The Oji Paper Group wishes to extend its heartfelt condolences to the victims of the Great East Japan Earthquake on March 11, 2011 and the series of typhoons that hit Japan in the summer of 2011.

After the Great East Japan Earthquake struck the Oji Paper Group immediately began providing relief supplies to areas affected by the disaster. In order to conserve energy in line with the rise in power demand over the summer months, we also took measures to increase our in-house generation of electricity and streamline our production structure, which helped us reduce company-wide power usage by more than 25%.

In addition, at the request of the Tokyo Electric Power Company (TEPCO), we restarted in-house power generation facilities that had been shut off in order to provide electricity to TEPCO.

We sincerely hope that the many areas affected by these disasters will be able to recover quickly and we stand committed to continuing with our Group-wide provision of assistance to the reconstruction effort going forward.
First, on behalf of the Oji Paper Group, I would like to extend our heartfelt condolences to those affected by the Great East Japan Earthquake of March 11, 2011 as well as extend our hope that the many areas affected by this disaster will be able to rebuild and recover as soon as possible.

The Oji Paper Group has provided relief supplies as well as charitable donations to those affected by the Great East Japan Earthquake and has become involved in a variety of assistance programs to help those in need in these local communities. In addition, we took standalone measures to help Japan conserve electricity in the midst of peak summer demand, including reducing our power usage by 25% and supplying electricity to the Tokyo Electric Power Company using our in-house power generation facilities.

At the same time, we also encouraged our employees to help conserve energy in their homes as part of our broader Group-wide effort to conserve electricity. Going forward, we plan to continue to implement similar energy saving measures to curb our company-wide use of electricity and to accommodate the needs of our society.

**Leveraging forest resources in Japan and overseas aimed at a total forestry business**

As a corporate group that makes use of timber as raw materials, the Oji Paper Group practices sustainable forest management and implements measures to maximize its utilization of forest resources without waste.

Specifically, we not only use timber to produce lumber and paper, we also promote the effective utilization of sawmill residue, thinned timber and low-grade lumber as part of our commitment to strengthening our initiatives toward the pursuit of a total forestry business model. In addition, we carefully manage and develop company-owned forests in Japan, and by expanding our forest plantations outside of Japan, we are making contributions to the global environment through the greater absorption of carbon dioxide from the atmosphere.

Furthermore, we promote the acquisition of forest certification and deliver products that are considerate of the environment to our customers, including forest certified paper. We are committed to expanding our supply structure further for forest certified products as well as making further contributions to forest conservation.

**Accelerating our business growth in China and Southeast Asia**

Demand for paper is growing in China, Southeast Asia and other emerging countries. Therefore, the further growth of our overseas businesses is gaining in importance.

Full-scale production at our paper mill in Nantong, China commenced at the end of 2010. Going forward we plan to use this mill to build a structure to provide a broad range of paper products, including printing paper, industrial packaging paper and specialty paper, to neighboring markets with an eye on the growing demand from Southeast Asia and primarily China.

We have businesses engaged in paper processing and papermaking in four Southeast Asian countries. Looking ahead, we hope to expand our business activities in this region further. At the same time, we have engaged in tree-planting activities in locations around the world, including Southeast Asia. This is meant to both secure future timber resources for raw materials and to help protect the global environment. Moving forward, we will make environmental contributions by means of the absorption of carbon dioxide through these overseas tree-planting activities. We will also be considerate of biodiversity, and through communication with local communities, we will work to generate employment opportunities and industry locally as well as spread tree-planting technologies at our overseas locations.

**Undertaking R&D and redeveloping technologies to accommodate the needs of a new era**

With fears persisting about the hallowing out of technologies in Japan, we stand committed to our R&D and technological competencies, which have been carefully developed over the previous 150 years since our founding, to developing engineers and to passing on technologies to future generations. I also believe that rebuilding and developing these technologies to accommodate the needs of a new era represents one of our most important missions for the future. We are ready to tackle the challenges of this new era.

Kazuhisa Shinoda
President and Chief Executive Officer
Oji Paper Group
Oji Paper Group products are used extensively in our everyday life.

Oji Paper Group products are close and indispensable to people’s lifestyles to functional materials, we provide products that better our lives.

Household and Industrial Materials Company

- Containerboard Materials Business
- Corrugated Board Business
- Boxboard and Packaging Papers Business
- Carton Business
- Bag Processing Business
- Household Products, Disposable Diapers Business

Oji Paper Group Environmental and Sustainability Report 2011
Paper products are made from a variety of pulp.

**Pulp**

- **Forest recycling**
  - Plant
  - Grow
  - Log

**Paper recycling**

- Use paper in products
- Collect recovered paper
- Use recovered pulp as a raw material

- **Unbleached pulp**
  - Chips are boiled in alkaline solution at high temperature

- **Bleached pulp**
  - Unbleached pulp is bleached

- **Disintegrated pulp**
  - Recovered paper is dissolved in water

- **De-inked pulp**
  - Ink is removed from disintegrated pulp

**Manufacturing Process**

**Papermaking**

- Printing
- Bonding
- Special processing

**Processing**

- Assembling
- Finishing
- Made into paper bags

**Paper Products**

- **Unbleached pulp**
  - Carrier bags
  - Adhesive paper
  - Corrugated boxes

- **Bleached pulp**
  - Household products
  - Cartons
  - Publications

- **Disintegrated pulp**
  - De-inked pulp
In October 2010, Oji Paper established a regional headquarters company onsite at GS Paper & Packaging (GSPP) located in Kuala Langat on the outskirts of Kuala Lumpur in Malaysia to manage and oversee our existing businesses in Asia and to seek out new business opportunities. It will be essential to build our business presence in Southeast Asia in order to capitalize on new market growth taking place in the region. First, we plan to firmly establish the Oji brand within Malaysia before moving on to the next region of Asia.

Shigeto Sano
President
Oji Paper Asia (Regional Headquarters)

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GS Paper & Packaging Sdn Bhd (GSPP) (Malaysia)

In April 2010, GSPP became a member of the Oji Paper Group. GSPP is Malaysia’s largest paperboard and corrugated board manufacturer and operates a papermaking mill and two box plants. GSPP’s papermaking mill manufactures containerboard using two papermaking machines. The company has also received strong recognition from the market for its high quality liners used on the outer and inner surfaces of corrugated board. Some 90% of GSPP’s raw materials are sourced from recovered paper. 70% of this is procured from contract recovered paper collection providers located in 32 locations across Malaysia.

It’s important to separate recovered paper

A resource sorting system is not yet fully functional in Malaysia today, so workers at recovered paper collection stations need to sort recovered paper by hand.

Utilizing energy from incinerators

Incinerators are used to burn contaminants found in recovered paper and sludge that is created during the wastewater treatment process. Energy produced from the heat of the incinerator is used as steam in the mill. While the Oji Paper Group uses incinerators at most of its mills in Japan, the use of incinerators in Malaysia is a relatively new initiative that was undertaken in a New Energy and Industrial Technology Development Organization (NEDO)-led project.


Oji Paper (Thailand) Ltd. (OPT)
Oji Label (Thailand) Ltd. (OLT)

OPT and OLT manufacture thermal paper, carbonless paper and adhesive paper for labels on the outskirts of Thailand’s capital of Bangkok. OPT is focusing more energy on thermal paper, in particular, because of anticipated market growth in the future. On the manufacturing floor staff from Oji Paper in Japan are working to transfer technologies to the local staff. OPT and OLT also sell their products not only to Asian countries, but also to the Middle East as well as Africa, and both companies have received recognition from the market for their superior quality.

Expanded Our Business Presence in Southeast Asia

Papermaking Business—Containerboard

Oji Paper Group Environmental and Sustainability Report 2011

Corrugated boxes

The Oji Paper Group manufactures corrugated boxes at two plants, one located in Northern Vietnam and the other in Southern Vietnam. Ojitex (Vietnam) in the south sells its products to many of the Japanese companies that have set up operations in Vietnam and has earned a high level of credibility in the market for its transfer of technologies from Japan.

In August 2011, Malaysian corrugated board manufacturer the Harta Packaging Group joined the Oji Paper Group, increasing our corrugated board market share in the country to some 30%. In addition, we also established a business location in Cambodia and added a plastic bag business to the Group.

S. Pack & Print Public Co., Ltd. (Thailand)

In March 2011, the Oji Paper Group became involved in the management of cartons and corrugated board manufacturer S. Pack & Print Public based in Thailand. The company excels at decorative offset printing and features an integrated production line from corrugated board sheets through to final box assembly. We are currently working to transfer our long-standing expertise in quality as well as environmental management from Japan to the company.
Contributions to local communities

In fiscal 2010, the Oji Paper Group helped to construct bridges and roads for local communities.

Road construction in Thong Noy Village, Laos
Bridge construction in Naka Village, Laos

We are now able to utilize grasslands that until now were not used effectively. LPFL provided us with seedlings and instructed us on how to manage them after planting. We are excited that these same seedlings will be bought back in the future after they have grown and become a source of income for the village.

Selecting premium quality tree species

We select trees that mature quickly or that are highly resistant to disease as the parent tree for breeding.

Growing premium quality trees (Indonesia)

Conducting research

We conduct research for the benefit of future generations that includes mapping the genetic information of trees to identify genes that help trees mature quickly or are resistant to dry climates.

Researching genetic information

In order to promptly identify premium quality trees, we conduct research into breeding technologies using indicators for specific substances unique to these trees.

Developing breeding technologies

PT. Korintiga Hutani (KTH) aims to pursue a total forestry business model

In fiscal 2010 we became involved in the management of a tree planting company in Indonesia. With the beginning of logging approaching, KTH is planning to launch operations at a chip mill with an annual capacity of 1 million tons by the year 2013.

Eucalyptus forest plantation

Oji South Lao Plantation Forest Co., Ltd. (SLPFL) commences tree planting

We established a new tree planting company in Laos and planted a total of 700 hectares of trees in fiscal 2010.

Carefully planting a seedling

Members of the local community planting seedlings

Time well spent

In Southeast Asia, certain land is used for traditional purposes by the local villagers, so the cooperation and understanding of the local community is required when determining a location for tree planting.

Roads leading to our forest plantations are also used by the local community

Plantation trees are now being used to make furniture

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Plantation trees are now being used to make furniture
Coexistence with Forests

Forest Owned by the Oji Paper Group (Japan and Overseas)

Total Land Area

430,000 hectares

Amount of CO₂ Absorbed

10 million tons

The Role of Forests

Forests supply us with wood as well as retain water, absorb CO₂, prevent soil erosion, support other plant and animal life, and act as places of recreation.

Absorption of carbon dioxide

Through photosynthesis forests absorb CO₂, the cause of global warming, and release oxygen.

Wood supply

Wood is used in nearly every aspect of our lives.

Water conservation

Forest soil stores water and controls the amount of water flowing into rivers.

Recreation

Forests act as places where we can camp or play sports and also provide us with soothing spaces that bring us closer to nature.

Soil erosion prevention

Trees extend out their root systems while underbrush and fallen leaves cover the forest floor, preventing soil erosion from rainwater.

Biodiversity conservation

Rich forest ecosystems are fostered by the growth of diverse plant and animal life.

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Trees extend out their root systems while underbrush and fallen leaves cover the forest floor, preventing soil erosion from rainwater.

Rich forest ecosystems are fostered by the growth of diverse plant and animal life.
Safeguarding Company-Owned Forests

Tree Thinning

Thirty years after they are planted, we thin about 30% of the trees in our forests once every 10 years. Tree thinning helps let sunlight penetrate to the forest floor and create sound, healthy forests. Moreover, the remaining trees actually absorb even more CO₂ than before.

In fiscal 2010, the Oji Paper Group thinned 3,380 hectares of company-owned forest.

Uses for thinned timber

Branches are trimmed from round, straight logs that are then transported to the mill. About 60% is used in lumber and plywood, while the remaining 40% is used as a raw material for making paper or a biomass fuel.

Work Road Improvements

The development of forest roads is essential to tree thinning work and the transport of thinned timber. We constantly repair forest roads that have been damaged by rainwater or have become overgrown with weeds and underbrush.

In fiscal 2010, we built 12 km of new forest roads and made improvements to 370 km of existing forest roads.

Utilizing Company-Owned Forests

Pure Spring Water from Our Company-Owned Forests

A river fed by all natural spring water flows through our company-owned Tomakomai Forest that extends to the southeast of Lake Shikotsu in Hokkaido. Water from this spring water that bubbles up to the surface in a nurtured natural environment is bottled without pasteurizing. In this regard, forest management is a key to safeguarding natural spring waters.

Houses Made with SGEC Forest Certified Lumber

Thinned Japanese cedar logged by Oji Forest & Products at our company-owned Tomakomai Forest in Shizuoka Prefecture is now being used in construction material for homes, including columns and joists, as a SGEC forest certified material. We are making efforts to ensure that builders help us utilize this material as well as safeguard the forests of Japan. Our goal is to also have builders feel a greater sense of closeness to Oji brand forestry products.

What is SGEC?

SGEC is Japan’s own forest certification program that verifies a forest is managed sustainably.

Coexistence with Forests

Safeguarding Company-Owned Forests

Pure Spring Water from Our Company-Owned Forests

Utilizing Company-Owned Forests

This informative brochure highlights the efforts of the Oji Paper Group to better utilize eco-friendly forest resources. The accompanying Q&A booklet also serves as a tool to broaden reader understanding of forests. The brochure is handed out to our customers, who have remarked that it is very easy to understand.

Oji Paper Group Environmental and Sustainability Report 2011
Our Overseas Plantations Help Absorb CO2

The Oji Paper Group plants trees on unused or degraded lands and by sustainably managing these forests it is helping to absorb CO2.

Our commitment to sharing forestry technologies as well as creating jobs and industries locally helps to prevent the logging of natural forest. We are also making efforts under the REDD+ mechanism which acts as a platform for developing countries and developed countries to discuss international forest issues.

What is REDD+?

Reducing Emissions from Deforestation and Forest Degradation (REDD) is an international mechanism involving developing countries and developed countries that forms part of the world’s global warming measures for 2013 and beyond. Discussions are now underway via the REDD+ mechanism which adds forest conservation, sustainable forest management and the creation of financial value for the carbon stored in forests to the conventional REDD mechanism.

Utilizing J-VER

The Japan Verified Emission Reduction scheme, or J-VER, works to certify as emission credits the amount of carbon dioxide absorbed through proper forest management and the promotion of tree thinning. The Oji Paper Group has plans to thin 5,000 hectares of its company-owned forests in order to acquire J-VER emission credits. As of the end of July 2011, we had acquired some 8,589 tons of CO2 emissions credits, representing the largest amount of any private-sector company in Japan. We have also begun to sell our emissions credits, and we are working to raise awareness of global warming prevention measures and environmental issues.

Our overseas forest plantations help absorb large amounts of CO2

Trees absorb carbon dioxide in the air using photosynthesis and release oxygen. They also store carbon in their trunks, branches and roots. A young forest that more actively uses photosynthesis can absorb larger amounts of carbon dioxide, while mature old-growth forests absorb less. Company-owned forests in Japan consist of older and lower growth natural forests and planted forests, but our overseas forest plantations are being logged and replanted according to a shorter cycle than those in Japan. This is why our overseas forest plantations absorb a larger amount of CO2 than our company-owned forests in Japan.

Utilizing Overseas Forest Plantations

We are committed to the sustainable development of forests as we replant trees after they reach maturity and have been harvested. These logged trees are utilized to make lumber, plywood and wood chips.
Corporate Philosophy

Contribution to the Environment and Culture, Innovation and Speed, Global Reputation for Dependability

With pride in and recognition of its responsibilities as a leading paper company, Oji Paper will work to continuously improve itself and win greater trust worldwide.

Corporate Code of Conduct

I. We, the management and employees of the Oji Paper Group, hereby adopt the Oji Paper Group Corporate Code of Conduct, as detailed below, as guiding principles for corporate activities based on an awareness of our responsibilities as a good corporate citizen and on high ethical principles appropriate for an organization that enjoys the trust of society.

II. We, the management and employees of the Oji Paper Group, will strive at all times to implement this Code, and to contribute to the genuine enrichment of society.

1. Compliance with the law
2. Harmony with the environment
3. Supply of safe, useful products and services
4. Communication with society
5. Participation in social contribution activities
6. Conscience with the international community
7. Contribution through manufacturing
8. Achievement of employee satisfaction

Environmental Charter

The Oji Paper Group Environmental Charter requires the Oji Paper Group to help create a truly enriched and sustainable society by developing business activities that harmonize with the environment from a global perspective. The Charter calls for the Oji Paper Group to make autonomous efforts to achieve further environmental improvement, and aggressively drive its forest recycling, paper recycling, and global warming countermeasures forward.

Oji Paper Group Environmental Management Organization

Recognizing the importance of environmental management in our corporate activities and striving for environmental compliance.
The Oji Paper Group established Environmental Action Program 2015 covering the period up to fiscal 2015.

**Promotion of paper recycling**
- Encourage the use of recovered paper as a resource.
  - (Target to achieve a 64% recovered paper utilization rate)

**Promotion of global warming countermeasures**
- Reduce greenhouse gas emissions by 15% relative to 1990 and carbon dioxide emissions from energy sources by 35%.
- Increase the amount of CO₂ absorbed (offset credits, etc.) through forest management.

**Transfer of environmental protection technology to other countries**
- Comply with relevant environmental standards in each country and share environmental management technologies developed in Japan.
  - (Target to acquire EMS certification for 150 mills)

**Reduction and effective utilization of waste**
- Reduce the total amount of waste for final disposal to under 50,000 tons (AD) per year.
  - (Oji Paper, Oji Paperboard, Oji Specialty Paper, Oji Nepia)

**Recommendations for stakeholders**
- Encourage greater communication with our stakeholders through exhibitions and publications.
- Promote social contribution activities rooted in the local community.
The Oji Paper Group Environmental Charter—Action Guidelines

Promotion of forest recycling
We will provide green procurement of resources grown in sustainably managed forests. We will see the results of the broad research activities of our forest research, and environmental initiatives made to date in the utilization and management of our company-owned forests in Japan, for the planned development of overseas tree plantation projects. We will work to secure new raw materials, which will result in global environmental conservation.

Promotion of global warming countermeasures
In the area of global warming countermeasures, we will strive to reduce carbon dioxide emissions by high priority issues related to global warming, including promotion of energy conservation and conversion to non-fossil fuels. We will also contribute to the sequestration of carbon dioxide by promoting the development and maintenance of forests.

Promotion of paper recycling
We will seek to advance the utilization of recovered paper, making the most of the benefits of paper recycling and giving due consideration to the intended uses, giving due consideration to the environment, in particular, as well as working on increasing the recovered paper usage in the paper area, we will work on the development of technologies for recycling types of used paper that are hard to recycle.

Distribution of the Oji Paper Group Overseas Forest Plantations

As a forestry company we are committed to protecting company-owned forests, expanding the area of plantations and utilizing forests.

Fiscal 2010 Achievements

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<th>Action Guidelines</th>
<th>Achievements (Fiscal 2010)</th>
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<td>Promotion of forest recycling</td>
<td>Overseas forest plantations: 240,000 ha</td>
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<td>Promotion of paper recycling</td>
<td>Recovered paper utilization rate: 62.4%</td>
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<td>Promotion of global warming countermeasures</td>
<td>Greenhouse gas (GHG) emissions: 20.5% reduction (relative to FY1990 levels)</td>
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<td>Reinforcement of environmental improvement measures and environmental management systems</td>
<td>EMS certified mills (subject to environmental oversight): ISO14001: 105 mills Certification in Japan: 6 mills (NES, Eco-Action 21, etc.) O-EMS: 13 mills</td>
</tr>
<tr>
<td>Development of production technologies and products that minimize environmental impact</td>
<td>Comply with voluntary standards for food container packaging (product safety)</td>
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<tr>
<td>Reduction and effective utilization of waste</td>
<td>Final disposal amount: 74,000 tons (4 papermaking companies)</td>
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<tr>
<td>Transfer of environmental protection technologies to other countries</td>
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<tr>
<td>Building relationships of trust with stakeholders</td>
<td>- Oji Paper Group Environmental and Sustainability Report 2010 - Oji Forest Nature Schools - &quot;Groundwork&quot; programs - Exhibition at Eco-Products 2010 - Community environmental monitor meetings</td>
</tr>
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Distribution of the Oji Paper Group Domestic Company-Owned Forests

Largest area
- 190,000 ha

Distribution of the Oji Paper Group Overseas Forest Plantations

- 240,000 ha (Fiscal 2010)
- 300,000 ha (Fiscal 2015 Target)
- All of our overseas forest plantations will acquire forest certification (currently 60% have acquired forest certification)

Forest that have acquired SGEC certification in Japan (excluding profit-share forests)

- Hokkaido: 126,594 ha
- Tohoku: 7,314 ha
- Chugoku: 14,134 ha
- Kyushu: 7,702 ha
- Kanto, Chubu: 17,715 ha
- Kinki: 12,905 ha
- Shikoku: 2,679 ha
- KTH (Indonesia): 38,741 ha
- CPFL (China): 22,978 ha
- KPFL (China): 22,978 ha
- LPFL (Laos): 27,723 ha
- EPFL (New Zealand): 737 ha
- SPFL (New Zealand): 10,047 ha
- PAN PAC (New Zealand): 33,505 ha
- CENIBRA (Brazil): 56,447 ha
- AFPI (Canada): 2,475 ha
- SLPP (Laos): 2,118 ha
- QPFL (Vietnam): 12,282 ha
- APFL (Australia): 21,922 ha
- QPFL (Australia): 6,325 ha

- All of our overseas forest plantations will acquire forest certification (currently 60% have acquired forest certification)
Recently, the volume of recovered paper exports has been increasing. In 2010, some 20% of Japan’s recovered paper was exported, with nearly 80% of this bound for China. Japan’s recovered paper is known for its high quality as it has fewer contaminants when compared to recovered paper from the US or Europe, and because of the country’s geographic proximity exports of recovered paper bound for China and Southeast Asia are on the rise.

The Oji Paper Group believes in the importance of collecting and using recovered paper in Japan as well as exporting recovered paper in a well-balanced manner. With exports on the rise, we are now making efforts to use difficult-to-process recovered paper, which had once been considered unusable as a raw material for papermaking, in order to continue to make use of recovered paper procured from domestic sources.

Difficult-to-process recovered paper refers to paper that once was either disposed of or solely used as fuel because technologically it could not be used as a raw material for papermaking. Demand has risen for the use of difficult-to-process recovered paper on the back of efforts to reduce waste and heightened awareness of corporate social responsibility. This paper includes highly confidential documents, released paper from plasterboard and container packaging, all of which are used as a raw material for major paperboard. As difficult-to-process recovered paper only accounts for several percent of all recovered paper usage, we are making efforts to increase this amount going forward.

Utilizing Difficult-to-Process Recovered Paper

Difficult-to-process recovered paper is either disposed of or used as fuel. The Oji Paper Group has made efforts to use this paper as raw material for papermaking in order to reduce waste and increase resource utilization.

Oji Paper Group’s Volume of Recovered Paper and Utilization Rate

The Oji Paper Group believes in the importance of recycling as a way to reduce waste and preserve the world’s limited resources. The group has been making efforts to increase the utilization rate of recovered paper.

Recovered paper utilization rate: 62.4%

Oji Paperboard engages in the manufacturing of paperboard products that use recovered paper as a primary raw material. Recovered paper recycling dumpsters are placed at the front gate of each of its mills so that the company can work together with members of the local community to help utilize resources effectively.

Oji Paperboard’s Fuji Mill has installed specialized equipment for difficult-to-process recovered paper. The company has actively received samples of recovered paper that was once difficult to recycle and is also conducting tests repeatedly. In fiscal 2010, it was able to increase the usage amount of released paper from plasterboard and vinyl laminated paper.

We separate and collect recovered paper at our papermaking mills

We promote the use of difficult-to-process recovered paper

The Process for Making RecoveredPaper into a Raw Material

Recovered paper produced by consumers, supermarkets, offices or printing and binding plants is collected at schools or by municipal collection providers. This recovered paper is then sorted, compressed, and packed according to type by a recovered paper wholesaler. The processed recovered paper is then shipped off to a papermaking mill where it is then sorted by type, such as newspaper, magazine and corrugated box, depending on the usage.

Sorting and separating are critical work processes

One of the most important jobs of a recovered paper wholesaler is quality control. Employees work hard during hot summer days or freezing cold winter days, to find contaminants from among mountains of recovered paper as well as sort through newspaper and magazine paper. We ask that consumers help to never mix in contaminants in their recyclables as well as properly sort newspapers and magazines.

Don’t mix in contaminants!

Paper that is not suitable for papermaking raw material is referred to as contaminant. Quality troubles occur when sublimation transfer paper (dyed printing and iron printing paper) and thermosensitive paper foam board find their way into raw materials.

Recycling dumpster for recovered paper

We separate and collect recovered paper at our papermaking mills

We promote the use of difficult-to-process recovered paper

Ota, General Manager

One of the most important jobs of a recovered paper wholesaler is quality control. Employees work hard during hot summer days or freezing cold winter days, to find contaminants from among mountains of recovered paper as well as sort through newspaper and magazine paper. We ask that consumers help to never mix in contaminants in their recyclables as well as properly sort newspapers and magazines.

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Confidential documents are chemically dissolved without being taken out of the corrugated box. Oji Paper Group's Fuji Mill has installed specialized equipment for difficult-to-process recovered paper.

Screened and collected recovered paper

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We promote the use of difficult-to-process recovered paper

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Promotion of Global Warming Countermeasures

We are promoting the reduction of greenhouse gases (GHG) through energy conservation initiatives and the use of waste as fuel.

Initiatives to Reduce GHG Emissions

We have made our production system more energy efficient, implemented 600 energy conservation measures, and reduced our use of heavy oil by controlling operations at our papermaking mills. In fiscal 2010, we were able to reduce our GHG emissions by 7.8% compared to fiscal 2009.

GHG* Emissions Reduced by 20.5% relative to fiscal 1990

Information providing

We respond to inquiries from customers based on a variety of chemical safety information verified through our pre-use evaluation system and information updating system.

Pre-use evaluation system

When beginning the use of a new chemical, 11 Group companies employ the Oji Paper Group’s proprietary New Raw Material Safety Sheets to verify relevant regulations, customers’ green procurement practices, and chemical toxicity with more detail than MSDS. The items on this sheet are revised when needed to maintain compliance with the latest laws and regulations.

This system was launched by Oji Paper in 1994, the year before the enactment of Japan’s Product Liability Law, and afterward was extended to other companies within the Group.

Information updating system

Chemical substance management requirements are being tightened in laws and regulations both in Japan and overseas as well as in the green procurement practices of our customers. In order to provide accurate information, we need to promptly obtain the latest information on the chemicals we use.

As a complement to our pre-use evaluation system, we employ the Oji Paper Group’s proprietary Regulatory and Hazard Information Study Sheets to periodically collect the latest information from chemical companies that manufacture the chemicals in use by the Group.

Oji Paper Group’s GHG Emissions

Utilizing hydroelectric power since the early 1900s

Oji Paper’s Tomakomai Mill owns nine and Oji Specialty Paper’s Tokai Mill and Nakatsu Mill own 10 hydroelectric power plants that combined can produce up to 70,000 kW of electricity with zero GHG emissions. Chitose No. 1 Power Plant, which is the oldest and largest hydroelectric power plant owned by the Tomakomai Mill, was first constructed as a power source for the mill when it began operations in 1910. A century later the power plant continues to generate power for the mill. Electricity generated by seven hydroelectric power plants, including Chitose No. 1 Power Plant, is delivered to the mill using independently owned transmission lines.

The 10,000 kW of electricity generated by Tomakomai Mill’s Shiribetsu No. 1 and No. 2 power plants are supplied all the way to Tokyo via a power company’s transmission network where it is utilized by commercial-scale utility customers that are required to reduce their CO2 emissions under the Tokyo Metropolitan Government’s emissions trading scheme.

Oji Paper Group Chemical Safety Management—

Verification of Chemical Safety

Development of Production Technologies and Products that Minimize Environmental Impact—Product Safety Management—

We carefully screen the chemicals we use from the selection process for compliance with applicable laws, regulations and voluntary standards.

Informing Customers

A Information provision

Oji Paper, Oji Paperboard and Oji Specialty Paper respond to a variety of inquiries from customers using Article Information Sheets (AIS), Investigation Reports, and Material Safety Data Sheets (MSDS). In fiscal 2010, we responded to some 7,000 customer inquiries. Other Group companies also respond to customer inquiries individually.

Oji Paper Group

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Domestic and overseas regulations and green procurement

EU REACH Regulation, EU RoHS Directive, JGPSSI, GADSL, etc.

Responding to customer inquiries

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Implementing a Wide Range of Initiatives

Making use of voluntary industry standards
Various industry organizations have developed voluntary standards to ensure a higher level of security and safety for paper products that come into contact with foods.

Performing product safety audits
We verify voluntary standards, product quality, and product safety management.

Oji Paperboard manufactures and sells containerboard. The company follows the voluntary guidelines developed by the Japan Paper Association and confirms the implementation of these standards using product safety audits.

Oji Chiyoda Container and the Mori Shigyo Group manufacture and sell corrugated cardboard boxes used for fresh fruit and vegetables. They follow the voluntary guidelines developed by the Japan Containerboard Industry Association and confirm the implementation of these standards using product safety audits.

Confirming the compliance of 10,000 products and parts
Oji Packaging processes paper and paperboard as well as manufactures and sells paper packaging, containers, and decorative cardboard and film. The company uses many complex processes and, including unit companies, handles up to 10,000 products and parts. Through the cooperation of a raw materials manufacturer that it consigns work to, the company verifies the presence of environmental load substances as well as compliance with the voluntary standards for food container packaging developed by industry organizations.

ISO certification obtained for food applications
Ginpo Pack manufactures and sells trays and containers for foodstuff, including frozen foods and boxed lunches sold at convenience stores. With growing social concern over packaging materials, the company has acquired ISO22000 certification for food safety as well as fully complies with Japan’s Food Sanitation Act and voluntary standards developed by the industry.

Performing quality control audits
Oji Nepia manufactures and sells personal hygiene products used in the home. As its products come into direct contact with consumers, the company maintains a steadfast commitment to product quality control. As part of this commitment, Oji Nepia performs quality control audits annually at each of its plants and its consigned manufacturing partners to verify their quality control structure and implementation status on the manufacturing floor. The company also implements sure-fire preventative measures when and if product defects are found by its customers.

Obtained ISO certification for medical devices
New Tac Kasei manufactures and sells medical device products, which demand an advanced quality control structure be in place. As a result, the company has obtained ISO13485 certification in medical devices as well as ISO9001 certification in quality, and also conducts product safety audits under Japan’s Pharmaceutical Affairs Act to ensure the safety of its medical device products.

Obtained Hokkaido HACCP certification
Oji Salmon, which has acquired Hokkaido HACCP* certification, manufactures and sells processed salmon products and mineral water. With the aim to further enhance its food hygiene controls, the company acquired Hokkaido HACCP certification for its mineral water plant in June 2010, following its acquisition of the same certification for its salmon processing plant. The company regularly holds meetings in order to heighten its awareness toward making tastier and safer food products.

* HACCP: Hazard Analysis and Critical Control Point

Making use of voluntary industry standards

Oji Paper Group Environmental and Sustainability Report 2011
The promise of the FSC certified logo

- Forests are properly maintained, properly utilized and properly managed.
- We are helping local communities who nurture forests as well as their social and economic activities.
- The FSC certified logo represents a guarantee that forests are being properly maintained by all parties in the value chain, from the people actually managing the forest to people making, selling and using lumber and products made from lumber.

The FSC certified logo is still not widely recognized by general consumers in Japan. However, in Europe and North America, especially in the United States, the FSC certified logo is one of the most widely recognized certification logos used in the construction industry. In Europe, reports indicate that lumber and lumber products that have received FSC certification account for between a 6% and 7% share of the market, and interest in the certification process and logo is increasing.

In Brazil, consumer recognition of the FSC certified logo increased from 1% to 22% in the span of three years. Going forward, this same increase in recognition is expected in Japan.

Delivers FSC®-Certified Products

Oji Nepia Delivers FSC®-Certified Products

Household paper products, including tissue paper and toilet paper, are some of the paper products most closely intertwined in our daily lives but are also difficult to recycle once used. Oji Nepia manufactures products that use certified pulp and chips from responsibly managed forests. The company has begun to produce products for consumers that are more considerate of the environment.

Requirements to display the FSC certified logo

- Forest resources or the forest environment is properly managed (FM* certification)
- Non-FM certified lumber is not mixed in with FM certified lumber during production, processing and distribution (CoC* certification)

Delivering FSC certified products

Kamematsu
Director and Sales Division General Manager
Oji Nepia Co., Ltd.

Oji Nepia sells FSC certified tissue paper and toilet paper products that use pulp and chips from responsibly managed forests. Moving forward, we will continue our marketing activities so that customers are able to recognize that our company provides safe products that are considerate of the environment.

Consumer survey conducted

The FSC certified logo is still not widely known by general consumers in Japan, but after they were given an explanation about its meaning, the FSC certified logo many consumers responded that they would like to buy FSC certified products.

Q: Do you know about the FSC certified logo? I think I may know about it I do not know about it

2011 Nepia survey
Participants: 800 females between the ages of 20 and 69 from throughout Japan
We are moving forward with the implementation of environmental management systems customized to mill conditions so that each mill can systematically practice its own environmental management activities. We have focused particular energy on instituting a proprietary EMS developed by the Oji Paper Group known as the O-EMS.

O-EMS is a streamlined version of ISO14001 that we have developed for small-scale mills. O-EMS is more in tune with the actual conditions of small mills, helping these facilities to comply with laws and regulations as well as reduce environmental risks.

We are lessening our impact on the environment and strengthening our voluntary environmental management structure. As a result, we are implementing measures to dispose of waste oil and alkali for small tanks used to store waste oil and alkali that have the potential to cause harm to the environment if a leak were to occur.

On-site audits led by the Environmental Management Division have been performed since fiscal 1994, but starting in fiscal 2010 we enhanced our auditing system by adding paper audits. In fiscal 2010, we performed on-site or paper audits for 205 mills within the Group. Although the number of remedial measures that need to be taken have decreased as a result of our ongoing environmental audits, we still face challenges with regards to waste disposal matters. Factors surrounding this include the lack of understanding regarding laws and regulations on the part of environmental managers or the lack of a handover when managers change. As a result, we are implementing measures to further raise awareness and understanding of environmental practices.

The Environmental Management Division assesses the situation at environmental mills and shares this information at conservation meetings.

We are taking measures to prevent leaks in small equipment. We have installed dikes for our chemical tanks, and have also instituted leak prevention measures for small tanks used to store waste oil and alkali that have the potential to cause harm to the environment if a leak were to occur.

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The Oji Paper Group Environmental and Sustainability Report 2011
As part of our commitment to combating global warming, we use refuse paper and waste plastic, or RPF, as well as paper sludge and black liquor derived from chips from the paper manufacturing process as fuel at our papermaking mills. In fiscal 2010, our CO₂ emissions from energy sources were reduced by 38.4% relative to fiscal 1990. However, a large amount of ash was generated as a by-product. This ash is mainly used as a raw material either in cement or public works projects, but parts of this same ash contain chlorine and lead, meaning that it cannot be used without first being treated. We are currently working to develop detoxifying technologies so that we can effectively utilize the entire amount of this ash.

Japan-China Green Expo 2011 was held from June 1 to June 3 in Beijing under the theme of “Aspiring to integrate the environment and economy.” A total of 92 exhibitors attended, including leading companies from both Japan and China, local governments and research institutions. The Oji Paper Group booth showcased the Group’s environmentally-conscious recycling-based business.

President and CEO Kazuhisa Shinoda also gave a presentation at the event’s forum on the Oji Paper Group’s recycling-based business model.
As part of a project to commemorate its 100th anniversary as a fixture in the local community, the Tomakomai Mill helped develop the Hokkocho Future Forest Park. The 7.9 hectare park features a civic garden and dog park as well as offers great views of Somei-yoshino and Sergeant’s cherry tree blossoms during the middle of May each year.

**Tomakomai Mill celebrates its 100th anniversary**

As part of a project to commemorate its 100th anniversary as a fixture in the local community, the Tomakomai Mill helped develop the Hokkocho Future Forest Park. The 7.9 hectare park features a civic garden and dog park as well as offers great views of Somei-yoshino and Sergeant’s cherry tree blossoms during the middle of May each year.

**Hokkocho Future Forest Park:** 2.6 ha park, 4.3 ha civic garden and 0.5 ha dog park

**Groundwork program recognized**

Oji Paper, Oji Nepia, Oji Paperboard’s Nikko Mill

Construction of the Tomakomai Mill, which began in 1907, would later be suspended due to a shortage of gravel to mix in with the concrete. At the time, the people of Tomakomai Village lent a hand to collect gravel from the seashore, which proved instrumental in the completion of the mill.

**Sponsored booth at Eco-Products 2010**

The Oji Paper Group sponsored a booth at Eco-Products 2010 focused on the theme of future coexistence with forests that showcased forest recycling and the creation of new value from forest resources.

**Oji Paper Tomakomai Mill**

In June 2010 we planted 4,000 memorial trees together with members of the local community. The park is widely used as a place of recreation by visitors of all ages.

**Company Initiatives**

Implementing a variety of initiatives to meet the needs of our customers.

**Household and Industrial Materials Company**

**Takashi Ishida**

President

The Household and Industrial Materials Company manufactures paper products closely linked with our daily lives that are used to both wrap or wipe. We focus on creating value sought after by our customers and standby our customer-first motto in developing our business to meet eco friendly demands.

**Printing and Communications Media Company**

**Tadashi Watanabe**

President

The Printing and Communications Media Company manufactures a line up of paper products closely linked with our daily lives that are used to both wrap or wipe. We strive to meet increasingly strict quality demands and operate our mills with a lessened impact on the environment. We are also working to integrate our operations in the East Asia market centered on our Nantong Mill in China.

**Functional Materials Company**

**Shinichiro Kondo**

President

The Functional Materials Company manufactures a wide range of value-added specialty and functional papers. Together with cultivating new businesses that leverage our core sheeting and coating technologies, we are also advancing the development of new products and technologies that help create new value and reduce both CO2 emissions as well as the use of natural resources.

Since its inception, the Oji Paper Group has listened closely to feedback it has received through dialogue with its customers, the local community and employees. We stand committed to further enhancing our social action programs while strengthening our relationship with the local community through our environmental monitor system, groundwork program, disposable chopstick recycling initiative, mill tours and the Oji Forest Nature School.
We are pursuing the development of new packaging materials and processing technologies with the ultimate goal of becoming an integrated provider of optimized packaging solutions that meet the form and functionality requirements throughout the entire supply chain.
Packaging Innovation

We are able to reduce packaging weights and shorten work time by changing the conventional steel or wood packaging used for exporting robots to a heavy weight paperboard product called HiPLE-ACE. The reduced weight of the packaging also helps to reduce CO₂ emissions during shipment.

Improvements
• Materials cost: 23% reduction
• Weight: 57% reduction; 109 kg
  47 kg
• Packaging time: 33% reduction
  30 min. / unit
  20 min. / unit
• Air freight cost: 49% reduction
• Shipping container capacity: 66% increase; 12 units
  20 units

Corrugated container solution
We helped improve Rinrei Wax’s shipping efficiency by changing the material used for wax packaging from metal cans to corrugated container (with an inner pouch). After use, the packaging solution can easily be disassembled. Enhanced shipping efficiency also means a reduction in CO₂ emissions.

Improvements
• Enhanced shipping efficiency
  (1,500 metal cans → 2,800 boxes per 4 ton truck)
• Enhanced disposal efficiency (volume reduction)

Kikkoman Food Products Company
Pursuing greater usability
We participated in the joint development of an air-tight soy sauce package that developed a new plastic cover and packaging solution. This ensured the usability of the package until its very last use.

*This design won an award at Japan Packaging Contest 2011.


Refillable paper container boxes
We jointly developed a refillable design where the folding carton for non-woven cooking paper can be reused after the original roll is used up.

Made improvements to light fixture packaging
A thorough revamping of our packaging designs helped to significantly reduce the amount of materials used in light fixture packaging. Some of the packaging materials are also used as buffer parts.

Improvements
• Materials cost: 20.4% reduction
• Materials weight: 27.7% reduction
• CO₂ emissions: 23.7% reduction

*This design won an award at Japan Packaging Contest 2011.

Diabetes prevention packaging
We developed a corrugated container more closely shaped to the products it carries that helps prevent the packaging from bulging. This new design is not only more aesthetically pleasing, but is also easier to carry and helps reduce the use of resources.

*This design won an award at Japan Packaging Contest 2010.

Oji Paper Group leverages its competencies in technologies and development to deliver value to its customers through integrated solutions that combine initiatives in materials, engineering, design, processing and the environment.

Oji Nepia manufactures and sells household paper products most often used in our daily lives, including a variety of tissue paper and toilet paper as well as children’s diaper nepia Genki and adult diaper nepia Tender. Given its close connection with our lives, Oji Nepia is taking part in a wide range of social action programs as well as assistance activities for those in need following the Great East Japan Earthquake, under the slogan action with a kind heart.

### Groups receiving support
- NPO One Family Sendai (Sendai City, Miyagi Pref.)
- NPO Terakoya Hojosha (Aizuwakamatsu City, Fukushima Pref.)
- Hanamaki Civic Network Council (Hanamaki City, Iwate Pref.)
- NPO Kohaku no Izumi (Kuji City, Iwate Pref.)
- NPO One Family Sendai (Sendai City, Miyagi Pref.)
- NPO Kohaku no Izumi (Kuji City, Iwate Pref.)
- NPO Network Orange (Kesennuma City, Miyagi Pref.)
- NPO Arts for HOPE (Shinagawa, Tokyo)
- NPO Kohn'yu no Iizumi (Kujy City, Iwate Pref.)
- Hanamaki Civic Network Council (Hanamaki City, Iwate Pref.)
- NPO Network Orange (Kesennuma City, Miyagi Pref.)

### Details of campaign
- Period: May 2011 to March 2012
- Target products: All Nepia national brand products

### Support scheme

1. **Customer purchases Nepia product**
2. **Nepia donates a portion of the proceeds to the Japan Philanthropic Association**
3. **The Japan Philanthropic Association provides assistance to groups helping those in need**
4. **Donated funds are used to benefit a wide range of activities in the disaster-affected areas**

Further details about the company’s assistance activities can be found on the Oji Nepia corporate website.

http://www.nepia-sasaeru.com/ (Japanese)

### Ongoing activities

- **“nepia 1,000 Toilets Program”**

  Launched in fiscal 2008, the nepia 1,000 Toilets Program seeks to save lives that would otherwise be lost due to sanitation and water problems by donating a portion of sales from specific Nepia products to UNICEF.

  Over a two-year period from 2008, the program completed some 2,400 toilets for local homes and 25 water supply facilities and school toilets in Asia’s youngest country Timor-Leste. Financial aid in fiscal 2010 is currently being used to construct more than 1,500 additional toilets. We have also received more than 55,000 messages of support for the initiative.

  *Only company donations will be provided to the program in fiscal 2011 because of the Great East Japan Earthquake.*

- **Poo Class**

  In order to convey the fact that “excretion is part of life and good health,” in fiscal 2007 we joined forces with Japan Toilet Labo to launch “Poo Class” to teach Japan’s elementary school children about the importance of healthy bowel movements. In fiscal 2010, the class also included a talk on toilet conditions in Timor-Leste. Financial aid in fiscal 2010 is currently being used to construct more than 1,500 additional toilets. We have also received more than 55,000 messages of support for the initiative.

  As of fiscal 2010, a total of 7,934 elementary school children have participated in the class. In fiscal 2011, we plan to hold the class for elementary school children from disaster-affected areas in the Tohoku region.

- **“nepia GENKI” supporting the Japan Cliniclowns Association**

  In fiscal 2010 we donated a portion of sales from nepia GENKI products to the Japan Cliniclowns Association, which helps invigorate hospitalized children with fun and humor.

  In addition to assisting the Association’s 18-appearance schedule for 12 hospitals, we also introduced their activities on our website and product packaging. We are also providing support for their special program being held in areas impacted by the Great East Japan Earthquake.
We continue to provide paper essential to information media even today where the digitalization of information is progressing.

Activities that lessen our impact on the environment

Shibata
Production Coordination Manager
Tomakomai Mill, Oji Paper Co., Ltd.

The Tomakomai Mill is a key manufacturer of newprint within the Group. We run many of our facilities in an on-and-off pattern based on the inflow of pulp raw materials and the energy supply balance. In this regard, we actively create the most optimized production plan that can also help us lessen our environmental impact.

Launch of Printing Paper Production in China

Our newly constructed Nantong Mill in China commenced full-scale operations in fiscal 2010. The production line ranges from A2 gloss/matte coated paper used in heatset web offset (HSWO) printing to A2 gloss/matte coated paper and uncoated wood-free paper. Already renowned by the market for its high quality, the paper manufactured at the mill is used in a wide range of applications from magazines and advertisements to art catalogues.

In order to meet increasing demand in China and Southeast Asia, the Nantong Mill is aiming to establish a comprehensive supply system that will provide not only printing paper, but also a wider range of paper products, from packaging paper to specialty paper, in the future.

"Safety, the Environment and Compliance" is always positioned as a top priority in the management of the Nantong Mill. Product safety is managed in accordance with Oji Paper Group standards. In addition, raw materials are strictly selected and managed from the quality design stage, in compliance with China’s laws as well as related international regulations.

Involvement with our customers

Hu
General Manager
Shanghai Lin Ye Paper Co., Ltd.

“We started our paper business in China’s domestic market in 1999. Since then, we have established a cooperative relationship with the Oji Paper Group. Our company aims to supply top-quality, reliable paper products to our customers. We hope to develop a closer relationship with the Oji through the Nantong project to provide our customers better and more considerate services.”

Quality control at the Nantong Mill

Zhang Shu-Ying, Gong Shu-Ying, Ji Hui, Cai Jin-Juan
Production Technology Department, Environmental Management Office
Jiangsu Oji Paper Co., Ltd.

The new Nantong Mill finally commenced operation. We stand firmly committed to managing product safety and quality so that our customers are always impressed by the paper they purchase.

In new non-paper sectors

Globally

Considerate of the environment

Functional Materials Company

We utilize our core proprietary technologies to develop value-added functional materials.

Core Technologies

Papermaking

We feature proprietary technologies that evenly disperse fibers to create sheets. We are able to make sheets from various fibers, such as wood pulp, synthetic fibers and mineral fibers.

Coating

We possess proprietary technologies for evenly coating base materials as well as controlling the thickness of coating layer and degree of penetration of coatings into base materials.

Stretching

We have proprietary technologies for manufacturing uniform thin films by stretching plastics biaxially while applying heat.

Adhesives Processing

We feature proprietary technologies that coat release paper with adhesives and layer it with paper or films.

Dry Web Formation

We have proprietary technologies for dispersing fibers into the air to form sheets, which makes it possible to form bulky web without the use of water.

Involvement with our customers

Voice

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Our newly constructed Nantong Mill in China commenced full-scale operations in fiscal 2010. The production line ranges from A2 gloss/matte coated paper used in heatset web offset (HSWO) printing to A2 gloss/matte coated paper and uncoated wood-free paper. Already renowned by the market for its high quality, the paper manufactured at the mill is used in a wide range of applications from magazines and advertisements to art catalogues.

In order to meet increasing demand in China and Southeast Asia, the Nantong Mill is aiming to establish a comprehensive supply system that will provide not only printing paper, but also a wider range of paper products, from packaging paper to specialty paper, in the future.

"Safety, the Environment and Compliance" is always positioned as a top priority in the management of the Nantong Mill. Product safety is managed in accordance with Oji Paper Group standards. In addition, raw materials are strictly selected and managed from the quality design stage, in compliance with China’s laws as well as related international regulations.

Involvement with our customers

Hu
General Manager
Shanghai Lin Ye Paper Co., Ltd.

“We started our paper business in China’s domestic market in 1999. Since then, we have established a cooperative relationship with the Oji Paper Group. Our company aims to supply top-quality, reliable paper products to our customers. We hope to develop a closer relationship with the Oji through the Nantong project to provide our customers better and more considerate services.”

Quality control at the Nantong Mill

Zhang Shu-Ying, Gong Shu-Ying, Ji Hui, Cai Jin-Juan
Production Technology Department, Environmental Management Office
Jiangsu Oji Paper Co., Ltd.

The new Nantong Mill finally commenced operation. We stand firmly committed to managing product safety and quality so that our customers are always impressed by the paper they purchase.

In new non-paper sectors

Globally

Considerate of the environment

Functional Materials Company

We utilize our core proprietary technologies to develop value-added functional materials.

Core Technologies

Papermaking

We feature proprietary technologies that evenly disperse fibers to create sheets. We are able to make sheets from various fibers, such as wood pulp, synthetic fibers and mineral fibers.

Coating

We possess proprietary technologies for evenly coating base materials as well as controlling the thickness of coating layer and degree of penetration of coatings into base materials.

Stretching

We have proprietary technologies for manufacturing uniform thin films by stretching plastics biaxially while applying heat.

Adhesives Processing

We feature proprietary technologies that coat release paper with adhesives and layer it with paper or films.

Dry Web Formation

We have proprietary technologies for dispersing fibers into the air to form sheets, which makes it possible to form bulky web without the use of water.
New Tac Kasei Co., Ltd.
Adhesive films for optical devices
We have utilized our adhesive processing technologies to develop films that enable more advanced optical qualities, are easier to process, and retain greater durability. These films are manufactured in a plant fully equipped with VOC treatment facilities.

Oji Specialty Paper Co., Ltd.
Glass paper
We have developed non-woven fabrics from glass fibers that utilize our wet-laid papermaking technologies. With superior qualities, including being difficult to burn, corrode and damage, non-woven fabrics are also used as a component in photovoltaic cells.

Oji Specialty Paper Co., Ltd.
Anti-corrosive paper
We have utilized our coating technologies to create layers that absorb hydrogen sulfide, which is a major cause for silver corrosion by paper and paperboard. This prevents electronic components that use silver from corroding, such as automotive fuses. No anti-corrosion chemicals are needed as the desired effect can be achieved simply by wrapping the component in anti-corrosive paper.

New Tac Kasei Co., Ltd.
Films for capacitors
We have utilized our stretching technologies to transform polypropylene film, once used as packaging material, into capacitor components used in hybrid vehicles. We are also helping the environment by supporting hybrid vehicles that use less fuel and operate more efficiently than gas-powered automobiles.

Adhesive labels
We have utilized our adhesive processing technologies to eliminate the need for release paper by treating the back of the label with an adhesive. This helps to reduce waste as release paper is no longer discarded.

New Tac Kasei Co., Ltd.
In the Home

Cold compression pack
We have utilized our dry web formation technologies to develop a bandana type cold compression pack. The cool sensation is sustained by slowly gasifying the water content in superabsorbent polymers. This product helps to reduce energy usage during the hot summer.

Imaging Media Business Division, Oji Paper Co., Ltd.
Diagnostic imaging film
We have utilized our coating technologies to develop a direct thermal film for x-ray applications, which eliminates silver staining that occurs when developing images using the conventional halide method.

Oji Paper Group Environmental and Sustainability Report 2011
Oji Paper Group Environmental Data

Understanding the environmental impact of our production activities to effect further improvement.

**INPUT**
- Fossil fuel-derived energy: 1,531 thousand kl
- Renewable energy: 1,340 thousand kl
- Waste-derived energy: 558 thousand kl
- Water used: 628 million m³

**Main raw materials**
- Wood chips: 4,150 thousand tons
- Recovered paper: 4,351 thousand tons
- Company-owned Forests in Japan: 680 thousand tons/year
- Overseas forest plantations: 9,390 thousand tons/year

**OUTPUT**
- Discharge to atmosphere:
  - CO₂ (from energy): 4,217 thousand tons
  - SOx: 6 thousand tons
  - NOx: 10 thousand tons
  - Soot: 0.5 thousand tons
- Discharge to water:
  - Wastewater: 601 million m³
  - COD: 6 thousand tons
  - SS: 28 thousand tons
- Production volume of paper and paperboard: 7,266 thousand tons

**Environmental Data**

<table>
<thead>
<tr>
<th>Environmental Data</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soot (CO₂ from energy): &amp;\text{Volatilization,} &amp;\text{indirect increase} &amp;\text{in waste-derived} &amp;\text{energy}</td>
<td></td>
</tr>
<tr>
<td>NOx (nitrogen oxides): &amp;\text{Volatilization,} &amp;\text{indirect increase} &amp;\text{in waste-derived} &amp;\text{energy}</td>
<td></td>
</tr>
<tr>
<td>CO₂ from energy: &amp;\text{Volatilization,} &amp;\text{indirect increase} &amp;\text{in waste-derived} &amp;\text{energy}</td>
<td></td>
</tr>
<tr>
<td>COD (chemical oxygen demand): &amp;\text{Volatilization,} &amp;\text{indirect increase} &amp;\text{in waste-derived} &amp;\text{energy}</td>
<td></td>
</tr>
<tr>
<td>SS (suspended solids): &amp;\text{Volatilization,} &amp;\text{indirect increase} &amp;\text{in waste-derived} &amp;\text{energy}</td>
<td></td>
</tr>
</tbody>
</table>

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**Environmental Impact**

<table>
<thead>
<tr>
<th>Environmental impact on water</th>
<th>Environmental impact on air</th>
<th>Industrial waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>COD</td>
<td>BOE</td>
<td>SS</td>
</tr>
<tr>
<td>wastewater output</td>
<td>NOx</td>
<td>SOx</td>
</tr>
<tr>
<td>COD</td>
<td>BOD</td>
<td>SS</td>
</tr>
<tr>
<td>COD (chemical oxygen demand)</td>
<td>BOD (biochemical oxygen demand)</td>
<td>SS (suspended solids)</td>
</tr>
<tr>
<td>COD (chemical oxygen demand)</td>
<td>BOD (biochemical oxygen demand)</td>
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<tr>
<td>COD (chemical oxygen demand)</td>
<td>BOD (biochemical oxygen demand)</td>
<td>SS (suspended solids)</td>
</tr>
</tbody>
</table>

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**Environmental Accounting**

<table>
<thead>
<tr>
<th>Environmental conservation cost (Unit: ¥ million)</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main initiatives</td>
<td>8,214</td>
</tr>
<tr>
<td>Investment</td>
<td>20,395</td>
</tr>
<tr>
<td>Costs</td>
<td>6,950</td>
</tr>
<tr>
<td>Total</td>
<td>24,886</td>
</tr>
</tbody>
</table>

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**Economic benefit associated with environmental conservation activities**

<table>
<thead>
<tr>
<th>Economic benefit associated with environmental conservation activities (Unit: ¥ million)</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income from company-owned forests in Japan</td>
<td>340</td>
</tr>
<tr>
<td>Cost reductions through energy conservation</td>
<td>2,242</td>
</tr>
<tr>
<td>Income from recycling</td>
<td>838</td>
</tr>
<tr>
<td>Total</td>
<td>3,419</td>
</tr>
</tbody>
</table>