

1. Background

Timber has been established to be a highly environmentally sound material. Processing timber requires the consumption of a smaller amount of energy than its alternatives, it is a renewable resource, and the carbon dioxide that is emitted when it is incinerated is considered to be carbon neutral.\(^1\) However, there is only a limited number of inventory analyses of timber compared to its alternatives, and there is a lack of reliable and established data. Therefore, it is difficult to find detailed assessments that compare it to other materials. When conducting an analysis of timber, it is vital to have inventory data on logs, but the situation in Japan is that there are only a small number of research examples that can be used.

\(^2\) For the purpose of this comparison, density=0.68g/cm\(^3\) is converted into ton to equalize the base units.

\(^3\) Source: Abstracts of papers presented at The 2nd Meeting of The Institute of Life Cycle Assessment, Japan (March 2007).

\(^4\) Analysis of the input (energy, materials, etc.) and output (gas emissions, waste, etc.) of a product over its life cycle, from manufacture to disposal.
2. Survey outline

2.1 Target of survey

The survey was conducted in three districts: the Monbetsu District, Hokkaido; the Niihama District, Ehime Prefecture; and the Hyuga District, Miyazaki Prefecture. It was conducted in 20 locations over an area of 359 hectares, as outlined in Table 1.

2.2 System boundaries

Diagram 1 shows the scope of the boundaries in the survey system.

<table>
<thead>
<tr>
<th>Area</th>
<th>Number of survey items</th>
<th>Area of forest surveyed (hectares)</th>
<th>Survey period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monbetsu</td>
<td>8</td>
<td>193.5</td>
<td>Oct 2006~Feb 2007</td>
</tr>
<tr>
<td>Niihama</td>
<td>5</td>
<td>98.7</td>
<td>May 2003~Dec 2004</td>
</tr>
<tr>
<td>Hyuga</td>
<td>7</td>
<td>66.8</td>
<td>Oct 2007~Jan 2009</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>359.0</td>
<td>May 2003~Jan 2009</td>
</tr>
</tbody>
</table>

At Monbetsu, thinning was carried out at all locations, mainly on Larch trees. At Niihama, selected thinning on tree groups was carried out at one location and thinning at four locations. At Hyuga, thinning was carried out at three locations and clearing at four locations.

2.3 Survey method

The base unit in the inventory analysis was set as 1m³ of logs.

- Foreground data: data was collected at work sites via a questionnaire for recording volumes consumed, including the volume of light diesel oil.
- Background data: the IDEA inventory database, which is installed with the MiLCA³ LCA support system, was used.
- Impact assessment method: the Japanese version of the Life-Cycle Impact Assessment Method Ver.2 (LIME2) was used.

3. Results (summary)

1) The majority of emissions generated in the production process of Japanese timber are created during harvesting operations.
2) The volume of CO₂ emissions during harvesting operations may differ due to the effects of the 'work system,' 'the harvest material per area where harvest operations are conducted,' and 'the party conducting the operations.'
3) It was calculated that 1m² of Japanese logs generates 10.1kg of CO₂ emissions.
4) It was calculated that the cost to society to produce 1m² of Japanese logs is in the range of 41 yen to 57 yen.
The data suggests that a work system using high performance forestry machinery generates more CO₂ emissions in the production of Japanese logs than a work system that uses conventional forestry machinery. As a result, in order to reduce the volume of CO₂ emissions generated during harvesting operations, it is important to improve the efficiency of the use of high performance forestry machinery and to limit their fuel consumption.

Notes / Literature
1 Dr. Akira Hattori (2005): The Institute of Life Cycle Assessment (LCA) Japan academic journal, 1 (1) , 34-35
2 A forestry method that avoids rapid changes to the environment by harvesting only a small amount of trees in each harvest.
3 Japan Environmental Management Association for Industry: LCA support system “MiLCA”
4 The hidden monetary impact that a product has on society during its life, resulting from its environmental impact.
Contribution to Expanding Carbon Stocks

Policy & Plans

As trees grow, they absorb CO₂ from the atmosphere and sequester it as carbon (carbon stock). Trees continue to store carbon, even after being harvested and processed into products and CO₂ is only released when the wooden materials are eventually incinerated. When mature trees are harvested and used as building materials, the carbon sequestered in the trees is stored for a long period of time. This is the reason behind that building wooden houses almost means creating forests in the city.

The Sumitomo Forestry Group promotes the use of timber from sustainably managed forests in the construction of its high-quality, long-lasting wood houses and for the wooden building materials it uses. The Group also encourages the active use of timber. MOCCA (wood use integration) operations¹ aim to expand the applications of timber and promote its wider use, which in turn increases timber-based carbon stocks and helps to curb global warming.

Results

Carbon Stock of the Timber in Company-Owned Forests in Japan
In fiscal 2012, the carbon stocks of Company-owned forests in Japan was equivalent to about 10.74 million tons of CO₂.

> Link in this report: “Conservation and Sustainable Use of Timber Resources” (P.189)

Carbon Stock of the Timber Used in Housing Construction
In fiscal 2011, the carbon stocks of the Sumitomo Forestry Group’s timber used for housing construction was equivalent to about 203,000 tons of CO₂. (for 9,007 houses) roughly the amount of CO₂ emitted by approximately 40,000 households over one year.

Increasing the carbon stock through promoting the use of wood
Against the backdrop of the enactment in October 2010 of the Act for Promotion of Use of Wood in Public Buildings, the applications for timber, particularly Japanese timber, are expected to increase in the future. With this situation in mind, in April 2011 the Company established the MOCCA (Wood Use Integration) Department. Centered on the activities of this department, the Sumitomo Forestry Group is working to promote the use of wood and thereby increase the carbon stock from timber and contribute to efforts to combat global warming.

¹ The collective term for all businesses within the Group that aim to expand the use of timber through promoting wooden construction and the use of timber.
Climate Change and Sumitomo Forestry’s Role

Policy & Plans

Climate change resulting from global warming is a serious environmental problem facing the planet. The 17th Conference of the Parties (COP17) to the United Nations Framework Convention on Climate Change adopted the Durban Agreement, with the goal of holding down the increase in global average temperature below 2 °C or 1.5 °C above pre-industrial levels. Japan announced that it would not take part in the Kyoto Protocol's second commitment period, but it seems to be inevitable that it will have to review its position following its international commitment to meet the target established at the 2009 Summit Conference of the Leading Industrialized Nations, of reducing total greenhouse gases by 25% compared to 1990 by 2020.

Given that the household sector accounts for about 14.4%1 of Japan's total CO2 emissions, as a housing provider the Sumitomo Forestry Group has a major role to play in reducing CO2 emissions that result from home living. It will make a positive contribution to the prevention of global warming by reducing CO2 emissions from its business activities while facilitating absorption or storage of CO2 through proper forest management and the promotion of Group operations that encourage greater use of timber resources through the structural application and incorporation of wood.

1 From data on Japan’s emissions of greenhouse gases from Greenhouse Gas Inventory Office Refer to the fiscal 2010 share of CO2 emissions according to category (indirect emissions)

Stakeholder Comment

- The initiatives being conducted by Sumitomo Forestry for the risks anticipated from climate change are concrete and left a good impression on me. (Student)
Impact of Climate Change on the Business

Risks Presented by Climate Change

- Among those countries in which the Sumitomo Forestry Group has business sites, Japan, Australia and New Zealand are bound by the terms of the Kyoto Protocol, which established greenhouse gas reduction targets to be achieved by fiscal 2012. As a result, there is a risk that the regulations and tax systems could be tightened in these countries.

- In July 2012, Australia introduced a carbon pricing system (carbon-emissions tax) and plans to move to an emissions trading system in 2015. China and Indonesia are also both currently investigating introducing the same system, which is expected to have an effect on the activities of companies with business sites in these countries.

- Given that Sumitomo Forestry uses wood as a natural raw material, the depletion of timber resources or changes in forestland resulting from climate change could impact on the procurement of raw materials. In addition, the growth of Company-owned forests could be affected by strong wind and heavy rain damage or changes in ecosystems resulting from climate change.

- As demands to disclose greenhouse gas countermeasures further increase, it may become necessary to gather wide-ranging information along the whole supply chain, beyond the scope that is identifiable within the Company, in order to address these demands.

- At sites in New Zealand and elsewhere where hydroelectric power generation is used, there is the risk that energy supply could be disrupted by climatic factors and the level of precipitation.

Opportunities Presented by Climate Change

- Using the Kyoto Mechanisms established by the Kyoto Protocol, there is an opportunity to create credits through CDM projects.
  - Link in this report: “CDM Business Using Wood Biomass Power Generation” (P.232)

- In housing construction, Sumitomo Forestry aims to differentiate itself from its competitors through full compliance with energy conservation standards at the high level, and also by supplying Life Cycle Carbon Minus (LCCM) houses and other products with outstanding performance and equipment to generate and store energy.
  - Link in this report: “Developing of Life Cycle Carbon Minus (LCCM) Homes” (P.171)

- Climate change generates opportunities such as promoting forest growth and developing untapped resources, and the Company believes this leads to new business opportunities, including discovering new suppliers.

Stakeholder Comment

- Recently we have witnessed many examples of abnormal weather, so I think our ability to respond to such events is going to be tested. (Customer)
Tackling Climate Change

The Sumitomo Forestry Group is working to reduce CO2 emissions through its business activities at offices and plants as a countermeasure to climate change.

**FY2011 CO2 Emission Results**

Sumitomo Forestry Group: FY2011 CO2 Emission Volume

- **From offices**: 42,000 t-CO2
- **From Subsidiaries in manufacturing businesses outside Japan**: 112,000 t-CO2
- **From Subsidiaries in manufacturing businesses in Japan**: 8,000 t-CO2
- **Indirect CO2 emissions**: 36,000 t-CO2

Total emissions: 199,000 t-CO2

**Trend in Direct Emissions** (t-CO2)

- 200,000
- 150,000
- 100,000
- 50,000
- 0

<table>
<thead>
<tr>
<th>Year</th>
<th>Offices</th>
<th>Plants in Japan</th>
<th>Plants outside Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>167,259</td>
<td>109,665</td>
<td>16,924</td>
</tr>
<tr>
<td>2007</td>
<td>163,519</td>
<td>106,928</td>
<td>15,939</td>
</tr>
<tr>
<td>2008</td>
<td>169,325</td>
<td>112,629</td>
<td>16,941</td>
</tr>
<tr>
<td>2009</td>
<td>159,213</td>
<td>103,568</td>
<td>14,560</td>
</tr>
<tr>
<td>2010</td>
<td>172,340</td>
<td>117,907</td>
<td>13,656</td>
</tr>
<tr>
<td>2011 (FY)</td>
<td>162,664</td>
<td>112,382</td>
<td>8,033</td>
</tr>
</tbody>
</table>

**Note:** CO2 emission volumes are for the entire Group in each fiscal year.

**Note:** Sumitomo Forestry offsets its CO2 emissions from offices, which were 1,590 tons in FY2010 and 2,542 tons in FY2011, by utilizing the forest-absorption credits issued under the J-VER System.
Tackling Climate Change
The Sumitomo Forestry Group is working to reduce CO₂ emissions through its business activities at offices and plants as a countermeasure to climate change.

Policy & Business Impact | FY2011 CO₂ Emission Results | Reducing CO₂ Emissions in Business Activities | Reducing Energy Consumption in Homes

Sumitomo Forestry Group CO₂ Emission Volume Reduction Targets

Policy & Plans
In December 2009, the Sumitomo Forestry Group updated its CO₂ emissions reduction targets and implemented initiatives to meet these new targets. From April 2011, in addition to setting units for each plant, the Company newly established a "per sales unit" for targets so that it could manage the progress toward achieving CO₂ emissions targets at all Subsidiaries in manufacturing businesses in Japan in an integrated manner.

Medium-Term Environmental Management Plan: CO₂ Total Emission Volume Reduction Targets

| Offices | By FY2010, achieve a 12% reduction in overall emissions compared with FY2006, and maintain this level to 2014 |
| Subsidiaries in manufacturing businesses in Japan | By FY2014, achieve an 8% reduction in the per sales unit compared with FY2006 |
| Each plant independently sets the base units for targets. In addition, as a method of collectively managing progress toward achieving targets, the plants also use the rate of reduction of total CO₂ emissions from the base year of FY2006. |
| Subsidiaries in manufacturing businesses outside of Japan | Set targets for each plant in consideration of local laws and regulations, including overall emissions, emissions per unit sold, and / or other targets as appropriate to each plant |

Results

Offices

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<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Emissions at offices (t-CO₂)</td>
<td>36,403</td>
<td>36,857 (+1.2%)</td>
<td>34,841 (-4.3%)</td>
<td>33,403 (-8.2%)</td>
<td>34,052 (-6.5%)</td>
<td>32,558 (-10.6%)</td>
</tr>
</tbody>
</table>

Note: Figures in brackets indicate the percentage change compared with FY2006
Note: The figures are aligned with the organization in the base year (FY2006) in order to manage progress toward targets
Following the earthquake in fiscal 2011, Group companies within Japan initiated a range of power saving measures, and as a result they were able to significantly reduce the amount of electricity and thereby cut their CO₂ emissions. However, as the Group was unable to make similar progress with initiatives to reduce its usage of gasoline, the overall reduction was 10.6%, which was below the target.

### Subsidiaries in manufacturing businesses in Japan

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</tr>
</thead>
<tbody>
<tr>
<td>Subsidiaries in manufacturing businesses in Japan, per sales unit (tons of CO₂ / mil. yen)</td>
<td>188.8</td>
<td>210.9</td>
<td>221.1</td>
<td>231.6</td>
<td>234.1</td>
<td>217.4</td>
</tr>
</tbody>
</table>

Note: Figures in brackets indicate the percentage change compared with FY2006

Although there are differences between individual plants, Sumitomo Forestry Crest Co., Ltd. reduced its total CO₂ emissions year-on-year through initiatives to reduce the maximum instantaneous consumption of electricity at sites including its Kashima Plant. At the same time, it also improved its base unit performance from the previous year. However, its overall result fell well below the target as compared to the base year, due to an increase in its production line compared to the base year, and also because some of the Komatsujima Plant’s machinery was transferred to the Kyushu Plant following the sale of the Komatsujima Plant.

### Subsidiaries in manufacturing businesses outside Japan

- CO₂ emissions at PT. Kutai Timber Industries (KTI) and Fuxin Sumirin Wood Products Co., Ltd. increased along with an improvement in their productivity. However, the overall total decreased due to a decline in productivity at Alpine MDF Industries Pty Ltd. (Alpine).

  The biomass power generation system introduced at PT. Rimba Partikel Indonesia (RPI) to reduce CO₂ emissions is operating roughly as hoped, and the company reduced its emissions year-on-year. At overseas plants, targets are set on a per-plant basis according to the conditions in each country and each is carrying out initiatives to reduce emissions according to base units. As a result, in companies such as Alpine, RPI, and PT. Sinar Rimba Pasifik (SRP), improvements can be seen based on the units that they have independently established.

CO₂ emissions data and base unit emission results for each plant inside and outside Japan are shown in the Environmental Data.

- Link in this report: “Environmental Data” (P.239)

### Future Plans

The Group is continuing to implement initiatives toward achieving the CO₂ emissions targets established in the Medium Term Environmental Management Plan. In addition to thoroughly implementing power saving measures, its offices are working to reduce emissions by measures to further cut their use of gasoline and other fossil fuels.
I want Sumitomo Forestry to keep developing initiatives worldwide. I believe that these initiatives will definitely have a positive impact on people in different countries. (Management consultant)

Reducing CO₂ Emissions from Offices

Policy & Plans

In order to reduce the CO₂ generated by offices, the Sumitomo Forestry Group sets common targets across all Group companies and continues to advance its efforts.

Results

Initiatives to Reduce Gasoline Consumption

The Sumitomo Forestry Group in Japan promotes ‘eco-driving’ among its employees, encouraging them to participate in external training courses such as the Eco Training course run by the Japan Automobile Federation (JAF). Since fiscal 2009, 16 employees have taken part in this course. In addition, an initiative is being implemented to reduce gasoline usage, whereby employees using fleet cars record and identify how much gasoline they use each day in order to drive more efficiently.

Use of Fuel-Efficient Tires on Company-Owned Vehicles

Since fiscal 2009, the Company has promoted switching to the Dunlop fuel-efficient tire ENASAVE EC202 on Company-owned vehicles used by Group companies in Japan (all passenger vehicles except freight vehicles). This is equivalent to an annual reduction of approximately 61,200 liters of gasoline and 143 tons of CO₂ across all vehicles.

Switch to Fuel-Efficient Company-Owned Vehicles

In order to reduce gasoline consumption, the Company is switching to fuel-efficient vehicles selected based on Group standards. In fiscal 2011, 87.8% of upgraded Company-owned vehicles were fuel-efficient vehicles.

Adding the “3rd Eco Car” as the Standard Model for Company-Owned Vehicles

In March 2012, the Company released its revised Office Product and Company Vehicle Purchasing Guidelines, which added the 3rd Eco Car, which is a highly fuel efficient gasoline powered vehicle, as the Group’s standard model to the list of vehicles to be used by the Company, in addition to hybrid vehicles.

Implementing the Perfect No Overtime Day

The Company implemented the Perfect No Overtime Day in June during the Environment Month and in November during Family Week. On these days after a specific time, all lighting was turned off.

Future Plans

The Company will work to further reduce its CO₂ emissions by continuing to replace conventional vehicles in its fleet with highly fuel efficient vehicles (its standard model).

Link in this report: “Promoting Green Purchasing” (P.150)
Implementing Power Saving Measures in Response to the Great East Japan Earthquake

Policy & Plans

The Sumitomo Forestry Group has been pushing ahead with a range of power saving initiatives not only in response to the electricity shortages that followed the Great East Japan Earthquake, but also from the perspective of reducing CO₂ emissions.

Results

Responding to the Government Order Limiting the Use of Electricity

In July 2011, the government issued an order that obliged large-scale users of electricity within the areas of the Tokyo Electric Power Co., Inc. or Tohoku Electric Power Co., Inc. to reduce their electricity consumption by 15% compared to its maximum power usage in fiscal 2010. This applied to the Tsukuba Research Institute and Sumitomo Forestry Crest Co. Ltd’s Kashima Plant, and through measures that included monitoring of peak usage of electric power through a peak demand controller, shifting the time when the equipments that used the most electric power were used, and rotating operations on production lines, they succeeded in reducing electricity usage by more than 15% compared to the peak usage on weekdays.

Implementing Power Saving Measures throughout the Country

Responding to the power shortages that followed the Great East Japan Earthquake, from July to September the Company implemented power saving measures at all its sites throughout the country, except for those in the disaster region, with the goal of reducing power consumption by at least 15% compared to the level in fiscal 2010. Specifically, this involved strict management of lighting and air conditioning in work places to ensure they were turned off when the area was not in use, controls of lighting and air-conditioner temperatures, and measures to ensure that all employees were aware of the importance of saving power. Toward this, the weekly email magazine included one or two methods of saving power, while a review of work styles was also conducted, including adjusting working days and working times. Thanks to these efforts, during the 2011 summer period (June to September) the Sumitomo Forestry Group was able to reduce the amount of energy it used in the area under the jurisdiction of the Tokyo Electric Power Co., Inc. and Tohoku Electric Power Co., Inc. by 24.3% compared to fiscal 2010 and by 6.3% in other areas. These savings were equivalent to 1,706 tons of CO₂ emissions, and moreover the Company decided to continue to implement these power saving measures after the summer of 2011.

Energy Conservation in Model Homes and Showrooms throughout Japan

In response to the electricity shortages that followed the Great East Japan Earthquake, Sumitomo Forestry has been turning off advertising boards and other types of external lighting at model homes, tenant offices, and Company offices (roadside branches), and has also introduced green curtains and solar power systems at some locations.

In addition, in fiscal 2008 it launched a project to switch to environmentally sound lighting at its model homes and showrooms throughout Japan; this has now been completed for the showrooms and is being carried out sequentially at model homes. Since fiscal 2009, the Company has maintained its policy of turning off lighting during weekdays at these locations when there are no customers present.
Future Plans

At the present time, it is anticipated that electricity demand-supply conditions will continue to be tight in the near future. Based on this situation, in order to reduce the maximum instantaneous consumption of electricity, from July 1 to September 30 in the summer of 2012, the Sumitomo Forestry Group will implement power saving measures at offices and business sites at all Group companies. The goal is to keep electricity usage to the lowest possible level and achieve at least a nationwide 15% reduction in electricity consumption compared to fiscal 2010. Specifically, this will entail continuing the initiatives launched in the summer of 2011, such as ensuring that the lighting and air conditioning is always turned off within business sites when an area is not being used, adjusting workdays and times, and far-reaching reductions in the use of electrical equipment that had a lower rate of reduction in the previous fiscal year. Improvements will also be implemented at those Group organizations and business sites that have not achieved sufficient power saving results up to the present time.

Sumitomo Forestry Crest Co., Ltd., which is among the group of companies designated a large-scale electricity user, will continue measures at its business sites to reduce electricity consumption, with a particular focus on the reduction of the maximum instantaneous consumption of electricity during the summer.

Stakeholder Comment

- Even though something might seem small, making many small steps can have a big impact. Many households are saving money and energy, and I think this will soon be the norm for offices too.
  (Customer)

Reducing CO₂ Emissions at Plants

Policy & Plans

PT. Rimba Partikel Indonesia (RPI) is reducing its CO₂ emissions through its initiative to generate power through wood biomass. Also, PT. Kutai Timber Indonesia’s (KTI) particle board plant has cut its CO₂ emissions by switching fuel, from light diesel oil to natural gas.

Results

Initiatives in New Zealand

Nelson Pine Industries Ltd. (NPIL) won the Award for Excellence in two out of the total nine categories at the EECA Awards 2012¹, held in May 2012. It was highly evaluated for its achievement in reducing the amount of wood for fuel and electricity it used through the introduction of two reforms; the improvement of the combustion efficiency of MDF² combustion furnaces, and the reduction of wood for fuel as well as the consumption of electricity by installing a motor system that can save power. These technologies were introduced in April 2010 and they have helped to achieve a reduction in CO₂ emissions of approximately 19% compared to the level prior to their introduction. In addition, in comparison to the cost of installing these technologies of approximately 45 million yen, they save the company about 78 million yen each year in reduced energy costs. Moreover, the judges highly praised these projects for the contributions they make to the environment. NPIL is located on the South Island, New Zealand, which relies almost entirely on hydro-electric plants for its power supply. Therefore, it is prone to power shortages during the winter, when rainfall levels are low but demand is high due to the cold temperatures. By reducing the amount of power that it consumes, NPIL is helping to reduce the burden on the regional energy supply.
RPI is using wood biomass to create power and replace its conventional diesel power generation system. It is reducing its CO₂ emissions by using the waste timber and sawdust created by sawmills in the vicinity of its plant as the primary fuel in this system. The United Nations’ CDM Executive Board registered this initiative as a Clean Development Mechanism (CDM) project in May 2008. In March 2011, it was issued credits (CER) for its reduction of 10,982 tons of CO₂ emissions during fiscal 2009, which was its total calculated according to CDM rules.

RPI’s CO₂ emissions in fiscal 2011 were 8,125 tons, which is a 48% reduction compared to before it launched its wood biomass generation project in 2006.

RPI CO₂ Emissions

<table>
<thead>
<tr>
<th>Year</th>
<th>CO₂ Emissions (t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>15,673</td>
</tr>
<tr>
<td>2007</td>
<td>14,892</td>
</tr>
<tr>
<td>2008</td>
<td>8,526</td>
</tr>
<tr>
<td>2009</td>
<td>4,860</td>
</tr>
<tr>
<td>2010</td>
<td>8,642</td>
</tr>
<tr>
<td>2011</td>
<td>8,125</td>
</tr>
</tbody>
</table>

I think it will be necessary to remain environmentally aware in the production process, long into the future. (Student)
Reducing CO₂ Emissions from Transportation

Policy

The Sumitomo Forestry Group is implementing measures to reduce CO₂ emissions generated by the transportation vehicles it uses to carry out its business activities. The revised Energy Saving Law requires that companies "reduce by more than 1% the average annual energy consumption basic unit in the medium-to-long term," that they generate from the transportation of goods. Sumitomo Forestry and Sumitomo Forestry Crest Co., Ltd. are required to submit a report on this to the Japanese Government as a "Specified Shipper (that transports freight of more than 30 million ton-kilometers¹ a year)".

¹ Amount of freight transported (ton-kilometer) = amount of freight (ton) × distance transported (kilometer)

Results

Results for Fiscal 2011 in Response to the Revised Energy Saving Law

Sumitomo Forestry and Sumitomo Forestry Crest Co., Ltd. submitted a report to the Japanese Government on its achievements in meeting the requirements of this revised law. In compiling this report, the Environmental Management Department requested to collect the data and explained its methods of calculating the data, mainly to the Timber & Building Materials Division that is responsible for more than 90% of Sumitomo Forestry’s actual results.

Results for Fiscal 2011

<table>
<thead>
<tr>
<th></th>
<th>Energy usage (Crude oil equivalent)</th>
<th>CO₂ emissions</th>
<th>Energy consumption basic unit²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sumitomo Forestry</td>
<td>2,391kl</td>
<td>6,364t-CO₂</td>
<td>0.000493kl / m³</td>
</tr>
<tr>
<td>Sumitomo Forestry Crest Co., Ltd.</td>
<td>2,328kl</td>
<td>6,184t-CO₂</td>
<td>0.000064kl / 1,000 yen</td>
</tr>
</tbody>
</table>

² Calculation of energy consumption
   Sumitomo Forestry: energy consumption per volume handled
   Sumitomo Forestry Crest Co., Ltd.: energy consumption per net sales

Rationalizing and Improving the Efficiency of the Distribution of Home Building Materials

In fiscal 2007, the Company reformed its home building materials logistics system. Instead of building materials being sent individually from their manufacturer to the construction site, it coordinated its nationwide network of 31 relay centers and constructed a logistics system for the consolidated shipment of various building materials from multiple manufacturers. Thanks to this system, in fiscal 2011 the Company was able to reduce the CO₂ emissions by 162,591 delivery vehicle trips compared to before the system was introduced (equivalent to about 1,441 tons of CO₂). In addition, after the system was launched, it began to reduce the number of delivery vehicles used per facility. Moreover, in order to further reduce CO₂ emissions generated when transporting home building materials, in fiscal 2010 it made full use of the expertise in logistics efficiency that it had acquired up to that time and established Home Eco Logistics Co., Ltd, which uses the relay centers to make deliveries. It is responsible for all the Group’s housing business logistic operations in Japan, and in addition it provides outsourcer services for the sales logistics of materials manufacturers and deliveries to the construction sites of other home manufacturers.
The Company is collaborating with carriers to reduce CO₂ emissions, such as by measures to improve the efficiency of loading and distribution. In addition, going forward, as the owner of goods, plans to verify the level of CO₂ emissions in its supply chain from its shipment of goods both within Japan and overseas. Initially, Home Eco Logistics Co., Ltd. delivers homebuilding materials such as fittings, bathroom vanity units and fitted kitchens, and plans to increase the range of items handled in the future.

Future Plans

Stakeholder Comment

- I think that using the relay centers to consolidate materials from multiple suppliers and then send them to construction sites as a single shipment is a great way of doing it. (Customer)
- It is wonderful that you are minimizing the environmental impact of your model homes and fleet of cars. (Customer)
Policy & Plans

Sumitomo Forestry offsets the CO₂ emissions it generates through harvesting of trees that are used as principal structural members in its homes to construction (approximately 6 tons per home) by planting trees. In order to offset the CO₂ emitted by all the custom-built and spec homes sold during the five-year period beginning with fiscal 2009, the Company plans to plant approximately 1,500,000 trees on 1,500 hectares of land, and then manage cultivation of the trees for another ten years after planting.

There are two methods of tree plantation, “Environmental reforestation,” which aims to regenerate ecosystems on waste land, and “Industrial reforestation,” which aims to both comprehensive forest management and contribute to regional communities. This initiative is conducted as part of Project EARTH which is promoted by the Group.

Results

Environmental Reforestation in Indonesian National Park

Between fiscal 2009 and fiscal 2011, the Company conducted environmental reforestation on approximately 180 hectares of deforested land in Indonesia’s Bromo Tengger Semeru National Park East Java. In 2010, the Company’s plantation forest was damaged by the volcanic ash and gases from the eruption of Mt. Bromo, which is located within the same national park as the forest. However, for every tree destroyed in the eruption, it has planted another.

Start of Regional Cooperation-Based Reforestation in East Java Village

In fiscal 2010, Sumitomo Forestry launched a regional cooperation-based industrial reforestation project centered on Supiturang village at the foot of Mount Semeru in the Lumajang Regency, East Java, Indonesia. Part of the profits obtained from harvesting mature trees in this area will be distributed for improving the lifestyles of the local people, with the remainder of the profits being used for an initiative to cover the costs of reforestation and cultivation. The Company aims to contribute to the regional society through these sustainable plantation activities.

Environmental reforestation in Bromo Tengger Semeru National Park and regional cooperation-based industrial reforestation had covered a cumulative plantation land area of around 720 hectares by fiscal 2011.

Future Plans

In fiscal 2012, Sumitomo Forestry plans to carry out 300 hectares of forest plantation in total, comprising 60 hectares of environmental reforestation in the Bromo Tengger Semeru National Park, and 240 hectares of regional cooperation-based industrial reforestation, which is a continuation from activities of last year. The cumulative total area of plantation land since fiscal 2009 is expected to reach 1,020 hectares. The Company will continue to conduct its business with consideration for biodiversity, while engaging in activities that make a contribution to regional society.

Stakeholder Comment

- We need timber for our homes. I think rising CO₂ is a problem and I hope that the Company conducts its activities while considering how best to coexist with nature. (Other stakeholder)
Offsetting CO₂ Emissions through the Japan Verified Emission Reduction (J-VER) System

Policy & Plans

As a measure to combat global warming, the Ministry of the Environment is promoting the Japan Verified Emission Reduction (J-VER) system for offset credits as a means of reducing emissions of greenhouse gases. Under this system, projects to absorb greenhouse gases within Japan receive carbon offset credits equivalent to the quantity of CO₂ they reduced or absorbed. Sumitomo Forestry is actively utilizing the J-VER system to offset the CO₂ generated by its business activities.

Results

Offsetting the CO₂ from Model Homes

Sumitomo Forestry is implementing a range of initiatives to reduce CO₂ emissions from its model homes. In October 2010, for a further environmentally sound initiative, as part of the series of initiatives in its Project Earth scheme, it has launched an independent initiative aiming to offset the CO₂ generated by its electricity and other power used at its approximately 300 model homes around the country by using the credits it generates in the J-VER system from Company-owned forests. The offset period for credits is from October 2010 until March 2014, and in fiscal 2011 the Company offset 2,542 tons of CO₂.

Offsetting CO₂ Emissions from Sumai Haku

In February 2012, the Company held Sumai Haku 2012, its interactive wooden housing fair, in Tokyo, Nagoya, and Osaka. It used the credits it acquired in the J-VER system to offset the CO₂ emissions (63 tons at the 3 locations) that were generated at the venues through their use of electricity, gas, and water.

Participating in Japan’s Trial Integrated Emissions Trading Market

In October 2008, the Government of Japan launched an integrated emissions trading market on a trial basis with a view toward adopting full-scale emissions trading in Japan. There are 521 participant companies with set targets (including 392 industry associations, federations, and other organizations), 68 companies participating in trading of emissions credits, and 126 companies participating as emissions-reducing entities in the domestic clean development mechanism, in total 715 companies (as of July 6, 2009). Participant companies establish and pursue a voluntary goal for reducing CO₂ emissions. In addition to undertaking their own efforts to reduce emissions, the participants help reduce Japan’s CO₂ emissions by trading emission allowances and credits.

In September 2011, Sumitomo Forestry’s results in fiscal 2010 in achieving its targets were audited by the Japan Quality Assurance Organization, which confirmed that the data was accurate and that the Company had achieved its targets. The results of the audit and the issues pointed out within it are used as feedback within the Company toward further improving the accuracy of data in the future.
Developing Life Cycle Carbon Minus (LCCM) Homes

Policy & Plans

The reduction of energy usage in daily life is essential to realizing a low-carbon society. The Sumitomo Forestry Group is working to develop LCCM housing to reduce CO₂ emissions throughout the life cycle of a home, from construction and operation through to dismantling and disposal. The LCCM concept aims to achieve a negative CO₂ balance across the whole life cycle of a home by using renewable energy such as solar power, solar heat and biomass. This is premised on the deployment of technologies to reduce the CO₂ produced throughout the life cycle of a home, and the establishment of an energy-saving lifestyle utilizing these technologies.

Sumitomo Forestry is striving to realize an LCCM house in which CO₂ emissions are negative throughout the life cycle of the house, and which also creates lifestyle value through a variety of lifestyle-oriented services. Sumitomo Forestry Home houses are a wooden custom-built home constructed from renewable resource, timber. By promoting measures including the proactive use of domestic timber, Sumitomo Forestry Home houses achieve a reduction in CO₂ emissions as compared with steel-framed and concrete homes, from materials procurement through to construction. By implementing the following range of measures in the Sumitomo Forestry Home houses, the Company is working toward the realization of a comfortable LCCM house.

- To reduce CO₂ emissions at the occupancy stage, promote excellent insulation and air tightness, highly efficient housing equipment, and the adoption of energy-generating equipment.
- Control energy consumption in the home to optimize the internal energy balance, including energy creation and storage using solar power systems, residential fuel cells and storage batteries, as well as electric vehicles, which are likely to become widespread in the future.
- To encourage proactive energy conservation by homeowners, provide environmental information such as temperature, humidity and energy consumption in the household. Also provide a variety of lifestyle-oriented services for homeowners.
Results

Launch of the Smart House Smart Solabo

Sumitomo Forestry launched its New Solabo in 2010 as a wooden home that generates its own energy. Advancing this concept, in February 2012 it launched the Smart Solabo, which not only features the same energy saving functions as the wooden home, but is also installed with Smart House technologies.

This product makes extensive use of the qualities of wood, which is a highly renewable natural resource, while also being installed with a variety of Smart House technologies that enable the residents to make the best use of energy. It generates energy through a solar power system, while residents can visualize the energy they use through a home energy management system (HEMS). The energy generated is stored in a 12kWh high-capacity residential storage battery system for later use. The use of wood and Smart House technologies enables Smart Solabo home owners to reduce their electricity use and CO2 emissions, providing them with a home that saves them money and also reduces their environmental impact.

Renovation to Improve Earthquake Resistance and Insulation, at the Same Time as Realizing Energy Savings by Making Power Usage Visible

In April 2012, Sumitomo Forestry Home Tech Co., Ltd. launched its new renovation product, Smart Reforest. Through renovations to improve earthquake resistance and insulation, it improves the fundamental functions of modern homes to provide safe, secure, and pleasant living environments. Moreover, the Company responds to customer requests and building conditions to provide a renovation proposal that can achieve zero lighting and heating costs through its installation of a combination of power generation, saving, and storage equipment. Centered on the installation of a solar power system, these proposals combine the latest energy equipment, such as a system for visualizing energy use, a residential storage battery, and a power outlet for use by electric vehicles.

Initiatives to Re-use Storage Batteries

Testing is now underway to validate re-use of the lithium-ion battery that powers the LEAF electric vehicle sold by Nissan Motor Co., Ltd., with a view to its application as a reusable storage battery in the LCCM house to achieve energy self-sufficiency. In the future, as electric vehicles become widespread, used lithium-ion batteries could be re-used in homes to help realize a low-carbon society through efficient utilization of resources. In order to gather a variety of data related to use of such a lithium-ion battery in the home and develop performance enhancements, in February 2011 the Company recruited monitors for houses equipped with residential storage batteries and has installed verification equipment in their homes.
Summary Illustration of House Equipped with a Storage Battery

Link to the news release: Ranked Highest in DBJ Environmental Ratings (http://sfc.jp/english/pdf/20120427.pdf)

Selection as a Leading CO₂ Conservation Business in Homes and Buildings (Category: Specified Disaster Areas)

Sumitomo Forestry’s Sustainable Energy House (Support Tohoku project) was selected by the Ministry of Land, Infrastructure and Transport for its 3rd Project for Promoting CO₂ Reduction in Houses and Buildings, fiscal 2011 (category: specified disaster areas). This project aims to promote the widespread adoption of zero energy homes and reduce CO₂ emissions at the same time as constructing highly feasible housing to support the recovery from the Great East Japan earthquake. Further, to support those in the disaster area the Government subsidies part of the maintenance costs of the homes selected for the project.

The Sustainable Energy House was highly evaluated by the Government and selected for this project for its active use of Tohoku timber as the main structural material and for the immaculate flooring, and balanced use of technologies for creating and saving energy. These included insulation that surpasses the next generation energy saving standard (Region II), the use of the passive Ryouonbou natural heating and cooling design concept, and the installation of a solar power system. It was also selected for encouraging home owners to be more aware of the importance of energy saving and for the Company’s goal of comprehensively promoting the widespread adoption of environmentally sound homes.

Sustainable Energy House (Support Tohoku project)
Reducing Energy Use through the *Ryouonbou* Design Concept

The *Ryouonbou* design concept draws on the wisdom and techniques of Japan's traditional houses to effectively take advantage of nature's blessings and offer a housing style that enables people to live comfortably while limiting energy consumption.

The *Ryouonbou* concept is based on three design principles for creating housing that is cool in the summer and warm in the winter: *Kaze no Sekkei* wind design, *Taiyo no Sekkei* sun design, and *Midori no Sekkei* greenery design.

Research on a model house demonstrated that the *Ryouonbou* design concept could reduce CO₂ emissions during occupancy by about 40%¹ compared to houses built to specifications mandated by 1992 energy conservation standards.

¹ This figure only applies to emissions attributable to heating and cooling

Comparison of CO₂ Reduction (for Air-Conditioning and Heating Only) during Occupancy Using Eco Assessment

![CO₂ Reduction Chart](chart.png)

**Calculation Details**

- Calculations are based on data from the Automated Meteorological Data Acquisition System (AWeDAS) observation point for a model house with a total floor area of 132.49 m² and located in Saitama City, Saitama Prefecture, using Region B building insulation specifications.
- Average annual maximum temperature: 19.6°C
- Average annual minimum temperature: 13.9°C
- Average annual temperature range: 8.8°C

Note: Eco Assessment Chart: Assessment record of CO₂ emissions and air-conditioning expenses for each house plan calculated based on the insulation specification used and other assumptions, and on regional AWeDAS climate data for the house location. Environmental design is carried out based on this assessment record.
Case Study Plan for Placement of Greenery and Channels for the Airflow

A Green canopy to create a cool, shady area of foliage

Deciduous trees grow thick with leaves in summer, blocking out direct sunlight and creating a cool, shady area of foliage. In winter, the trees lose their leaves, allowing the sunlight into the rooms.

B A refreshing green area that produces cool air

By planting trees on the north side of the house it is possible to make it cooler in summer. This also has the effect of protecting the house from the northerly winds.

C A screen of greenery that blocks out heat

In addition to blocking out sunlight during summer, the greenery also cools the air. The use of climbing plants such as bitter melon offers the added benefit of fresh produce.

D Beautification with foliage that decorates the home

We recommend trees that suit the individual home and change appearance with the seasons. As well as bringing out the beauty of a home, greenery also helps blend the building in with its surroundings.

E A parking space with greenery that moderates temperature increases during summer

In addition to allowing rainwater to be absorbed in the earth, a green parking space prevents the powerful rays of the summer sun from being reflected back into the atmosphere, thereby moderating increases in temperature in the area around the home.

F “Green blinds” that gently restrict the vision of passersby

Strategically placed foliage in front of windows and other open areas restricts the view in the house from outside and enhances privacy.
A lawn effectively reduces the reflection of the heat of the sun back into the atmosphere. Leaf transpiration, whereby moisture evaporates from the grass, helps moderate increases in temperature.

By strategically placing trees according to prevailing wind direction, it is possible to obstruct the cold northerly wind in winter, reduce its force and chill, and divert its direction.

I think that the Ryounbou design concept is a really important development for home builders. (Customer)

Growing Use of Solar Energy in Houses

Policy & Plans

Sumitomo Forestry is working to further reduce a house’s environmental impact by employing a solar power system in addition to the Ryounbou design concept.

Results

In fiscal 2011, about 36% of all new detached houses sold by Sumitomo Forestry were equipped with solar power systems. The Company is also increasing its installation rate for of dual power generation incorporating solar power generation systems with the residential storage battery Enefarm or the gas cogeneration system ECOWILL, increasing the rate to approximately 14% in fiscal 2011.

<table>
<thead>
<tr>
<th></th>
<th>FY2008</th>
<th>FY2009</th>
<th>FY2010</th>
<th>FY2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar power installation rate</td>
<td>4%</td>
<td>22%</td>
<td>28%</td>
<td>36%</td>
</tr>
<tr>
<td>Dual power generation installation rate</td>
<td>-</td>
<td>3%</td>
<td>5%</td>
<td>14%</td>
</tr>
</tbody>
</table>

Holding the “Generating Electricity: Kikorin’s House Fair 2011,” Showcasing Housing Development that Saves Power and Energy

Sumitomo Forestry held its Generating Electricity: Kikorin’s House Fair 2011 throughout Japan for about one and a half months from July 2011. Focusing on showcasing homes installed with a solar power generation system, the Company held a series of events in a variety of venues—including on the Internet, at already-built homes, at model homes, and at design-consultation meetings—for potential customers to see, learn, and actually experience the appeal of its environmentally sound housing. Thanks to these events, the many participants were able to experience and understand the appeal of living in a Sumitomo Forestry eco-home that generates its own electricity through solar power.
**Solar Hot Water System Developed**

**Policy & Plans**

Sumitomo Forestry is developing a solar hot water system in collaboration with an equipment manufacturer. The Company is promoting the diffusion of this system, which makes efficient use of solar energy, as it helps to save energy and reduce CO₂ emissions. The heat energy in this hot water system is used more efficiently than in a solar power system, and a double solar system combining the two systems is even more economical and environmentally sound.

Comparison of Annual Heating / Lighting Expenses and CO₂ Emissions Using Combined Solar Power and Hot Water Generation System

**Comparison of Annual Heating/ Lighting Expenses and CO₂ Emissions**

<table>
<thead>
<tr>
<th></th>
<th>Old energy conservation standards</th>
<th>Ryuunkou home + Solar hot water system</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hot water system only</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Annual heating/ lighting expenses</strong></td>
<td>Save about ¥120,000</td>
<td></td>
</tr>
<tr>
<td><strong>CO₂ emissions</strong></td>
<td>35% reduction</td>
<td></td>
</tr>
</tbody>
</table>

**Solar power + solar hot water system**

<table>
<thead>
<tr>
<th></th>
<th>Old energy conservation standards</th>
<th>Ryuunkou home + double solar</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Annual heating/ lighting expenses</strong></td>
<td>Save about ¥270,000</td>
<td></td>
</tr>
<tr>
<td><strong>CO₂ emissions</strong></td>
<td>66% reduction</td>
<td></td>
</tr>
</tbody>
</table>

×178 Reduction equal to CO₂ absorbed by about 178 Japanese cedars

×328 Reduction equal to CO₂ absorbed by about 328 Japanese cedars
Adoption Rate of Next-Generation Energy Conservation Standards

Policy & Plans

The Japanese government has established energy conservation standards geared toward reducing energy consumption in houses. Sumitomo Forestry’s standard housing specifications have been based on next-generation energy conservation standards since fiscal 2005.

Results

Increasing Adoption of Next-Generation Energy Conservation Standards

In fiscal 2011, next-generation energy conservation standards were employed in 98.8% of the detached houses built by the Company, an improvement on last year. The standards also correspond to the highest energy-saving level (level 4) under Japan’s Housing Performance Indication System.

Promoting Environmentally Friendly, Energy-Saving Renovation

Policy & Plans

70% of existing homes were built before 1992, and are said to have inadequate heat insulation. Energy conservation in existing homes is an important issue in the prevention of global warming. Sumitomo Forestry Home Tech Co., Ltd. offers environmentally friendly, energy saving renovation, including solar power generation systems, the latest water-saving household appliances for the kitchen and bathroom, and natural ventilation and lighting to reduce reliance on heating and cooling equipment.

Results

Launching Renovation Campaign to Improve Earthquake Resistance and Insulation

Sumitomo Forestry Home Tech Co., Ltd. continues to provide its customers with renovations that improve the seismic resistance and energy-conservation functions of their homes. During 2011, from October 1 to November 30, customers requesting renovations were provided with proposals that included an inspection to confirm the functions of their current home, such as a diagnosis to check its levels of seismic resistance, insulation, and energy conservation. In addition, the proposals included a natural lighting and ventilation simulation showing how the customers’ homes might utilize natural energy.

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1 These refer to the "Standards and Owner Determination of Energy Usage Rationalization Pertaining to Houses" (Notice No 3 of the Ministry of Economy, Trade and Industry and the Ministry of Land, Infrastructure and Transport [2006]), and "Guidelines for Design, Construction and Maintenance of Energy Usage Rationalization Systems for Houses" (Notice No 378 of the Ministry of Land, Infrastructure and Transport [2006]).
Providing Environmentally Sound Homes in Australia

Policy & Plans

Australian Group company Henley Properties Group is providing a zero-emission demonstration house incorporating energy- and water-saving measures in response to growing environmental awareness and severe water shortages.

Results

In April 2010, the Company opened its Zero Energy Demonstration House. This house achieves more than 70% energy savings compared to a conventional home through utilizing a design that takes advantage of climatic conditions and through installing a solar power system.

Installing a Home Energy Management System (HEMS)
The installation of a home energy management system within the home enables residents to check and record the amount of energy they are using. The Company has been collaborating with TELSTRA, one of Australia’s leading communication companies, and developed the system that residents can confirm and adjust their home’s energy use via the Internet or a portable device while away from home.

Water-Saving Measures
The Company installs 1,000-liter rain water tanks on the roofs of its Zero Energy Demonstration House to catch and store rain water, which can be used for flushing toilets and for water sprinklers in gardens. In addition, waste water from baths and washing machines is filtered for re-use for watering gardens.
Resource Recycling
Sumitomo Forestry is working to reduce and recycle resources, with a focus on resources used in the housing business.

Policy on Resources

<table>
<thead>
<tr>
<th>Policy &amp; Plans</th>
</tr>
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</table>

Approximately 76.2 tons of resources are used for the principal structural members and building materials that go into a single house built to the Company’s standard specifications. Therefore, first of all the Company is working to reduce the environmental impact and effectively utilize resources, focusing on zero emissions initiatives, including reducing the generation of waste, reusing resources, and recycling.

In addition, at the time of inputting raw materials, it is necessary to eliminate redundant materials and use components that generate a low amount of offcuts, in order to reduce the volume of resources. The Company also believes it is important to utilize recycled products in order to advance the recycling of resources. Sumitomo Forestry is working to complete the loop of recycling by using recyclable resources, thoroughly separating wastes at construction and demolition sites, and promoting the use of recycled products.

Stakeholder Comment

- I think it’s wonderful that your philosophy of using natural resources based on reuse, repair, and recycling enables you to keep the amount of waste you produce to the absolute minimum. (Housewife)
- I was surprised at how high your recycling rate is. (Company employee)
In order to advance the recycling of resources, the Company first defines the “zero emissions” target to be pursued, and works to achieve this target.

**Definition of Zero Emissions**

The Group will not simply incinerate or bury in landfills all of the industrial waste generated from its plants in Japan and new housing construction sites.

Based on this definition, the Group will continue zero emissions activities at domestic manufacturing facilities, and initially aims to achieve zero emissions at new construction sites in the capital area by December 31, 2012.

The recycling rate at the end of fiscal 2011 was 89.3%.

1 Includes residential landscaping

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**Waste Reduction at New Housing Construction Sites**

**Policy & Plans**

Sumitomo Forestry identifies the volume of waste generated at new housing construction sites and works to reduce this volume, while also preventing inappropriate disposal. The Company is also working towards the achievement of zero emissions by promoting the processing of industrial waste by utilizing “inter-region recovery and recycling certification system.”

1 When manufacturers collect industrial waste across multiple prefectures, this is a special system whereby approval for waste disposal is not required from each separate municipal government provided that the Minister for the Environment certifies compliance with certain strict criteria such as processing capacity, even when the manufacturer outsources collection/transportation, intermediate treatment and final disposal.
Results

FY2011 Recycling Results

Within the items targeted for zero emissions, a recycling rate of 86.8% was achieved for waste generated at new housing construction sites.

Volume of Industrial Waste from New Detached Housing (FY2011)

<table>
<thead>
<tr>
<th>Material</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metal</td>
<td>873 t</td>
</tr>
<tr>
<td>Sledge</td>
<td>81 t</td>
</tr>
<tr>
<td>Composite waste</td>
<td>47 t</td>
</tr>
<tr>
<td>Fiber</td>
<td>1 t</td>
</tr>
<tr>
<td>Plastic</td>
<td>4,050 t</td>
</tr>
<tr>
<td>Rubble</td>
<td>5,476 t</td>
</tr>
<tr>
<td>Paper</td>
<td>6,446 t</td>
</tr>
<tr>
<td>Glass/ceramic</td>
<td>6,986 t</td>
</tr>
<tr>
<td>Wood</td>
<td>9,495 t</td>
</tr>
<tr>
<td>Gypsum board</td>
<td>7,859 t</td>
</tr>
<tr>
<td>Total</td>
<td>43,100 t</td>
</tr>
</tbody>
</table>

Treatment of Industrial Waste Utilizing Inter-Region Recovery and Recycling Certification System

On December 8, 2010, Sumitomo Forestry obtained industrial waste certification from the Minister of the Environment based on an inter-region recovery and recycling certification system. This system enables companies designated by Sumitomo Forestry (such as materials suppliers) to be registered as “persons engaged in the collection or transportation of industrial waste,” so that approval for industrial waste treatment is not required in relation to the collection and transportation of the Company’s waste. This makes it possible to collect industrial waste by utilizing specialist waste collection/transportation vehicles and trucks returning to base after having transported homebuilding materials to new construction sites, and to consolidate waste collection at collection centers registered in the inter-region certification system.

The consolidated waste is entrusted directly to treatment contractors that can process it with zero emissions, or is transported to in-house facilities where high-level separation can be carried out. After sorting, the waste is entrusted directly to third-party recycling facilities or is sold at a profit.

Establishment of the Capital Area Recycling Center

- To achieve zero emissions at new construction sites, waste needs to be sorted to the highest degree possible. Thinking that it would be effective to establish a specialist in-house waste separation facility to carry out high-level sorting of waste, Sumitomo established the Capital Area Recycling Center in Kazo City, Saitama Prefecture and it has been sequentially launching operations at this center since July 2012. The ultimate goal of the consolidation and separation of waste from housing construction in the capital area and its transportation to recycling centers is to achieve zero emissions in the Tokyo metropolitan area by December 2012.

- Establishment of the recycling center will make it possible to collect and analyze waste-related data, and provide feedback on potential improvements in areas such as product development, materials, design, production and distribution, which will lead to a reduction in the volume of waste being generated.
Validation with Industrial Waste Traceability System

In fiscal 2008, the Housing Division conducted a trial run of an industrial waste traceability system\(^2\) that uses IC chips to ascertain the actual output of waste from new housing construction sites. In fiscal 2009, this industrial waste traceability system was installed and operated at 10 branches, including the six branches in the Greater Tokyo area, Mito, Kyoto, Shiga, and Kita-Kyushu. The operational plans for the Capital Area Recycling Center have been drafted with reference to the data collected in this system.

This system will come to an end at the six branches in the Tokyo area and Mito along with the launch of the recycling center collection system utilizing inter-region recovery and recycling certification system. However, operations were launched at the Shinshu branch in February 2012 and it will also continue to operate in
other areas as the Company works to reduce waste by comparing the data before and after introduction of the system.

Initiatives to Limit Industrial Waste from Packaging Materials

The Group continues its efforts to limit the generation of industrial waste through the use of precut timber, reducing the amount of packaging materials used. Examples of efforts in this area include setting the dimensions of the eaves to minimize the waste generated when producing precut timber for soffits (the underside of eaves) and end cuts from materials used to finish the underside of the home’s eaves. In addition, the practicality and costs of pre-cutting ceramic roof tiles, sidings, and panels for exterior reinforcement are being investigated for future deployment.

Future Plans

Sumitomo Forestry will continue its efforts to increase its recycling rate at its business sites throughout Japan and achieve zero emissions through recycling at recycling centers that utilize the inter-region recovery and recycling certification system. The Company’s Capital Area Recycling Center is working toward achieving even finer separation of waste at the same time as developing materials recycled from in-house production and utilizing them in the construction of new houses.

Waste Reduction at Plants

Results

Achievement of Zero Emissions

Zero Emissions was achieved at the plants of Sumirin Agro-Products Co., Ltd. in fiscal 2011 as a result of its continuing efforts to eliminate emissions. The plants operated by Sumitomo Forestry Crest Co., Ltd. have also been working to reduce industrial waste by searching for and implementing new methods of processing difficult-to-recycle waste, but despite these efforts their overall result fell slightly below the target for fiscal 2011.

Volume of Waste Generated at Plants (FY2011)
Sumitomo Forestry has promoted recycling since before enactment of the Construction Waste Recycling Law, by thoroughly dismantling, sorting, and separately disposing of waste materials when constructing new houses.

Results

The Company has achieved a nearly 100% recycling rate for concrete and metal waste. A 98% recycling rate has been achieved for wood waste, and the present challenge is to develop recycling routes for roofing tiles, glass, ceramics, gypsum board, and other composite waste.

Volume of Demolition Waste (FY2011)
Recycling of Wood Waste

Policy & Plans

Offcuts from the timber milling process and waste wood from new housing construction and demolition sites can be turned into wood chips for re-use in papermaking and particle board or as fuel for power-generating boilers. Recently, it has been pressing ahead with the use of PKS (palm kernel shells) from overseas as fuel. Sumitomo Forestry has created its own recycling routes for facilitating the distribution of wood chips by employing the networks it has developed through its timber distribution business.

Results

Due mainly to the increased applications of wood chips as a fuel since 2009, the Company has increased the volume it handles as fuel for biomass, boilers, and biomass power generation.

Volume of Wood Chips Handled

Stakeholder Comment

- I agree with your reuse of natural resources, such as creating wood chips from waste to use as fuel. (Customer)
Effective Utilization of Used Activated Carbon from Water Purification Plants

Policy & Plans

The Tokyo Metropolitan Government Bureau of Waterworks uses an advanced water purification process that combines ozone treatment with biologically activated carbon. This system uses a large quantity of activated carbon, amounting to some 5,000m$^3$ per year, in the process of reducing organic material and deodorization, necessitating the effective use of the used activated carbon.

Group company Sumirin Agro-Products Co., Ltd. is making effective use of this used activated carbon to develop and market potting media for agriculture and horticulture and a soil improvement agent for landscaping.

Results

Joint Patent Application with Tokyo Metropolis regarding Effect on Promotion of Plant Growth

For two years (fiscal 2008-2009), Sumirin Agro-Products Co., Ltd. conducted joint research with the Tokyo Metropolitan Government Bureau of Waterworks to develop effective uses for used activated carbon from water purification process. The research demonstrated that used activated carbon effectively promoted plant growth when used as potting media for agriculture and horticulture and as a soil improvement agent for landscaping. Sumirin Agro-Products Co., Ltd. and the Tokyo Metropolis have jointly applied for a patent based on these research results.

Launch of Soil Improver Sales

In February 2011, the Company started selling a soil improvement agent that utilizes used activated carbon. Sales in fiscal 2011, which were primarily from the Kanto area, reached 53 tons.

Future Plans

Going forward, the company plans to commercialize and expand sales channels for potting media and soil improvement agents using used activated carbon.
Recycling of Glass Pieces

Policy & Plans

Sumirin Agro-Products Co., Ltd. has developed a next-generation, lightweight growing medium for rice seedlings utilizing glass pieces. Conventional red soil-type rice seedling growing media have a significant environmental impact, as their production involves the extraction of mountain soil, and their heavy weight has presented problems as the age of those working in agriculture has risen. This product helps to resolve these issues.

Results

Sales of Karuido Rice Seedling Growing Medium

In March 2011, sales of a new rice seedling growing medium Karuido were launched. Karuido is an environmentally sound product that uses granular activated carbon and a recycled material made by expanding waste (broken) window glass at high temperature. It weighs about 60% less than conventional products, and also has excellent permeability and aeration properties. The product also facilitates a shorter growing period due to faster seed germination and root growth, and requires no new equipment additional to planting with a transplanting machine, thereby saving labor.

Sales had reached 130 tons by May 2012.

Future Plans

Sales in fiscal 2011 were focused on the Tokai, Kansai, and Hokuriku regions, but in fiscal 2012 sales will also begin in the Tohoku, Joshin’etsu, and Kanto regions.

Link to the news release: “Sumirin Agro-Products to Launch Karuido” (http://sfc.jp/english/pdf/20110225.pdf)

Stakeholder Comment

- I think LCA is important. I was surprised that potting compost is being created from waste glass materials. (Customer)
Conservation and Sustainable Use of Timber Resources

Preserving Forests
Sumitomo Forestry practices sustainable forest management, both in and outside Japan. The Company also strives to use Japanese timber.

Conservation and Sustainable Use of Timber Resources

Forests perform a variety of functions for the public good, including erosion control and water control, cultivating water resources, curbing global warming by absorbing CO₂, and preserving biodiversity. For these functions to work effectively, proper forest management is crucial. The Sumitomo Forestry Group believes that sustainable forest management is necessary to ensure that timber resources are available in perpetuity, and is advancing initiatives both in and outside Japan.

Cultivation
The Sumitomo Forestry Group owns forests with a total area of 42,868 hectares within Japan. Outside Japan, it manages forests with a total area of approximately 200,000 hectares. The functions of forests that serve the public good can be enhanced by appropriate forestry management including weeding, pruning, and thinning. Forests absorb CO₂ then retain it as carbon – or “carbon stock.” The carbon stock of the Sumitomo Forestry Group forests in Japan was 10.74 million t-CO₂, and the carbon stock of plantation forests overseas was 3.62 million t-CO₂.
In fiscal 2011, the Sumitomo Forestry Group harvested approximately 560,000m³ of trees. The harvested trees were milled and processed, then provided to the world as a variety of applications, including housing and furniture. In some cases, for example structural members used in houses, the timber will be used for decades. Even after trees are processed into products, the wood continues to retain CO₂ as carbon. Thus, it can be said that using wooden products and building wood-construction homes are activities that “Create Forests in Cities.”

### Carbon Stock in Housing

One Sumitomo Forestry Home house has a carbon stock of about 22.6 t-CO₂. The carbon stock of all houses constructed by the Company in fiscal 2011 (9,007 houses) totaled approximately 203,000 t-CO₂.

1 Carbon stock of the timber used in housing construction in fiscal 2011

### Usage

Wood products can still be used effectively even after they have served their purpose. For example, in the case of wood-construction homes, the lumber can be re-used after demolition as wooden materials such as boards. Wood chips resulting from this process of re-use, and wood that has served its purpose as a wooden product, can still be used as wood fuel. This is called cascade usage and is a way to use wood completely and totally. In this way, carbon is retained until wood products are used as biomass fuel to create electricity. At this point, the CO₂ released from burning the wood is the CO₂ that was absorbed during the tree’s growth process, so the CO₂ in the atmosphere has not been increased during the life cycle of the tree.

**Link in This Report:** “Promoting Wood Biomass Power Generation” (P.233)

### Plantation

Just harvesting trees and using the timber means forestry resources will be diminished. Sumitomo Forestry always plants and cultivates new trees after harvesting trees to ensure sustainability of forest resources. In fiscal 2011, Sumitomo Forestry planted forests in Japan with a total area of approximately 54 hectares and 13,905 hectares overseas. From a carbon stock perspective, during the time wood products used in cities are retaining carbon, newly planted trees grow, absorb CO₂, and retain carbon. By promoting operations that encourage greater use of timber resources through the structural application and incorporation of wood, Company-owned forests and the carbon retained in the homes built by Sumitomo Forestry thus increase the carbon stock and contribute to counteracting global warming.

### Stakeholder Comment

- I am interested in your use of Japanese timber. I hope that you continue to use it in the future, and also that you educate people on the importance of using it. (Student)
- You communicated well your Company’s philosophy with regards to timber. (Other stakeholder)
- Considering forestry in Japan as a whole, in the future I hope that the forestry business develops while placing great importance on environmental protection. (Customer)
Promoting Sustainable Forestry in Japan

Sumitomo Forestry's Company-owned forests located in Hokkaido, Wakayama, Shikoku and Kyushu regions cover a total area of 42,868 hectares (about 1/900 of Japan's land area). Company-owned forests are categorized as "economic forests," where the production of timber is the priority, and "environmental forests," where the preservation of forests is the focus. Thinning is carried out appropriately, taking into consideration the ecosystems and surrounding environment. The Company ensures sustainable forest management using a range of techniques, including small-area clear cutting for mature forests that are ready for harvesting, which enables efficient harvesting of trees, followed by reforestation. Moreover, it is utilizing this expertise in order to contribute to the realization of sustainable forestry at non Company-owned forests within Japan.

Distribution and Area Covered by Sumitomo Forestry-Owned Forests (As of March 31, 2012)
Results

Acquisition of SGEC\(^1\) Certification For Company-Owned Forests

Sumitomo Forestry-owned forests acquired certification from Japan’s Sustainable Green Ecosystem Council (SGEC) in September 2006. In fiscal 2011, the first updated inspection was carried out and it was independently determined that Sumitomo Forestry had continued to manage its forests appropriately, including taking measures to preserve biodiversity, among other issues.

▶ Link in This Report: “Preserving Biodiversity” (P.208)

\(^1\) 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.

Selected as the Outsourcer for the Implementation of a Proposal-Type Recycling Business in Wakayama Prefecture

Sumitomo Forestry Wood Products Co., Ltd. was selected for this model project by the Forests and Forestry Office in the Agriculture, Forestry, and Fisheries Department of Wakayama Prefecture, which requested application proposals for the first trial period. Within the 170 hectares of Wakayama Prefecture-owned Kawanaka-forests, 26 hectares were selected to be used for the trial. The proposals from the recycling-business operators were evaluated based on their ability to comprehensively conduct afforestation operations in the area over a five year period, including tasks such as clear cutting, transportation, timber sales, and afforestation. Sumitomo Forestry Wood Products intends to minimize implementation costs in this project through comprehensively utilizing the existing road network and overhead wiring.

Stakeholder Comment

- I think that rebuilding the Japanese forestry business in Japan, which has been in decline, can contribute to securing a sustainable, green energy source. Toward this, I think the Company needs to focus not only on its own forests, but also to increase its collaborations with NPOs and NGOs that are undertaking rural regeneration activities in regional locations. In this way, I think the Company can contribute even more to the rebuilding of domestic forestry by creating jobs and helping people in regional communities make a living. (Customer)

- I think that the decline of the forestry business should have been discussed in a little more detail. (Other stakeholder)
Initiatives for Efficient and Labor-Saving Harvesting of Trees

Policy & Plans

Sumitomo Forestry is working to achieve substantial streamlining and labor saving in its timber harvesting system in Japan’s forests through modernizing its overhead wire lines, centered on its introduction of next-generation tower yarders.1

Results

The Company has developed an in-vehicle-type, highly functional tower yarder for ‘R&D for Harvesting Equipment for Wood Biomass in Remote Forests,’ which is a project supported by NEDO (New Energy and Industrial Technology Development Organization). The new tower yarders are intended to replace conventional overhead wire lines and the Company has been testing this new equipment for approximately one year in Company-owned forests in Kyushu (Hyuga Forest Office). As a result of this trial, in fiscal 2011, 2,000m³ of forest was harvested using this equipment (result from May 2011 to January 2012), thereby establishing the foundations for highly efficient, labor-saving operations. In addition, the Company is actively using equipment installed with wireless control functions, with the intention of not only increasing the efficiency of harvests but also improving safety at work sites.

Future Plans

The Company aims to introduce the next-generation tower yarders into actual operations during fiscal 2012 and plans to use them to harvest approximately 7,000m³ a year.

Using Tree Shelters1 for Low Density Cedar Reforestation in Tokushima Prefecture

Sumitomo Forestry Wood Products Co., Ltd. completed a forestry outsourcing contract with a forestry company in Tokushima Prefecture, and in accordance with the contract has begun low-cost cedar reforestation using tree shelters. The tree shelters, which were jointly developed by Sumitomo Forestry Wood Products, Sumitomo Forestry, and Phytoculture Control Co., Ltd, protect the trees from damage from birds and animals, such as deer, and also encourage their growth by preventing the dispersion of excessive moisture. As a result, they make possible low density reforestation, with a density of approximately half that required in conventional reforestation. As a type of next generation forestry that takes into account how the market is expected to develop in the future, it is thought that tree shelters can play a useful role in improving and reinvigorating the forestry industry within Japan.

Future Plans

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1 Timber harvesting machinery that has been modified to make it suitable for Japanese forests

1 Using Tree Shelters for Low Density Cedar Reforestation in Tokushima Prefecture

Sumitomo Forestry Wood Products Co., Ltd. completed a forestry outsourcing contract with a forestry company in Tokushima Prefecture, and in accordance with the contract has begun low-cost cedar reforestation using tree shelters. The tree shelters, which were jointly developed by Sumitomo Forestry Wood Products, Sumitomo Forestry, and Phytoculture Control Co., Ltd, protect the trees from damage from birds and animals, such as deer, and also encourage their growth by preventing the dispersion of excessive moisture. As a result, they make possible low density reforestation, with a density of approximately half that required in conventional reforestation. As a type of next generation forestry that takes into account how the market is expected to develop in the future, it is thought that tree shelters can play a useful role in improving and reinvigorating the forestry industry within Japan.

1 Covering the area surrounding the sapling with a plastic tube
Building a Forest Management Model Utilizing Airborne Laser Imaging Detection and Ranging (LIDAR) Technology

Policy & Plans

Sumitomo Forestry is using Airborne Laser Imaging Detection and Ranging (LIDAR) on a trial basis in some of its forests in order to accurately identify the volume of resources in these forests, to more accurately calculate the sustainable harvestable volume over the medium-to-long term, and to build an efficient and effective forest management model.

Results

Implementation of LIDAR

Forest measurement using LIDAR was carried out over approximately 1,500 hectares of Company-owned forest in Kyushu, and the measurement data was then analyzed. LIDAR is a technology for obtaining detailed measurement of the ground surface. Laser beams are projected onto the ground by a laser measuring device on board an aircraft or a helicopter, and ground measurements are obtained from the direction of the reflected beam and the time it takes to arrive. When used in a forest region, it is possible to obtain detailed data including the topography and height of the trees.

Validation of LIDAR Efficacy

The efficacy of LIDAR in surveying the volume of forest resources was confirmed by validating the precision of forest stand LIDAR measurement based on a field survey.

Future Plans

Additional surveys are due to be carried out in forest stands where existing forest survey data differs significantly from the fiscal 2010 validation results, in order to enhance the precision of the survey data. Wide-area measurement of forests using LIDAR will also be carried out in other regions in order to build an efficient and effective forest management model.

Streamlining Management of Company-Owned Forests through Joint Operations

To maximize the functionality of forests, proper maintenance of forests—clearing away of underbrush, pruning, and thinning—is vital. In Japan, however, the large number of owners holding small forestland makes it difficult to do so efficiently, diminishing the vitality of forests and hindering the use of domestic timber resources. To overcome this problem, Sumitomo Forestry is working to increase the efficiency of forest maintenance through joint operations with forest owners in Japan.

Joint Operations with Private Owners of Large Forests

Policy & Plans

The Group aspires to fulfill its responsibility to society as a leading private-sector owner of forests in Japan by realizing the renewal of Japan’s forests by innovating new private-sector-led business models.
Results

Signing of Memorandum on Joint Operations by Three Private-Sector Companies

In October 2009, Sumitomo Forestry, Oji Paper Co., Ltd., and Oji Forest & Products Co., Ltd. signed a memorandum of understanding to engage in joint utilization of forestry resources centered on each of the three company’s forests. This is the first joint operation of its kind in Japan between corporations holding large-scale forest assets.

The three companies are jointly engaged in two projects involving “active use of SGEC-certified timber from Hokkaido,” and “a joint forestry operations area in Ehime prefecture,” leveraging technology and expertise accumulated over many years of forestry management, as well as an integrated, upstream-to-downstream initiative.

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Overview of Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active use of SGEC-certified timber from Hokkaido</td>
<td>SGEC-certified logs harvested from forests owned by Sumitomo Forestry (Monbetsu area) and Oji Paper group (Soya and Engaru areas) will be processed by SGEC-certified entities (processing facilities that have been certified by SGEC for classification, separation, and labeling), and finished into high-quality structural members made of engineered wood, then used in custom-built detached houses sold by Sumitomo Forestry.</td>
</tr>
<tr>
<td>Joint forestry operations area in Ehime prefecture</td>
<td>Sumitomo Forestry and the Oji Paper group will jointly create a forestry operations area centered on forests owned by Oji Paper group with neighboring privately held forests, creating the scale necessary for operating efficiencies, and building new logging roads through the mountains, thereby increasing the productivity and efficiency of operations such as thinning.</td>
</tr>
</tbody>
</table>

In fiscal 2011, as part of the project for the ‘Active Use of SGEC-certified timber from Hokkaido,’ the Company purchased approximately 318m³ of SGEC forest certified Japanese larch laminae that was produced and processed by the Oji Paper Group. The Company’s Sapporo branch utilized some of these laminae to produce approximately 110m³ of engineered wood (for columns) for use in orders for detached housing.

Promotion of Public-Private Sector Forestry Management

Policy & Plans

To achieve efficiencies in forest management, Sumitomo Forestry is promoting efficient forest operations by designating a forestry joint operations area encompassing national forests and private and public forests, whose ownership structures are different.

Results

Signing of Agreement to Promote Forest Maintenance between Owners of National, Private and Public Forests

In fiscal 2009, Sumitomo Forestry signed an agreement to promote forest maintenance between owners of national, private and public forests in relation to Company-owned forests in the prefectures of Kochi, Kumamoto and Wakayama. The initiative in Kumamoto prefecture is the largest forest area ever covered by such an agreement. As a result, it is now possible to efficiently build a network of strip roads, which has been problematic up until now, and to create efficiencies in forestry operations, with the expectation of reduced costs.
Overview of Agreement for Promotion of Forest Management

<table>
<thead>
<tr>
<th>Area</th>
<th>Signatories to the Agreement</th>
<th>Company-Owned Forest Area (Total Area)</th>
<th>FY2011 Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kochi Prefecture</td>
<td>• Forestry Agency, Shikoku Regional Forest Office, Reihoku Forest Management Department</td>
<td>225 ha (716 ha)</td>
<td>Strip roads built through Company-owned forests (Breakdown)</td>
</tr>
<tr>
<td></td>
<td>• Sumitomo Forestry Co., Ltd., Nihama Forestry Office¹</td>
<td></td>
<td>Upgraded: approx. 420 m&lt;br&gt;Constructed: approx. 40 m</td>
</tr>
<tr>
<td>Kumamoto Prefecture</td>
<td>• Forestry Agency, Kyushu Regional Forest Office, Kumamoto Nambu Forest Management Department</td>
<td>317 ha (3,935ha)</td>
<td>New strip roads built through Company-owned forests (Breakdown)</td>
</tr>
<tr>
<td></td>
<td>• Forestry and Forest Products Research Institute, Forest and Agricultural Land Maintenance Center, Kumamoto Water and Forest Resource Office</td>
<td></td>
<td>Company owned: approx. 400 m&lt;br&gt;Other: approx. 900 m</td>
</tr>
<tr>
<td></td>
<td>• Sumitomo Forestry Co., Ltd., Hyuga Forestry Office²</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Kyushu Yokoi Forestry Co., Ltd.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Oji Forest &amp; Products Co., Ltd., Hyuga sales office</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Nippon Paper Industries Co., Ltd., Nippon Paper Lumber Co., Ltd., Yashiro sales office</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wakayama Prefecture</td>
<td>• Forestry Agency, Kinki Chugoku Regional Forest Office, Wakayama Forest Management Department</td>
<td>288ha (1,539ha)</td>
<td>New strip roads built through Company-owned forests (Breakdown)</td>
</tr>
<tr>
<td></td>
<td>• Forestry and Forest Products Research Institute, Forest and Agricultural Land Maintenance Center, Wakayama Water and Forest Resource Office</td>
<td></td>
<td>Company owned: approx. 2,850 m</td>
</tr>
<tr>
<td></td>
<td>• Sumitomo Forestry Co., Ltd., Ogawa Forestry Office³</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Miyama Forest Owner’s Cooperation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ Now Sumitomo Forestry Wood Products Co., Ltd., Nihama Forestry Office
² Now Sumitomo Forestry Wood Products Co., Ltd., Hyuga Forestry Office
³ Now Sumitomo Forestry Wood Products Co., Ltd., Wakayama Forestry Office

### Future Plans

Going forward, the partners will continue to jointly engage in thinning operations and sales of products made from the thinnings, and aim for even more appropriate and efficient operations.
Effective Use of Unused Biomass Resources

Policy & Plans

Branches and twigs from thinning of forest, and wood left over from logging become a source of greenhouse gas emissions, and can be a remote cause of regional natural disasters, such as mudslides. Sumitomo Forestry Wood Products is actively promoting effective use of such unused biomass resources.

Results

Start of Supply of Wood Left Over from Logging as Wood Biomass Fuel

Sumitomo Forestry Wood Products Co., Ltd. has taken a lead role in researching the construction of a system to collect wood left over from logging and provide wood biomass fuel, as part of the Model Demonstration Project for New Business Creation Using Wood Resources since fiscal 2008. Following a positive assessment of the results, Sumitomo Forestry Wood Products Co., Ltd. has been providing Sumitomo Joint Electric Power Co., Ltd. with all the necessary amount of wood left over from logging for their biomass power generation business launched in July 2010, in which a portion of the coal used to generate electric power is replaced with biomass chips. As well as cutting CO₂ emissions by 6,900 tons per year, this also contributes to the preservation of regional forests. Similar initiatives are being promoted with the Kochi plant of Sumitomo Osaka Cement Co., Ltd., involving the supply of wood left over from logging. In fiscal 2011, Sumitomo Forestry Wood Products supplied the two companies with a combined total of approximately 20,000 tons of left-over wood.

Future Plans

Following the launch in July 2012 of the Feed-in Tariff program for renewable energy, Sumitomo Forestry is aiming to further expand its business of supplying wood left over from logging across the nation.
Preserving Forests
Sumitomo Forestry practices sustainable forest management, both in and outside Japan. The Company also strives to use Japanese timber.

Conservation and Sustainable Use of Timber Resources
Sustainable Forestry in Japan
Proactive Use of Domestic Timber
Overseas Plantation Forest Operations and Sustainable Use

Proactive Use of Domestic Timber

Policy & Plans

Sumitomo Forestry is promoting measures to encourage the active use of Japanese timber, including the development and diffusion of standards to ensure the supply of timber with consistent quality, cost reductions through joint forestry operations, and the effective use of wood left over from logging.

Results

Expansion of Supply Using Company-Developed Standard FS (Forest Service) Grade

In order to increase demand for Japanese timber, it is necessary to provide products with consistent quality, while also ensuring stable supply. In fiscal 2009, Sumitomo Forestry Wood Products Co., Ltd. began selling Japanese timber products using a Company-developed standard for pre-cut timber, the FS (Forest Service) Grade. The other Company-developed standard is MIZDAS®, which is targeted at timber blocks of Japanese cedar and cypress, but FS Grade is a general standard for pre-cut timber, covering cedar posts and studs. This standard leads to enhanced recovery rate and cost-competitiveness, for example by broadening the acceptable range of surface cracks, and by allowing wane if it is within 30cm from the tip end of the timber, as the wane is cut at the pre-cut stage. Sales have been focused on the Kanto, Tohoku and Hokuriku regions, and in fiscal 2011, supplies of FS Grade products reached 390,000m³, 13 times the fiscal 2010 level.

Promoting Systems for Utilizing Japanese Timber

Sumitomo Forestry Wood Products Co., Ltd. is working to reduce costs by creating joint forestry operations areas with small-scale forest owners and proposing efficient forestry management including maintenance of forestry roads and thinning/final cutting and planting. With regard to distribution, a system has been established in which products bypass the log market and are shipped directly to customers, incorporating the market-in² technique into harvesting plans. Also, the Company is engaged in a project to utilize wood left over from logging, such as branch and short timber, in biomass power generation and as a fuel mixed with coal during burning.

Future Plans

The Company plans to expand sales of FS Grade products and increase the range of products available, such as cypress posts, foundations and engineered wood, while developing a nationwide customer base.

Link in this report: “Streamlining Management of Company-Owned Forests through Joint Operations” (P.194)

1 A system that is incorporated into timber drying equipment to automatically control temperature and humidity via computer
2 A management approach whereby the requirements of the customer or buyer are identified during the development, production and sale of a product, and only the quantity of the product required by the user is supplied.
Stakeholder Comment

- I think that using Japanese cedars to manage forests is helping to preserve these forests. (Customer)
- I feel that today, timber-related businesses have important roles to play both in terms of protecting the environment and creating jobs. (Customer)

Using Japanese Timber in Homes

Policy & Plans

Sumitomo Forestry embraces a policy of actively using Japanese timber in its houses, and is promoting initiatives to encourage the use of its Super Cypress laminated engineered wood for structural use, made from Japanese cypress (Chamaecyparis obtusa), and its original load-bearing wall Lattice Panels, made from Japanese cedar (Cryptomeria japonica) and Japanese larch (Larix leptolepis).

Results

Supply of Homes with Enhanced Ratio of Japanese Timber

In fiscal 2008, the Company reached its target of using Japanese timber for 70% of the principal structural members in Sumitomo Forestry Home house, where the main Multi-Balance construction method is employed. Sumitomo Forestry also supplies houses in certain regions, or limited to particular models, in which this ratio is increased to 100%, such as MyForest-Waraku Miyabi, MyForest-Taiju, and a Hokkaido Specification product.

Supply of Homes Using Certified Timber

To produce homes that use timber from certified forests, such timber must be appropriately separated and marked in the processing, distribution and home construction processes. Since February 2008, Sumitomo Forestry has been supplying houses that use SGEC-certified timber in Hokkaido, where it was possible to implement these systems in each process and to procure certified timber on a stable basis throughout the year.

Supply of Homes Actively Using Regionally-Produced Timber

In Hokkaido, Sumitomo Forestry offers a 100% "made in Hokkaido" model that uses only locally grown Japanese larch and Sakhalin fir. The Company has built houses in Nagano, Nara, Wakayama, Yamaguchi, Ehime, Kochi, and Oita using at least some locally produced timber.

In August 2010, the Company launched sales of Forest Garden Keio Horinouchi built-for-sale housing (in Hachioji City, Tokyo), where some of the principal structural members (posts and foundations) use Japanese cypress certified based on the Tama Timber Certification Scheme1, thereby contributing to the revitalization of regional forests.

Link in this report: “Property Development in Harmony with Regional Areas and the Environment” (P.74)

1 A scheme in which forest owners, materials manufacturers, the log market and timber product manufacturers register, and the Tama Timber Certification Council certifies that the wood has been produced in appropriately managed forests in the Tama region.
Using Japanese Timber in Products

Policy & Plans

Sumitomo Forestry is committed to the proactive use of Japanese timber in interior materials and furniture. The proactive use of domestic timber supports the revitalization and sound cultivation of domestic forests and also contributes to environmental conservation, including preserving national land and curbing global warming. Thus, it also contributes to the achievement of the government’s goal of 50% self-sufficiency in timber.

Results & Future Plans

Making Effective Use of Thinnings: The Monbetsu no Mori Line of Furniture

Sumitomo Forestry markets the Monbetsu no Mori line of furniture that makes effective use of thinnings of hard wood harvested from Company-owned forests primarily in Monbetsu, Hokkaido. The thinnings from hard wood used as raw materials for the Monbetsu no Mori brand comes from SGEC1-certified forests. In fiscal 2010, companies involved in production of the Monbetsu no Mori brand acquired certification for a distribution system for SGEC-certified timber products, and can now display the SGEC label on products. This is the first time in Japan that furniture displaying the SGEC label has been sold and the number of companies that support initiatives such as these are increasing. Through these companies, Sumitomo Forestry is aiming to also exhibit its products overseas. Going forward, it intends to develop products that use not only Mongolian oak, but also other tree species such as the Japanese ash and the Japanese white birch.

Production of Ayasugi and Totorop Interior Materials Using Japanese Timber

Sumitomo Forestry Crest Co., Ltd. uses Japanese cedar for its Ayasugi line of interior materials such as entrance hall storage areas, doors, stairs, and flooring, and Japanese-grown Sakhalin fir for its Totorop line of doors, walls, and flooring. A cycle of planting and logging Japanese-grown Sakhalin fir trees, which are commonly grown in Hokkaido, enables a balance between timber supply and forest regeneration.
Exterior Products Using Japanese Cypress Thinnings and Small Trees

Sumitomo Forestry Landscaping Co., Ltd. sells the environmentally sound *Original Deck Hinoki* brand that uses thinnings from Japanese cypress, and has also increased sales of product variations such as Japanese cypress fences/open verandahs. Japanese cypress is a conifer that possesses beautiful grain and superior durability, and, as such, has traditionally been used in shrines and altars. Cypress thinnings and small diameter trees are procured through the domestic network of the Sumitomo Forestry Group, and are used effectively as products employing the Group’s own heat treatment technology. During fiscal 2011, the Company sold 8,000m² of *Original Deck Hinoki*.

**Stakeholder Comment**

- When using wood, I think it’s good if consumers know where it comes from. (Student)

**Development of Efficient Timber Drying Technology**

When manufacturing cedar and cypress posts, cracking tends to occur in the wood-drying process, especially for cedar due to its high and unstable moisture content, making it difficult to ensure consistent quality as a dried timber. Sumitomo Forestry responded by developing and promoting the MIZDAS® system, which is incorporated into timber drying equipment, to automatically control temperature and humidity via computer. This system which adjusts the drying process to the moisture content and temperature of the timber to be dried reduces cracking, distortion and other damage to the timber, and makes it possible to supply highly competitive and high-quality MIZDAS® Cedar posts and MIZDAS® Cypress posts at low cost.
As forecasts for global timber consumption continue to rise, loss of forests and destruction of ecosystems are accelerating at a dramatic pace due to forest fires, illegal logging, and slash-and-burn farming in Southeast Asia and other parts of the world. In this environment, Sumitomo Forestry is expanding its forest plantation business overseas in order to promote the active use of sustainable plantation timber.

### Promotion of the Plantation Forestry Business Overseas

#### Policy & Plans

In order to ensure a stable supply of raw materials while still protecting the environment, Group companies outside Japan are increasing their use of plantation timber by reducing procurement of raw materials from natural forests, and are promoting plantation forest operations.

#### Results

During fiscal 2011, overseas Group companies reforested a total area of 13,905 hectares. However, the total number of samplings planted by RPI in Indonesia declined because of the later-than-usual start to the rainy season, which delayed the start of its reforestation operations.

### Trees Planted in FY2010 and FY2011

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Country</th>
<th>Reforested Area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2010</td>
</tr>
<tr>
<td>Kutai Timber Indonesia (KTI)</td>
<td>Indonesia</td>
<td>2,814ha</td>
</tr>
<tr>
<td>Rimba Partikel Indonesia (RPI)</td>
<td>Indonesia</td>
<td>1,051ha</td>
</tr>
<tr>
<td>Nelson Pine Industries (NPIL)</td>
<td>New Zealand</td>
<td>216ha</td>
</tr>
<tr>
<td>Open Bay Timber (OBT)</td>
<td>Papua New Guinea</td>
<td>965ha</td>
</tr>
<tr>
<td>PT. Wana Subur Lestari (WSL)</td>
<td>Indonesia</td>
<td>638ha</td>
</tr>
<tr>
<td>PT. Mayangkara Tanaman Industri (MTI)</td>
<td>Indonesia</td>
<td>-</td>
</tr>
</tbody>
</table>
Reforestation in Indonesia (Thousand Trees)

Future Plans

The Company is aiming to increase the percentage of raw material from plantation trees, which it will use to produce plywood and other timber products. It is actively implementing measures to expand the size of its plantations and during 2012, RPI plans to plant approximately 1.5 million saplings.

Stakeholder Comment

- I was surprised by how different the land is before and after reforestation. (Student)

Contribution of Social Forestry to Local Communities

Policy & Plans

In its plantation forest operations in Indonesia, the Sumitomo Forestry Group cooperates with residents living in the vicinity of its projects to ensure that regional society also receives the economic benefits of plantation forest operations.
Results

Contributing to Regional Society through Social Forestry

In 2000, the Company launched “social forestry” in Indonesia, a program for distributing seedlings to local residents free of charge. Kutai Timber Indonesia (KTI) (http://www.hti.co.id/) and Rimba Partikel Indonesia (RPI) then promise to buy the grown trees back in six to seven years, when the trees are ready for harvesting. As well as endeavoring to support the independence of local residents, social forestry also fosters communication in order to build strong relationships with regional society.

In fiscal 2011 in the area around the plantation forest operations, more than 30 regions and about 5,100 people were involved with forest plantation through social forestry.

Acquisition of Forestry Certification in Cooperation with Local Residents

KTI formed a reforestation cooperative together with local residents in fiscal 2007, and acquired FSC®-FM certification for 152 hectares of plantation forest in December 2008. Certification was obtained for an additional 179 hectares of plantation forest in January 2011, taking the total area of certified plantation forest to 331 hectares.

Future Plans

In order to increase its total area of forests that are certified, in September 2011 the Company applied for FSC®-FM certification for an additional 673 hectares of plantation forest and expects to acquire this certification during fiscal 2012.

Stakeholder Comment

If you are satisfied with the progress of your measures overseas, could you not do something about the devastated forests in Japan? (Other stakeholder)

Increased Handling of Timber from Certified Forests and Plantation Forests

Policy & Plans

Sumitomo Forestry procures timber from forests all over the world and therefore has a major obligation to preserve the world’s forests. The Sumitomo Forestry Group has set forth its Timber Procurement Philosophy and Policy and Action Plan, and is promoting procurement of sustainable timber. The Timber & Building Materials Division’s International Marketing Department and Timber & Building Materials Department have acquired Chain of Custody (CoC) certification from both the Forest Stewardship Council (FSC®) and the Programme for the Endorsement of Forest Certification (PEFC) to encourage the use of timber from sustainable forests. The Action Plan based on the Timber Procurement Philosophy and Policy has set a target of 70% handling of timber from certified forests (FSC®, PEFC, and SGEC) and plantation forests within the process of timber distribution by fiscal 2012.
Results

Volume Handled
The volume of certified timber and plantation timber handled in fiscal 2011 was approximately 1.45 million m³ (70% of the timber handled by Sumitomo Forestry). Also, the percentage of the total volume of logs purchased that were FSC certified timber was 45%. When PEFC, SFI\(^4\), and other certification schemes are included, this figure becomes 60%.

Major Forestry Certifications

<table>
<thead>
<tr>
<th>Type of Forestry Certification</th>
<th>Name of Certified Division or Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>SGEC Forestry certification</td>
<td>Forestry &amp; Environmental Business Department, Forestry &amp; Environment Division (Company-owned forests)</td>
</tr>
<tr>
<td>CoC certification (Group-wide certification)</td>
<td>International Marketing Department, Timber &amp; Building Materials Division (pre-cut materials), Housing Division (pre-cut materials)</td>
</tr>
<tr>
<td>CoC certification</td>
<td>Sumitomo Forestry Wood Products Co., Ltd., and Sumitomo Forestry Crest Co., Ltd.</td>
</tr>
<tr>
<td>FSC® FM certification</td>
<td>PT. Kutai Timber Indonesia (reforestation cooperative), Open Bay Timber Ltd.</td>
</tr>
<tr>
<td>FSC® CoC certification</td>
<td>International Marketing Department and Timber &amp; Building Materials Division; Sumitomo Forestry Crest Co., Ltd.; Kowa Lumber Co., Ltd.; Alpine MDF Industries Pty. Ltd.; PT. Kutai Timber Indonesia; Sumitomo Forestry (Singapore) Ltd.; Nelson Pine Industries Ltd.; Open Bay Timber Ltd.</td>
</tr>
<tr>
<td>PEFC CoC certification</td>
<td>International Marketing Department and Timber &amp; Building Materials Division, Timber &amp; Building Materials Division</td>
</tr>
</tbody>
</table>

1 The Forest Stewardship Council (FSC®), which is a third party organization, provides a global forestry certification system. Its Forest Management (FM) certification authenticates forest management, while FSC Chain of Custody (CoC) certification confirms that forest products from certified forests are appropriately separated and marked in the storage, processing and distribution processes.
2 Abbreviation of the Programme for the Endorsement of Forest Certification Schemes. It is implemented by the international supervisory organization that inspects forest certification schemes independently created in various countries and promotes mutual recognition between these schemes.
3 The PEFC is a forest certification program that promotes sustainable forest management by offering certification from third parties independent of stakeholders.

Acquiring FSC® Certification for its Timber from a Plantation Forest in Papua New Guinea, the First Time in This Country

Open Bay Timber Ltd. (OBT) acquired FSC®FM / CoC certification in September 2011 for its plantation in Papua New Guinea. The tree species it is planting is the *Eucalyptus Deglupta* (local name: Kamerere), which is conventionally harvested 18 years after planting. OBT acquired FSC certification for 11,770 hectares of the 31,260 hectares of plantation forest that it manages.

Sales of Environmentally Sound Plywood KIKORIN-PLYWOOD

In fiscal 2009, Sumitomo Forestry launched sales of the environmentally sound plywood KIKORIN-PLYWOOD. More than 50% of the raw materials used to manufacture KIKORIN-PLYWOOD are timber from forests certified by FSC® or PEFC, as well as from plantation forests that are sustainably managed. In fiscal 2011, the volume of KIKORIN-PLYWOOD sold was 31,524m³. A portion of the sales from this product are allocated to the Company’s planting activities in Indonesia to contribute to the environment.

| Sales Volume of KIKORIN-PLYWOOD |
|-------------------------------|------------------|------------------|
| FY2009                        | 2,224m³          | FY2010           | 10,224m³         |
| FY2011                        |                  | 31,524m³         |

**Future Plans**

Initiatives are being implemented under the New Action Plan stipulated by the Timber Procurement Philosophy and Policy.

- Link in This Report: “Action Plan for Timber Procurement” (P.20)

**Stakeholder Comment**

- I think it’s wonderful that a virtuous cycle is being created in which income from plywood is used for future forest plantation. (Customer)
Implementing Large-Scale Commercial Forest Plantation Business

Policy & Plans

Sumitomo Forestry is conducting a large-scale commercial forest plantation business in cooperation with ALAS Kusuma Group, a company involved in the forestry management and plywood manufacturing businesses in Indonesia. As well as realizing the stable supply of timber, this initiative not only contributes to the economic development of the local community by providing employment for local residents in commercial forest plantation operations, but also to the preservation of biodiversity.

Results

Implementing Full-Scale Plantation Operations

This initiative classifies forestland degraded by illegal logging and slash-and-burn farming, into three areas: (1) forests preservation zones, (2) buffer zones, and (3) forestation zones. By further classifying forestation zones by environmental factors such as soil composition and moisture content, the initiative matches forestation operations to local environmental conditions. Full-scale plantation operations started in 2010.

Promoting Initiatives and Research into the “Right Tree for the Right Site”

Aiming for sustainable commercial plantation forestry that contributes to the preservation of biodiversity, Sumitomo Forestry identifies areas to protect, such as riparian forests, and carries out mosaic planting whereby forestation is undertaken only in designated areas suited for that purpose. In addition, the Company continues to undertake research into the suitability of trees in specific areas, selecting species of trees that are suited to the land in the particular plantation site.

Future Plans

The plan is to expand the area of plantation operations from the current 140,000 hectares to 280,000 hectares.

When drawing up forestation plans in the future, the Company is also considering the use of leading-edge satellite information technology currently under development through joint research with the Japan Aerospace Exploration Agency (JAXA)’s Space Open Lab system.

▶ Link in this report: “Plantation Forest Operation Using Satellite Information” (P.231)

Stakeholder Comment

- I want to see proactive initiatives to help restore destroyed tropical rainforest. (Customer)
Biodiversity and Sumitomo Forestry's Operations

Wood has been the axis of Sumitomo Forestry’s businesses since its founding centuries ago. While many companies are indirectly involved with biodiversity through their supply chains, at Sumitomo Forestry, forests that nurture trees and support biodiversity are directly and inextricably its business field—and the Company is acutely aware of the critical importance of, and its responsibility for, biodiversity. Moreover, wood is one of the blessings it receives from biodiversity. If this blessing is lost, the Company risks losing the foundation of its business, thus it is imperative that it is proactively and aggressively involved with preserving and encouraging biodiversity to an even greater degree than other companies.

How Our Businesses are Linked to Biodiversity

<table>
<thead>
<tr>
<th>Business Domain</th>
<th>Activities to Preserve Biodiversity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forestry / Environment Operations</td>
<td>• Preservation of natural forests</td>
</tr>
<tr>
<td></td>
<td>• Biodiversity-friendly operations in Company-owned forests</td>
</tr>
<tr>
<td></td>
<td>• Protection of rare animal and plant species</td>
</tr>
<tr>
<td>Timber and Building Materials</td>
<td>• Procurement of timber from forests where sustainable forestry is practiced</td>
</tr>
<tr>
<td>Distribution / Building Materials</td>
<td>• Manufacture and handling of products using certified timber and plantation timber</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>• Greenification of land where plants are located</td>
</tr>
<tr>
<td>Housing / Real Estate / Landscaping</td>
<td>• Landscaping using native / indigenous plant species</td>
</tr>
<tr>
<td></td>
<td>• Proactive use of Japanese timber</td>
</tr>
<tr>
<td>Overseas Operations</td>
<td>• Switchover to plantation timber as raw materials</td>
</tr>
<tr>
<td></td>
<td>• Plantation operations that consider zoning and coexistence with the local community.</td>
</tr>
<tr>
<td>Research and Development</td>
<td>• Conservation of precious germ-plasm stocks</td>
</tr>
<tr>
<td>Social Contribution Activities</td>
<td>• Regeneration of tropical rain forests</td>
</tr>
<tr>
<td></td>
<td>• Restoration of native forests at the Mt. Fuji Manabi no Mori</td>
</tr>
<tr>
<td></td>
<td>• Environmental education activities at the Mt. Fuji Manabi no Mori</td>
</tr>
</tbody>
</table>

Stakeholder Comment

- As trees are your ‘business partners,’ I think it is only natural that you put so much effort into preserving forests. (Customer)
- I hope that Sumitomo Forestry becomes the leading supplier of timber to the world at the same time as aiming to preserve the diversity of natural resources in the environment, and that through these efforts it can spread and promote its environmentally sound approach throughout the forestry industry. (Customer)
Policy and Plans for Biodiversity Preservation

Policy and Plans

Sumitomo Forestry declared its commitment to preserve biodiversity when it revised its Environmental Philosophy and set forth its Timber Procurement Philosophy and Policy in fiscal 2007. The Company has promulgated its Policy on Biodiversity Preservation in Company-owned forests in Japan.

In fiscal 2009, to identify the impact of its businesses on biodiversity, the Company conducted assessments and evaluations—from the perspective of biodiversity—of its operations, particularly in those business domains where it is thought its activities impact biodiversity. Based on these results, in each business unit, it sought out third-party perspectives from experts and specialists from NGOs and NPOs to ensure that it objectivity and effectively advances its activities.

In addition to creating its Declaration of Biodiversity, in fiscal 2011 the Company defined its Action Guidelines and Long-term Targets for biodiversity. Going forward, the entire Sumitomo Forestry Group will push ahead with initiatives to preserve biodiversity in accordance with these three commitments.

Results

In March 2012, the Sumitomo Forestry Group formulated its Declaration on Biodiversity, which sets out its attitude and approach toward biodiversity; the Biodiversity Action Guidelines, which establishes in-Group guidelines for its initiatives in the future; and its Biodiversity Long-term Targets. These commitments were created with reference to the Aichi Targets, which were adopted at the 10th Conference of Parties to the Convention on Biological Diversity (COP10), and were created after a comprehensive review of what the Group could feasibly achieve. Going forward, each department will carry out initiatives based on the Declaration, Action Guidelines, and Long-term Targets, while also considering the advice from NGOs, NPOs, and other experts that were received at the opinion-exchange meeting held in March.

The Group will make full use of this advice as it pushes ahead with key initiatives, in accordance with the Guidelines and the Long-term Targets.

Declaration of Biodiversity

Based on the Declaration of Biodiversity, the Group’s activities to protect biodiversity are as follows.

The Sumitomo Forestry Group Declaration of Biodiversity

The forefather to the Sumitomo Forestry Group was founded more than three centuries ago, and since then we have developed our businesses while conserving forests, whose clear water, air, and soil are the source of life for many living creatures. Going forward, we at Sumitomo Forestry will continue to place the greatest importance on preserving biodiversity through our forestry business for providing timber, which is a renewable and natural material, and for managing forests, which support diverse ecosystems. We shall also strive to help realize a sustainable society that exists in harmony with nature.
Biodiversity Action Guidelines

The Company formulated the following Action Guidelines to guide Group companies as they actively pursue initiatives to protect and promote biodiversity.

The Sumitomo Forestry Group’s Biodiversity Action Guidelines

1. Position biodiversity as a key issue with the goal of coexisting with the environment and, together with its stakeholders, pursue initiatives to protect and promote biodiversity.
2. Ensure that each and every employee in the Group understands the importance of biodiversity and acts while considering both the direct and indirect consequences of their actions on biodiversity.
3. Minimize the impact of all Group activities on biodiversity.
4. Through its timber and forest-related businesses, provide to society the gifts acquired from forest ecosystems and contribute to the improvement of people’s lives.

Biodiversity long-term targets

In order to globally develop its key biodiversity initiatives both within Japan and overseas, the Company formulated the Long-term Targets described below. Toward efficiently achieving these targets, it has also established incremental time schedules for reaching each target, and going forward it will progress initiatives specifically designed to achieve them.

<table>
<thead>
<tr>
<th>The Sumitomo Forestry Group’s Biodiversity Long-term Targets: Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group-wide targets</strong></td>
</tr>
<tr>
<td>1. (Aim to achieve sustainable forests)</td>
</tr>
<tr>
<td>In all timber-related businesses, from upstream to downstream, work to prevent any reduction in forest areas and aim to achieve sustainable forests.</td>
</tr>
<tr>
<td>　・ Regenerate forests through reforestation and the recharging of natural resources and maintain logging to less than grown volume of the forest.</td>
</tr>
<tr>
<td>　・ Increase the procurement and use of sustainable timber, including forest certified timber, plantation forest timber, and Japanese timber.</td>
</tr>
<tr>
<td>　・ Promote the efficient use of timber and, recycle, and reuse timber.</td>
</tr>
<tr>
<td>2. (Increase the amount of CO₂ absorbed by and sequestered in forests and timber)</td>
</tr>
<tr>
<td>In order to increase the amount of CO₂ absorbed by and sequestered in forests and timber, promote the use of timber by cultivating healthy forests and encouraging the use of timber construction materials and the construction of wooden buildings. In this way, contribute to the protection of biodiversity and help alleviate climate change.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Individual targets</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>3. (Forests) Promote forest management that regenerates, maintains, and increases biodiversity</td>
</tr>
<tr>
<td>　・ Carry out zoning that protects ecosystems and the habitats of living creatures.</td>
</tr>
<tr>
<td>　・ Maintain to 20% or above the percentage of the environment protection priority forests area of Company-owned forests in Japan.</td>
</tr>
<tr>
<td>　・ Maintain to 100% the percentage of Company-owned forests in Japan that are forest certified.</td>
</tr>
<tr>
<td>　・ Establish targets for protecting endangered species based on the results of the biodiversity monitoring conducted within Company-owned forests in Japan starting 2012.</td>
</tr>
<tr>
<td>　・ Conduct operations at plantation forests overseas while considering how best to contribute to local communities, economies and education.</td>
</tr>
</tbody>
</table>
## The Sumitomo Forestry Group’s Biodiversity Long-term Targets: Summary

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4 (Products)</td>
<td>Provide products and services that are considerate to biodiversity, such as forest-certified timber and products and services that have received an environmental assessment.</td>
</tr>
<tr>
<td>5 (Construction)</td>
<td>Work to develop homes and communities that are in harmony with the natural environment and their surrounding urban landscapes.</td>
</tr>
<tr>
<td>6 (Design)</td>
<td>Manage and minimize the generation of waste through promoting a zero-emissions policy in construction operations.</td>
</tr>
<tr>
<td>7 (Greening)</td>
<td>Be considerate to the surrounding ecosystems and tree species and actively cultivate native species.</td>
</tr>
<tr>
<td>8 (Plants)</td>
<td>Manage and minimize the generation of pollutants, waste, and noise pollution, and reduce their impact on biodiversity.</td>
</tr>
<tr>
<td>9 (Public relations)</td>
<td>Actively communicate the importance of biodiversity to all stakeholders, including customers, business partners, and local communities.</td>
</tr>
<tr>
<td>10 (Research)</td>
<td>Collect the latest information and develop preservation technologies in order to implement measures to protect biodiversity.</td>
</tr>
<tr>
<td>11 (Social contribution)</td>
<td>Protect those trees that are historically and culturally important and also preserve their genetic material.</td>
</tr>
</tbody>
</table>

### Stakeholder Comment
- It is wonderful that you go as far as preserving and promoting biodiversity in your business activities. I also think your Harmonic Plants™ are very interesting. (Housewife)
- I hope you continue with your plantation forests both within Japan and overseas, but I think an approach of selecting the right tree for the right region is also very important. (Customer)
Preserving Biodiversity

Sumitomo Forestry continues its environmental conservation activities in forests based on site surveys proposing environmentally sound planting in the landscaping business.

Preservation Initiatives at Company-Owned Forests in Japan

The Company has created the *Sumitomo Forestry Red Data Book* to list the rare flora and fauna that might exist in Company-owned forests, and provides training to those who work in these forests. This data book was created with reference to the *Red Data Book* published by prefectural authorities, and is updated whenever necessary. Forests are subject to appropriate zoning based on criteria such as tree growth volume, and efforts are being made to protect areas around water, which are rich in biodiversity, through the creation of a Riparian Forest Management Manual.

Since fiscal 2008, the Company has conducted monitoring surveys of the habitation status of mammalian and avian species in Company-owned forests. In order to ascertain the long-term impact of logging and plantation operations on mammalian and avian species, surveys will be conducted in the regions of Hokkaido, Shikoku, Kyushu and Wakayama, with one of the four regions being surveyed each year. Therefore, the plan is to survey the same region once every four years.

In 2012, the Company plans to conduct its second monitoring survey to assess the habitation status of mammalian and avian species in Company-owned forests in the Shikoku region.

Stakeholder Comment

- I think it’s wonderful that Sumitomo Forestry is carrying out very specific activities, such as creating the Red Data Book and conducting monitoring surveys. (Customer)
Policy on Biodiversity Preservation in Company-Owned Forests in Japan
(Excerpt)
(Formulated September 2006)

1. Diversity of ecosystems
We will properly manage strictly protected areas designated under the Natural Parks Law 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.

Monitoring Surveys of Mammalian and Avian Species in Company-Owned Forests

As part of a monitoring program for SGEC\(^1\) forestry certification, in May 2011 Sumitomo Forestry conducted a monitoring survey of Company-owned forests in Wakayama Prefecture. Mammalian and avian species were surveyed and photographed at fixed locations to obtain the basic information needed to preserve biodiversity in Company-owned forests and determine the impact of logging on the surrounding environment.

In June 2011, it also conducted a monitoring survey of Company-owned forests in the Shikoku region (Momi no Ki Yama). In conjunction with the adoption by the Company of a new method of small-area clear cutting at Momi no Ki Yama this survey was designed to evaluate what effect this method was having on biodiversity. This monitoring survey will be continued over a period of several years and survey items will include effects on plants, insects, and soil animals.

Survey Results

The survey confirmed the presence of the Asian black bear and the Japanese serow in Company-owned forests in Wakayama.

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\(^1\) 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.
Table 1: Confirmed Mammalian and Avian Species in the Surveyed Area

<table>
<thead>
<tr>
<th>Survey year</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shikoku</td>
<td>14</td>
<td>11</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Kyushu</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hokkaido</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wakayama</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mammalian species</td>
<td>14</td>
<td>11</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Avian species</td>
<td>31</td>
<td>33</td>
<td>38</td>
<td>25</td>
</tr>
<tr>
<td>Main important species</td>
<td>Japanese squirrel</td>
<td>Japanese serow</td>
<td>Sable</td>
<td>Asian black bear</td>
</tr>
</tbody>
</table>

2 Species included in Red Data Book by national or regional stipulation (designated as endangered species) under the Act for Protection of Cultural Properties, Act for Preservation of Species, prefectural ordinances, and other laws and ordinances.

No. of confirmed species sightings in Company-owned forests in the Shikoku region (Momii no Ki yama) in 2011

<table>
<thead>
<tr>
<th>No. of species</th>
<th>Main, important sightings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plants (plant survey)</td>
<td>33</td>
</tr>
<tr>
<td>Insects (butterfly survey)</td>
<td>1</td>
</tr>
<tr>
<td>Insects (bate trap survey)</td>
<td>7</td>
</tr>
<tr>
<td>Insects (sweeping survey)</td>
<td>28</td>
</tr>
<tr>
<td>Soil animals</td>
<td>71</td>
</tr>
</tbody>
</table>

Based on the results of the monitoring survey conducted in Company-owned forests in Wakayama, Regional Environmental Planning, Inc., the company that conducted the survey, made the following observations on the impact of clear cutting upon mammalian and avian species.

1. Mammalian Species

   In addition to ascertaining the effects of clear cutting in the clear cutting area, the survey confirmed that while there was a fairly large number of confirmed sightings of herbivores, due to the fence erected to prevent the entry of deer, only a few species were observed; namely, hare (Lepus brachyurus) and Japanese sika deer. In addition, although only a small number of animal species were observed in the clear-cutting area, a variety of species were found to be present in the adjacent forest area. Therefore, as plant life recovers it is thought that in the future these clear-cutting areas will also become habitats for a variety of living creatures.
2. Avian Species
The effects of clear cutting were conspicuous. Only a few bird species were confirmed in the clear-cutting areas, and there was an obvious difference between clear-cutting areas and the surrounding forest in terms of bird numbers, species, formation of groups, and territories. However, it is considered that this result indicates not a situation in which birds were completed segmented between the two areas, but rather a situation in which continuity was comparatively well maintained. From these observations, it is thought that, going forward, bird species will increase as plant life recovers in clear-cutting areas.

3. Shared
The area covered by this survey supports a wide variety of mammalian and avian species. Umbrella species\(^6\), such as Asian black bear, and endangered species, such as the Japanese serow (*Capricornis crispus*), great spotted woodpecker (*Dendrocopos major*), and the Japanese thrush (*Turdus cardis*) are confirmed and thus, it is thought that habitats capable of supporting a diverse range of mammalian and avian species are being preserved.

The Company will continue to carry out the monitoring survey in collaboration with Regional Environmental Planning, Inc., with the goal of accumulating data to ascertain what effects its forestry operations are having on the surrounding forest and to investigate forestry methods that will minimize any adverse impact. Moreover, it is also using the results of the surveys to set appropriate numerical values for targets.

\(^6\) The species at the top of the food chain

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**Stakeholder Comment**

- I’d like Sumitomo Forestry to continue listening to third-party viewpoints and tackle the issues even more. (Student)
Preservation of Overseas Plantation Forests

Policy & Plans

Indonesia has the third largest area of rainforest in the world, but it is said that around 700,000 hectares of forest are lost each year due to factors including forest fires, illegal logging and slash-and-burn farming. Sumitomo Forestry is working to curb the decline in rainforests and preserve biodiversity through reforestation.

Results

Sumitomo Forestry has a large-scale commercial forest plantation in West Kalimantan, Indonesia. In order to protect precious forests, forest plantation is being carried out using techniques matched to specific areas, based on appropriate zoning that takes biodiversity into consideration.

Link in this report: “Implementing Large-Scale Commercial Forest Plantation Business” (P.207)

Reforestation Based on Appropriate Zoning
Preserving Biodiversity
Sumitomo Forestry continues its environmental conservation activities in forests based on site surveys proposing environmentally sound planting in the landscaping business.

| Policy and Plans for Biodiversity Preservation | Initiatives at Company-Owned Forests in Japan | Preservation of Overseas Plantation Forests | Initiatives at Landscaping Business | Initiatives at Plants |

## Landscaping Operations that Help to Preserve Biodiversity

### Policy & Plans

Sumitomo Forestry and Sumitomo Forestry Landscaping Co., Ltd. have named the biodiversity-friendly plants and trees to be used in landscaping, “Harmonic Plants®1,” and actively promote them.

Through the landscaping business, the Companies have been encouraging planting that includes native species, and aiming for promotion of biodiversity, they have clearly classified the trees and plants used in landscaping from the perspective of biodiversity as “Harmonic Plants®”, so that species having a clearly adverse impact on local ecosystems are not used.

The conservation level for the planned planting site is classified into one of four area types—Protected Area, Conservation Area, Satoyama Area (countryside close to rural communities), City Area—and “local seedlings”, “native plants” and “cultivatable species” are used according to the impact on each area’s ecosystem. In the landscaping of residential gardens, consideration is given to the color of the space by incorporating certain cultivatable species and introduced plants that do not affect the local ecosystem, rather than limiting planting only to native plants.

The Thinking behind “Harmonic Plants®”

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1 Protected areas do not include “Harmonic Plants®,” as the artificial transplanting or introduction of plants is not permitted.
Approach to Planting Areas

1. Protected Area (area in which the genetic constitution is protected): Area in which the artificial transplanting or introduction of plants is not permitted for scientific reasons, such as an area of primordial nature.

2. Conservation Area (area of systems conservation): An area in which nature is protected, such as islands, high-mountain, or wetlands. Local seedlings are used for greening.

3. Satoyama Area (area of species conservation): A region of secondary nature that is impacted by human activity, such as a mid-mountainous area or Satoyama Area. Native species, including cultivatable species, are used for greening.

4. City Area (area in which introduced species are managed): An area removed from a natural ecosystem that can be managed. Non-invasive cultivatable species can also be used.

In residential exterior landscaping, the company is promoting the “Mou Hitotsu no Mori-zukuri™” (Making Another Forest) project for the greenification of towns and residences, primarily using plants that are native to the region, including cultivatable species.

Results

Continued Participation in Green Wave 2011

Continuing on from 2010, Sumitomo Forestry participated as a partner organization in Green Wave 2011, an event to encourage awareness of biodiversity and promote biodiversity initiatives that was organized by the Ministry of the Environment; the Ministry of Agriculture, Forestry and Fisheries; and the Ministry of Land, Infrastructure, Transport and Tourism. The Company's main contribution to this project was distributing approximately 9,000 tree seedlings of native Japanese species at Sumitomo Forestry's 287 model homes throughout Japan in 2011, from April 23 to May 5.

Planting at New Model Homes

At new model homes since 2010, the Company has planted “Harmonic Plants®” focused on Japanese native species, and has been popularizing residential landscaping that takes ecosystems into consideration. It carried out the planting in 2011 at its Kawagoe model house in Kawagoe City, Saitama Prefecture; its Sengawa model house in Chofu City, Tokyo; and at its Kohoku model house in Yokohama City, Kanagawa Prefecture.

Launch of Tree Production Technology Association, Building of Local Seedling Production Network

Even plants classified as being the same species can have different genes according to the region in which they are found naturally.

In order to produce local seedlings whose existing mother (seed) trees have grown natively in each region since ancient times, a Tree Production Technology Association made up of Sumitomo Forestry Landscaping Co., Ltd. and tree producers was launched and has been developing its operations.

On land of cooperating farms in Oita Prefecture, around 2,600 seedlings comprising approximately 33 species are being cultivated, including the evergreen oak (Quercus myrsinifolia), the maple (Acer), and the hill cherry (Prunus jamasakura).

Going forward, seedlings that are native to local areas will be sold to local government bodies promoting the preservation of public forests, and to companies planning the greenification of offices and factories.
Future Plans

Sumitomo Forestry is committed to ongoing activities that take biodiversity into consideration, promoting the preservation of ecosystems, by further tightening the selection criteria for plants handled by the landscaping business, and by strengthening the dissemination of information about the appeal and value of this business through “Harmonic Plants®”.

Stakeholder Comment

- I think your plantation forest operations and efforts to protect the environment are wonderful. I hope that you continue to protect the environment and biodiversity both overseas and in Japan.
  (Housewife)
Sumitomo Forestry Crest Co., Ltd. is conducting biodiversity conservation activities optimized for the local communities where its production facilities are located, under the shared objective of “providing habitats for local species and rest areas through conservation of plant life indigenous to the local community.”

**Results**

**Plan to Cultivate Beach Silvertop (*Glehnia littoralis*) at the Kashima Plant**

Plans are underway to cultivate the endangered plant species, beach silvertop (*Glehnia littoralis*), which is native to the sandy beaches of Kashima. In fiscal 2009, Sumitomo Forestry Crest Co., Ltd. began cultivation in planter boxes of beach silvertop seeds received from Kamisu City. But based on the fact that germination was not confirmed in fiscal 2010, it has been protecting the growth of those seedlings that were divided immediately after germination and transferred to planter boxes. Going forward, it will attempt to increase the harvest of seeds and the number of seedlings at the same time as conducting testing to determine the optimum timing for transferring the seedlings to permanent planting locations at beaches.

**Bird-Friendly Planting at No. 2 Kyushu Plant of Sumitomo Forestry Crest Co., Ltd.**

Sumitomo Forestry Crest Co., Ltd. conducted a survey in order to ascertain the bird species present within the grounds of the No. 2 Kyushu plant and the surrounding areas, and also to determine which non-invasive species of trees were most compatible with these species of birds. From among the various species of trees considered, trees were selected for planting based on a comprehensive consideration of such factors as whether the species was an evergreen or deciduous tree and whether it was a tall growing or short-growing variety. Planting is being carried out at locations close to the Kyushu plant where such varieties of trees were not conventionally found.
Management of Chemical Substances at Research Institute and Plants

The Sumitomo Forestry Tsukuba Research Institute and the plants belonging to Sumitomo Forestry Crest Co., Ltd. use chemical substances in laboratory work and production. The Tsukuba Research Institute prepared the Chemical Substance Management Manual based on a pollution prevention agreement it entered into with the city of Tsukuba. In accordance with this manual, the institute established an organizational structure for chemical substances management and prescribed methods for receiving, storing, using, and disposing of chemical substances. In 2010, a new Chemical Substance Disaster Response Manual was created to prescribe matters including pre- and post-disaster response, and preventive measures.

Sumitomo Forestry Crest Co., Ltd’s plants take precautions to prevent chemical leaks and other environmental accidents. They have prepared environment-related operations manuals that prescribe methods for waste disposal, water treatment, and the handling of organic solvents, among other matters. The plants are also measuring concentrations of air and water pollutants and organic solvents in exhaust gas.
PRTR Substances
Unit: kg (excluding dioxins, which is shown in mg-TEQ)

<table>
<thead>
<tr>
<th>Substance No. (PRTR Law)</th>
<th>Chemical substance</th>
<th>Volume used</th>
<th>Emissions to air</th>
<th>Emissions to public sewage system</th>
<th>Emissions to soil</th>
<th>On-site landfill</th>
<th>Total emissions</th>
<th>Transfer as waste</th>
<th>Transfers to sewage</th>
<th>Total transfers</th>
<th>Consumed[^1]</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Acrylic acid and its water-soluble salts</td>
<td>4,301.00</td>
<td>0.00</td>
<td>15.00</td>
<td>0.00</td>
<td>15.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
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<td>4,303.00</td>
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<tr>
<td>7</td>
<td>n-Butyl acrylate</td>
<td>13,234.00</td>
<td>0.00</td>
<td>0.00</td>
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<td>36.00</td>
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<tr>
<td>13</td>
<td>Acetonitrile</td>
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<td>0.00</td>
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<td>134</td>
<td>Vinyl acetate</td>
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<td>1,826,237.00</td>
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<tr>
<td>186</td>
<td>Dichloromethane</td>
<td>72,800.10</td>
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<tr>
<td>243</td>
<td>Dioxins</td>
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<td>1,2,4-Trimethylbenzene</td>
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<tr>
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<td>1,3,5-Trimethylbenzene</td>
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<td>600.00</td>
<td>28,080.00</td>
<td></td>
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<td>395</td>
<td>The water-soluble salts of peroxydisulfuric acid</td>
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<td>13.00</td>
<td>0.00</td>
<td>13.00</td>
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<td>2.00</td>
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<tr>
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<td>13.00</td>
<td>0.00</td>
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### Effluent Water Quality Survey Results (No. 2 Kyushu Plant)

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit</th>
<th>Measured</th>
<th>Effluent Standards</th>
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<tr>
<td>pH</td>
<td></td>
<td>7.5</td>
<td>5.0 ~ 9.0</td>
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<tr>
<td>COD</td>
<td>mg/l</td>
<td>28.4</td>
<td>40</td>
</tr>
<tr>
<td>SS</td>
<td>mg/l</td>
<td>3.4</td>
<td>50</td>
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<tr>
<td>T-N</td>
<td>mg/l</td>
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<tr>
<td>T-P</td>
<td>mg/l</td>
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### Effluent Water Quality Survey Results (Tsukuba Research Institute)

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit</th>
<th>Measured</th>
<th>Effluent Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td></td>
<td>7.5</td>
<td>5.8 ~ 8.6</td>
</tr>
<tr>
<td>BOD</td>
<td>mg/l</td>
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<td>160</td>
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<tr>
<td>SS</td>
<td>mg/l</td>
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<td>200</td>
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<tr>
<td>Total n-hexane extract substances (total mineral oils)</td>
<td>mg/l</td>
<td>Less than 1</td>
<td>5</td>
</tr>
<tr>
<td>Total n-hexane extract substances (total plant and animal fats/oils)</td>
<td>mg/l</td>
<td>Less than 1</td>
<td>30</td>
</tr>
<tr>
<td>Total Phenols</td>
<td>mg/l</td>
<td>Less than 0.025</td>
<td>0.5 or less</td>
</tr>
</tbody>
</table>

---

2. pH = concentration of hydronium ions, COD = Chemical Oxygen Demand, SS = Suspended Solids, T-N = Total Nitrogen, T-P = Total Phosphorous
3. Effluent Standards uses values stipulated by prefectural ordinance.
4. Effluent Standards uses values stipulated by the Water Pollution Control Act.
   Total Phenols uses standards required by the Tsukuba City Pollution Prevention Agreement.
5. BOD = Biological Oxygen Control
Proper Treatment of Building Materials Containing Asbestos

The Sumitomo Forestry Group has secured appropriate disposal routes for asbestos. Countermeasures for prevention of asbestos being released into the air during home demolition work are detailed in the Guide for Appropriate Measures during Demolition Work, which sets forth policies for construction management. The Company also discloses information about asbestos use and countermeasures via its website.

In fiscal 2011, asbestos was discovered at the sites of the Nagoya Plant of Sumitomo Forestry Crest Co., Ltd., and the former Iwaki branch business office and warehouse of Daiichisansho Co. Ltd. Work was carried out to remove and process the asbestos at these locations in accordance with the Air Pollution Control Act and the Waste Disposal Act.

Storage and Proper Treatment of Polychlorinated Biphenyls (PCBs)

Sumitomo Forestry properly manages polychlorinated biphenyl (PCB) waste and prevents leakage to the soil by keeping it in sealed metal containers inside designated, locked steel warehouses marked for stored goods. Each branch and division has arranged to gradually dispose of stored PCBs based on proper disposal implementation plans.

In fiscal 2010, following the sale of Sumitomo Forestry Crest Co., Ltd.’s Komatsushima Plant, equipment units stored at the Komatsushima Plant were transferred to this company’s Kyushu Plant. Trace amounts of PCB waste were found on one unit and waste containing PCBs was found on six units. These units are now being processed and stored appropriately.

Measures against Volatile Organic Compounds (VOCs)

Policy & Plans

Sumitomo Forestry is working to reduce emissions of volatile organic compounds (VOCs) in Sumitomo Forestry Home houses, which have been identified as a cause of “sick house” syndrome.

Results

- Only “F★★★★★”-rated building materials, furniture, lighting systems, and curtains—which have the lowest level of formaldehyde emissions—are used
- Cosmetic plasterboards that absorb and break down formaldehyde are used inside closets. Only tatami mats that do not contain foamed polystyrene are used. Efforts are also being made to reduce toluene and xylene.
Efficient Use of Water Resources
Sumitomo Forestry Group works to reduce water use at its plants and offices, and to use recycled water at its factories.

Reducing Volume and Using Recycled Water at Plants

Policy & Plans

Of the Sumitomo Forestry Group's domestic manufacturing facilities, the No. 2 Kyushu Plant of Sumitomo Forestry Crest Co., Ltd., which manufactures synthetic resin adhesives and other products, is a designated facility under the stipulations of the Water Pollution Control Law. The other factories primarily manufacture processed wood products such as plywood and housing interior materials and thus do not use large amounts of water. Nonetheless, efforts to use water as efficiently as possible are being made at all Sumitomo Forestry manufacturing facilities.

Results

Measures to Cut Down on Water Usage

The No. 2 Kyushu Plant of Sumitomo Forestry Crest Co., Ltd. uses industrial water to cool manufacturing equipment, then reuses it to dilute plant effluent, and processes it appropriately as industrial effluent. The four initiatives described below are ongoing in order to reduce the amount of water used. However, due to the reason described below, in fiscal 2011 the volume of industrial water used increased by 11% compared with the previous fiscal year.

The water quality of industrial effluent is processed so that it meets the standard set in prefectural regulations, but an inspection of water quality in fiscal 2010 found that on occasions, its COD value\(^1\) was close to exceeding the standard. Therefore, in fiscal 2011 the plant had to increase the volume of industrial water used in order to stably keep this value well below the standard.

Going forward, in addition to continuously implementing the four measures described below, Sumitomo Forestry Group will work to decrease the volume of industrial water that it uses through efforts including the launch of a project to improve its effluent technologies and the processing of effluent with the absolute minimum level of dilution water.

1. Redesign production plans to match the actual production sequence in order to decrease the number of times equipment is washed.
2. Recirculate some of the water used to wash equipment for reuse as a raw material.
3. Cover a storage pool for effluent with a roof to prevent rain from increasing wastewater volume.
4. Enhance the efficiency of rainwater use (including by measures to upgrade the pumps used to collect rainwater)

\(^1\) Chemical Oxygen Demand. This shows the amount of oxygen required to oxidize an organic compound in water and is considered one of the most important indicators of water quality.
Using Recycled Water

Some 360,000m³ of recycled and reused water is utilized every year at the No. 2 Kyushu Plant and Niihama Plant of Sumitomo Forestry Crest Co., Ltd. through such efforts as recycling the water used in water curtain spray booths and reusing treated wastewater.

Stakeholder Comment

- I hope that you measures to maintain and protect forests and the environment also reflect the importance of water. (Customer)
Environment-Related Businesses

The Sumitomo Forestry Group is deeply interconnected with forests, which play a central role in solving global environmental problems, including global warming. Its environment-related businesses include sustainable plantation forest operations that respect biodiversity, biomass power generation, environmental greening operations, and environmentally friendly products, as well as many other fields that hold potential for commercialization. Leveraging our accumulated expertise and knowledge, we offer tree-related consulting services, and have built a business model on these services for actually implementing our ideas on site. This is embodied in our environmental problem solutions business, which realizes sustainable use of natural resources while harmonizing with the environment and the local community.

Stakeholder Comment

- I would like to see Sumitomo Forestry plays an active role in environmental planning for the entire region. (Expert)

Expanding the Scope of the Company’s Biodiversity Greening Business

Policy & Plans

Today, protecting biodiversity has become an important issue, and this has prompted a range of initiatives involving the use of corporate green zones. Sumitomo Forestry Landscaping Co., Ltd., which is involved in a variety of greening and biodiversity-related businesses, such as rural regeneration projects, has collaborated with the MS&AD Insurance Group and Regional Environmental Planning Inc., to create Eco-Asset™ to provide consulting services to companies, mainly for biodiversity greening in corporate green zones. From October 2011, Sumitomo Forestry has also participated in this organization through its Eco-Asset Team and is aiming to expand the scope of its environmental business through the team’s activities.
**Results**

**Redevelopment of Mitsui Sumitomo Insurance’s Land in the Surugadai District**

The Company is aiming to recreate Mitsui Sumitomo Insurance's land in the Surugadai District (Chiyoda Ward, Tokyo), which is located 1km away from the Imperial Palace, into a green city space that reflects the abundant nature found in the palace. It is currently pushing ahead with this redevelopment to create a green space that will attract a variety of living creatures. The Eco-Asset Team began collaborating with this redevelopment project when an application was made for recognition as a Special Urban Development Area. Construction of the new building was completed in February 2012, while repairs to the adjacent main building began in May 2012. In addition to exterior landscaping, Sumitomo Forestry Landscaping Co., Ltd. received orders to undertake a variety of other greening projects for the redevelopment, including wall greening, eaves greening, and planting roadside trees.

In fiscal 2011, this project was awarded the highest possible ranking of Superlative Stage in the recently renewed Social and Environmental Green Evaluation System¹ (SEGES) assessment, making it the first project in Japan to receive this ranking.

**Panasonic’s Biodiversity Greening Plan**

In 2011, the Eco-Asset Team carried out environmental evaluations at 121 Panasonic Group business sites throughout Japan. Among the sites evaluated, the Kadoma and Moriguchi area in Osaka was considered to be particularly environmentally important and an initiative was launched at this location to create a business site that also functioned as a bio-reserve for living creatures. This included removing part of the parking lot and the grounds and preparing a green zone, primarily for attracting butterflies. Construction for this project was completed in March 2012, and its success in attracting living creatures to the Yodogawa water network in the northern area and the Tsurumi Ryokuchi Park southern area is currently being confirmed.

**A Greening Plan that Protects Biodiversity in a Greenbelt in a Coastal Industrial Zone**

During the period of rapid economic growth in Japan, large-scale green belts were created in coastal industrial zone, one of which is located near Chita City, Aichi Prefecture. In the subsequent 40 years, the tree saplings planted in this green zone have grown to create a forest that serves as the habitat to many living creatures, and moreover forms the basis for a number of regional ecosystems. A movement has gained momentum among companies in the coastal area of Chita City to integrate the land that they each own within this green zone with the aim of contributing to the region in which they planted their own roots as businesses. The Eco-Asset Team has been providing consulting services on biodiversity to individual companies that own land in the greenbelt, and it is also participating in the New Public Services Support Model, a project to utilize corporate green zones and protect the region’s natural environment.

**A Forest Maintenance Program for Forest of Co-Creating a Brighter Future at Daiwa House Industry Land in Hayama**

Daiwa House Industry Ltd. announced that it would use 330 hectares of its unused land in Hayama Town, Miura-gun, Kanagawa Prefecture to create a nature-encounter facility, which it will open as a base for nature activities in the region. Various stakeholders are participating in the plan and will utilize the facility for a range of uses, such as growing firefly, farming, and for hiking and running trails. During fiscal 2011, the Eco-Asset Team focused its efforts into ecosystem surveys and stakeholder analyses, and based on the results of a potential assessment, in fiscal 2012 it will push ahead with the fundamental measures set out in the plan to utilize the green areas.

¹ Focusing on corporate green zones that contribute to society and the environment through activities to protect and cultivate greenery, this 'green awards' system evaluates initiatives and certifies those that are particularly excellent.
Future Plans

The Company will work to develop new environmental businesses, using its greening operations as the gateway into these businesses.

Treasured and Precious Trees Propagation Business

Policy & Plans

One of Sumitomo Forestry’s businesses has been developing technologies for breeding trees with the same qualities as treasured trees and precious trees in various regions, in order for future generations to benefit from these trees.

Results

Developing a Technology to Identify Cherry Tree Varieties through an Analysis of Their DNA

The cherry tree is the flowering tree most synonymous with Japan, and breeding to create new varieties has taken place here since the Muromachi Period. As a result, it is said that today there are more than 250 varieties of cherry tree. However, it is extremely difficult to identify the variety solely from the tree’s external appearance, and therefore Sumitomo Forestry collaborated with the Forestry and Forest Products Research Institute, a National Institute of Genetics, and the Association for the Propagation of Knowledge on Genetics, to jointly develop a technology to identify the variety through DNA markers.

Completing a DNA Database of approximately 200 Cultivated Varieties

In March 2010, the Company completed the creation of a database of 200 varieties of cherry trees for which DNA information was available, in collaboration with the Forestry and Forest Products Research Institute, using the above-described identification technology. The database clearly identifies and organizes the data on individual varieties, making it possible to accurately identify and manage the data in the future.

Successful Breeding of Yuten Cherry Tree (Protected Species) Using Plant Tissue Culture Techniques

The Yuten cherry tree is an ancient breed found at Seigan-ji Temple, Tokyo, that has been designated a protected species in Shinagawa Ward. Due to the advanced age of the trees and rapid changes in the environment in recent years, the trees have shown signs of decay in their canopies, raising the need to plant successors. In 2011, Sumitomo Forestry Co., Ltd. and Sumitomo Forestry Landscaping Co., Ltd. were successful in breeding seedlings of these trees, using their plant tissue culture techniques based on progress made thus far in development and applied research.

In addition, during their most recent investigation, the companies used the database of cherry tree DNA to attempt to identify the DNA of the Yuten cherry tree and they concluded that it is highly likely that it is a new variety. The Company is also involved in a range of other initiatives to breed and preserve Japan's historically and culturally important trees.

Future Plans

The team will confirm whether the flowers, leaves and other parts of the cherry tree are the same, by checking the DNA of the seedlings bred from the Yuten cherry tree, and following up with flower petal research after they bloom. Then it plans to use the incubated seedlings at commemorative and other events held at Yuten-ji Temple.

The team also plans to identify the origins of unknown species of cherry trees using our cherry tree DNA database and plant tissue culture techniques. It will apply this experience in our breeding business for treasured and precious trees throughout Japan. It hopes to preserve these precious trees for future generations by understanding in depth the many varieties of trees, their identifying DNA traits, diversity of the species and individual history.

Overseas Reforestation Consultancy

Policy & Plans

Backed by its knowledge of forest management in tropical regions, the Company offers consulting services for environmental reforestation and for the protection and cultivation of forests that takes into account local communities, such as for the restoration of degraded forests in tropical regions and the rehabilitation of biodiversity.

Results

Tropical Forest Regeneration Project with Mitsui Sumitomo Insurance Co., Ltd.

With the aim of restoring degraded forests in national parks, Sumitomo Forestry has been working on a reforestation project for the Paliyan Wildlife Sanctuary in Indonesia. As a result of reforestation that began in April 2005 and continues today, it has planted around 300,000 trees on 350 hectares of land, as of March 2011. From April 2011, with the goal of ‘Creating a Framework for the Independent Protection by Local People of Abundant Forest Areas,’ the Company launched a support project to provide local people with guidance on farming methods that help to preserve forests, and has also created a scheme through which local people can independently protect the forests once they have regenerated.
Industrial and Environmental Reforestation with Roland Corporation

Since 2007, Sumitomo Forestry has participated in the industrial reforestation of lands managed by The Indonesian State Owned Forestry Enterprise (Perum Perhutani) for the purpose of timber production, and also in the environmental reforestation of these lands for the purpose of increasing watershed protection, contributing to local economies and preventing global warming. For the former, 72.4 hectares have been reforested, and some of the harvested trees were processed into fiberboards and used to build cabinets for electric pianos made by Roland Corporation. For the latter, a total of 30.6 hectares have been reforested. In addition to continuing with the cultivation carried out in fiscal 2011, the Company has created a harvesting plan for its industrial tree plantation in this region that it will launch during fiscal 2012.

Future Plans

- Tropical Forest Regeneration Project with Mitsui Sumitomo Insurance Co., Ltd.
  Sumitomo Forestry provides guidance for local people on the use of cultivation technologies for high-value added crops, support for the sale of these crops, in order to improve the quality of local people's lives through measures to prevent the degradation of forests. In addition, it continuously holds discussions with local governments and private sector organizations in the regions where it has plantation forests toward creating systems that will prevent forests that have recovered from becoming degraded once again.

- Reforestation Business with Roland Corporation
  Starting in fiscal 2012, over a three year period the Company processes timber from trees harvested at its industrial tree plantations to build cabinets for electric pianos made by the Roland Corporation

Policy & Plans

Sumitomo Forestry has been developing a new business model for plantation forest operations based on data from land-observing satellites. By using satellite information, environmental data of the planned site stretching across a broad area can be obtained or estimated with a high degree of accuracy, which is extremely valuable for conducting reforestation projects in developing countries.
Results

Development of Support Tools for Using Satellite Data in Reforestation Projects and Feasibility Studies

In cooperation with the Hiroshima Institute of Technology and Kyoto University, Sumitomo Forestry proposed an Afforestation Business Model for Developing Nations Using Satellite Data, and it was selected for the Space Open Lab in fiscal 2008. The Industrial Collaboration Department of the Japan Aerospace Exploration Agency (JAXA), an independent administrative organization, administers the Space Open Lab project. Research on the project was conducted jointly with JAXA through the end of fiscal 2010.

Based on knowledge gained from this joint research, the Company has been developing a plantation development support tool and conducting feasibility studies using satellite information in the Company’s large-scale industrial plantation operation in plantation forest areas of West Kalimantan in Indonesia. The satellite data has provided a detailed map of the land candidates for plantation forests, and it has helped with forming estimates of the pace of growth of forests that have already been planted. In these ways, the satellite data can increase the efficiency of plantation forestry operations.

CDM Business Using Wood Biomass Power Generation

Policy & Plans

On May 23, 2008, PT. Rimba Partikel Indonesia’s (RPI) wood biomass power generation business, which primarily uses lumber mill offcuts and sawdust as fuel, was registered by the CDM Executive Board at the United Nations as a Clean Development Mechanism (CDM) project.

The generator, a wood biomass model with an output capacity of four megawatts, is expected to reduce annual CO₂ emissions by 15,000 tons compared to the diesel generator it replaces.

Results

Issuance of CER Credits for 10,982t-CO₂

Following an assessment by the United Nations, in March 2011, CER credits for 10,982t-CO₂ were issued for the fiscal 2009 portion. Many CER credits issued to date have been for reducing CFC gas and nitrogen oxide, or for reducing CO₂ emissions by using hydroelectric, wind power and other forms of clean energy. This time, the CER credit was issued for RPI’s efforts in using wood biomass energy, an area that has not been cited often for credits in the past.

Link in this report: Reducing CO₂ emissions from plants (P.165)

Sale of 6,000t of CER credits

During fiscal 2011, the Company sold credits worth 6,600 tons of CO₂ to companies within Japan from the credits issued to it in March of the same year.
Future Plans

The CER credits issued for the Company’s various businesses are being used for measures to help alleviate global warming, such as for carbon offsetting and emissions rights trading schemes.

1. Clean Development Mechanism (CDM): A system under which developing countries receive technologies and funding from advanced countries in order to encourage businesses to reduce emissions of greenhouse gases or increase their offset of greenhouse gases. In exchange, the advanced countries receive CERs, which can be used to help achieve emissions targets at home.

2. Certified Emission Reduction (CER): CER credits are certified by the United Nations, which issues them based on the volume of greenhouse gas emissions reduced in accordance with CDM rules.

Promoting Wood Biomass Power Generation

Policy & Plans

By operating a biomass power generation facility that uses industrial waste wood generated by thinning forests or demolition of buildings, the Company promotes recycling of timber, efficient use of forest resources, and contributes to stopping global warming by reducing CO₂ emissions.

Results

Establishing a Biomass Power Generation Facility Installed with Environmental Equipment

Sumitomo Joint Electric Power Co., Ltd., Fuluhashi EPO Corporation, and Sumitomo Forestry jointly established Kawasaki Biomass Electric Power Co., Ltd. in Kawasaki City, Kanagawa Prefecture, to operate a biomass power generation facility using woodchips as fuel. Japan Bio Energy Co., Ltd., a woodchip supply company, was also established in a nearby location. The Kawasaki Biomass Electric Power Co., Ltd. started operations in February 2011 as the largest biomass power generation business in Japan. The facility is able to generate 33MW of power, which means it can supply power for approximately 37,000 households consuming a typical amount of power, or for about 100,000 people. Moreover, the facility is contributing to society by supplying power to help alleviate the power shortages that have occurred in Japan following the Great East Japan Earthquake of March 2011.

In order to clear the strict environmental standards established by Kawasaki City, Kawasaki Biomass Electric Power Co., Ltd. has installed environmental equipment that no other regional biomass power facility uses, including flue gas desulfurization equipment, an exhaust gas denitrizer, and a bag filter. Moreover, as a city-type biomass power generation facility it is working to improve the atmospheric environment.
Building a System that Supplies Wood Waste as a Fuel

Japan Bio Energy makes woodchips out of wood waste collected from the construction of homes, and supplies it to Kawasaki Biomass Electric Power Co., Ltd. as a fuel for its power generators. The chip factory and power plant are located next to each other, dramatically cutting the amount of energy used to transport the woodchips.

Future Plans

Japan Bio Energy will work to secure biomass fuel to ensure stable power generation at maximum output, and also develop other biomass fuels from forest resources and other unused biomass sources, such as food waste.

Stakeholder Comment

I want Sumitomo Forestry to partner with electric power companies and local residents to support lifestyles in the broadest sense of the meaning throughout society. (Student)

Sale of First Private-Sector Domestic Forest Absorption-type Offset Credit (J-VER)

Policy & Plans

The Japan Verified Emission Reduction (J-VER) system, an offset credit promoted by the Ministry of the Environment as a measure to combat global warming, certifies carbon offset credits for domestic projects that reduce emissions of or absorb greenhouse gases, in an amount equivalent to the amount of emissions reduced or gases absorbed. The use of J-VER offset credits, a business model of utilizing offset credits to improve profitability of forestry management, contributes to the revitalization of Japan's forests.

Results

Forest Absorption-type J-VER Offset Credit

In July 2009, a Company-owned forest (Miyazaki Prefecture) was registered under the J-VER system as the first Sustainable Forestry Management Promotion-Type Project. Following validation, the J-VER credits issued were used to offset CO₂ emissions generated at exhibitions and other events. Under the J-VER system, in fiscal 2009 and fiscal 2010 a combined total of 4,234t-CO₂ worth of credits were issued to the Company. As the area within Miyazaki Prefecture covered by the system was expanded in order to meet the demand for credits, in March 2012 the Company was issued with credits worth 9,441t-CO₂.
J-VER Offset Credits Sold to Ochisangyo Co., Ltd.

Continuing on from 2010, in July 2011 Sumitomo Forestry sold J-VER offset credits worth 30t-CO₂ to Ochisangyo Co., Ltd. These credits were used to offset 1kg of CO₂ per visitor to Ochisangyo’s “I Love Home Fair” events, which it held at various locations in West Japan. In total, 24.22t-CO₂ was offset for 24,220 people. The remaining credits will be used at other events and conferences sponsored by the company. The Company will once again offer credits to Ochisangyo in fiscal 2012.

▶ Link in this report: “Offsetting CO₂ Emissions through the J-VER System” (P.170)

Carrying out Reforestation and Reducing Greenhouse Gas Emissions in Overseas Businesses

Policy & Plans

Sumitomo Forestry considers REDD+1, which is currently being investigated by the United Nations, and the Bilateral Offset Credit Mechanism (BOCM), which the Japanese Government plans to introduce from 2013 as a new mechanism for credits, to be promising business opportunities that warrant close examination. Therefore, with an eye to these frameworks the Company is currently looking into the feasibility of initiatives in Vietnam and Indonesia for the regeneration of degraded forests or those destroyed by forest fires, and also into initiatives to reduce emissions of greenhouse gases.

Results

Investigating New Mechanisms for Regeneration of Forests and Biomass Power Generation in Vietnam

In 2011, the Global Environment Centre Foundation was contracted by the Ministry of the Environment to carry out the New Mechanism Feasibility Survey (http://gec.jp/main.nsf/en/Activities-Climate_Change_Mitigation-FS2011newmex24). As part of this, the Company has been conducting a feasibility survey for measures to protect and regenerate forests in the Son La Province of West Vietnam, where forests have been degraded due to field burning, and also for reducing greenhouse gas emissions through biomass power generation using timber procured from these sustainable forests. A large area of forest in this area has been degraded, but as forests play an important role here as a water source for the hydro-electric dams that are dispersed throughout the region, there is an urgent need for them to be protected and regenerated. In addition, this region is one of the most deprived in Vietnam, and the launch of a forest preservation and regeneration project will contribute to environmental protection and sustainable development in the region, while the Company is aiming to develop projects that can acquire emissions credits in Japan. The Company is currently collaborating with the relevant Vietnamese government authorities, the Vietnam University of Forestry, and JICA as it continues with its survey.

Conducting the survey

The forests of Son La Province
Measures to Regenerate Forests in Indonesian Peatlands

Large volumes of carbon accumulate in peatlands. When this land is developed for farming, it must be dried by drainage and as a result, the microorganisms in the soil decompose, which in turn causes the accumulated carbon to be released into the atmosphere as CO₂. In addition, fires can occur in peatlands that have been dried, which causes large quantities of CO₂ to be released into the atmosphere. Both of these forms of CO₂ emissions contribute to global warming.

In fiscal 2011, the Ministry of Economy, Trade and Industry commissioned a survey on the feasibility of reducing greenhouse gas emissions through measures to prevent large-scale fires in the peatlands in the central part of Kalimantan Province, Indonesia. Sumitomo Forestry collaborated with Sumitomo Corporation and Shimizu Construction Co., Ltd. to carry out the survey, its role being to investigate methods of regenerating the vegetation that would also benefit the local people and economy. It was able to contribute to the project through constructing a new mechanism that can help prevent global warming by preserving the peatland and ensuring that it is used appropriately.

1 An approach to reducing emissions of greenhouse gases from forests by preventing deforestation and forest degradation (REDD: Reduced Emissions from Deforestation and forest Degradation). Based on this approach, the goal is to reduce the emissions of greenhouse gases through conserving and managing forests, such as by clarifying the role of forest conservation, managing sustainable forests, and increasing carbon stock from forests.
### Policy & Plans

Sumitomo Forestry calculates and publicizes the costs and benefits of its environmental conservation activities to promote environmentally sound management.

Note: The basis of calculation includes Sumitomo Forestry on a non-consolidated basis and certain group companies.

### Results

#### Environmental Protection Costs

<table>
<thead>
<tr>
<th>Cost Category</th>
<th>Main Activities</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operations costs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pollution prevention costs(^1)</td>
<td>Soil contamination survey</td>
<td>0.41</td>
</tr>
<tr>
<td>Global environmental protection costs(^2)</td>
<td>Sustainable forestry cultivation</td>
<td>648</td>
</tr>
<tr>
<td></td>
<td>Environment-related business (CDM business, overseas reforestation, etc.)</td>
<td>212</td>
</tr>
<tr>
<td></td>
<td>Carbon offset</td>
<td>76</td>
</tr>
<tr>
<td>Resource recycling costs(^3)</td>
<td>Promotion of appropriate treatment, reduction, and recycling of industrial waste</td>
<td>3,586</td>
</tr>
<tr>
<td></td>
<td>Waste wood-based chip distribution operations</td>
<td>183</td>
</tr>
<tr>
<td></td>
<td>Potting mix business (using sediment from water purification plants, etc.)</td>
<td>550</td>
</tr>
<tr>
<td><strong>Upstream/Downstream costs(^4)</strong></td>
<td>Green purchasing</td>
<td>197</td>
</tr>
<tr>
<td><strong>Management activity costs(^5)</strong></td>
<td>Operation and promotion of environmental management (ISO 14001 certification,</td>
<td>112</td>
</tr>
<tr>
<td></td>
<td>environmental education, LCA surveys, etc.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Disclosure and administration of environmental information</td>
<td>1,554</td>
</tr>
<tr>
<td></td>
<td>(Environmental and Social Report, environment-related advertising, environment-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>related exhibitions, etc.)</td>
<td></td>
</tr>
<tr>
<td><strong>R&amp;D costs(^6)</strong></td>
<td>Research and development activities related to environmental conservation</td>
<td>303</td>
</tr>
<tr>
<td><strong>Social contribution costs(^7)</strong></td>
<td>Management and operation of Mt. Fuji Manabi no Mori</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>Management and operation of Forester House</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Participation in other social contribution activities</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Grants to the Keidanren Nature Conservation Fund, etc.</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>7,456</td>
</tr>
</tbody>
</table>

The basis of calculation includes Sumitomo Forestry on a non-consolidated basis and certain group companies.
Environmental Benefits

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Benefits from operations costs</td>
<td>Volume of recycled waste wood from distribution operations (converted into chip equivalents)</td>
<td>1,186,000m³</td>
</tr>
<tr>
<td></td>
<td>Volume sold of potting mix using recycled sediment from water purification</td>
<td>25,000t</td>
</tr>
<tr>
<td>2. Benefits from upstream and downstream costs</td>
<td>Green procurement ratio</td>
<td>71.8%</td>
</tr>
<tr>
<td>3. Benefits from management activity costs</td>
<td>Number of people attending “Sustainable Forest Gallery 2011-Kikorin’s Forest”</td>
<td>5,224 people</td>
</tr>
<tr>
<td></td>
<td>Employees designated as internal environmental auditors</td>
<td>59 people</td>
</tr>
<tr>
<td>4. Benefits from research and development costs</td>
<td>Standard installation of a highly functional, long-life, large-capacity household battery storage system Launch of the Sumitomo Forestry Smart House Smart Solabo</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Successful cultivation of seedlings from the ‘Pine Tree of Hope’ in Rikuzen-takata City</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Started test planting of the Omuro Cherry Tree using plant tissue culture techniques</td>
<td>-</td>
</tr>
<tr>
<td>5. Benefits of social contribution costs</td>
<td>Volunteers who participated in Mt. Fuji Manabi no Mori project</td>
<td>324 people</td>
</tr>
<tr>
<td></td>
<td>Children participating in the Environmental Education Program at Mt. Fuji Manabi no Mori project</td>
<td>546 people</td>
</tr>
<tr>
<td></td>
<td>Visitors to Forester House</td>
<td>2,407 people</td>
</tr>
</tbody>
</table>

1. Pollution prevention costs: Expenditures on soil contamination inspections
2. 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, overseas reforestation expenses for implementing carbon offset, and offset credit purchase expense.
3. 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 potting mix business.
5. 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 the Environmental and Social Reports; expenditures relating to lectures on environmental education; and costs for life cycle assessment inspections.
6. R&D costs: Expenditures for environment-related research conducted at the Tsukuba Research Institute and expenditures for outsourced research and development by each division.
7. Social contribution costs: Expenditures related to operating the Mt. Fuji Manabi no Mori natural forest restoration project; expenditures related to maintaining and operating Forester House; expenditures related to other social contribution activities; and grants to the Keidanren Nature Conservation Fund and other contributions.
# Environmental Data

## Group Companies in Japan

Data for plants in Japan shows the environmental impact per company and per plant.

### Sumitomo Forestry Crest Co., Ltd.

**Sumitomo Forestry Crest Co., Ltd.**

<table>
<thead>
<tr>
<th>Item</th>
<th>Kashima Plant</th>
<th>Shizuoka Plant</th>
<th>Nagoya Plant</th>
<th>Niihama Plant</th>
<th>Kyushu Plant</th>
<th>No. 2 Kyushu Plant</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy input (GJ)</td>
<td>24,152</td>
<td>25,885</td>
<td>33,931</td>
<td>22,258</td>
<td>32,820</td>
<td>15,199</td>
<td>154,205</td>
</tr>
<tr>
<td>Raw material input (t)</td>
<td>6,663</td>
<td>22,724</td>
<td>9,918</td>
<td>3,392</td>
<td>8,178</td>
<td>4,412</td>
<td>55,287</td>
</tr>
</tbody>
</table>

**Water resource consumption**

| Clean water (m³)       | 3,431         | 5,120         | 14,664       | 503           | 2,480        | 147              | 26,345      |
| Main water source      | Lakes-Kasumigaura/Kitaura (Protected area: partly in Suigo-Tsukuba Quasi-National Park) | Groundwater-Oi River basin | Rivers-Kiso River basin (Protected areas: N/A) | Groundwater (Niihama City Bureau of Waterworks) | Ponds-Tashiro Pond (partly in protected forest) | Reservoirs | -              |
| Industrial water (m³)  | -             | -             | -            | 5,394         | 26,352       | 139,042          | 170,788     |
| Main water source      | -             | -             | -            | Groundwater (Niihama City Bureau of Waterworks) | Rivers-Arita River basin (partly in Kurokamizan Wildlife Preserve) | Rivers-Arita River basin (partly in Kurokamizan Wildlife Preserve) | -              |

**Greenhouse gas emissions**

| Overall emissions (t-CO₂) | 1,016         | 1,160         | 1,447         | 952           | 280        | 55.5           | 6,802       |
| Emissions per base unit (kg-CO₂/m³) | 105.6kg-CO₂/m³ | 43.0kg-CO₂/l | 44.0kg-CO₂/m³ | 280.2kg-CO₂/m³ | 55.5kg-CO₂/m³ | 78.1kg-CO₂/l | -           |

**Volume of waste (t)**

| Volume of waste (t) | 1,858 | 1,819 | 2,865 | 1,053 | 1,699 | 200 | 9,493 |

**Total water discharge**

| Sewage (m³) | 1,646 | -     | -     | -     | -     | -   | 6,472 |
| Ocean area (m³) | 705 | -     | 7,918 | -     | -     | -   | 8,623 |
| Rivers (m³) | -     | 3,267 | -     | -     | -     | -   | 3,267 |
| Lakes (m³) | -     | -     | -     | -     | 27,264 | 130,610 | 157,874 |
### Sumirin Agro-Products Co., Ltd.

<table>
<thead>
<tr>
<th>Item</th>
<th>Sakura Plant</th>
<th>Shinshiro Plant</th>
<th>Tobishima Plant</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy input</td>
<td>1,363GJ</td>
<td>3,969GJ</td>
<td>3,425GJ</td>
<td>8,758GJ</td>
</tr>
<tr>
<td>Raw material input</td>
<td>60t</td>
<td>21t</td>
<td>69t</td>
<td>149t</td>
</tr>
</tbody>
</table>

#### Water resource consumption

<table>
<thead>
<tr>
<th>Clean water</th>
<th>-</th>
<th>-</th>
<th>1,456m³</th>
<th>1,814m³</th>
<th>3,270m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main water source</td>
<td>-</td>
<td>Rivers-Ure River basin (Protected area: partly in Tenryu-Okumikawa Quasi-National Park and Hourai Wildlife Preserve)</td>
<td>Rivers-Kiso River basin (Protected area: N/A)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Groundwater</td>
<td>302m³</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

#### Greenhouse gas emissions

<table>
<thead>
<tr>
<th>Overall emissions</th>
<th>73t-CO₂</th>
<th>248t-CO₂</th>
<th>186t-CO₂</th>
<th>506t-CO₂</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emissions per base unit</td>
<td>10.4kg-CO₂/t</td>
<td>59.3kg-CO₂/t</td>
<td>15.7kg-CO₂/t</td>
<td>-</td>
</tr>
<tr>
<td>Volume of waste</td>
<td>15t</td>
<td>12t</td>
<td>24t</td>
<td>51t</td>
</tr>
</tbody>
</table>

#### Total water discharge

| Ocean area | -    | -    | -    | 1,694m³ | 1,694m³ |
| Rivers     | -    | -    | 1,156m³ | -       | 1,156m³ |
| Lakes      | -    | -    | -    | -       | -       |
| Others     | 302m³| -    | -    | -       | 302m³   |
## Environmental Data

### Group Companies outside Japan

Data for plants outside of Japan shows the environmental impact per company

### Group Companies outside Japan

<table>
<thead>
<tr>
<th>Item</th>
<th>PT. Rimba Partikel Indonesia (RPI)</th>
<th>Alpine MDF Industries (ALPINE MDF)</th>
<th>PT. AST Indonesia (ASTI)</th>
<th>PT. Kutai Timber Indonesia (KTI)</th>
<th>Nelson Pine Industries Ltd. (NPIL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy input</td>
<td>116,826GJ</td>
<td>466,090GJ</td>
<td>71,185GJ</td>
<td>693,921GJ</td>
<td>1,057,758GJ</td>
</tr>
<tr>
<td>Raw material input</td>
<td>147,028t</td>
<td>245,934t</td>
<td>29,529t</td>
<td>404,059t</td>
<td>672,252t</td>
</tr>
<tr>
<td>Water resource consumption</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clean water</td>
<td>-</td>
<td>95,843m³</td>
<td>-</td>
<td>-</td>
<td>322,593m³</td>
</tr>
<tr>
<td>Industrial water</td>
<td>-</td>
<td>-</td>
<td>29,529m³</td>
<td>180,580m³</td>
<td>-</td>
</tr>
<tr>
<td>Groundwater</td>
<td>324,065m³</td>
<td>-</td>
<td>-</td>
<td>117,763m³</td>
<td>-</td>
</tr>
<tr>
<td>Greenhouse gas emissions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall emissions</td>
<td>7,991t-CO₂</td>
<td>36,592t-CO₂</td>
<td>5,115t-CO₂</td>
<td>46,862t-CO₂</td>
<td>12,559t-CO₂</td>
</tr>
<tr>
<td>Emissions per sales unit</td>
<td>295.9kg-CO₂/US$</td>
<td>597.3kg-CO₂/AU$</td>
<td>140.1kg-CO₂/US$</td>
<td>389.7kg-CO₂/US$</td>
<td>76.1kg-CO₂/NZ$</td>
</tr>
<tr>
<td>Emissions per base unit</td>
<td>63.9kg-CO₂/m³</td>
<td>281.6kg-CO₂/m³</td>
<td>140.1kg-CO₂/m³</td>
<td>155.4kg-CO₂/m³</td>
<td>36.6kg-CO₂/m³</td>
</tr>
<tr>
<td>Volume of waste</td>
<td>24,692t</td>
<td>59,884t</td>
<td>2,625t</td>
<td>29,521t</td>
<td>5,332t</td>
</tr>
<tr>
<td>Total water discharge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sewage</td>
<td>-</td>
<td>87,109m³</td>
<td>-</td>
<td>-</td>
<td>260,599m³</td>
</tr>
<tr>
<td>Ocean area</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>103,828m³</td>
<td>-</td>
</tr>
<tr>
<td>Rivers</td>
<td>316,494m³</td>
<td>-</td>
<td>29,529m³</td>
<td>-</td>
<td>-</td>
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</tbody>
</table>