

Sustainable Forest Management and Biodiversity Conservation

Sustainable Forest Management

Basic Approach

The appropriate cultivation and management of forests not only produces renewable forest resources; it also helps to enhance the multi-faceted functions of forests, including absorbing and fixing CO₂, conserving biodiversity, cultivating water resources, and pre-serving soil. To meet such environmental challenges as dealing with global warming and conserving biodiversity, our purpose is to fully leverage the functions of forests that are the precious assets of the Oji Group in pursuing our business activities. We believe that continuing to “grow forests and utilize forests” will produce exceedingly important value, both for the environment and for society.

Overview of the Oji Group's Forests (Oji Forests)

The Oji Group owns and manages extensive forests in Japan and overseas, amounting to 603,000 ha. The portfolio comprises 455,000 ha of production forests primarily for produc-ing forest products in consideration of environment, and about 148,000 ha of conservation forests principally for preserving biodiversity and basins.

Wood from production forests is expected to be used as raw materials for paper manufacturing and fuels for biomass power generation, and for new materials derived from wood components under development. In order to maintain stable supply of these wood raw materials, the Oji Group spends approximately 14.2 billion yen annually for ongoing sustainable forest management. In addition, our Environmental Action Program 2030 states a goal of expanding overseas produc-tion forest area to 400,000 ha.



CENIBRA in Brazil: Production forest (left) and conservation forest (right)

Conservation Forests

Of the 603,000 ha of forests owned and managed by the Group in Japan and overseas, approximately 25%, i.e., 148,000 ha are conservation forests, which are managed with consideration for the environment and ecosystems. Specifically, of the forests man-aged by CENIBRA, Brazil, conservation forests account for as much as about 42%.

In Japan, 12,000 ha out of 188,000 ha of company-owned forests are conservation forests designated for preserving biodiversity, maintaining landscapes around recreational facilities (conservation for forest utilization), preventing soil runoff and collapse (land con-servation), preserving water sources, and protecting scientifically valuable forests. Since one forest may have multiple functions, the cumulative total area of environmental conservation functions is 17,000 ha.

We will continue to maintain and properly manage conservation forests that contribute to the conservation and promotion of biodi-versity.

Oji Group's Forests by Country

Country	Business company	Established	Production forests (1,000 ha)	Conservation forests (1,000 ha)	Total (1,000 ha)
Brazil	CENIBRA	1973	144	106	250
	Pan Pac	1971	36	5	41
New Zealand	SPFL	1992	10	3	13
	Oji FS	2014	7	1	8
Indonesia	KTH	1998	63	19	82
Vietnam	QPFL	1995	9	1	10
Other (3 companies in Vietnam and Australia)		—	10	1	11
Overseas subtotal			279	136	415
Company-owned forests in Japan	—	—	176	12	188
Group total			455	148	603

Production forests : forests primarily for producing forest products in consideration of environmental conservation.
Conservation forests : forests primarily for environmental conservation, including protecting biodiversity and basins.

Conservation Forests in Japan by Function

Conservation forest functions	Forest area*1 (actual area) (ha)	Function area*2 (cumulative total) (ha)
Biodiversity conservation	9,742	9,495
Conservation for forest utilization	710	4,357
Land conservation	818	2,735
Water conservation	275	532
Conservation for scientific research	8	8
Total	11,552	17,127

*1 Each conservation forest is categorized by its main function, and forest areas are aggregated by category.
*2 Each function area shows the cumulative total of the areas of forests with that function regardless of their main functions' categories.

Topics Earned the Highest “A” Score in the CDP Forests Category (Timber Products)

Oji Holdings was added to the “A list” of top-scoring companies se-lected by CDP, an international non-profit organization for the first time in 2022, which recognized its leadership in transparency and perfor-mance in corporate sustainability concerning forests (timber products).

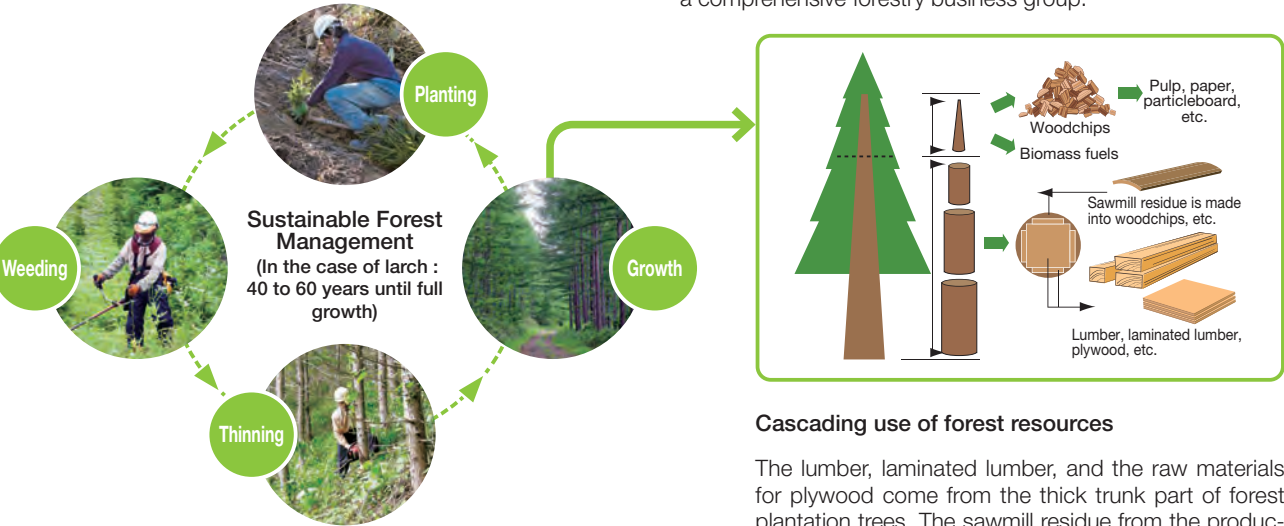


Renewable Forest Resources

Forests are a renewable resource that can be planted, grown, harvested, and re-planted. To make cascading use of trees (thorough use of every part of trees), the Oji Group utilizes the

harvested wood for lumber, plywood, woodchips for paper manufacture, wood biomass fuel, etc.

The Oji Group promotes the effective utilization of wood as a comprehensive forestry business group.



Cascading use of forest resources

The lumber, laminated lumber, and the raw materials for plywood come from the thick trunk part of forest plantation trees. The sawmill residue from the produc-tion of lumber, and the tips of those trunks which can-not be used for lumber, are thoroughly utilized as woodchips for paper manufacturing or biomass fuel.

Social Contributions That Are Environmentally and Economically Friendly to Local Communities

Sustainable forest management requires a mutual understand-ing between forest plantation companies and the local com-munities, grown through considering environmental, social, and economic effects for the community. To give an example of economic contribution, our overseas forest plantation com-panies have created approximately 15,000 jobs locally. An-other such example is our technical training primarily on plant-ing and forest management provided to owners of small-scale forests. Further, we cooperate with local governments, NGOs, and civic groups in each region to create and share environ-mental and social benefits. Their activities include biodiversity conservation programs in environmentally protected forests, vocational and educational support in local communities, and assistance in areas that have poor access to medical services.



CENIBRA supports beekeeping

Oji Fibre Solutions supports an educational program of Graeme Dingle Foundation

Topics Establishment of Oji Forest Value-Creation & Promotion Department

The Oji Group established the Oji Forest Value-Creation & Promotion Department in Oc-tober 2022 to utilize diverse functions of the forests it owns and manages toward achiev-ing its Purpose. The Oji Forest Value-Crea-tion & Promotion Department seeks to uti-lize forest resources to create new busi-nesses and expand research areas, while conducting various surveys, searching for partners, and sourcing investment op-portunities to solve social issues and in-crease corporate value.

Forests' Multi-functionality and Ecological Services



Sustainable Forest Management and Biodiversity Conservation

Biodiversity Conservation

Basic Approach

The Oji Group has declared to seek “Harmony with Nature and Society” in its Management Philosophy and has set the goal of conserving biodiversity and reducing our impact on the environment under its Environmental Vision 2050 and Environmental Action Program 2030. To that end, the Group works for forest management with consideration for ecosystems, protection and nurturing of rare plants and animals, research and development of biodegradable and biomass materials for ecosystem maintenance, and purification of wastewater and exhaust gases.

With regard to forests, in particular, as well as the need of sustainable forest management for the continuation of our business as a company that use forest resources, we recognize the importance of conservation and promotion of biodiversity as a social responsibility of a company that owns and manages vast forests. We maintain natural forests' ecosystems rich in biodiversity, and properly manage our plantations to help the formation of multilayered vegetation and healthy ecosystems.

In Japan and overseas, we work with governments, environmental NPOs, academic researchers, and local community to protect and nurture endangered species and maintain and restore ecosystems.

Initiatives for Protection and Nurturing of Rare Animals and Plants

The 30by30 Alliance for Biodiversity

We have joined the 30by30 Alliance for Biodiversity, which was voluntarily launched by companies, local governments, and organizations in April 2022 under the initiative of the Ministry of the Environment in Japan, towards the international goal of protecting at least 30% of land and sea by 2030. The Alliance members provide support for registering their owned or controlled lands as OECM* and expanding protected areas, and provide support.

* Other Effective area-based Conservation Measures. Areas where biodiversity is being conserved through efforts by the private sector, such as corporate forests and satoyama.

The Oji Group has been working in collaboration with the Ecosystem Trust Society since August 2016 in activities to protect fairy pitta's growing environment in the Koyagauchi company-owned forest in Kochi Prefecture. For this company-owned forest, we have already applied for screening for certification under a “trial scheme to certify conserved areas” conducted by the Ministry of the Environment in FY2022. We aim to obtain OECM certification through final certification under the Ministry's scheme.

* A national scheme to certify areas where biodiversity is being conserved through efforts by the private sector or other parties. The certified areas, other than protected areas, will be registered as OECM on an international database.

Conservation Activity for Kiwi (Pan Pac, New Zealand)

Pan Pac conducts activities for protecting kiwi, a rare bird species, in cooperation with the Ministry for the Environment of New Zealand, citizen volunteers, and other parties. For these activities, the company has designated land of an area of approximately 40 ha as a kiwi sanctuary for protecting kiwi chicks. Chicks and eggs in the surrounding area are captured and collected, and chicks that are captured or hatched from the collected eggs are nurtured in the sanctuary before being returned to the wild.

In June 2019, Pan Pac was named Community Corporate Sponsor of the Year at a national kiwi conference held by “Kiwis for kiwi,” a kiwi protection organization.

Monitoring of Biodiversity Indicators (CENIBRA, Brazil)

In collaboration with external research institutions, universities, NGOs, and other organizations, CENIBRA monitors plants and animals and water resources, and conducts various ecosystem protection and conservation activities.

Monitoring results up until 2021 confirm that endangered 31 species of birds and 17 species of mammals are inhabited in CENIBRA's conservation forest. CENIBRA is engaged in activities for breeding mutum (crax blumembachii), an endangered bird species, and several other species, and returning them to nature, and is implementing a Green Corridor Program to link separated habitat areas.



Green Corridor Program

*1 Expanding forest areas by restoring waste lands to connect neighboring natural forests.

*2 Plantations also serve to protect protected forests from erosion from the surrounding area.



Fairy pitta in the Koyagauchi company-owned forest. Listed as an Endangered IB on the Ministry of the Environment Red List. Photo provided by the Ecosystem Trust Society



Kiwi



Buffy-headed marmoset (CR)



Mutum (VU)

† IUCN Red List Categories: Critically Endangered (CR), Vulnerable (VU)

Itou Conservation Activities in Sarufutsu (Sarufutsu Company-owned Forest in Hokkaido)

In 2009, the Oji Group established the Sarufutsu Itou Conservation Council with a local NPO, administrative bodies, researchers, and others for the purpose of protecting the Japanese huchen called itou, or the sea-run taimen (Hucho perryi), an endangered species that lives in the river zone of the Sarufutsu forest in Sarufutsu village, Hokkaido. An area of 2,600 ha including the river zone was designated a conservation area. Activities include the removal of artifacts that obstruct the itou from migrating upstream, and surveys on spawning beds and the number of individuals migrating upriver.



Nuptial-colored itou (male) Photo by Yo Chirai (Listed as an Endangered IB on the Ministry of the Environment Red List)

Alpine Plant Community Restoration Activities (Samani Company-owned Forest in Hokkaido)

The alpine plant community on Mt. Apoi is home to many endemic plants with place names such as “Apoi,” “Samani,” and “Hidaka,” and was designated a national special natural monument in 1952. While the local government and people continue to work together to maintain trails to prevent trampling, patrol the area to prevent illegal digging, and conduct restoration experiments, the Oji Group provides support such as offering a site for restoring alpine plants.



Samani yukiwari blooming on the trail



Apoi-azumagiku blooming in a test site

Initiatives for Maintenance and Restoration of Ecosystems

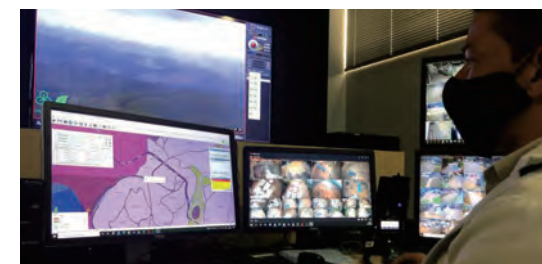
Protection against Forest Fires (CENIBRA, Brazil)

CENIBRA has introduced an innovative forest fire prevention and fighting system using artificial intelligence (AI) for their 250,000 ha forests. The company has installed 38 watchtowers equipped with 360 degrees rotating cameras in the forests. When the AI detects smoke and fires, the monitoring

room notifies fire crews nearest to the site of the incidents. They start firefighting immediately. The AI-equipped cameras are more efficient than human eyes and can locate the accurate fire site within one to two minutes. CENIBRA has reduced forest fire risks significantly.



Fire watchtower



Fire monitoring in the monitoring room



Firefighting training by firefighters

Efforts to Preserve and Restore Natural Forest (Pan Pac, New Zealand)

The forest land located just north of Pan Pac's Whirinaki Mill with a total area of 298 ha includes about 23% (68 ha) of well-established indigenous (native) forest.

Pan Pac partnered with a government organization to place the forest reserve into a conservation covenant. The reserve area comprises tree species unique to the Hawke's Bay region, and given the forest's age and previous protection from animal livestock and pests, the native tree population holds particular ecological and cultural importance. Pan Pac will be working with specialists to harvest rare seeds to assist in local and national programs of native forest regeneration. The company also hopes to welcome schools to the area for educational visits.

In June 2021, Pan Pac received funding approval through the government's “Jobs for Nature Fund.” The money will be

used to fence the reserve area and plant an additional 12 ha of native plants on bare land areas to speed up restoration.



A view of the reserve