

The Sustainable Business Model of a Comprehensive Biomass Enterprise

The Nippon Paper Group is a comprehensive biomass enterprise that, while sustainably managing forests, effectively uses and recycles the abundant biomass resources they produce. We practice CSR activities consistent with our business characteristics and business strategies.

Helping to fight global warming, protect biodiversity, and prevent resource depletion

Three Cycles Contributing to Sustainable Development

1 Sustainable Forest Management

179,000 hectares of company-owned forests worldwide*

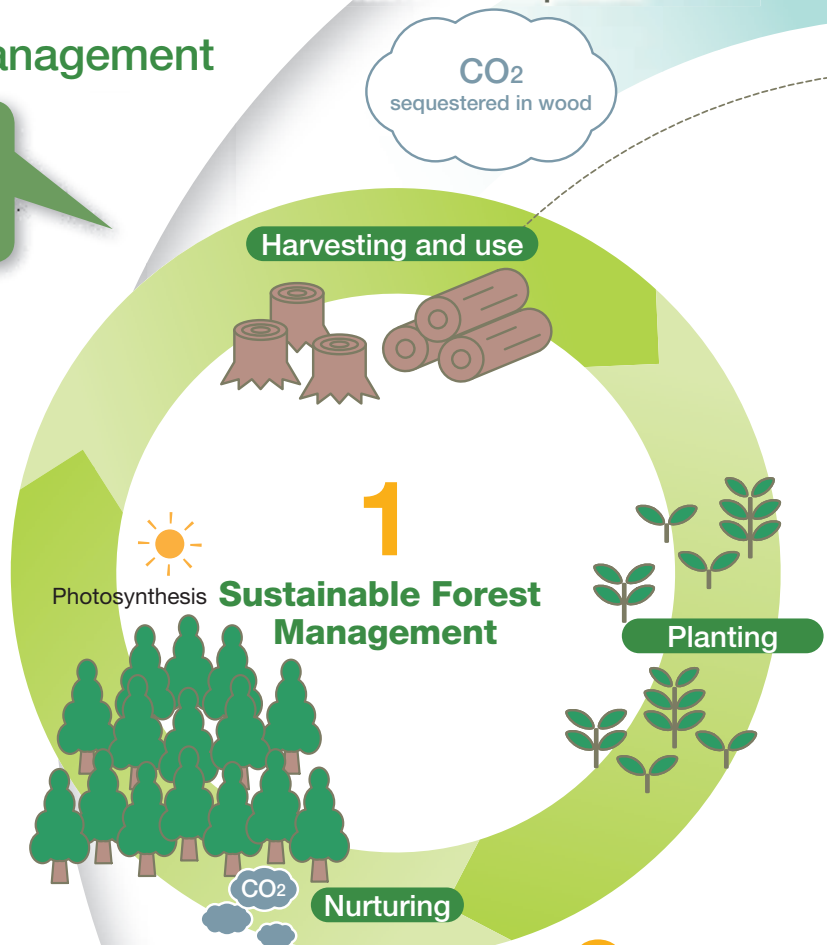
* Reflects a decline from 204,000 hectares in fiscal 2015, due to the sale of plantations in light of lower paper demand.

In addition to preventing global warming and protecting watersheds, forests perform a wide variety of functions such as providing shelter for diverse living creatures. After harvesting, steps are taken to regenerate forests and ensure that forests under our stewardship thrive indefinitely.

Preserving biodiversity

Nippon Paper Industries has designated approximately 20% of its Japanese forest as "environmental forest areas." In these areas, logging for commercial purposes is prohibited and forest ecosystems and water resources are protected. These environmental forest areas include national park lands in Akan, Nikko, and other places as well.

Environmental forest areas:
18,000 hectares
About 20% of forests owned in Japan



2 Carbon Neutrality (Preventing Global Warming through the Carbon Cycle)

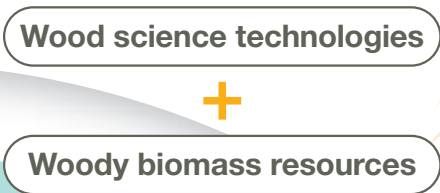
CO2 sequestered in company-owned forests worldwide: 32 million tons

Trees, the principal raw material used by the Nippon Paper Group, absorb and hold CO₂ from the atmosphere as they grow. It is believed, therefore, that the release of CO₂ when wood resources are burned results in no net increase in atmospheric CO₂. The ongoing effective use of wood resources from properly managed, sustainable forests constitutes a carbon-neutral cycle that adds no carbon to the atmosphere.

Carbon Neutrality (Carbon Cycle)

CO2 absorption from the growth of plants and trees

Toward greater use of trees

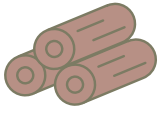


- New business creation** → PP.10-11
- Expansion of product applications to growth areas** → PP.10-11

Making full use of trees as a biomass resource

Cascade use of wood

Unprocessed wood



Use as a material

Paper and construction materials and various other products



CO₂ emission from burning

Use as a fuel

Black liquor, construction waste, logging residue, and other forms of biomass fuel



Use

3

Recycling of Paper Products

Separation and collection

Production of recycled paper

Pulp production from wastepaper

Cascade use of wood

While constantly building upon its wealth of wood science technologies, the Nippon Paper Group uses every harvested tree in a cascade of applications.

Prevention of resource depletion

Of the energy used by the Nippon Paper Group, 47% is comprised of black liquor from the pulp-making process, wood construction waste and other biomass fuels, and fuels derived from discarded tires, RPF, and other waste materials. The Group is also making advances in the development of biomass fuel that can be used in place of fossil fuels.

Non-fossil energy* as a percent of total energy usage:

47%

* Non-fossil energy = biomass energy+ waste energy

3 Recycling of Paper Products

Recycled paper utilization rate

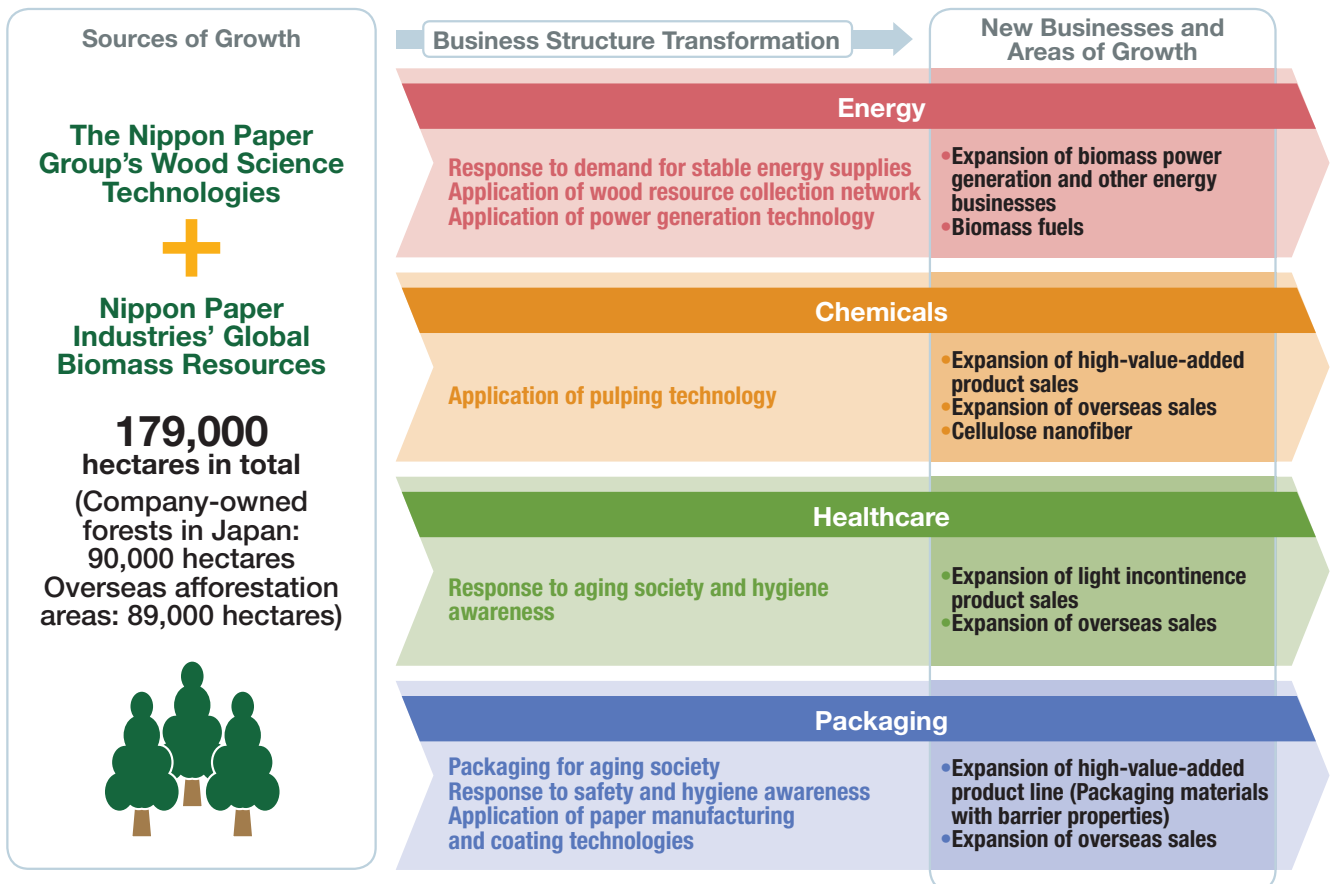
Paper **38%** Paperboard **89%**

The Nippon Paper Group is working diligently to increase the waste paper collection rate with the support of customers and the general public. In addition to bolstering its recycled paper processing capabilities, the Group is striving to expand the range of applications for pulp made from wastepaper.

Business Strategy Aiming to Create New Value

Working from a base of enhancing profitability in the domestic and overseas paper and paperboard businesses, the Nippon Paper Group is expanding businesses in growth areas by transforming the business structure, and creating new value as a comprehensive biomass enterprise shaping the future with trees.

Fifth Medium-Term Business Plan



Enhance Competitiveness of Existing Businesses

Business Alliance with Tokushu Tokai Paper Co., Ltd.

Nippon Paper Industries Co., Ltd. and Tokushu Tokai Paper Co., Ltd. agreed to enter into a business alliance* concerning containerboard, and sack and general-purpose kraft paper, businesses. Under the agreement, an efficient sales system will be established by consolidating sales functions in a joint sales company to be newly established. Furthermore, Tokushu Tokai Paper will spin off its Shimada Mill, which will then be operated with production know-how from both companies for enhanced competitiveness.

* The business alliance is scheduled to take effect on October 1, 2016. Nippon Paper Industries Co., Ltd. will hold 65% of the shares of the new joint sales company, Nippon Tokai Industrial Paper Supply Co., Ltd., while Shin Tokai Paper Co., Ltd., the company created to take over operation of the Shimada Mill, holds the remaining 35%.

New Business Creation and Expansion of Product Applications to Growth Areas

1 Energy

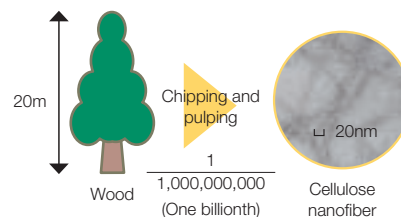
Nippon Paper Industries Co., Ltd. is focusing on the use of renewable energy in its power generation business, where it has established the goal of achieving ¥50 billion in annual sales as early as possible. The mega solar plant in Komatsushima City, Tokushima Prefecture, and the Yatsushiro Mill's biomass power plant, fueled entirely with unused woody materials, are presently operating as expected. In addition, wind power generation is scheduled to get underway on a site adjacent to the Akita Mill, in January 2018, and a cutting-edge thermal power plant capable of using biomass fuel, including unused woody material, at rates of up to 30% is expected to come online in March of the same year at the Ishinomaki Mill's Hibarino site.



Komatsushima Solar Power Plant (Module capacity of 21,000 KW)

2 Cellulose Nanofiber (CNF)

Cellulose nanofiber (CNF) is wood fiber (pulp) that has been refined down to a nano-level scale and is the world's most advanced biomass material. In 2013, Nippon Paper Industries Co., Ltd. established Japan's first test facility for CNF production at the Iwakuni Mill, and now we are working on a new CNF production facility at the Ishinomaki Mill. With an annual capacity of 500 tons, this plant will be among the world's largest facilities of its kind, and plans are to have it in operation by April 2017.



In 2015, the Nippon Paper Group completed development work on sheets using CNF that has been treated so that its surface is coated with silver and other metal ions. These sheets offer outstanding antibacterial and deodorant properties, and they are being used in Nippon Paper Crecia Co., Ltd.'s Hada Care Acty® brand of adult diapers and other products in the Hada Care series - the world's first applications of functional CNF. Looking to the future, consideration is being given to offering not only CNF but also items such as resin and rubber primary processed products reinforced with CNF, and packaging, functional paper, and filters applying the transparency, gas-barrier, and other properties of CNF.

* "Nano" = one billionth.

3 Healthcare

The healthcare business is viewed as a promising growth area and management resources will be allocated to it with the goal of achieving a medium-term target of ¥20 billion in annual sales. Nippon Paper Crecia will complete capacity expansion work at its Kyoto Mill and strengthen its sales operations. In addition, through the offering of products such as the Poise® Hada Care Pad and the Hada Care Acty® series, Nippon Paper Crecia is offering new value that responds to the needs of an aging society.



Poise® Hada Care Pad Regular
20 pads



Hada Care Acty® Soft Fit
Comfortable thin pants
M-L size, 22 count

4 Packaging

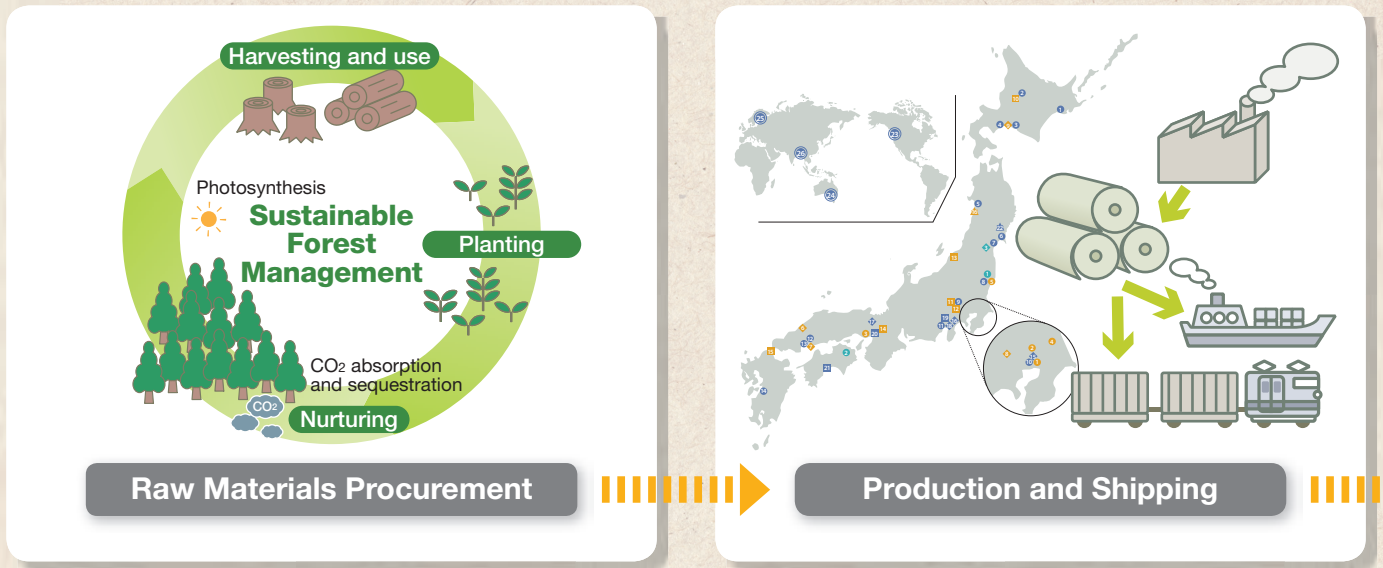
In April 2016, Nippon Paper Industries Co., Ltd. established the Packaging Communication Center, to perform marketing and proposal functions, and the Packaging Research Laboratory, to develop packaging materials and technologies. The Company also entered into a licensing agreement with Elopak AS, a Norwegian company, in March 2016. Under the agreement, Nippon Paper Industries will become the first company in Japan to manufacture and sell the chilled liquid cartons Elopak provides around the world. In a separate deal, Nippon Paper Industries acquired the liquid packaging board business of Weyerhaeuser Company in the US.

Through the measures mentioned above, Nippon Paper Industries aims to pursue global business development as a total liquid carton system supplier with integrated operations spanning everything from the production of liquid packaging board, to processing, new carton development, and sales.



Various types of paper containers and packaging

Social Issues and the Nippon Paper Group's Value Creation Flow



Addressing Social Issues in Our Value Chain

Social Issues	ISO 26000 Core Subjects	Pages in Sustainability Report 2016	Raw Material Procurement
Management Responsibility	Organizational Governance, Fair Operating Practices	PP.15-24	←
Forest Management, Raw Material Procurement, and Environmental Responsibility	The Environment	PP.25-50	<ul style="list-style-type: none"> • Sustainable procurement of raw materials (Efforts to procure certified material, confirm legitimacy, pursue afforestation overseas, obtain certifications for company-owned forests, and use domestic materials) • Protection and nurturing of company-owned forests in Japan (Preserving biodiversity and other efforts to maintain the diversity of roles played by forests)
Responsibility to Customers	Consumer Issues	PP.51-56	←
Human Rights, Employment and Labor Responsibility	Human Rights, Labor Practices	PP.57-64	<ul style="list-style-type: none"> • Confirmation of suppliers' actions in respecting human rights • Respect for human rights in the company's forest management (Respect for indigenous people, prohibitions against forced labor and child labor, etc.)
Responsibility to Communities	Community Involvement and Development	PP.65-69	<ul style="list-style-type: none"> • Coexistence with communities adjacent to overseas afforestation areas (Job creation, education support, cultural preservation, contributions to local environments, preserving biodiversity, promotion of safety and disaster preparedness, etc.) • Contributions that make use of company-owned forests for the benefit of local areas and communities (Environmental education that makes use of company-owned forests, etc.)



Materiality

Initiatives in Our Value Chain			
Production	Shipping	Sales and Usage	Separation, Collection, Recycling, and Disposal
Corporate governance, CSR management, thorough compliance, appropriate information disclosure, personal information management, and dialogue with stakeholders			
<ul style="list-style-type: none"> Climate change initiatives Reduction of environmental impacts (Water and air pollutants, waste, noise, vibration, odor, chemical substances, etc.) Development and manufacturing of environmentally and socially conscious products 	<ul style="list-style-type: none"> Increase in load efficiency (Promotion of modal shifts) Shortening of transportation distances (Pursuit of direct delivery and reorganization of distribution warehouses) 		<ul style="list-style-type: none"> Promotion of wastepaper collection Promotion of recycled paper usage (Strengthening of waste paper processing capacity, expansion of use of unutilized waste paper, improvement of recycled paper pulp quality)
<ul style="list-style-type: none"> The stable supply of products Ensuring quality and safety 		<ul style="list-style-type: none"> Providing environmentally and socially conscious products Ensuring safety in use Pursuing customer satisfaction Appropriate disclosure of product information Addressing customer questions and opinions 	<ul style="list-style-type: none"> Promotion of wastepaper collection together with customers (Support for recycling organizations, establishment of waste paper collection facilities, etc.)
Climate Change Initiatives Appropriate information disclosure, promotion of communication, and environmental education activities			
<ul style="list-style-type: none"> Hiring practices that respect human rights Securing diversity in the workforce Human resource development Ensuring occupational safety and health, and disaster prevention 	<ul style="list-style-type: none"> Ensuring safety in shipping (Promotion of transportation safety) 		
Respect for basic human rights			
<ul style="list-style-type: none"> Coexistence with areas surrounding mills (Job creation, education support, contributions to local environments, cultural preservation, promotion of safety and disaster prevention, etc.) 	<ul style="list-style-type: none"> Reduction of impacts of shipping (Promotion of transportation safety, adoption of low emission vehicles, promotion of noise abatement measures) 		<ul style="list-style-type: none"> Working with local communities to promote wastepaper collection
Promotion of appropriate information disclosure and communication			

CSR Materiality at the Nippon Paper Group

CSR Materiality Items among Initiatives in Our Value Chain (Addressed on pages 12-13)

ISO 26000 Core Subjects	Materiality	Scope of External Impacts	Indicators
Organizational Governance, Fair Operating Practices (Management Responsibility)	<ul style="list-style-type: none"> • Dialogue with stakeholders 	Society	P.15
The Environment (Forest Management, Raw Material Procurement, and Environmental Responsibility)	<ul style="list-style-type: none"> • Sustainable procurement of raw materials • Climate change initiatives • Reduction of environmental impacts • Wastepaper collection and use • Preserving biodiversity 	Production sites, people living near company-owned forests, and suppliers	P.25 P.33
Consumer Issues (Responsibility to Customers)	<ul style="list-style-type: none"> • Providing environmentally and socially conscious products 	Customers	P.51
Human Rights, Labor Practices (Human Rights, Employment and Labor Responsibility)	<ul style="list-style-type: none"> • Occupational safety and health 	Subcontractors, suppliers	P.57
Community Involvement and Development (Responsibility to Communities)	<ul style="list-style-type: none"> • Coexistence with local communities and society at large 	Production sites and people living near company-owned forests	P.65

The Nippon Paper Group, working from a foundation of sustainable forest management, contributes to better living and cultural progress as a comprehensive biomass enterprise making full use of, and recycling, renewable wood resources.

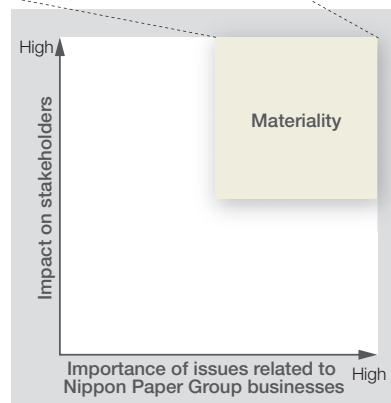
Proper management can make forests into sustainable resources and enable the preservation of biodiversity. Sequestering CO₂ in forests and using wood resources helps to fight global warming. And using renewable wood resources prevents resource depletion.

Creating new products and expanding our activities as a comprehensive biomass enterprise, we manage and operate expansive forests and large-scale production sites. We, therefore, have a significant impact on the local areas and people who work there. Coexistence with these communities, as well as reducing environmental impacts and securing the safety and health of our local employees, therefore, are critical to our own continued existence.

Moreover, the opinions of our stakeholders serve as valuable opportunities to grasp issues that are important for coexisting and growing with society in a sustainable way.

Therefore, the materiality items given above are of particular importance among our initiatives addressing social issues in our value chain (see pages 12–13).

We identify materiality items as described in the diagram to the right.



Process for Identifying Materiality Items

