

# The Oji Group

## Integrated Report 2022

Fiscal year ended March 2022







Lake Piauzinho and forest in Ipaba, Brazil

## Management Philosophy

### Creation of Innovative Value

Innovation is essential for the Oji Group to make a big leap forward. Changes must take place in the research and technological development leading up to revolutionary new products. At the same time, our organizational systems and the behaviors of each and every employee need to be transformed. We will promote “challenging manufacturing” based on novel ideas and fulfill society’s latent needs.

### Contribution to the Future and the World

The Oji Group comprises a diverse range of businesses. We have grown into a global corporate group, with an overseas sales ratio of over 30%. The Group will continue to provide innovative value to all countries, regions, and societies and create a new future through proactive global expansion in Asian and other countries.

### Harmony with Nature and Society

Sustainable resource circulation based on forest resources is the foundation of the Oji Group. We will advance our initiatives such that the business activities themselves contribute to a sustainable society. The initiatives include using vast areas of company-owned forest in and outside Japan for multiple purposes and seeking measures to reduce the environmental burden at manufacturing sites.



### Corporate Slogan

### “Beyond the Boundaries”

This slogan expresses the Oji Group’s commitment to actively go beyond the “boundaries” of business domains, countries, and the respective capabilities of individual employees to contribute to the future, society, and the world, as well as the determination of all Group members to maximize corporate value as a truly global company.

## Purpose

**Grow and manage the sustainable forest,**

**Develop and deliver the products from renewable forest**

**And**

**Oji will bring this world a brighter future filled with hope**

The forest grown and managed sustainably not only absorbs and fixes carbon dioxide, but also mitigates floods, cultivates water sources such as water purification and prevents natural disaster in addition to its contribution to biodiversity, healing and health enhancement of people.

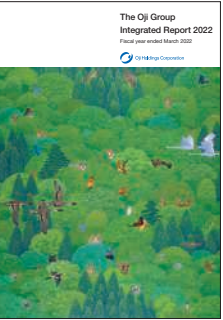
The products derived from wood utilizing forest resources are made of renewable materials and able to substitute for plastic, films and fuel derived from fossil resources.

Oji Group will confront global warming and environmental issues, and bring this world a brighter future filled with hope by growing and managing the sustainable forest and by developing and delivering the products utilizing renewable forest resources.



Cover Art: *Mori to Nakamatachi*  
[Forest with Friends]

Hiroo Isono (1945-2013)



Mr. Hiroo Isono, a master painter, primarily created works with forest motifs. From FY1999 to FY2001, the Oji Group commissioned Mr. Isono to create paintings on the theme of our Oji Forests in Japan and overseas. It published them in calendar form as the *Oji no Mori no Nakamatachi Calendar* [Calendar of Friends in Oji Forest] series.

This report's cover art, titled *Mori to Nakamatachi* [Forest with Friends], depicts lush Oji Forests in Japan and the many animals flourishing there.

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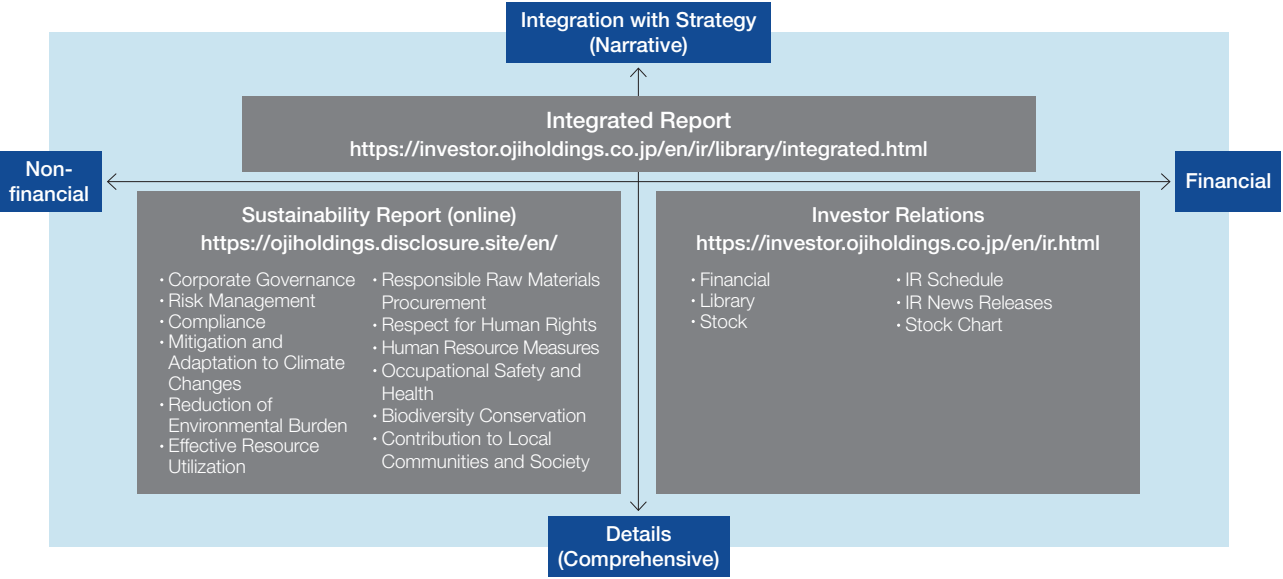
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Regarding the Issuance of Integrated Report 2022

We started publishing the Oji Group Integrated Report in 2019 to present financial and non-financial information concerning the Group in an easy-to-understand manner to all of our stakeholders. In this fiscal year's report, we would like to convey a narrative of new value creation encompassing our business development with a focus on the FY2022–2024 Medium-term Management Plan and the creation of new value through green innovation, based on our Purpose, which we announced in May, and our Long-term Vision for 2030. Through this Integrated Report, we will further deepen communication with our stakeholders and, amid an ever-changing society, strive toward what we aim for.

Communication Map



Editorial Policies

When preparing this Report, reference was made to the following.

- The ten principles in four areas found in the United Nations Global Compact
- International Integrated Reporting Framework (International Integrated Reporting Council)
- GRI Standards (Global Reporting Initiative)
- Guidance for Collaborative Value Creation (Ministry of Economy, Trade and Industry)
- Task Force on Climate-related Financial Disclosures (TCFD)

Ensuring Reliability

To ensure the reliability of this report, FY2021 figures marked with a star (★) have been assured in accordance with the International Standard for Assurance Engagements (ISAE) 3000 and ISAE 3410 by KPMG AZSA Sustainability Co., Ltd.

Scope of Coverage of this Report

In general, this report covers Oji Holdings, 186 consolidated subsidiaries, and 23 equity-method affiliates (as of March 31, 2022). In cases where coverage differs, this is indicated.

Reporting Period

The reporting period is from April 1, 2021 to March 31, 2022 (except for lost time injury frequency rate, and environmental data for certain overseas sites, for which the period is from January 1, 2021 to December 31, 2021). With the exception of numerical data, however, activities carried out from and after April 2022 are also referenced.

Disclaimer Regarding Forecasts and Other Forward-looking Statements

Forecasts and other forward-looking statements in this report represent projections by Oji Holdings based on information available at the time of publication and reasonable judgments and therefore contain uncertainties. Actual results may differ substantially due to various factors.

This Report is Printed on Forest Certified Paper

The report's cover is printed on Oji F-Tex's OK Muse Gulliver Gloss CoC (157.0 g/m<sup>2</sup>), while the main body of the report is printed on Oji Paper's OK Pixeed 01 EF (80.0 g/m<sup>2</sup>). These products are made with raw materials from responsibly-managed FSC™-certified forests, renewable resources, and other managed supply sources (FSC™C005431, FSC™C014119).

History of the Oji Group's Value Creation

Since its founding in 1873, the Oji Group has been growing through the expansion of business fields. While keeping abreast of the trends of the times, we have tackled changing social needs and evolved our business structure. Further, we have supported Japan's diversifying lifestyles through paper. In the early 1900s, we achieved the domestic production of printing and communications media such as newsprint and printing paper. During the country's rapid economic growth, we began producing corrugated containers, household paper, and other household and industrial materials. In the 1990s, we promoted the recycling of recovered paper as a solution to the issue of municipal refuse. In recent years, aiming for contribution to a sustainable society, we have been actively rolling out the technologies cultivated in our domestic business to the global market. We were quick to expand overseas business and transformed our business structure to one focusing on household and industrial materials. As a result of these efforts, our output ratio of paperboard to paper reversed for the first time in 2020. In FY2021, we achieved record-high profits, and we will continue to take steps toward further growth.

1873

**Birth of the Modern Paper Manufacturing Industry**

The origin of the Oji Group dates back to the establishment of Shoshi Kaisha, a paper manufacturing company, advocated by Eiichi Shibusawa, the founder of the modern Japanese economy.



From the collection of the Shibusawa Memorial Museum

Shibusawa advocated that "paper and printing businesses are the source of civilization." He held on to his great ambition to supply domestic paper.

1910

**Establishment of Domestic Supply Structure**

We established the Tomakomai Mill in a fishing village in Hokkaido, which had abundant resources such as forests and water as well as vast and flat land, which are required for paper manufacturing, and started producing newsprint.



We worked on unimaginably difficult construction such as building a latest hydroelectric power plant at Waterfall Nassou on the undeveloped shore of Lake Shikotsu.

1950s

**Efforts toward New Technologies**

With a view to producing high-quality paper quickly and in large quantities, we turned to a continuous digester, which was unproven at that time but highly productive. We introduced the equipment at the Kasugai Mill.



Tomakomai Mill for newsprint and Kasugai Mill for woodfree paper contributed to our growth. Kasugai Mill even became a pioneer of urban factories.

1970s

**Lifestyle Changes and Paper Diversification**

Demand for paper was only growing, and people started to have high expectations for the material, which found its way into products other than newsprint and printing paper.




Paper materials such as box-board, thermal paper, and household paper have come to play an active role in various situations that support daily life.

1990s

**Response to Environmental Issues**

Attention was drawn to issues that are directly related to people's lives, such as resource saving, energy saving, and urban waste treatment.



Light-weighted newsprint became common, and in the household paper field, we succeeded in volume reduction of box tissues. In addition, due to advances in recovered paper utilization technology, the recovered paper utilization ratio exceeded 50%.

2000s

**Shift in the Business Structure**

Paper production volume has been declining since 2008. This unprecedented crisis created an opportunity for shifts in the business structure.



Demand for paperboard as a packaging material was strong. The production ratio of paper and paperboard gradually changed.

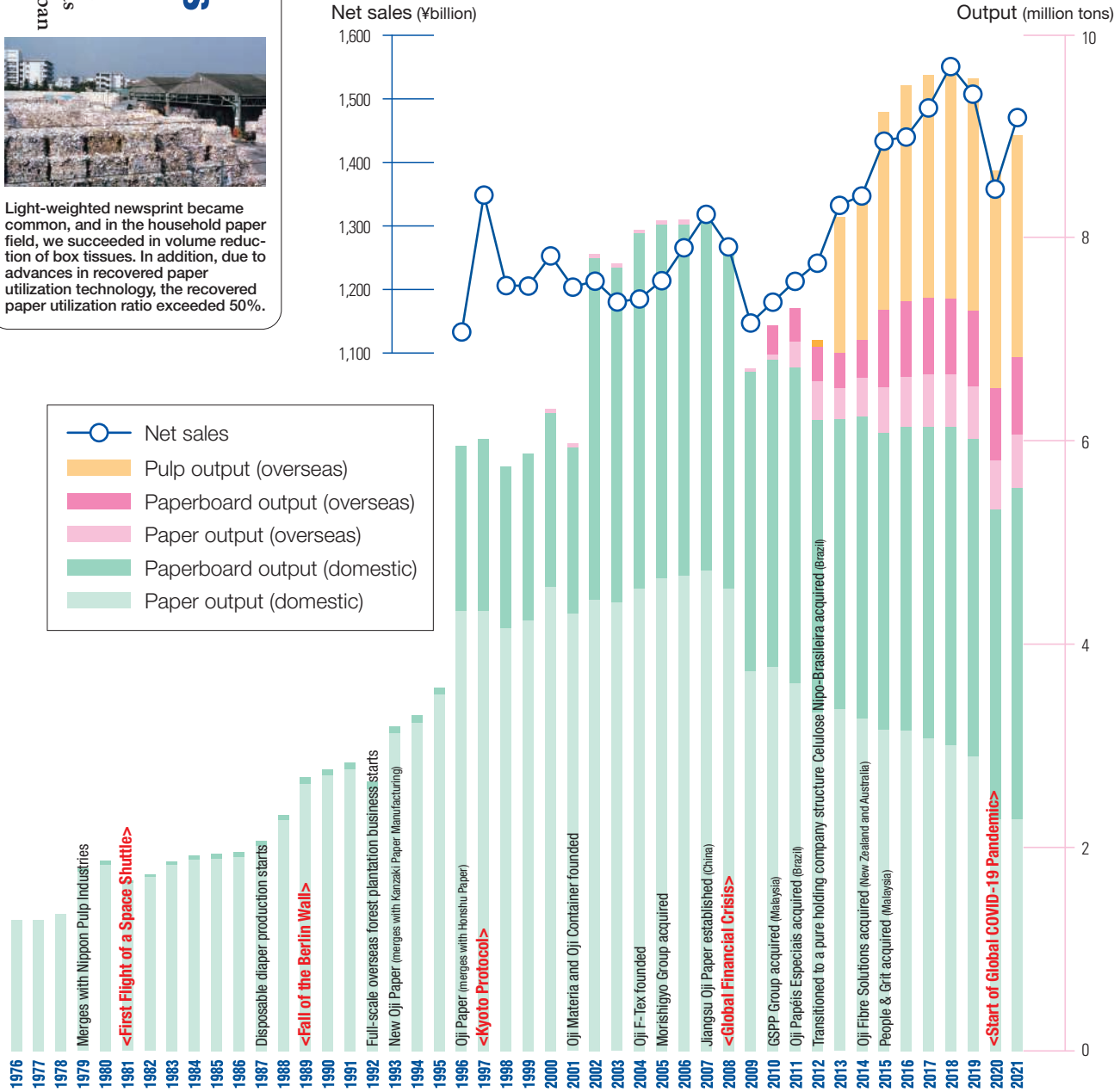
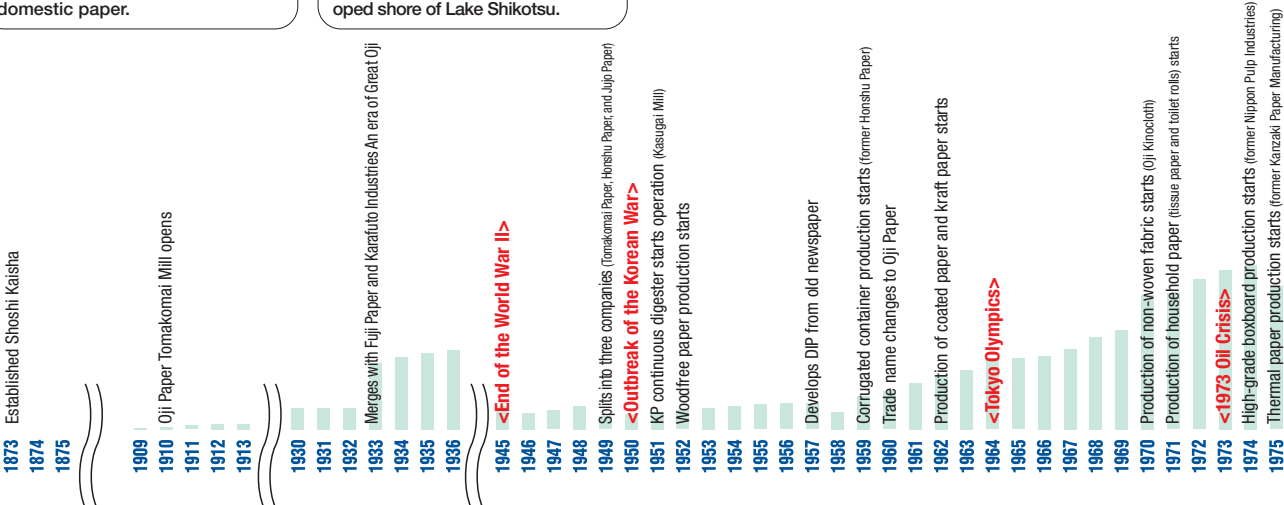
2010s

**Further Global Deployment**

We actively developed the overseas business with a focus on Southeast Asia. The overseas sales ratio reached approximately 30%.

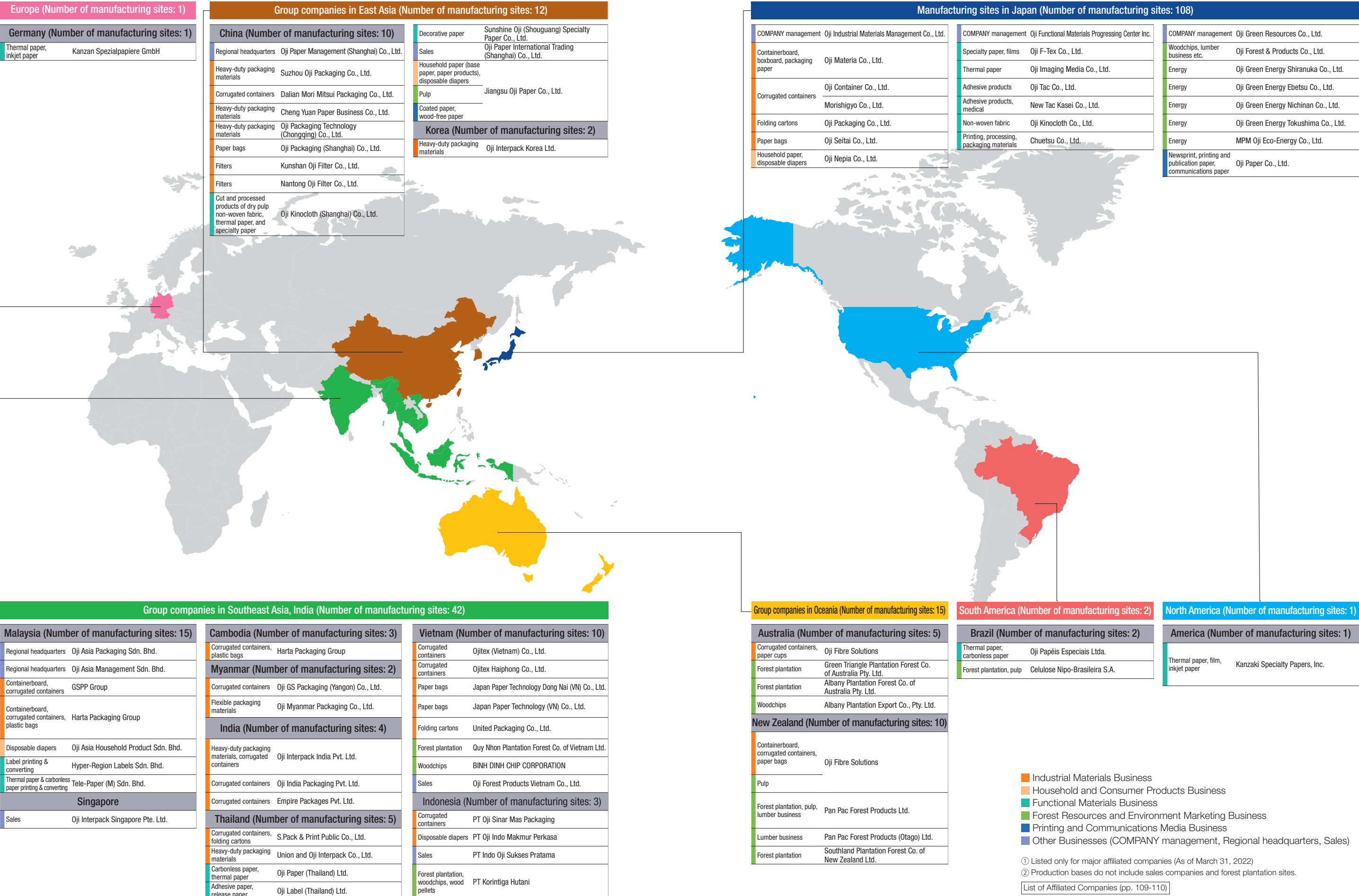


We have newly established corrugated container and folding carton factories in Malaysia, Cambodia and India, among other countries, to meet vigorous local demand.

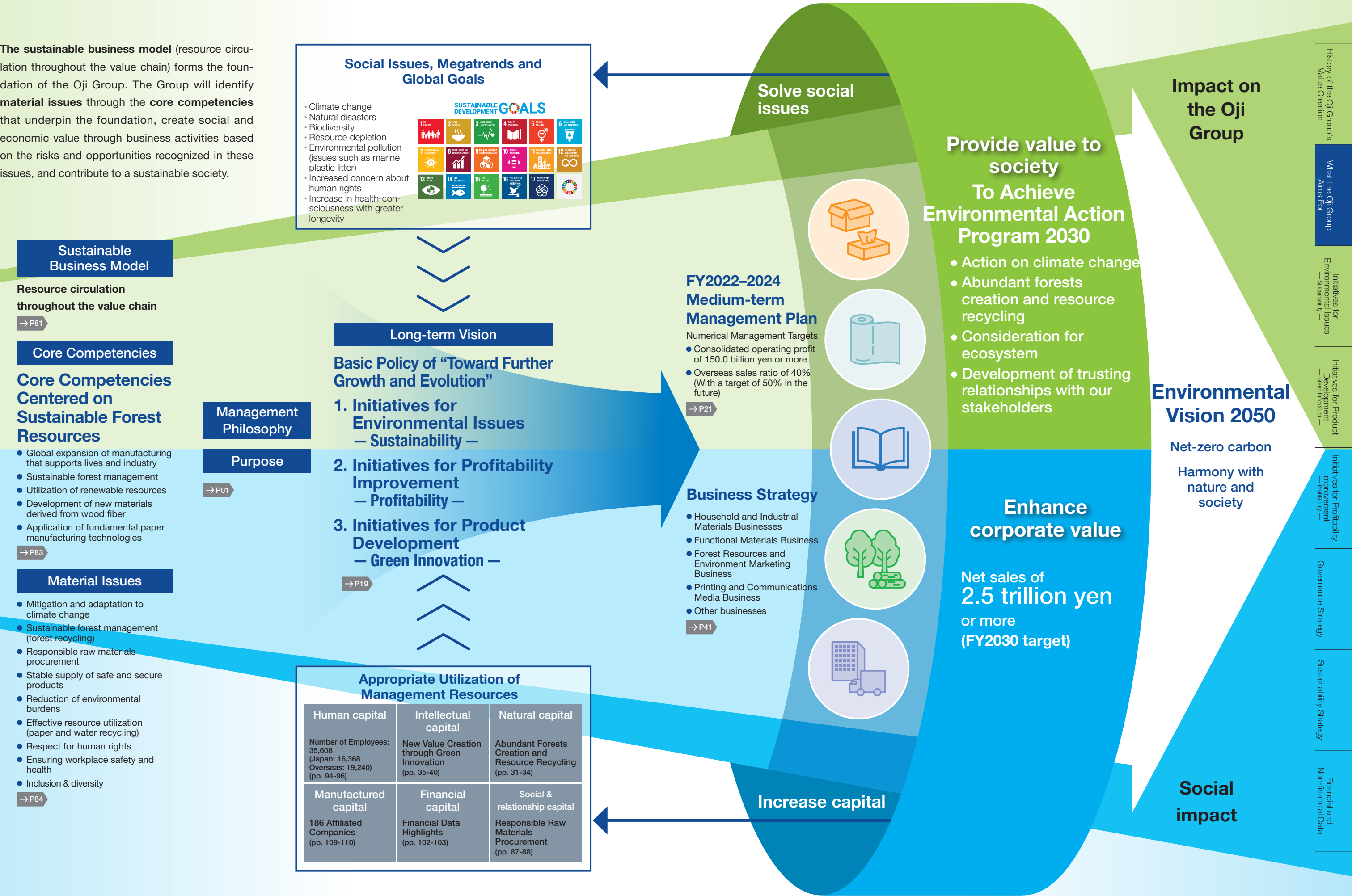




Major Affiliated Companies Distribution Map



The sustainable business model (resource circulation throughout the value chain) forms the foundation of the Oji Group. The Group will identify **material issues** through the **core competencies** that underpin the foundation, create social and economic value through business activities based on the risks and opportunities recognized in these issues, and contribute to a sustainable society.





# Through the Utilization of Sustainable Forest Resources, Oji Will Bring this World a Brighter Future Filled with Hope

In the decade since its transition to a holding company structure, the Oji Group has responded to drastic changes in the market environment by transforming its business structure and has achieved steady growth. In the next decade, under the theme of “Toward Further Growth and Evolution,” we will aim to make even greater leaps forward and pursue increased value in our businesses. In order to remain as an enterprise that is needed by the world, we will continue to take on the challenge of realizing a brighter future for the world filled with hope.

Representative Director of the Board,  
President and Group CEO,  
Oji Holdings Corporation

**Hiroyuki Isono**

## “Toward Further Growth and Evolution” – Striving Toward the Further Development of the Oji Group

In FY2022, Oji Holdings and the Oji Group transitioned to a new management structure. The Oji Group was founded in 1873 through the efforts of Eiichi Shibusawa, described as the father of capitalism in Japan. Over the course of 150 years, the Oji Group, centering on its paper business, has continued to expand the value it provides and contribute extensively to society. When we were founded, we established a domestic modern paper supply system, contributing to the development of Japan’s society and economy through the dissemination of newspapers and books. Thereafter, we began producing other products that met the needs of the times, such as corrugated containers in the 1950s, and household paper, boxboard, and thermal paper in the 1970s. Further, we didn’t just expand our product range; we also focused on global development and expansion, particularly from the 2010s onward. With the support of our many stakeholders, today we have become a company with over 35,000 employees across the entire Group, net sales of over 1.5 trillion yen, and operating profit of over 100.0 billion yen. To take over management from those who have come before me and lead the Oji Group toward further growth and evolution is a great responsibility. However, together with our management team and all of our employees, I intend to be unsparing in my efforts.

### Review of the Past 10 Years

Before discussing our future operations and business development, I would like to take a look back on the changes the Oji Group has undergone over the past 10 years.

In October 2012, Oji Paper Co., Ltd. transitioned to a pure holding company and renamed itself Oji Holdings Corporation. At that time, paper industry in Japan was in a critical situation because of the progress in the digital shift, the decline in the status of paper media, and the increase in imported paper. In order to surmount this difficult situation, the Oji Group took a policy of business structural transformation, strengthening and accelerating initiatives based on the following six measures:

- Strengthen international competitiveness through cost reduction
- Establish an integrated business model from base paper to paper processing
- Achieve growth through the promotion of R&D-based business
- Push ahead with the Forest Resources and Environment Marketing business
- Expand overseas business
- Strengthen trading functions

As a result, at the end of the FY2013–2015 Medium-term Management Plan, our first since transitioning to a holding company structure, operating profit was 72.0 billion yen. This is in contrast to our consolidated operating results for FY2012, per which operating profit was 43.5 billion yen. At the end of the following FY2016–2018 Medium-term Management Plan, operating profit was 110.2 billion yen, and at the end of the most recent FY2019–2021 Medium-term Management Plan, we had secured no less than 120.0 billion yen in operating profit. I see this as us having steadily transformed our business structure over the past 10 years and having achieved growth as a group.

The question now is what we will do in the coming 10 years. How will the Oji Group achieve further growth and evolution, and enhance its corporate value? I view exploring our future direction toward this end, mapping out a new policy, and achieving results to be of the utmost importance.

### “Growth” and “Evolution” Are Key

In considering our “growth” and “evolution,” “growth” means the expansion of business scale, like a child growing and gaining the same capabilities as its parents. “Evolution” refers to a change in the capabilities themselves, such as advancing into new fields, like one species evolving into a new one through gradual change over generations.

Let’s look at how these concepts will apply to the Oji Group and its future. First, looking at “growth,” we will achieve the expansion of business scale in situations where demand for a given business is growing, or in situations where demand is sluggish but we have an advantage over our competition that enables us to expand our share. Such situations apply to many of our businesses, including our domestic and overseas corrugated container, household paper, imaging media, and pulp businesses. We will be taking consistent steps to grow these businesses. It is impossible to avoid the fact, however, that some of our businesses face continuing decline in demand, or have difficulty implementing a differentiation strategy due to increasing commoditization in the field. This particularly applies to our printing and communication paper business and newsprint business. Even if a certain level of growth can be achieved amid a sure decline in demand for some products by compensating through the expansion of more promising products, there is a strong possibility of this growth primarily coming from fighting for greater share of the existing market, and it is likely such growth will eventually come to a standstill. Accordingly, it is extremely important that we “evolve” into new fields.





To be more specific, our “evolution” is predicated on developing new materials and products in order to advance into new fields—in other words, innovation which creates something from nothing or which produces value that has not yet been seen. True, in contrast to the “growth,” something which is continuous and connected, discontinuous “evolution” might be difficult to be accomplished. However, we do have the potential. The new materials and products we are developing are not just limited to those tied to paper stemming from our conventional businesses. They span a diverse array of forms and uses, including cellulose nanofibers and wood-derived pharmaceutical products. At first glance, these may appear to be disconnected, but they share the following two traits:

- (1) They apply the forestation and paper manufacturing technologies we have cultivated
- (2) Like paper, they are derived from wood, a renewable material

Throughout our long history, we have never balked at change and transformation when the time came. Leveraging to the utmost the technologies and know-how gained by earnestly investing ourselves in forestation, paper manufacturing, and wooden resources, we will produce further innovation. With sights fixed on the future of

the Oji Group, we are pushing forward with initiatives aimed at the “growth” and “evolution” which will be indispensable.

Formulating our “Purpose”

In discussing the steps we are taking toward a new phase, I feel it is necessary to take a moment to review how the Oji Group is involved with and how it can contribute to society. Our Management Philosophy of “Creation of Innovative Value,” “Contribution to the Future and the World,” and “Harmony with Nature and Society” exemplifies the direction of our aspirations for manufacturing which meets the needs of the times and supports a new future, and the development of a sustainable society. We considered what our purpose was in light of this, and what we realized was that the core of our business is forests, the Oji Group’s cherished assets.

The appropriate cultivation and management of forests not only produces renewable forest resources; it also helps to enhance the many functions of forests which are of public benefit, including absorbing and fixing CO<sub>2</sub>, conserving biodiversity, cultivating water resources, and preserving soil. In addition, our principal business is offering a lineup of products utilizing forest resources with the aim of supporting and enriching the lives of people

### Purpose:

“Grow and manage the sustainable forest,  
Develop and deliver the products from  
renewable forest  
And  
Oji will bring this world a brighter future filled  
with hope.”

the world over. This same lineup can be used to replace fossil resource-derived materials and products. In response to such environmental challenges as dealing with global warming and conserving biodiversity, I believe our purpose is to fully leverage these exceedingly unique characteristics and strengths in our business activities.

“To create forests and create from forests.” For many of our officers and employees, it may seem only natural that we would deeply involve ourselves with these two ideas. Going forward, however, I believe that continuing to do what to us is only natural will produce exceedingly important value, both for the environment and for society. I hope that explicitly stating our purpose here will inspire all of our officers and employees, encourage them to look toward the same goal, and turn words into action. With this wish in mind, we formulated our “Purpose.”

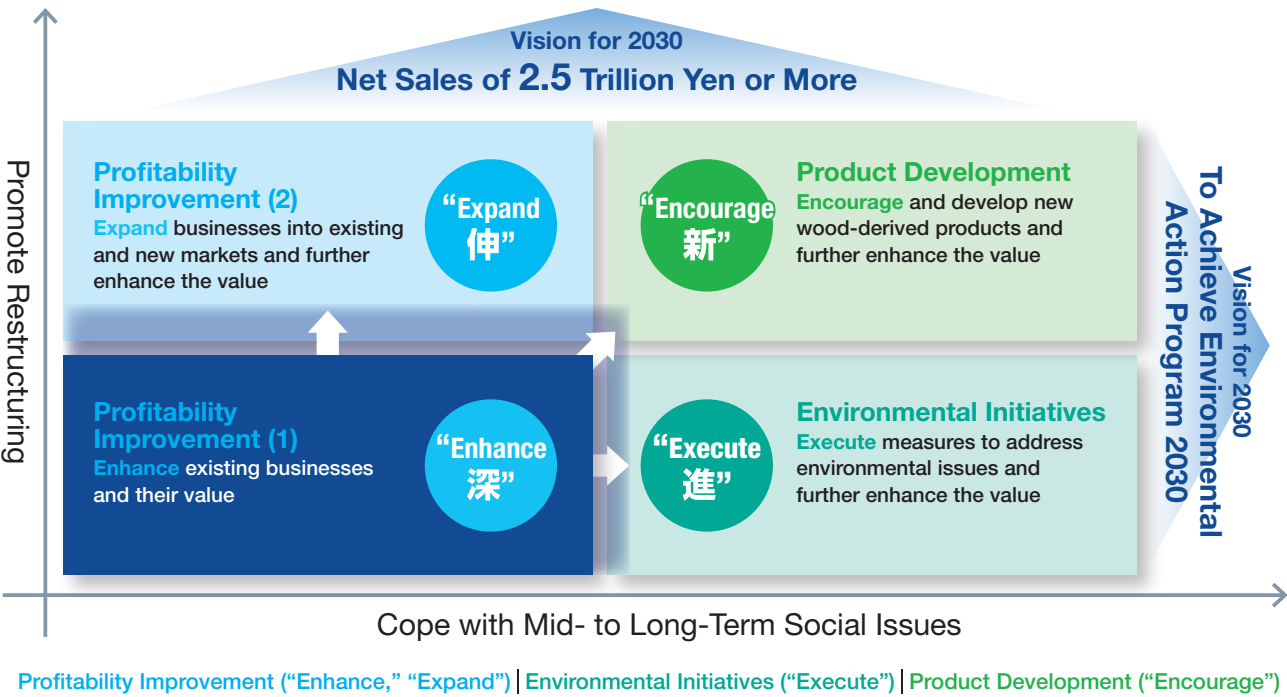
Toward Realizing Our Long-term Goals for the Next 10 Years

How will we achieve our Management Philosophy and Purpose as well as the “growth” and “evolution” I just

discussed? We formulated our Long-term Vision for 2030 and our FY2022–2024 Medium-term Management Plan to serve as our overarching policies for this.

Our Long-term Vision establishes our long-term goals for the Oji Group and the path to them, bearing in mind the management challenges we have encountered to date as well as the challenges society will face in the medium to long term. The Oji Group as it exists today is a product of a history of repeatedly looking forward and overcoming upheavals. Similarly, it is necessary to establish clear long-term goals and engage in conscious effort toward them in order to accomplish something in the future. We are a manufacturer involved in the equipment industry. This business model involves the planning of strategic investments and the restructuring of production systems which, if implemented, take two to three years from the planning of the relevant construction work to actual production going into operation. In this sense, as well, we determined that planning for the future was of the utmost importance, and this led to the formulation of our Long-term Vision.

More specifically, in FY2030, we are aiming to achieve our Environmental Action Program 2030 and consolidated net sales of at least 2.5 trillion yen by promoting the three basic policies of “Initiatives for Profitability Improvement,” “Initiatives for Environmental Issues,” and “Initiatives for Product Development” under a focus on “Toward Further Growth and Evolution.” In order to explain how the Oji Group will achieve “growth” and “evolution,” I will discuss these three basic policies using four keywords: “Enhance,” “Expand,” “Execute,” and “Encourage.”





Three Basic Policies for Long-term Vision

Initiatives for Profitability Improvement –Profitability– ➔ P41-60

The first basic policy aims to improve profitability by “enhancing” and at the same time “expanding” businesses.

Enhance Businesses and Increase Business Value

The first keyword, “enhance,” applies to existing businesses. It means to enhance such businesses—that is, to work to create an optimum production system, reduce costs, and increase productivity. Through this and measures such as stabilizing operation, investing to improve profits, and promoting DX, the aim is to further increase business value.

In the current business environment, we are seeing historic price increases resulting from the inflation caused by the partial recovery in demand amid the continuing effects of the COVID-19 pandemic, as well as from the

inflation caused by a supply-side crunch and soaring raw material costs spurred by Russia’s invasion of Ukraine. There is a growing risk of stagflation, in which general price levels continue to rise in spite of a stagnant economy. Looking at data for June 2022, in the United States, the corporate goods price index increased 11.3% year on year, and the consumer price index also rose 9.1%. Meanwhile, in Japan, while the corporate goods price index increased 9.2%, the consumer price index increased by a mere 2.4%. In addition, in response to rising prices, the United States raised interest rates. This produced an interest rate difference, causing rapid depreciation in the yen and further increasing the costs of imported materials. Failure to rapidly pass these increased costs on to product prices will weigh on corporate profits. The outlook moving forward is extremely uncertain and, further, numerous risks are materializing. It is necessary to reflect the increased costs in product prices to a certain extent.



At the same time, we will also be promoting ongoing initiatives to thoroughly cut costs and strengthen our earnings base.

Expand Businesses and Increase Business Value

Our second keyword, “expand,” means expanding businesses in markets and also expanding their business value. In order for the Oji Group to increase its current net sales from 1.5 trillion yen to 2 or 3 trillion yen, and increase operating profit from 120.0 billion yen to 200.0 or 300.0 billion yen, moving forward, we will require initiatives not only to “enhance” our businesses but also to “expand” them.

As a specific initiative in existing markets with a limited pie, we will leverage the existing superiority of our products and services to further increase the ratio of our products and services which our customers use. At the same time, it will be important to expand our share by encouraging customers to replace the products and services of other companies with new ones of our own. Conversely, in expanding into new markets, including

those overseas, we will leverage our existing superiority to develop new customers. Further, reforming and improving our products and services to increase customers will help our businesses to “expand” and in turn expand business value. For example, there is a market need for eco-friendly products, and moving forward, I believe this field will allow us to expand our sales significantly.

In these ways, combining new products and services with our conventional superiority in existing and new markets will enable us to grow our businesses.

In order to succeed in a competitive environment, we must precisely analyze the market and expand sales through active and intentional initiatives. Along with our existing products and services, we will develop new ones, promoting improvement and expanding sales. We will also make capital investments to augment our capabilities and expand our scale and domains through M&As, thereby expanding business value.

Initiatives for Environmental Issues –Sustainability– ➔ P25-34, 81-92

Execute Measures to Address Environmental Issues and Increase Business Value

The second basic policy, as expressed by the third keyword of “execute,” involves executing measures to address environmental issues such as carbon neutrality and green innovation, contributing to sustainability and in turn increasing the business value of the Oji Group.

In September 2020, the Oji Group set out a goal of net-zero carbon. In order to achieve this in the year 2050, we formulated our Environmental Vision 2050, as well as our Environmental Action Program 2030, which functions as a milestone on the way to achieving this vision. We then put these plans into action in FY2021.

Our Environmental Action Program 2030 establishes a target of reducing our greenhouse gas emissions by at least 70% in FY2030 compared to FY2018 levels. To achieve this goal, we will strive to achieve a 20% reduction in emissions from coal boilers and other sources of emissions, and the remaining 50% reduction will be achieved by enlarging forest plantations and otherwise increasing the net increment in carbon stocks by forests.

In order to reduce our emissions, we plan to take measures including works to convert fuel from coal to gas and the discontinuation of coal-fired boilers by revising our energy mix. To this end, we will be investing around 100.0 billion yen by 2030.

We are also planning to enlarge overseas forest plantations from 260,000 ha to 400,000 ha. This figure

excludes forest reserves and equivalents. The Oji Group has long been engaged in the business of using renewable forest resources as raw materials. We have been running forestation business since the 1930s in Japan and since the 1970s overseas. We can say that we have inherited forestation as part of our DNA for business promotion. We expect to spend 100.0 billion yen by 2030 on the enlargement of overseas forest plantations.

In addition, we own approximately 190,000 ha of company-owned forest in Japan, making us one of the largest corporate owners of forest in the Japanese private sector. In demonstrating our corporate stance toward environmental issues, we intend to make effective use of this lush and abundant company-owned forest.

Our measures to address environmental issues through our business activities are not just limited to our carbon neutrality initiative. Our paper business is a pillar of the Oji Group and, as a corporation in harmony with nature, we recycle three resources of forest, paper, and water, embodying circular economic activities. In addition, we are leveraging our forest resources to the fullest by focusing on the proactive use of unused trees such as forest residues, nationwide development of biomass power generation projects, and the green innovations for the future such as the development of biomass plastics and cellulose nanofibers.

Business activities which are inseparably tied to measures addressing environmental issues are what will help us realize a sustainable society.



Initiatives for Product Development –Green Innovation– ➡ P35-40

Encourage New Product Development and Increase Business Value

The third basic policy, as expressed by “encourage,” our final keyword, involves further increasing the value of our businesses by developing new products and materials and introducing them to the world. In recent years, the shift to non-plastic materials to tackle the marine plastic problem and the shift from fossil resources to renewable resources have been accelerating. For the Oji Group, which pursues innovation utilizing renewable wooden resources, this can be considered a huge opportunity for growth lying right in front of us. In the near future, we will

be working to make sure that we do not let this opportunity go to waste, from tackling innovation to securing sufficient sales for the products we develop.

The origin of our innovation lies in our 150-year history of manufacturing. Its foundation is our forest and wooden resources, as well as the technology and know-how we have cultivated to create evenly thin products and for placing coatings on them. Our paper business has shrunk in accordance with the decline in demand for newsprint and printing and communication paper. However, in looking at this business as the origin of our innovation, we can see that new innovation is an extension of this existing business.

A Foundation for Supporting Our Long-term Vision

In order to implement our Long-term Vision, and in order to survive as an enterprise that is needed by and essential to the world, there are several necessary elements. The key, I ultimately believe, is “people.” Focusing on cultivating the human resources that are the wellspring for value creation, leveraging the diversity and uniqueness of each individual employee while at the same time maintaining a work environment which enables them to enhance their capabilities and play an active role will lead to our growth as a corporation. An additional condition for our survival which we must preserve as the core of our corporate activities is the rigid pursuit of Compliance, Safety, and Environment.

Compliance is a prerequisite for corporate social responsibility, and without it, it is impossible to build relationships of trust with our stakeholders. Through good communication in the workplace, a good work environment, and improved work motivation, we will nurture all of our officers and employees to have “sound common

sense,” “sensitivity to immorality” and “courage to take action.” Further, we will adhere to laws and regulations as well as social norms, and strive to conduct our work each day with a sincere attitude.

Safety is a fundamental principle in the Oji Group’s business activities, and something which must always and absolutely be a top priority. We aim for thorough and consistent adherence to designated safety rules, and for zero accidents and zero disasters.

As I have repeatedly conveyed, Environment is an inextricable theme in our value creation, rooted as it is in forest and wooden resources. It is no exaggeration to say that the future of the Oji Group rests on the degree to which we are able to achieve harmony with the environment and realize sustainable business activities. We will not stop at only preventing environmental incidents and product liability incidents; moving forward, we will continue to engage in sustainability initiatives.

A Growth Strategy Based on Our New Medium-term Management Plan

We established our newest FY2022–2024 Medium-Term Management Plan in order to serve as a milestone on the way to achieving our Long-term Vision for 2030 described above. The purpose of our three basic policies is to materialize the four keywords. In order to discuss the degree to which we envision we will make progress toward their realization over the coming three years, let’s look at specific numerical management targets.

Our numerical management targets consist of consolidated operating profit of 150.0 billion yen or more, profit attributable to owners of parent of 100.0 billion yen or

more, an overseas sales ratio of 40%, and a net D/E ratio maintained at 0.7 times.

Some targets which were not achieved in the preceding FY2019–2021 Medium-term Management Plan, such as our target for consolidated operating profit, were carried over unchanged in our current plan. However, the above targets are of a level we intend to achieve as a bare minimum. During the previous Medium-term Management Plan, the COVID-19 pandemic resulted in a dramatic environmental change that was impossible to predict when the plan was released in May 2019. This

Numerical Management Targets for FY2024			
Consolidated operating profit	150.0 billion yen or more	Overseas sales ratio	40% (With a target of 50% in the future)
Profit attributable to owners of parent	100.0 billion yen or more (Continue stable profit of 100.0 billion yen or more)	Net D/E ratio	0.7 times maintained (End of March 2022: 0.7 times)

change had a profound impact on product sales as well as on the progress of strategic investments. From the formulation stage of the FY2022–2024 Medium-term Management Plan, we had already accounted for a much more severe business environment, such as dramatic exchange rate fluctuations and soaring raw material and fuel prices due to Russia’s invasion of Ukraine among other events. These are targets which we will aim to achieve in a time of opacity and uncertainty, no matter the business environment, and we will be selecting the best course of action going forward.

To get into specifics, we will be making the investments needed in order to timely and steadily execute our three basic policies of “Initiatives for Profitability Improvement,” “Initiatives for Environmental Issues,” and “Initiatives for Product Development.” In accordance with our intention to maintain a net D/E ratio of 0.7 times, we are anticipating three-year cash flows of 600.0 billion yen. We will be utilizing 550.0 billion yen of this for strategic and upkeep CAPEX; and 50.0 billion yen for dividends. While being selective about the areas we invest in, we will

also boost the expansion of businesses which contribute to profits and appropriately address urgent environmental issues. With regard to returns to our shareholders, our basic policy will be to continue to pay stable dividends over the long term. We will also consider gradually increasing dividends in light of the status of our profits and financial position.

The first three years of our Long-term Vision are an extremely important period which will influence what comes after. We will be focusing heavily not only on achieving our targets but also the processes which lead to their achievement. How do we execute our plan and, once it is in motion, how do we look back; identify issues; and, when necessary, correct our course to put ourselves back on track to achieve it? Further, amid the drastic changes the business environment continues to undergo, what things can we do that will be effective in bringing the Oji Group closer to our long-term goals? We will be encouraging all of our officers and employees to seriously think about these questions and to work together in answering them as we steadily move forward one step at a time.

Toward Realizing a Brighter Future Filled with Hope

The Next 10 Years Will Test Our True Value

As I stated above, in the 10 years since we transitioned to a holding company structure, the Oji Group has achieved significant growth. However, in terms of whether we have fully shifted our mindset from business management premised on an ever-growing economy to business management adapted to the environmental changes which have occurred thereafter, I feel that we have not 100% achieved this change in awareness. Moving forward, we must fully initiate a complete mindset shift in the Group and, at the same time, complete the transformation of our business structure before developing our businesses even further.

As a means of addressing environmental issues, we will build a carbon neutral business management system and “execute” initiatives to preserve a healthy global environment. At the same time, we will “enhance” and “expand” our businesses and “encourage” the creation of

new value. Reflecting on these four keywords from another angle, they are none other than a continuation of our Management Philosophy of “Creation of Innovative Value,” “Contribution to the Future and the World,” and “Harmony with Nature and Society;” and are our Purpose—to contribute to society through management rooted in forest resources—to be put into action. Will the Oji Group be able to further grow and evolve over the next 10 years? It will truly be a period which will test, as well as a time for us to demonstrate, our true value.

As a corporation which develops and shares its prosperity together with our stakeholders, the Oji Group aims to continue to boldly take on new challenges and make even greater leaps forward. We hope that all of our stakeholders will pay attention to our future business development based on our new management strategy, and we look forward to your further support and patronage.



Long-term Vision & Medium-term Management Plan

In order to continuously increase corporate value in an ever-changing society, the Oji Group has formulated and is implementing its FY2022–2024 Medium-term Management Plan as well as its Long-term Vision for FY2030 that promote the Group reaching its long-term goals based on its Management Philosophy and Purpose.

Long-term Vision



Targets We Aim to Achieve in FY2030

To Achieve Environmental Action Program 2030

In our Environmental Action Program 2030, we set a target of reducing our greenhouse gas (GHG) emissions by at least 70% in FY2030 compared to FY2018 levels, as a milestone for our target of net-zero carbon in 2050 per our Environmental Vision 2050. The breakdown of this 70% reduction consists of a 20% GHG emission reduction from increasing our usage rate of renewable energy such as reducing coal consumption and installation of private solar power panels; and the remaining 50% reduction will be achieved through increasing the net increment in carbon stocks by forests by expanding our forest plantations. By FY2030, we plan to invest 100.0 billion yen into each of these areas for a total investment of 200.0 billion yen.

In addition to our initiative to realize carbon neutrality, we will also be fully engaging in a wide range of initiatives indivisible from our business activities as outlined in our Environmental Action Program 2030.

Environmental Action Program 2030

- 1 Action on Climate Change**

  - Reduce greenhouse gas (GHG) emissions by at least 70% compared to FY2018
- 2 Abundant Forests Creation and Resource Recycling**

  - Sustainable forest management (forest recycling)
  - Resource recycling (paper and water recycling)
- 3 Consideration for Ecosystem**

  - Challenge for zero environmental impact
  - Biodiversity conservation
- 4 Development of Trusting Relationships with Our Stakeholders**

  - Responsible raw materials procurement and manufacturing
  - Expansion of products that contribute to a decarbonized society
  - Zero environmental incidents and zero product liability incidents

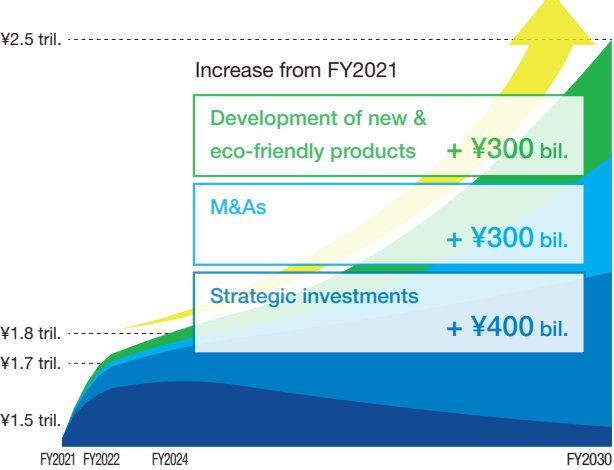
Environmental Action Program 2030  
→ <https://ojiholdings.disclosure.site/en/themes/150/>

Consolidated Net Sales of 2.5 Trillion Yen or More

Based on our FY2021 results, we have increased our consolidated net sales target for FY2030 by over 1 trillion yen to 2.5 trillion yen or more.

Amid an anticipated contraction in demand for a portion of our products, we will improve our profit ratio through means such as cost reductions and improving operations. However, our goals go beyond that. In order to achieve further growth and evolution as the Group, we will expand promising businesses through strategic investment and M&As, including our corrugated container, household paper, disposable diaper, imaging media, and pulp businesses. At the same time, we will focus our efforts on developing, commercializing, and expanding the sale of new and eco-friendly products, including in our high performance film and renewable energy businesses. Further, through this process, we will aim to transform our portfolio into one which meets the demands of the times.

Changes in Consolidated Net Sales



Basic Policy of “Toward Further Growth and Evolution” to Achieve FY2030 Targets

1 Initiatives for Environmental Issues –Sustainability–

→ P25-34, 81-92

2 Initiatives for Profitability Improvement –Profitability–

→ P41-60

Household and Industrial Materials Businesses

Sales target for FY2030  
¥1,250.0 billion

Long-term Goals:

- Industrial materials business
  - Further expand & enhance packaging business in Southeast Asia, India & Oceania
  - Expand & enhance corrugated container business in Greater Tokyo area, Japan
- Household and consumer products business
  - Enhance branding & expand sales of household paper products in Japan
  - Expand & enhance overseas disposable diaper business

Within our industrial materials business, demand for our corrugated container business remains robust. We aim to further expand and strengthen this business through M&As and new plant construction and, at the same time, by promoting restructuring of production systems and the integration of base paper processing. We will also be focusing our efforts on expanding our liquid packaging carton and filter businesses. In our household and consumer products business, we will expand our Japanese market share by increasing the value of our domestic household paper business, and expand and strengthen our disposable diaper business overseas.



United Kotak's new plant in Malaysia (commenced operation in July 2022)



Sales of “nepi eco” brand, eco-friendly products to be expanded

Functional Materials Business

Sales target for FY2030  
¥400.0 billion

Long-term Goals:

- Actively develop high-function and eco-friendly products
- Expand global sales of imaging media business and enhance competitiveness including printing and converting

We will aim to expand profitability by expanding sales of thin capacitor films for next-generation vehicles and other high-function and eco-friendly products; and by expanding our imaging media business, which is experiencing strong demand, through means such as construction to expand production.



Two film machines are currently being installed at the Oji F-Tex Shiga Mill (scheduled to commence operation in March 2023 and November 2024)

Forest Resources and Environment Marketing Business

Sales target for FY2030  
¥600.0 billion

Long-term Goals:

- Expand & enhance pulp business as a “comprehensive pulp manufacturer”
- Expand renewable energy and other energy businesses
- Expand lumber processing business

In addition to expanding and strengthening our global pulp business, we will focus our efforts on expanding other businesses which leverage forest resources such as our lumber processing and biomass power generation businesses.



CENIBRA/Pulp Mill in Brazil

Printing and Communications Media Business

Sales forecast for FY2030  
¥150.0 billion

Long-term Goals:

- Restructure production system and enhance competitiveness through collaboration with other group segments by maximizing the use of assets owned

We will strive for the optimum production system restructuring for the Group as a whole by assessing demand trends and continuing to implement thorough cost-cutting measures and, at the same time, by effectively utilizing owned assets such as pulp manufacturing facilities.



The #L-1 machine (for containerboard) at the Oji Paper Tomakomai Mill

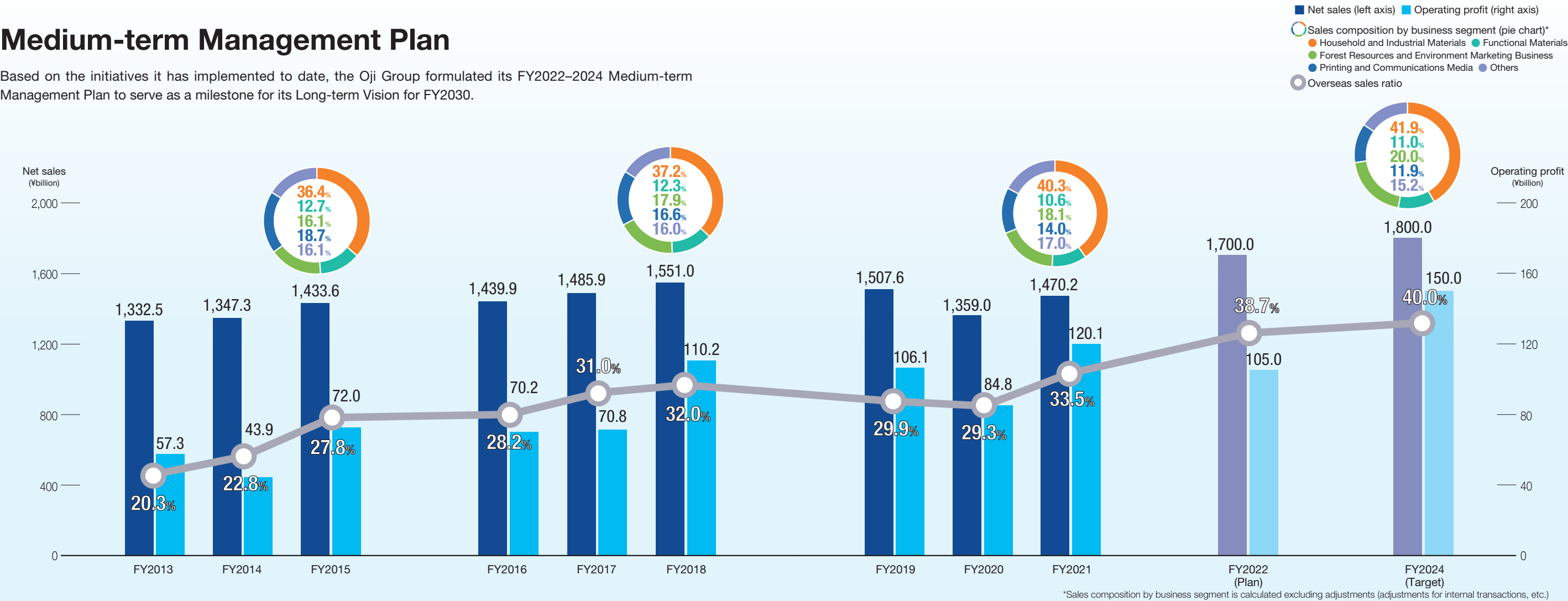
3 Initiatives for Product Development –Green Innovation–

→ P35-40



Medium-term Management Plan

Based on the initiatives it has implemented to date, the Oji Group formulated its FY2022–2024 Medium-term Management Plan to serve as a milestone for its Long-term Vision for FY2030.



Review of Medium-term Management Plans and their Policies

FY2013–2015			FY2016–2018			FY2019–2021			FY2022–2024		
Numerical Management Targets			Numerical Management Targets			Numerical Management Targets			Numerical Management Targets		
	Targets	Results		Targets	Results		Targets	Results		Targets	FY2022 Plan
Consolidated operating profit	¥90.0 billion	¥72.0 billion	Consolidated operating profit	¥100.0 billion	¥110.2 billion	Consolidated operating profit	¥150.0 billion or more	¥120.1 billion	Consolidated operating profit	¥150.0 billion or more	¥105.0 billion
Overseas sales ratio	26.0%	27.8%	Overseas sales ratio	35.0%	32.0%	Overseas sales ratio	40.0%	33.5%	Overseas sales ratio	40.0%	38.7%
ROE	7.0%	2.1%	ROE	8.0%	7.7%	ROE	10.0%	10.9%	Profit attributable to owners of parent	¥100.0 billion or more	¥70.0 billion
Interest-bearing debts	¥700.0 billion	¥777.7 billion	Interest-bearing debts	¥700.0 billion	¥620.6 billion	Net D/E ratio	0.7 times maintained	0.7 times	Net D/E ratio	0.7 times maintained	0.7 times
<b>Basic Policies</b> 1 Deepening of the core businesses 2 Development of new businesses and products 3 Further expansion of overseas businesses			<b>Basic Policies</b> 1 Expansion of overseas businesses 2 Concentration / advancement of domestic businesses 3 Enhancement of financial foundation			<b>Basic Policies</b> 1 Profitability improvement of domestic business 2 Expansion of overseas business 3 Promotion of innovation ★ Contribution to a sustainable society			<b>Basic Policies (Long-term Vision &amp; Medium-term Management Plan)</b> 1 Initiatives for environmental issues –Sustainability– 2 Initiatives for profitability improvement –Profitability– 3 Initiatives for product development –Green Innovation–		
<b>Review</b> ● FY2015 operating profit increased significantly from FY2012 by 28.5 billion yen; however, in part due to increased raw material prices and impairment losses recorded in some overseas businesses, we did not achieve our targets for operating profit or ROE. ● After transitioning to a holding company structure in October 2012, we promoted business structure transformation. We particularly proactively developed overseas businesses, and our overseas sales ratio increased by 11.1 percentage points, from 16.7% in FY2012 to 27.8% in FY2015. ● In Japan, we focused on increasing profitability through cost reductions and production system restructuring, and on developing new added-value materials and new businesses, such as dissolving pulp (DP) and our energy business.			<b>Review</b> ● We reached our target of 100.0 billion yen for operating profit in FY2018. We also achieved our target of reducing interest-bearing debts to 700.0 billion yen. ● We aimed to optimize and enhance production capacity and to expand overseas manufacturing sites with a focus on our packaging business, increasing our overseas sales ratio by 4.2 percentage points, from 27.8% in FY2015 to 32.0% in FY2018. ● In Japan, we continued to focus on increasing profitability through cost reductions and production system restructuring, and on developing new added-value materials and new businesses, such as cellulose nanofibers (CNF) and our water treatment business.			<b>Review</b> ● Due to the effects of the COVID-19 pandemic (delay of capital investments and subsequent effects, etc.) as well as soaring raw material prices, we failed to reach our target for operating profit in FY2021, yet achieved record-high profits. ● We strengthened and expanded our growth businesses in Japan (corrugated container, household paper, and renewable energy businesses) and overseas businesses. ● We proactively developed our themes for innovation: “Eco-friendly materials and products,” “entry into medical field,” and “total solution.” ● We formulated our Environmental Vision 2050 and Environmental Action Program 2030.			<b>Key Initiatives</b> ● In response to the increasing importance of addressing environmental issues, implement our Environmental Vision 2050 and Environmental Action Program 2030 action plans. ● Make effective use of own facilities, promote further production system restructuring. ● Implement strategic investments and M&As, etc. in order to further expand promising businesses in Japan and overseas businesses. ● In addition to developing new materials and products, accelerate rapid commercialization initiatives with regard to our green innovation themes: “Development of new materials derived from wood fiber,” “challenge to the medical and healthcare field,” and “development of eco-friendly paper materials.”		



Message from the Director in Charge of Finance

FY2022–2024 Medium-term Management Plan from a Financial Perspective

We will aim to achieve the new Medium-term Management Plan by optimizing the Group’s business portfolio through its financial strategy

Director of the Board, Executive Officer, Oji Holdings Corporation Akio Hasebe



A Review of the Previous Three-year Medium-term Management Plan

During the previous Medium-term Management Plan spanning from FY2019 to FY2021, the Oji Group positioned “profitability improvement of domestic business,” “expansion of overseas business,” and “promotion of innovation” as the basic policies of its management strategy and, through the policy of “contribution to a sustainable society,” the Group aimed to become a global corporate group that maintains stable consolidated operating profit of 100.0 billion yen or more. Under these basic policies, the Group has operated business with the performance targets for FY2021 of “consolidated operating profit of 150.0 billion yen or more”, “overseas sales ratio of 40%”, “ROE of 10.0%”, and “net D/E ratio of 0.7 times”.

Per our results for FY2021, our consolidated operating profit was 120.1 billion yen, our overseas sales ratio was 33.5%, our ROE was 10.9%, and our net D/E ratio was 0.7 times. In spite of stagnant economic activity and delayed recovery resulting from the spread of COVID-19, we enhanced our profitability through such means as continued cost reductions, production system restructuring in Japan, and effective utilization of facilities in our possession. As a result, we achieved our ROE target.

Cash flows from operating activities, generated through business management based on our basic policies, were proactively invested in promising businesses and research and development activities. While maintaining a net D/E ratio of 0.7 times, during the previous Medium-term Management Plan, capital investments and loans were 452.5 billion yen, and research and development costs were 28.0 billion yen.

Capital investments and loans were utilized in Japan to strengthen containerboard and its processing, household paper, and biomass power generation businesses, as well as in a business partnership with Mitsubishi Paper Mills Limited. Overseas, they were utilized to expand our packaging, disposable diaper, and thermal paper businesses, and for construction to increase the profitability of our pulp business. Further, through the acquisition of additional shares, we increased our voting rights ratio to 100% for CENIBRA in Brazil (engaged in pulp manufacturing and sales) and Oji FS in New Zealand (engaged in pulp and containerboard manufacturing, processing, and sales) in FY2021.

In our research and development activities, we proactively involved ourselves in the development of eco-friendly

materials and products and other initiatives in order to contribute to the resolution of global issues such as climate change and marine plastic pollution.

Financial Strategy under FY2022–2024 Medium-term Management Plan

Numerical Management Targets

The environment surrounding us is undergoing bewildering change. The changes occurring in the demand structure, ongoing since before the previous Medium-term Management Plan was formulated and implemented, became visibly more striking through the spread of COVID-19. This has required us to further transform our portfolio based on an assessment of promising businesses where demand is expected to increase and businesses where demand is forced to shrink. Additionally, increasing attention being paid to climate change and other environmental issues is creating even greater need for business activities which give thought to the global environment.

Against this backdrop, we formulated our new Long-term Vision for FY2030, as well as a new Medium-term Management Plan for the first three years of this vision spanning from FY2022 to FY2024. For FY2024, the final year of this new Medium-term Management Plan, we have set the following numerical management targets.

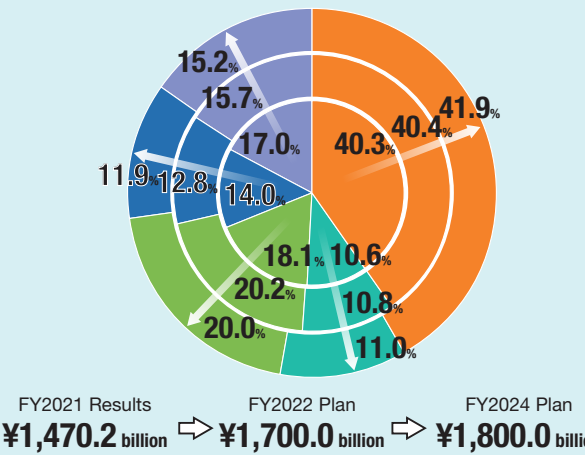
Consolidated operating profit	150.0 billion yen or more
Profit attributable to owners of parent	100.0 billion yen or more (Continue stable profit of 100.0 billion yen or more)
Overseas sales ratio	40% (With a target of 50% in the future)
Net D/E ratio	0.7 times maintained (End of March 2022: 0.7 times)

Capital Allocation

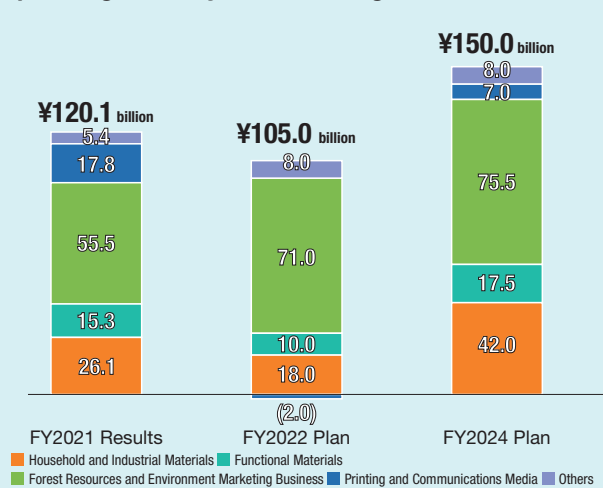
Intending to maintain our current net D/E ratio of 0.7 times, we will proactively allocate cash flows generated from business operations, etc. to environmental measures and investments in businesses with promising futures. More specifically, we are anticipating cash flows from the three-year period up to FY2024 of approximately 600.0 billion yen, of which approximately 400.0 billion yen, excluding dividends and upkeep CAPEX, will be used for strategic investments.

Of our 400.0 billion yen in strategic investments, we plan to invest 50.0 billion yen in environmental measures.

Consolidated Net Sales and Sales Composition by Business Segment



Operating Profit by Business Segment



In order to achieve our greenhouse gas reduction target (a reduction of at least 70% in FY2030 compared to FY2018 levels) in our Environmental Action Program 2030, we have announced that by FY2030, we will invest 100.0 billion yen each, for a total of 200.0 billion yen, in expanding our forest plantations, and in reducing emissions by converting coal-fired boilers to gas-fired ones and by installing private solar power systems. We plan on investing one fourth of this in the three-year period up until FY2024.

We will allocate the remaining 350.0 billion yen in promising businesses—such as our domestic and overseas corrugated container, high performance film, biomass power generation, and pulp businesses—to expand and strengthen them through M&As as well as construction of new facilities and plants. We will also allocate part of this amount to create new core businesses through the development of new materials and products.

The projects we have announced so far are only a part of the list, and we have also secured investment funds for other projects currently being considered or will be investigated moving forward.

Our Numerical Management Targets for FY2024 are already achievable solely through the measures in progress, and the measures to be implemented by the investment

under current Medium-term Management Plan are expected to be effective from the next Medium-term Management Plan onward. In order to achieve our long-term goals, what we do now is extremely important, and we will be implementing various measures based on our basic policies without delay.

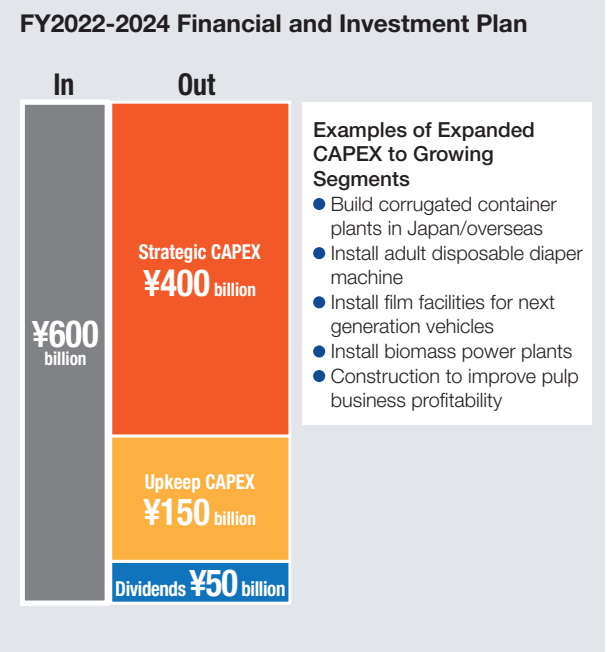
For business investments, we confirm the profitability of an investment in consideration of our cost of capital and other factors, and make investment decisions through appropriate risk-taking. We will also focus on innovations that will open up the future of the Group, based on their future potential, although the effects of such investments cannot be expected to be realized overnight.

Note that the Group’s capital condition is being centrally managed by Oji Holdings. In accordance with the acceleration in our global expansion, the amount of funds generated from our overseas businesses and companies is increasing year by year. At the same time, the number of overseas business opportunities to invest in has also increased. We will be engaging in efficient, global fund management, allocating surplus funds from our overseas businesses and companies to investment in opportunities in their regions.

Corporate Communication as Financial Strategy

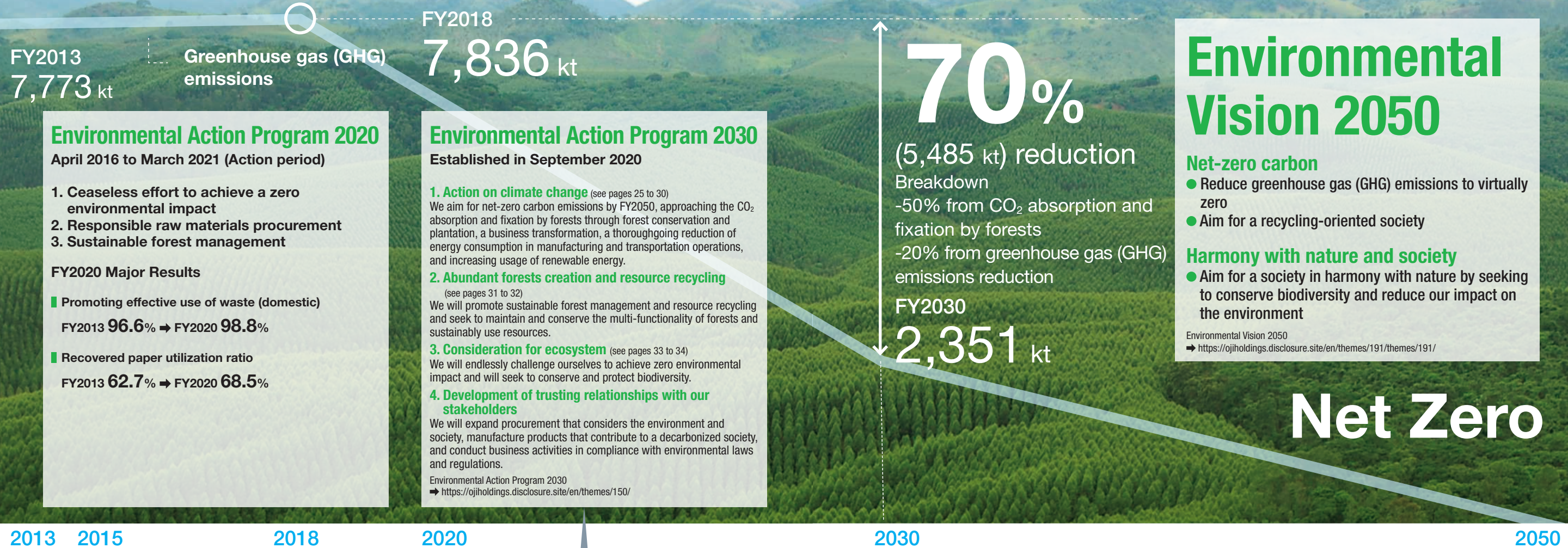
The Oji Group proactively shares and discloses information to investors, analysts, and its shareholders, including financial results and other financial information, and non-financial information such as ESG data through means which include its IR page, Integrated Reports, and Sustainability Reports (online). The Group also strives to build relationships of trust and achieve mutual understanding through engagement with institutional investors as well as interviews with analysts. Through these activities, the Oji Group promotes its activities.

With regard to returns to the shareholders who support the Oji Group, it is our fundamental policy to maintain stable dividends while at the same time giving consideration to internal reserves in order to prepare for future management measures. Based on this policy, we have decided to pay an ordinary dividend of 16 yen per share for FY2022, an increase of 2 yen over the previous fiscal year. We will also continue the shareholder benefits program we introduced in the previous fiscal year.





## Action on Climate Change



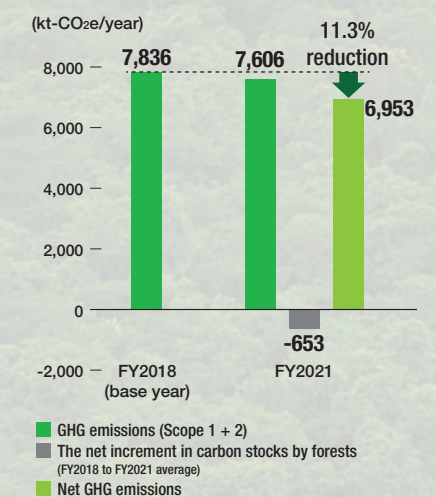
The Oji Group established Environmental Charter in 1997 with the philosophy of maintaining and developing our corporate activities in harmony with the environment from a wide global perspective and contributing to the realization of a truly affluent society. Toward realizing this philosophy, we formulated Environmental Action Program for the period of five years being the target achievement period. We have worked to ensure compliance with environmental regulations, address climate change issues, implement sustainable forest management, effectively utilize resources (improve recovered paper utilization ratio), reduce substances of environmental concern and wastes, and build trusting relationships with stakeholders. In 2019, we formulated and implemented the Medium-term Management Plan for FY2020 being the target achievement year by expressly positioning “contribution to a sustainable society” as the foundation supporting business continuity and growth.

Furthermore, in September 2020, to further strengthen our initiatives for “harmony with the environment,” and “contribution to a sustainable society,” we formulated our Environmental Vision 2050, which centers around our goals of “net-zero carbon” and “harmony with nature and society,” and also Environmental Action Program 2030, which functions as a milestone on the way to the Vision. As for climate change issues, we continue to work to reduce GHG emissions through coal consumption reduction, preserve forests including conservation of biodiversity, and increase the net increment in carbon stocks by forests based on the roadmap to 2030.

### Roadmap toward Achieving Reduction Targets for FY2030

	Category	Sub-category	GHG reduction (kt-CO <sub>2</sub> e)	GHG reduction			2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
GHG emissions reduction	Improve energy efficiency	Maintain energy conservation	200	2.6%			Continue to reduce energy consumption by 1.0% or more per year, averaged over five years									
	Increase the percentage of renewable energy use	Reduce coal consumption	1,007	12.9%			Technological research		Development		Investment decisions		Installations			
		Install private solar power systems, etc.	360	4.5%			Consider fuel conversion for 12 coal boilers in Japan				Installation planning		Investment decisions		Installations	
							Consider installation of private solar panels									
Subtotal			1,567	20.0%												
Expansion of net increment in carbon stocks by forests	Invest in forest conservation and plantation	Expand forest plantations	3,918	50.0%			Overseas production forests 256,000 ha	400,000 ha								
					Search for sites, land surveys			Assessment of business feasibility		Consideration of acquisition, decision						
	Plant fast-growing trees		Continue forest tree breeding (breed improvement) and elite trees' plantation													
Total			5,485	70.0%												

**FY2021 Net GHG Emissions Results**  
In FY2021, the net GHG emissions were reduced by 11.3% compared to the GHG emissions in the base year (FY2018).





Initiatives toward Achieving Targets for FY2030

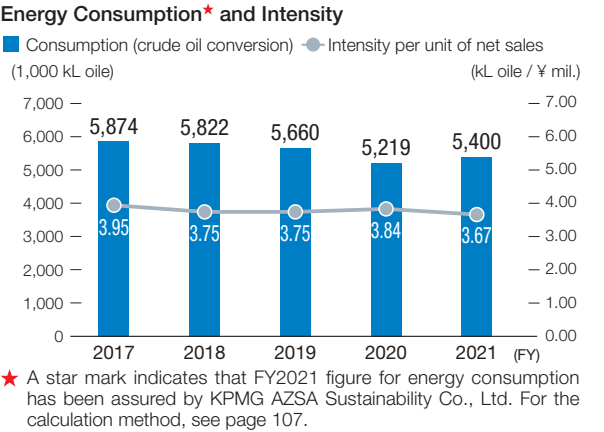
GHG Emissions Reduction

In Environmental Action Program 2030, we have set a target of reducing GHG emissions by 20% (1,567 kt-CO<sub>2</sub>e) compared to the base year (FY2018). In order to achieve the target, we take continuous measures to improve energy efficiency (reducing energy consumption intensity by thorough energy conservation) and increase the renewable energy usage rate (such as reducing coal fuel consumption and installing private solar power systems).

Improve Energy Efficiency

**Results**  
We set a target of reducing energy consumption intensity by 1 % per year for the 5-year average, and the average energy consumption intensity for FY2017 to FY2021 reduced by 1.8%.  
In FY2021, domestic business companies whose energy consumption accounts for approximately 50% of the total energy consumption across the Oji Group made energy conservation investments of 1.3 billion yen, thereby reducing energy consumption corresponding to approximately 1% of the total energy consumption across the Group (crude oil conversion 47 thousand kL).

**Future initiatives**  
The Oji Group has positioned energy conservation as a crucial topic and takes continuous measures to address it. For example, our mills/plants regularly hold energy conservation meetings, attended by personnel from energy management and manufacturing divisions. Various ideas including equipment update and change in equipment operation method are discussed. Although a lower production volume leads to the

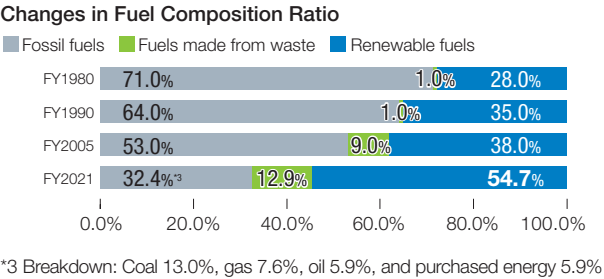


increase of energy consumption intensity, we will take continuous measures to address energy conservation by suspending surplus equipment and ensuring consistent power and steam saving.

Increase the Percentage of Renewable Energy Use

**Results**  
The Oji Group has been encouraging to reduce fossil fuel ratio by using renewable fuels\*1 such as black liquor\*2, wood residue and bark. Renewable fuels accounted for 54.7% in FY2021.

\*1 **Renewable fuels:** Organic energy and resources derived from renewable biological sources (such as wood) except for fossil resources.  
\*2 **Black liquor (black vegetative waste fluid):** Black vegetative waste fluid that remains after removing wood fibers in woodchips in the process of making pulp from woodchips (kraft pulping process). Its components include lignin and hemicellulose.



Future initiatives

**Status of examining ways to reduce coal consumption**

We own 15 coal-fired boilers in Japan (actual number at the end of FY2021) and are examining the possibility of fuel conversion for 12 of these, not including backup boilers, etc. We implemented equipment and technological research in connection with fuel conversion on 3 coal-only-fired boilers, and expect the fuel conversion will help achieve approximately 1,000 kt-CO<sub>2</sub> reduction.

**Investment in connection with coal reduction**

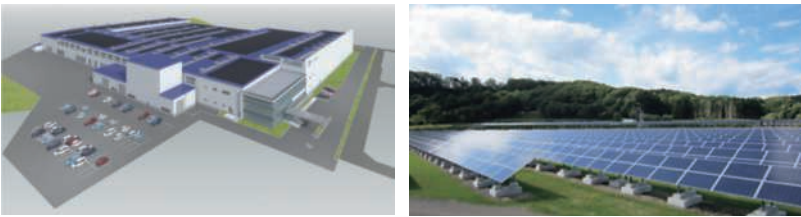
Approx. **100 billion yen** (by 2030)

**New installation of solar power**

Installation of private solar power systems  
(Installation at Oji Container / Tochigi Plant, Oji Materia / Kushiro, Sofue and Saga Mills are under consideration.)

Overview of Solar Power at Tochigi Plant, Oji Container

Panel capacity	1,850 kW
Scheduled commencement of operation	March 2023
100% of the electricity used at the plant during the daytime will be supplied by solar power.	
GHG reduction	(630 t-CO <sub>2</sub> /year)

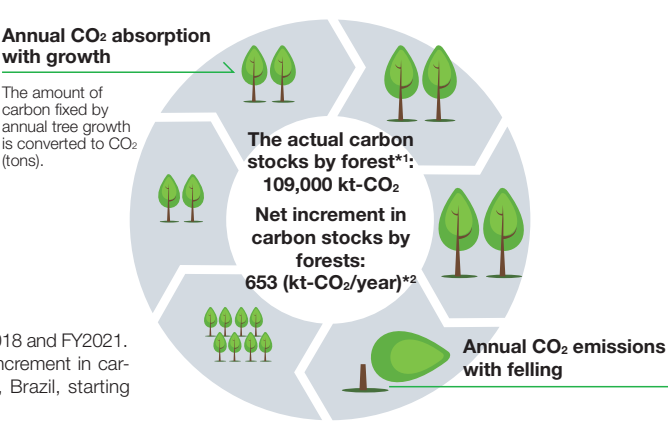


Expansion of Net Increment in Carbon Stocks by Forests

In Environmental Action Program 2030, we have set a target of absorbing and fixing the equivalent of 50% (3,918 kt-CO<sub>2</sub>e) of GHG emissions in the base year (FY2018). Accordingly, we are aiming to expand our overseas forest plantations to 400,000 ha by FY2030.

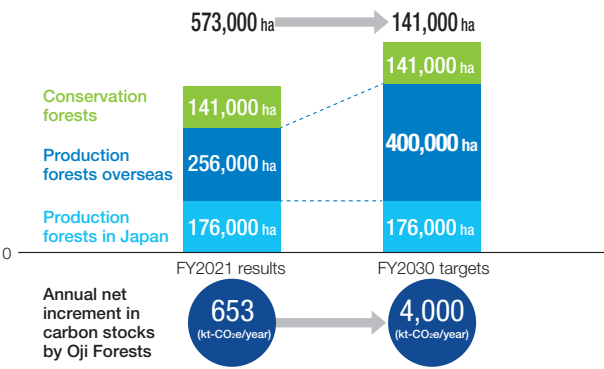
Invest in Forest Conservation and Plantation

**Results**  
The Oji Group owns a total of 573,000 ha of forests, comprising production forests totaling 432,000 ha in Japan and overseas and conservation forests of 141,000 ha, and practices sustainable forest management taking into consideration the environment, society and economy. The annual average net increment in carbon stocks by forests (our production forests and conservation forests) between FY2018 and FY2021 was 653 kt-CO<sub>2</sub>, while the actual carbon stocks in living biomass reached 109,000 kt-CO<sub>2</sub> at the end of FY2021.  
\*1 The CO<sub>2</sub> stocks in Oji Forests  
\*2 The annual average net increment in carbon stocks by forests between FY2018 and FY2021.  
We have applied the gain-loss method as a method of calculating net increment in carbon stocks by forests (and the stock difference method for CENIBRA, Brazil, starting from FY2021).  
CENIBRA has obtained assurance of the net increment in carbon stocks by forests in FY2021 from a third party organization.



**Future initiatives**  
In order to expand the net CO<sub>2</sub> absorption, we will move forward to further acquire forest plantations in South America, Oceania, Southeast Asia, etc. where we are already operating, and facilitate CO<sub>2</sub> absorption by developing better fast-growing trees while planting and cultivating fast-growing trees suitable for the regions where we operate the forest plantation business.

**Expand forest plantations**  
As of March 2021, preliminary calculations suggest that the expenses associated with expanding our overseas forest plantations to 400,000 ha by FY2030 will amount to approximately 100.0 billion yen. As a result of this expansion, the total area of Oji Forests (production forests and conservation forests) will be 717,000 ha in FY2030.



**Target area of overseas production forests**

**400,000 ha by FY2030**

**Investment in connection with acquisition**

Approx. **100 billion yen**

**Plant fast-growing trees**  
The Oji Group's overseas forest plantation business is planting fast-growing trees, including hardwoods such as eucalyptus and acacia as well as softwoods such as radiata pine. We harvest and replant trees in a shorter cycle than general forestry practices, for example, in a 6-to-10-year cycle for eucalyptus and acacia and in an approximately 30-year cycle for radiata pine.  
In addition, CENIBRA, Brazil, has long been breeding forest trees. Approximately 15 types of high-quality varieties with high growth rate and pulp productivity were selected from among more than 20 thousand trees obtained through artificial pollination efforts. KTH, Indonesia and other companies also continue to breed forest trees. We are aiming to improve



growth rate of forest trees and facilitate CO<sub>2</sub> absorption by planing high-quality tree species developed by each business.



Action on Climate Change

TCFD

The Oji Group announced its support for the Task Force on Climate-related Financial Disclosures (TCFD\*) in December 2020, and is working on climate-related information disclosure recommended by the TCFD.

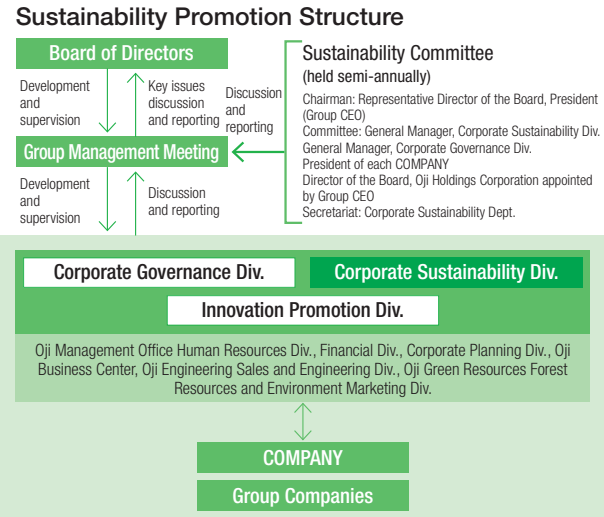


\* TCFD: Task Force on Climate-related Financial Disclosures  
The TCFD is a task force established by the Financial Stability Board (FSB) at the request of G20 Finance Ministers and Central Bank Governors Meeting. In June 2017, the TCFD released its recommendations that encourage companies to disclose the financial implications of climate-related risks and opportunities to help investors make appropriate investment decisions.

Governance

The Oji Group recognizes initiatives for sustainability including climate change issues as one of the important management challenges. In FY2021, the following were deliberated on and approved by the Board of Directors.

- Establish the “Sustainability Committee,” which is chaired by the Representative Director of the Board, President and consists of Directors of Oji Holdings Corporation and Presidents of all Companies, and the “Corporate Sustainability Division,” which implements decisions made by the Committee in order to enhance initiatives for sustainability in general including climate change
- Strengthen initiatives for environment and society including climate change issues and make necessary investments to ensure sustainable growth and enhance corporate resilience



Strategy

With assistance from external experts, the Secretariat of the Sustainability Committee examines what impacts of climate-related risks and opportunities have on our business on a group wide basis in the medium term (2030) and in the long

term (2050), and the Sustainability Committee deliberates on the priority and importance of them.  
Impacts of climate-related issues on our business, strategy and finances are assessed quantitatively and qualitatively,

TCFD-related Risks, Opportunities, Strategies and Responses

Type		Driver (Factor causing an impact on our business)	Awareness of business environment	Impact on our business			
				1.5°C (2°C) scenario		4°C scenario	
				2030	2050	2030	2050
Transition risks	Policies, laws and regulations	Fluctuation of fossil fuel-derived energy prices	Increase in costs related to procurement using fossil fuel-derived energy and electricity due to changing energy mix	Small	Small	Small	Small
		Tightened CO <sub>2</sub> emissions regulations	Increase in energy consumption and credit operating costs due to the introduction of carbon tax and tightening of regulations on emissions trading	Medium*	Small*	Medium*	Small*
	Markets	Increasing stakeholders' interest in low-carbon products and services	Increase in boycott activities toward products and services that use fossil fuels due to increased awareness of decarbonization among consumers	Small	Small	Small	Small
	Reputation	Negative feedback from stakeholders	• Decline in demand for paper products because of the impression that unnecessary tree felling facilitates global warming • Lower evaluation and difficulty in obtaining financing due to a failure to respond to investors' request	Medium	Medium	Small	Small
Physical risks	Acute	Increasing severity of extreme weather events	Business stagnation such as facilities affected by and supply chain disruptions caused by, a large scale natural disaster	Small	Small	Small	Small
	Chronic	Changes in precipitation and weather patterns, and rising average temperatures	Increase in procurement costs primarily as a result of deterioration of growth conditions for trees, key raw materials for our products	Small	Small	Large	Large
Opportunities	Resource efficiency	Effective resource utilization Reduction in water use and consumption	Increase in demand for advanced water treatment technology and water management due to flooding, drought, precipitation fluctuations and higher demand for clean water in water stress areas	Small	Small	Medium	Medium
	Energy sources	Use of low emission sources of energy	Increase in demand for renewable energy toward realization of a low-carbon society	Small	Medium	Small	Small
	Products and services	• Changes in consumer preferences • Development of new products and service through R&D and innovation	Increase in demand for low-carbon and environmentally-friendly products due to increased awareness of decarbonization and environment	Large*	Large*	Large*	Large*
	Markets	Use of incentives	• Expansion of support for forest preservation activities under the forest usage and forestry promotion policy • Possibility that carbon credit trading associated with forest absorption after 2050 will increase the value of company-owned forests, and that requests for forest management/assistance in management (providing know how) may increase	Small	Medium	Small	Small

\* Impact amount Small: less than 10.0 billion yen Medium: not less than 10.0 billion yen but less than 50.0 billion yen Large: not less than 50.0 billion yen  
Impact levels without asterisk mark (\*) represent qualitative assessment.

using several scenarios for 1.5°C (2°C) and 4°C. We recognize transition risks based on the 1.5°C (2°C) scenario (policy and regulatory risks including carbon tax) and physical risks based on the 4°C scenario (changes in precipitation and weather patterns, etc.) as important.

In order to address a shift toward a decarbonized society, the Oji Group formulated our Environmental Vision 2050 with our goal of “net-zero carbon,” and our Environmental Action Program 2030, which function as a milestone to reduce GHG emissions by 70% in FY2030 compared to FY2018. Toward achieving the goal, we are working to reduce coal

Risk Management

With assistance from external experts, the Secretariat of the Sustainability Committee examines the importance, priority and impact of climate-related risks on our business on a group wide basis, and the Sustainability Committee held on a semi-annual basis manages progress and deliberates on

Indicators and Targets

Based on the 1.5°C target in the Paris Agreement, Environmental Vision 2050 and Environmental Action Program 2030, we have set the following targets and are committed to achieving them. We have also established internal carbon pricing (ICP) with reference to the Net Zero Emission (NZE)

<b>SCOPE 1 + 2</b>	A 70% reduction by FY2030 and net zero by FY2050*		11.3% down (compared to FY2018)	GHG emissions reduction	3.0%
<b>SCOPE 3</b>	Reduction of GHG emissions through collaboration with suppliers	FY2021 results	We conducted a fact-finding survey of GHG emissions in a supplier sustainability survey	Net increment in carbon stocks by forests	8.3%
<b>Coal consumption</b>	FY2050 Zero coal consumption		We shut down the 3B boiler at the Nayoro Mill due to the restructuring of production systems		

\* Including the net increment in carbon stocks by forests (see page 26)

Strategies and countermeasures
• Optimize fossil fuel consumption and purchased electricity to reduce overall energy costs by working on energy conservation and optimal operation of in-house power generation facilities • Enhance the operation of renewable energy sources such as hydro and biomass energy toward net zero carbon emissions in FY2050
• Convert to renewable energy and other fuels that emit less CO <sub>2</sub> , and enhance energy conservation measures • Further promote resource-circulation, environmentally friendly business initiatives such as forest recycling and recovered paper recycling
• Continuously disseminate information on the status of sustainable forest management initiatives to stakeholders • Promote the acquisition of forest certification such as FSC, etc., announcement of procurement policies, such as no illegal logging, and ensuring traceability of suppliers • Implement environmental education to communicate environmental friendly business activities in collaboration with environmental NPOs, etc. • Be registered as Type I or Type II Registered Wood-related Business Entity as defined in the Clean Wood Act • (Plan to) conduct due diligence to prove the legality and verify the legality in connection with the procurement of wood raw materials and biomass fuels
• Formulate and regularly review a BCP, and enhance BCM • Keep abreast of and monitor the status of key raw materials • Enhance our relationship with suppliers, and stabilize procurement by diversifying suppliers
• Enhance stable procurement through procurement from multiple sources in North America, South America, Oceania, etc. • Expand and promote effective utilization of, company-owned forests • Conduct survey and research on impacts of temperature and precipitation on growth of trees, and select tree species suitable to the area
• Further expand the water treatment business primarily by promoting the expanded service for the production of water for daily use • Propose innovative technology leading to the effective utilization of water resources
• Promote the power generation business such as wind power generation and micro hydroelectric power generation
• Enhance the alternate use of biomass plastics made from biomass and the development of paper materials as an alternative to plastic packaging, and expand sales opportunities
• Plan and implement the management of company-owned forests in line with national and local governments policies • Maintain and improve productivity of planted trees by conducting research and technology development tailored to the relevant areas

Investment toward Decarbonization

Investment in connection with coal reduction
Approx. 100 billion yen
Investment in connection with acquisition of forest plantations
Approx. 100 billion yen

Financial Impact of Climate-related Risks and Opportunities (2030)

Example of opportunities
Green innovation Increase in sales from the environmentally friendly business
300 billion yen
Example of risks
Burden of carbon tax
39.7 billion yen*

\* Established with reference to the Net Zero Emission (NZE) scenario by the International Energy Agency (IEA)



Abundant Forests Creation and Resource Recycling

Forests produce wood, store abundant water, prevent landslide and other natural disasters, and nurture wild animals. They also absorb carbon dioxide and their various functions to prevent global warming are being reevaluated.

While the world is rapidly moving toward the realization of a carbon neutral society by 2050, we have more roles and responsibilities to fulfill. Practicing sustainable forest management with a direct connection to our business, we will continue to take steps toward realizing a decarbonized society, increasing the value of forest resources, and aiming to expand Oji Forests further.

Sustainable Forest Management Policy (established on April 1, 2022; full text)

The Oji Group owns and manages vast forests and practices sustainable forest management in harmony with the environment and local communities based on our Management Philosophy, Harmony with Nature and Society. Our business activities and local communities rely on ecosystem services such as water, climate control and forest products, while our forestry activities impact ecosystems, natural landscapes, and biodiversity. Therefore, we understand our responsibility of managing the forests we own and manage in an environmentally, socially, and economically sustainable way. Complying with the relevant local, national and regional laws and all relevant international conventions and agreements regarding forest management and based on the applicable internationally recognized principles, we will:

- 1. be complicit in neither deforestation nor illegal logging.
- 2. safeguard ecological health and functionality and promote sustainable forest and land management practices that aid the conservation of biodiversity, soil, and water resources.
- 3. respect the human rights of all people, not discriminate or act with prejudice, and never engage in the utilization of child labor or forced labor.
- 4. respect the unique economic and cultural rights and the legitimate rights of indigenous peoples, including traditional lands and land use.
- 5. contribute to maintaining or enhancing local communities’ social and economic well-being.
- 6. monitor the condition of forests and the results of management activities, and verify sustainable forest management using tools such as forest certifications.

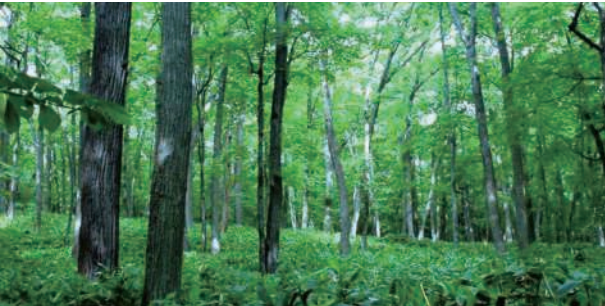
Overview of the Oji Group’s Forests (Oji Forests)

The Oji Group owns and manages extensive forests in Japan and overseas, amounting to 573,000 ha. The portfolio comprises 432,000 ha of production forests primarily for producing forest products in consideration of environment, and about 141,000 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 materials, the Oji Group spends approximately 11.2 billion yen annually for ongoing sustainable forest management. In addition, our Environmental Action Program 2030 states a goal of “expanding overseas production forest area from 250,000 ha to 400,000 ha.”

Country	Company	Established	Production forests (1,000 ha)	Conservation forests (1,000 ha)	Total (1,000 ha)
Brazil	CENIBRA	1973	144	106	250
New Zealand	Pan Pac	1971	35	5	40
	SPFL	1992	10	3	13
	Oji FS	2014	6	0	6
Indonesia	KTH	1998	39	12	51
Vietnam	QPFL	1995	9	1	10
Other (4 companies in Vietnam, Australia and China)		—	13	2	15
Overseas subtotal			256	129	385
Company-owned forests in Japan	—	—	176	12	188
Group total			432	141	573

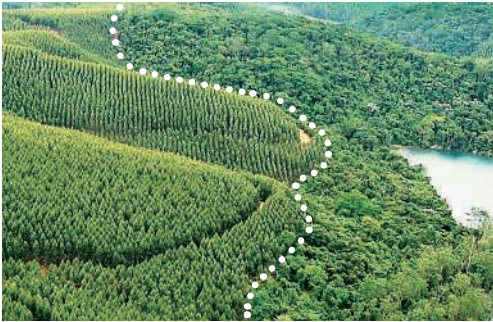
Production forests: forests primarily for producing forest products in consideration of environmental conservation.  
Conservation forests: forests primarily for environmental conservation, including protecting biodiversity and basins.



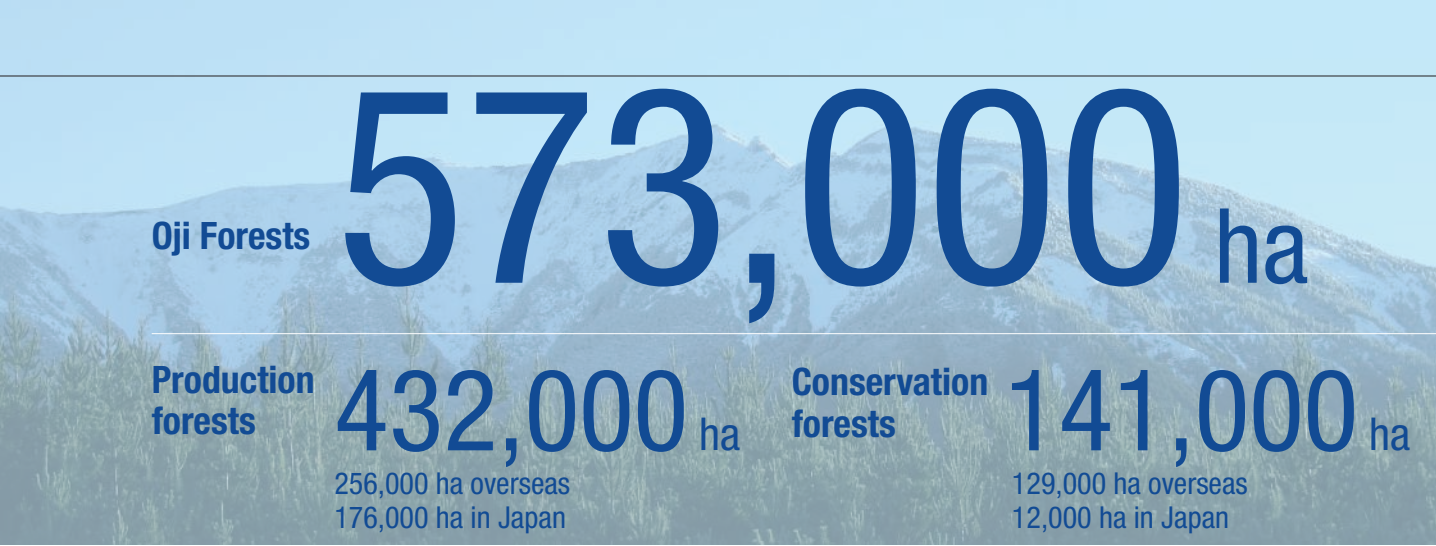
Rubeshibe company-owned forest in Hokkaido, Japan



Pan Pac, New Zealand



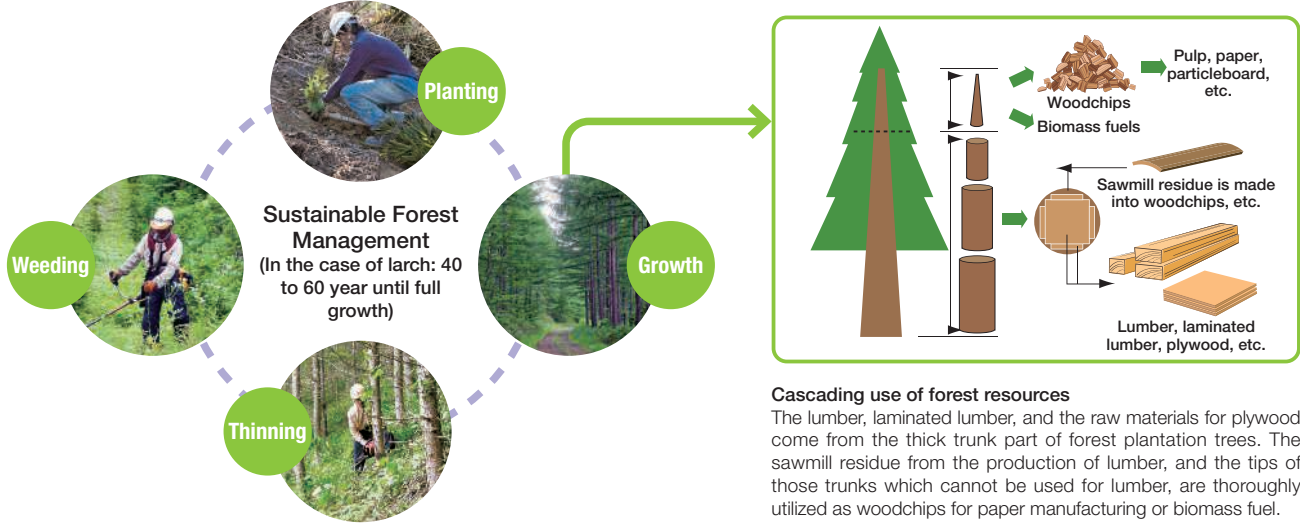
CENIBRA in Brazil: Production forest (left) and conservation forest (right)



Renewable Forest Resources

Forests are a renewable resource that can be planted, grown, harvested, and re-planted. To make thorough use of the 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 production of lumber, and the tips of those trunks which cannot 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 understanding between forest plantation companies and the local communities. Also indispensable is their sharing of environmental, social, and economic benefits. To give an example of economic benefits, our overseas forest plantation companies have created approximately 15,000 jobs locally. Another such example is our technical training primarily on planting 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 environmental 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.



Local staff in an eucalyptus nursery at CENIBRA



Supporting beekeeping in conservation forests at CENIBRA



Supporting health education on how to care for teeth and mouth at CENIBRA

Active Utilization of Forest Certification Programs

In Oji Forests of 573,000 ha, we actively utilize forest certification programs\* to implement appropriate forest management that considers the environment, society, and the economy, including conservation forests. The forest certification acquisition rates in FY2021 were 92% for overseas forest plantations and 100% for company-owned forests in Japan. The Oji Group aims to achieve 100% forest certification acquisition rate by 2030.

\* In pursuit of sustainable forest management, a third-party organization certifies forests after examining whether they are managed in good condition according to the standard. The certification covers all types of forest, including production forests and conservation forests. e.g. : FSC™, PEFC, etc.



Consideration for Ecosystem

Foster nurtures Water, and Water nurtures Forests. Forests and Water nurture our Lives. The Oji Group protects and nurtures Forests and Water to pass them on to the Next Generation.

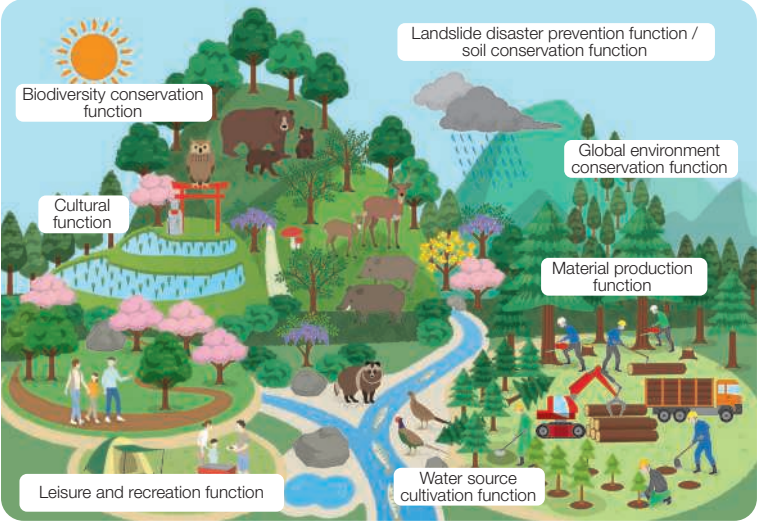
The capital (stock) formed by nature such as forests, soil, water, air and biological resources is called natural capital. Furthermore, the flows generated by the natural capital can be considered as ecological services (benefits). Take forests as an example. Forests are natural capital, and our society benefits in many ways including wood they produce, carbon dioxide absorption and fixation and landslide disaster prevention.

Forests’ Multi-functionality and Ecological Services

While leveraging forests’ various functions, the Oji Group has been conducting various activities to protect and nurture forests and water in the 573,000 ha Oji Forests we own and manage in Japan and overseas.

Forests, which have a significant number of multifaceted functions such as biodiversity conservation, landslide disaster prevention, water source cultivation and provision of leisure and recreation places, are deeply related to our life.

- Biodiversity conservation
- Landslide disaster prevention function / soil conservation function
- Cultural function (aesthetic scenery)
- Global environment conservation function (carbon dioxide absorption and fossil fuel alternative energy)
- Water source cultivation function
- Material production function (such as wood and mushrooms)
- Leisure and recreation function



List of Conservation Forests in Japan by Function

When acquiring forest certification (SGEC) in 2008, we selected conservation forests to address biodiversity. Later we identified 44 forests of 11,551 ha as conservation forests by adding forests for land and water maintenance purposes, academically valuable forests and other aesthetic forests. We believe it our corporate social responsibility to maintain conservation forests, and will ensure appropriate forest management.

Conservation forest category	Number of forests	Conservation area (ha)
Land conservation forests	16	817
Water conservation forests	4	274
Biodiversity conservation forests	13	9,742
Academic conservation forests	1	8
Conservation forests for forest utilization	10	710
Total	44	11,551

Conservation Biodiversity Program—Joining the 30by30 Alliance for Biodiversity

We have joined the 30by30 Alliance for Biodiversity, which was voluntarily launched by companies, local governments and organizations under the initiative of the Ministry of the Environment in Japan. This Alliance aims to “protect at least 30% of land and sea by 2030,” which was launched at the G7 Summit in June 2021. The Alliance members certify their owned or controlled lands as international OECM\*, and expand and support protected areas.

\* OECM: Other Effective area-based Conservation Measures

We will work on biodiversity preservation activities, under the collaboration with the Ecosystem Trust Society since 2016, aiming to acquire OECM certification for the Koyagauchi company-owned forest (in Kochi Prefecture) where measures to protect fairy pitta’s growing environment are being taken.



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

Example of Efforts of Water Resource and Basin Management by CENIBRA, Brazil

CENIBRA (founded in 1973) is located in Minas Gerais in southeast Brazil, and implements integrated production from planting, felling, chipping of raw material eucalyptus to pulp manufacturing. CENIBRA’s owned and managed 250,000 ha forests (144,000 ha production forests and 106,000 ha conservation forests) and pulp mill (1,200 kt/year) use water resources in the Doce River Basin.

In recent years, the areas around the Doce River have been experiencing lower rainfalls, causing a region wide concern about draught. CENIBRA conducted periodic survey on water volume and water quality at each water intake point, and identified the most seriously affected tributary area. In cooperation with public authorities, CENIBRA is conducting various conservation activities to cultivate water sources in the Doce Basin (see page 89 for “River Basin Management by CENIBRA, Brazil”).

In addition, to ensure the effective use of water taken from the Doce River, CENIBRA collects and recycles water and heat energy in production processes, thereby manufacturing pulp with minimum water consumption. All used water (excluding evaporated portion) is sent to a water treatment facility, processed to meet water quality standards required by applicable laws and regulations while its quality being monitored in an appropriate manner, and returned to the Doce River.



CENIBRA's Pulp Mill



Monitoring of each process



Pulp manufacturing



Monitoring of water quality



Pulp shipment

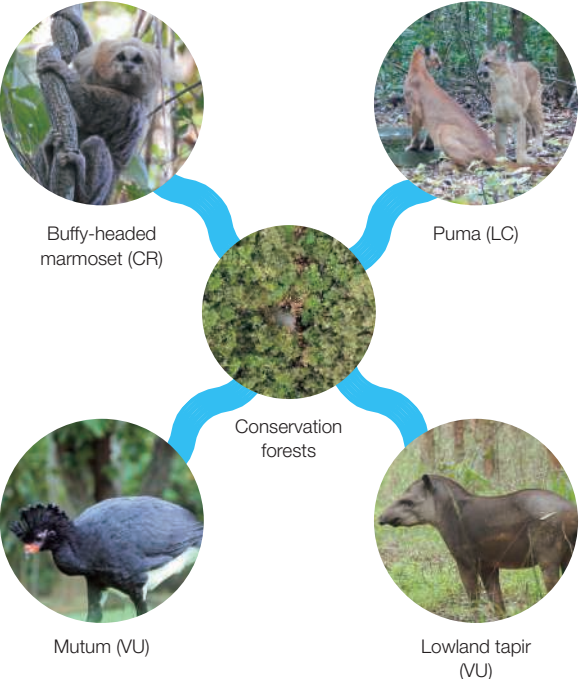
CENIBRA's Monitoring of Biodiversity Indicators

CENIBRA fosters a variety of lives by protecting the valuable ecosystem of the Atlantic Forest known as reservoir of biodiversity. In collaboration with external research institutions, universities, NGOs and other organizations, CENIBRA also monitors plants and animals and water resources, and conducts various ecosystem protection and conservation activities, thereby enhancing multi-functionality of forests.

Monitoring results up until 2021 confirm that endangered 31 species of birds and 17 species of mammals are inhabited in CENIBRA's conservation forest.

In addition, 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.

Sustainability Report (online)  
➡ <https://ojiholdings.disclosure.site/en/themes/182/>



\* IUCN Red List Categories: Least Concern (LC), Vulnerable (VU), Critically Endangered (CR)



New Value Creation through Green Innovation

Our Role Is to Effectively Utilize Forest Resources to Solve Social Challenges

General Manager, Innovation Promotion Division,  
Corporate Officer, Oji Holdings Corporation

Muraji Nishi

Under the Group basic policy of “Initiatives for Product Development –Green Innovation–”, the role of our Innovation Promotion Division is to solve social challenges through “the creation of new value through the effective use of forest resources.” On a foundation of diverse core technologies cultivated through paper manufacturing and forestation spanning the 150 years since our founding, we will be promoting innovation with a focus on the following three themes.

The first theme is “development of new materials derived from wood fiber.” We are developing a variety of new materials to realize a recycling-oriented society by effectively utilizing the abundant forest resources we own in Japan and overseas. Specifically, wood-derived biomass plastics utilizing enzyme reaction and fermentation technologies, and biomass plastic films utilizing film forming technology. We are promoting development utilizing core group technologies, such as cellulose nanofibers using nano-fibrillation technology, cellulose mats applying non-woven fabric manufacturing technology, and cellulose composites leveraging mixing technology.

The second theme is “challenge to the medical and healthcare field.” With an eye on the medical care of the future, we are taking on the challenge of entering a new field that goes beyond the Oji Group’s traditional businesses through our efforts to utilize our forest resources and proprietary technologies in the medical and healthcare field. Specifically, we are working on developing

pharmaceutical products using hemicellulose, a main component of wood, as a raw material; and large-scale cultivation of medicinal plants utilizing our forest tree-breeding technology. In addition, utilizing proprietary technology, we are promoting the development of cell culture substrates for controlled cell orientation, which are expected to contribute to regenerative medicine.

The third theme is “development of eco-friendly paper products.” Utilizing various paper products to achieve things such as CO<sub>2</sub> emissions reductions and reduce plastic usage is something that can only be accomplished by a company as knowledgeable about paper as we are. In order to meet a broad array of needs for environmental friendliness, we are promoting a variety of innovations. Examples include the development of plastic-free solutions utilizing paper materials, and laminated paper which can be recycled leveraging our paper production technology.

People around the world are holding great expectations for sustainable forest resources. We believe there are innovations which can only be achieved by a company like us which has long and dedicated experience in dealing with forest resources. By going back to the basics once again and reexamining the “Purpose” of the Oji Group, we will promote value creation to achieve our future goals.

Green Innovation Oji Is Aiming for

Effective Use of Forest Resources to Contribute to a Recycling-oriented Society

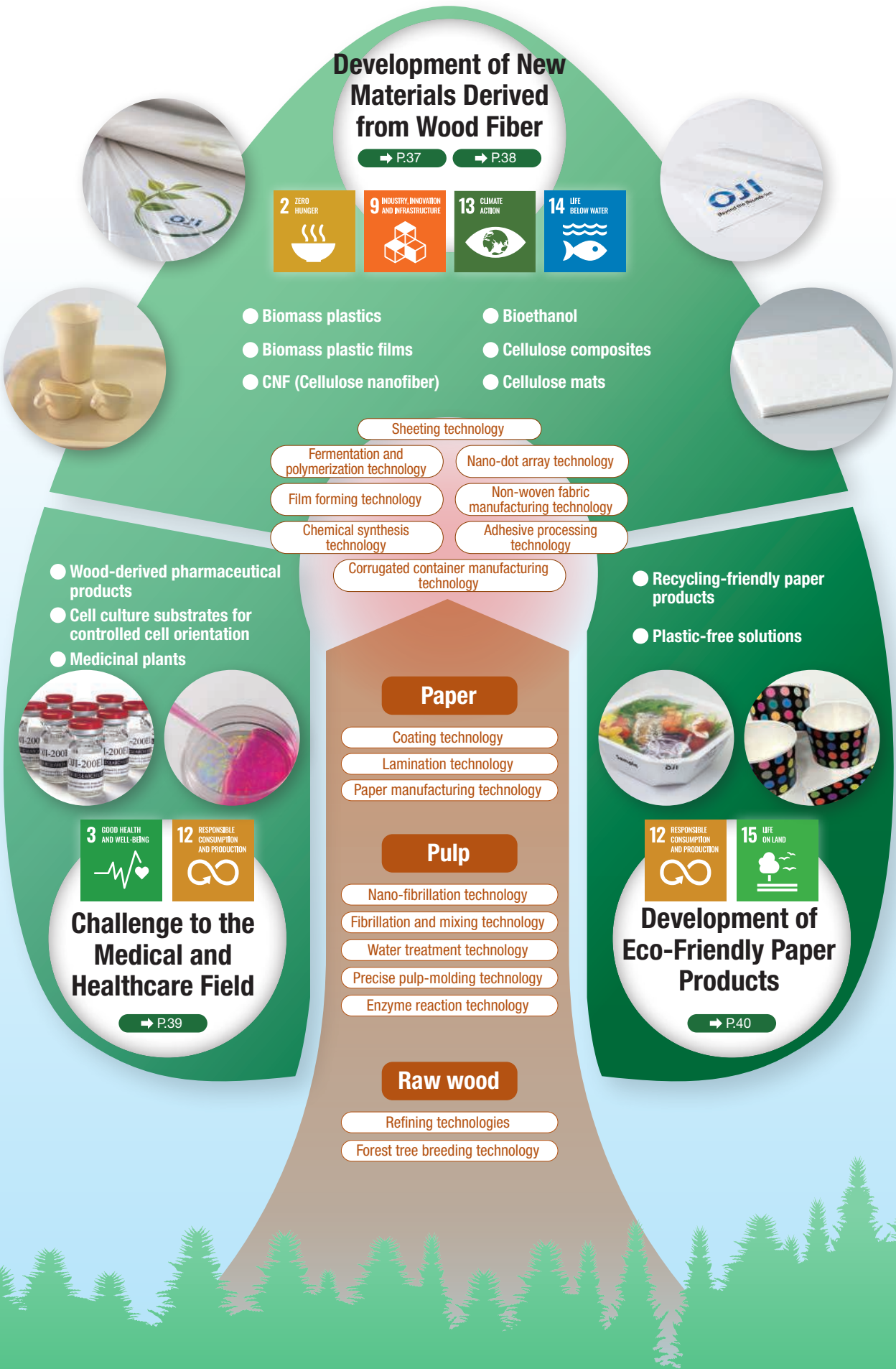
**Development of New Materials Derived from Wood Fiber**

Challenge to a New Field in Light of the Future of Medicine and Healthcare

**Challenge to the Medical and Healthcare Field**

Using a Variety of Paper Products to Solve Various Environmental Issues

**Development of Eco-Friendly Paper Products**





## Development of New Materials Derived from Wood Fiber

### Effective Use of Forest Resources to Contribute to a Recycling-oriented Society

Toward solving climate change issues caused by increased greenhouse gas emissions, the Oji Group promotes the development of new materials derived from renewable wood and aim to realize a recycling-oriented society.

#### Producing Wood-derived Biomass Plastics to Move Away from Petroleum-derived Plastics

##### Wood-derived biomass plastics

While the global need for biomass plastics is growing to reduce CO<sub>2</sub> emissions from fossil fuels, the diversification of raw materials for biomass plastics is required. We are exploring the manufacturing of biomass plastics by using inedible biomass derived from wood less susceptible to price fluctuations and tight supply-demand conditions due to the food situation. Before the end of FY2021, we succeeded in producing wood-derived polylactic acid and polyethylene through the commissioned project of the Ministry of the Environment\*.

Going forward, aiming to popularize these wood-derived biomass plastics, we will work to establish a mass synthesis method and develop applications.

Furthermore, since the knowledge of producing polyethylene from ethanol may be applicable to the production of Sustainable Aviation Fuel (SAF) from ethanol, we will examine the possibility of providing wood-derived ethanol as raw materials for SAFs. Although there is an established method of producing SAFs from waste edible oil, the method of producing SAFs from ethanol is awaited with great expectations for their popularization and expansion.



Testing plant for enzymatic degradation and fermentation

\* FY2019 to FY2021 Demonstration Project for a Plastic Resource Circulation System toward a Decarbonized Society



#### Emission reductions of CO<sub>2</sub> from fossil fuels by the development of biomass plastic films

##### Biomass plastic film, Alphan G

We have been developing plastic films containing a plant-based plastic, polylactic acid. In response to a greater need for packaging films with low environmental impact to reduce CO<sub>2</sub> emissions from fossil fuels, we aim to contribute to this social need. Our new product Alphan G, a polypropylene film containing polylactic acid, was certified as a Biomass mark product\* and has been commercialized and launched.

We will work on the development of heat-sealing biomass plastic films going forward, aiming to utilize them as pillow-type packaging films widely used for the food and pharmaceutical industries, and will continue to develop a wide variety of products that contribute to SDGs.

\* Biomass mark certified by the Japan Organics Recycling Association



#### Wood-derived Cellulose Nanofiber to Reduce Material Weight and Environmental Burdens

##### CNF (Cellulose nanofiber)

Cellulose nanofiber (CNF) is produced by nanofibrillation of pulp to a nanometer order (1nm = 0.000001mm), and is expected to contribute to the reduction of environmental burdens by replacing conventional functional materials derived from petroleum and mineral. We aim to apply CNF in a wide variety of fields, leveraging its functions and characteristics such as transparency, lightweight, durability, high resistance to deformation, and high viscosity.

There are increasing applications of our CNF in sports products, cosmetics, and on construction sites. In order to accommodate a wider variety of needs, we will work on the development aiming to promote further practical applications.

##### Development of cellulose nanofiber and natural rubber composites

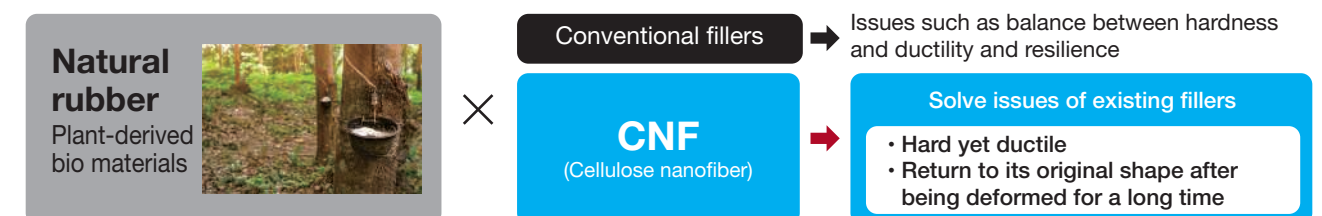
Natural rubber is a bio material derived from extract of tree such as *hevea brasiliensis*. Due to recent efforts to realize a decarbonized society, it is expected to replace petroleum-based synthetic rubbers.

Normally, natural rubber is reinforced by adding fillers such as carbon black. Although these existing fillers can increase strength of rubber materials, there are some issues namely



loss of ductility and resilience (ability to return to their original shape after being deformed for a long time). When using our CNF as a new reinforcing filler for natural rubber, we found it has the potential to solve these issues.

Going forward, we will explore the possibility of deploying this new composite to the market, and establishing the mass production technology.

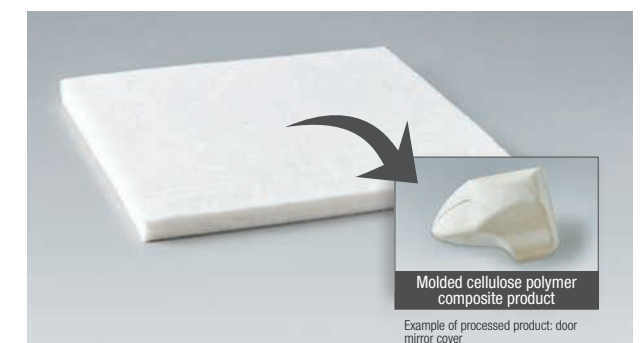


#### Light and Strong Less-Plastic Materials Using Cellulose as Reinforcing Fiber

##### Wood-derived cellulose mats

Mats using wood-derived cellulose fiber (pulp) as reinforcing fiber (cellulose mats) help reduce the consumption of petroleum-derived plastic by up to 70%. We have found that a molded product using cellulose mats shows much higher rigidity (flexural modulus) and impact strength than conventional plastics. We have now started providing cellulose mat samples.

We will continue the product development toward practical automotive applications.



#### Biodegradable Plastic-Cellulose Composites to Reduce Environmental Burdens

##### Cellulose composites, Resoil-Green

We are developing resin materials that are composites of biodegradable plastics and wood-derived cellulose (pulp). Since the product uses pulp, it can achieve high degree of biomass as well as high biodegradation rate. In addition, the product improves various properties of resin such as strength and stiffness. Since all raw materials of the products are biodegradable in soil, the products can contribute to reducing environmental burdens. Even if unaware discharges to the environment occur, those will be decomposed in the natural environment.

Currently, the product is well accepted by many customers, and we are working so that it will be adopted for a wide variety of applications.





## Challenge to the Medical and Healthcare Field

### Challenge to a New Field in Light of the Future of Medicine and Healthcare

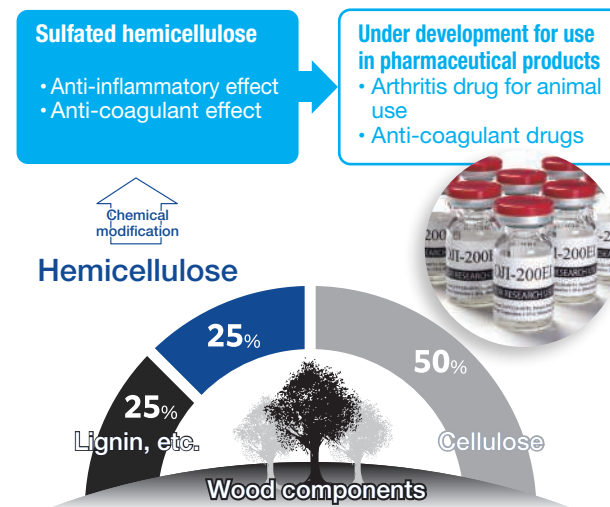
As the super-aging society progresses and interest in extending healthy life expectancy grows, there is a need for new and different form of medicine and healthcare. The Oji Group is challenging a new field beyond our traditional businesses through our efforts to utilize forest resources for medical and healthcare field.

#### Drug Discovery from Forest Resources

##### Wood-derived pharmaceutical products

The Oji Group aims to contribute to human and animal health through the development of “sulfated hemicellulose.” Sulfated hemicellulose is a compound obtained by chemically modifying “hemicellulose,” one of the major components of wood. Our joint research with companies and universities in and outside Japan confirms that it has anti-inflammatory and anti-coagulant effects. In addition, this compound is similar, in terms of chemical structure and pharmacological effect, to heparin, an animal-derived pharmaceutical product used all over the world. By replacing this animal-derived pharmaceutical product with wood-derived one, it is expected to accommodate a wide range of needs.

While we are currently filing a prior application for arthritis drug for animal use, we will develop into a drug for human use and work on the building of the pharmaceutical business, leveraging the property of being derived from wood.



#### Nanostructure Technology for Regenerative Medicine and Drug Discovery

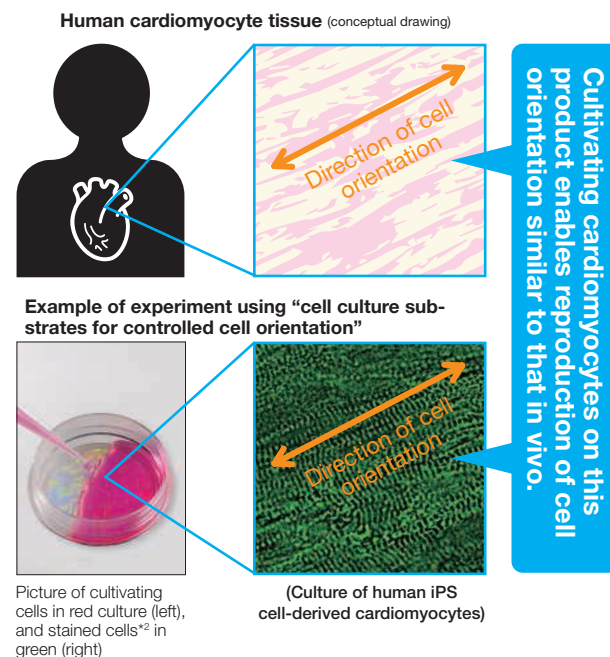
##### Cell culture substrates for controlled cell orientation

The Oji Group is developing cell culture substrates with a fine structure, by applying one of the semiconductor manufacturing process. While research on regenerative medicine and drug discovery using “iPS cells,” which can develop into any cell, is actively carried out, there is an issue that immature iPS cells must be matured in order to be used for regenerative medical purposes<sup>\*1</sup>. Focusing on the fact that human cardiomyocytes are “oriented” in vivo, we have developed culture substrates that induce cell orientation. This product is a cell culture substrate fabricated by our original technology, that has nanodot regions with a pitch of several hundred nm and planar regions interleaved in parallel stripes. It is confirmed that iPS cardiomyocytes cultured on this substrate enables reproduction of cell orientation similar to that in vivo, activating genes work like mature cells. We are currently conducting joint research with Juntendo University, etc.

We will continue to promote use of this product toward regenerative medicine and drug discovery applications.

<sup>\*1</sup> Since cardiomyocytes generated from iPS cells are inferior to those in vivo in terms of motility and physiological activity, it is required to make them closer (mature) to those in vivo.

<sup>\*2</sup> α-Actinin (protein)



#### Stable Supply of High Quality, Domestically Grown Raw Materials for Chinese Herbal Medicines

##### Large-scale cultivation of medicinal plants

Licorice, which is used in many Chinese herbal medicines, is imported from abroad (China), and domestic production is required due to fears of resource depletion in exporting countries and export restrictions. The Oji Group is applying its forest tree breeding technology to develop cultivation techniques within Japan, and has succeeded in conducting a demonstration test at our farm. In order to expand our business scale, we are now exploring the possibility of mechanized large-scale cultivation.



## Development of Eco-Friendly Paper Products

### Using a Variety of Paper Products to Solve Various Environmental Issues

Toward solving environmental issues, such as reduction of CO<sub>2</sub> emission and plastic consumption, the Oji Group establishes new business models using various eco-friendly paper products to provide solutions to accommodate a wide variety of needs.

#### Recycling-friendly Paper Products

##### Laminated paper using plant-derived polylactic acid

When disposing of ordinary laminated paper as combustible waste, combustion of petroleum-derived plastic layers results in CO<sub>2</sub> emissions from fossil fuels. Since plastic layers of the laminated paper we developed use plant-derived polylactic acid, combustion of the paper does not increase CO<sub>2</sub> in the atmosphere. In addition, this laminated paper is biodegradable under compost conditions.



##### Aqueous coated paper cup base

Traditional paper cups, made of plastic laminated paper, are not suitable for recycling and are generally treated as combustible waste. We have leveraged the technology cultivated in our paper manufacturing and successfully developed paper cup base which has water and oil resistance and heat sealability required for paper cups and is recyclable under the existing paper recycling system, by applying special aqueous resin to the cup base in a thin and even manner.



#### Sustainable Solutions (Paper Products which Accommodate a Wide Variety of Eco-friendly Needs)

Food trays that lead to both plastic reduction and food loss reduction



– Tapered paper tray with MAP capabilities –

This is a paperboard-based tray with a resin film that covers the surface. MAP\* can extend food shelf life.

<sup>\*</sup> MAP (Modified Atmosphere Packaging): a packaging system that involves replacing the atmosphere surrounding a food product inside a pack with a gas suitable for the preservation of food.

Cardboard that enables prolonged shelf life and attractive presentation of fresh foods



– FlatSkin® –

This is a package that is separable into cardboard and film. The vacuum packaging of meat and fish can suppress drip, and printing on the cardboard offers attractive presentation of foods.

Sustainable, heat-sealable package



– All paper-made blister pack –

This is composed of three pieces; paperboard-made top, tray and divider. Without the use of plastic films, it will secure and protect products inside. Printing on and window holes of this product offer effective presentation of daily goods inside.

#### Topics – Sustainability –

##### Reduction of CO<sub>2</sub> emissions by introduction of paper packaging

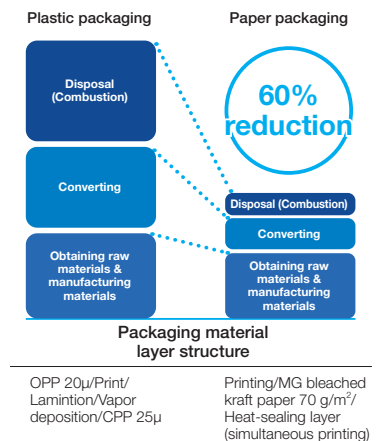
A comparison of the life cycle CO<sub>2</sub> emissions of petroleum-based plastic packaging and sustainable paper packaging shows that paper packaging emits less CO<sub>2</sub> than plastic packaging. Therefore, the introduction of paper packaging can contribute to CO<sub>2</sub> emission reduction. For more details, please see our website.

<sup>\*1</sup> CO<sub>2</sub> emissions are calculated by converting greenhouse gas (GHG) emissions such as carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and dinitrogen monoxide (N<sub>2</sub>O) into CO<sub>2</sub>. The calculation is made based on LCA (Life Cycle Assessment) methodology.

<sup>\*2</sup> Calculation results of reduction rate change, depending on packaging material and layer structure. (It is assumed that the paper packaging material is MG bleached kraft paper 70 g/m<sup>2</sup> and that the type of printing is gravure printing.)

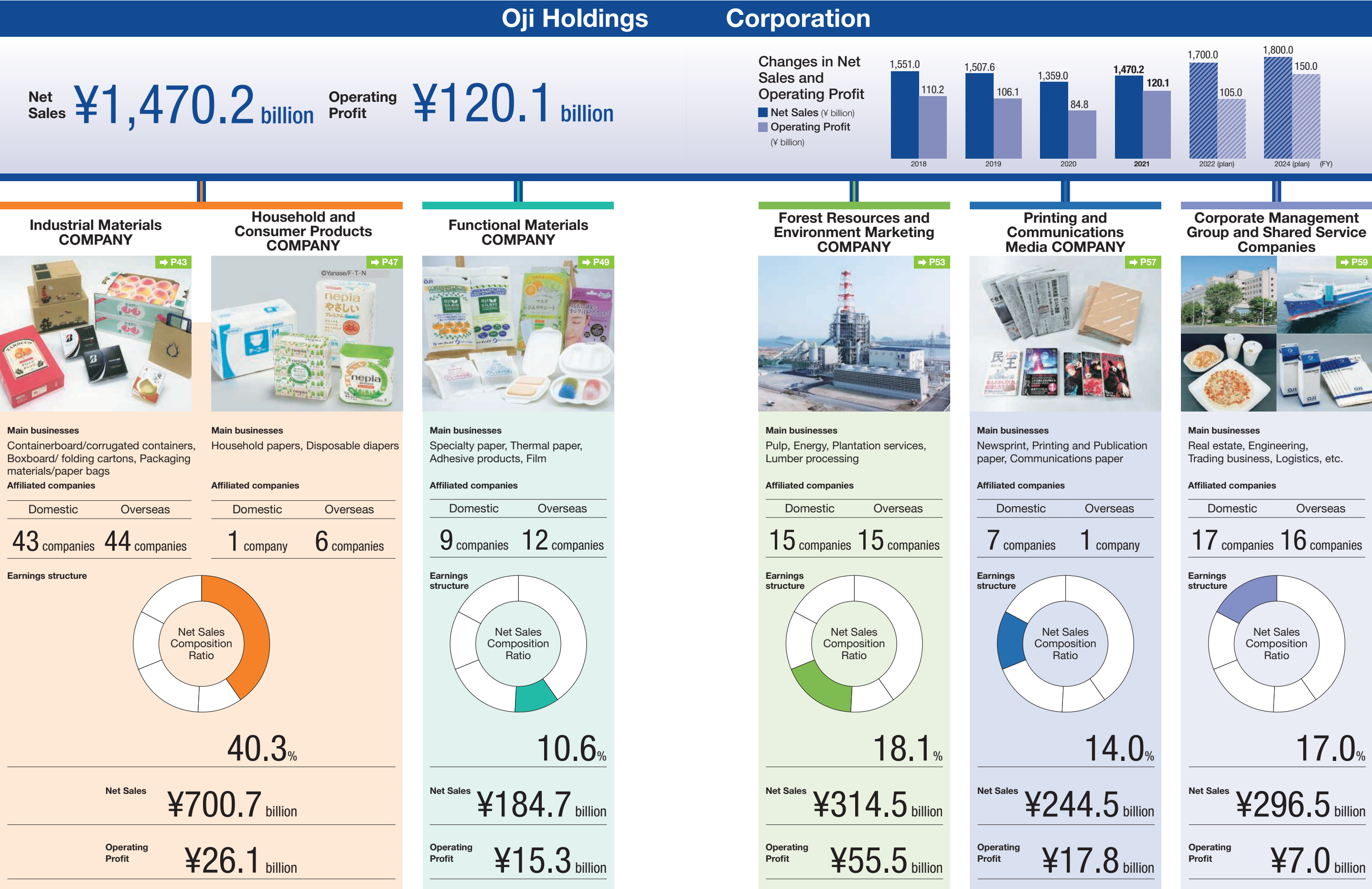
##### Sustainable packaging | CO<sub>2</sub> reduction effect

➡ <https://solution.ojiholdings.co.jp/ojipaperpackage/sustainability/> (available in Japanese only)





Business Overview





Household and Industrial Materials Businesses



We aim to be a “lifestyle and social support enterprise” that contributes to the prosperity of society by providing materials and technologies that are closely tied to people’s day-to-day lives.

**Takayuki Moridaira**  
President, Household and Consumer Products COMPANY  
President, Industrial Materials COMPANY  
Executive Officer  
Oji Holdings Corporation

Industrial Materials Business



**Business Overview**

The Industrial Materials Business has production and sales structures that integrate material and converting from base paper manufacturing to product processing and packaging design for the packaging materials that are essential to industry such as corrugated containers, folding cartons, and paper bags and responds in a timely manner to customer needs.

● **Corrugated container business**

As well as corrugated containers used in foodstuffs, daily products, electronics, and other areas, we also offer heavy-duty packaging materials used for transporting mainly industrial parts. We also provide automatic packaging systems adjusting the packaging dimension in order to fit each product size inside.

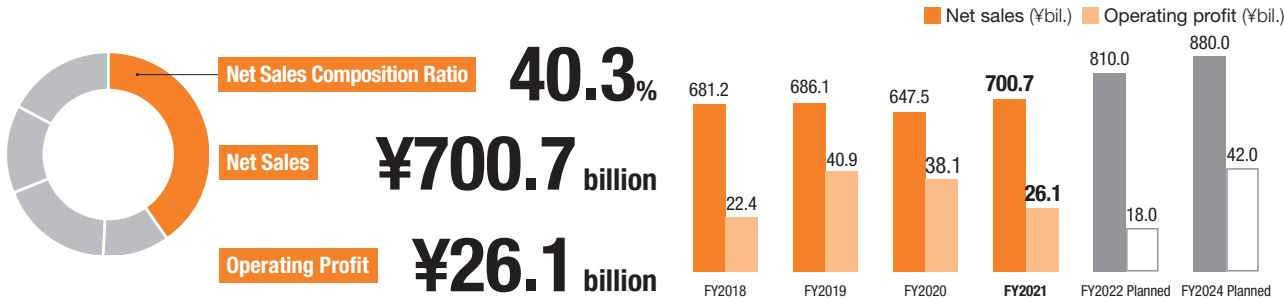
● **Folding carton business**

For folding cartons used in a range of fields including confectionaries, cosmetics, and pharmaceuticals, we are combining aesthetically pleasing base paper with structural design tailored to the application and appealing graphics, thereby further enhancing the value of our customers’ products.

● **Paper bag business**

We handle a wide range of customer needs—from heavy-duty sacks for packaging used for safe and secure transport of various products, through to paper bags that are used for packaging of retail products and also play a role in sales promotions, and bags for home delivery, which are seeing increased demand given the growth in online shopping.

Changes in Net Sales Composition Ratio, Net Sales and Operating Profit Sales target for FY2030: ¥1,250.0 billion



**Segment Overview**

In FY2021, the Household and Industrial Materials Businesses had net sales of 700.7 billion yen (up 53.2 billion yen from FY2020) and operating profit of 26.1 billion yen (down 12.0 billion yen from FY2020). Domestic business saw increased sales due to continued steady sales of corrugated containers for e-commerce use as well as of kitchen towels, wet wipes and other products for healthcare purposes, in addition to the overall recovery in demand for many products. In the overseas business, despite weak sales of disposable diapers, sales increased owing to robust sales of corrugated containers, coupled with price increases becoming widely accepted.

In FY2022, net sales of 810.0 billion yen (up 109.3 billion yen from FY2021) and operating profit of 18.0 billion yen (down 8.1 billion yen from FY2021) are planned.

Expansion & Enhancement of Corrugated Container Business in Greater Tokyo Area, Japan

To further strengthen our business base in the Kanto region where the demand for corrugated containers is expected to markedly increase, we are constructing an integrated plant for manufacturing the base paper and processing it for making corrugated containers in Utsunomiya City, Tochigi Prefecture (scheduled to complete construction in January 2023). We intend to enhance our competitive strength by having an integrated plant.

At the same time, as part of its initiatives to restructure the manufacturing system for base paper, we completed the modifications of the Oji Paper Tomakomai Mill newsprint production facilities for the production of containerboard and kraft paper (started operation in October, 2021), followed by the relocation of a special liner and special paperboard machine from Nayoro Mill of Oji Materia to the same mill (started operation in April 2022).

To further reinforce earnings bases through the integration of material and converting, a range of investments will be made for the optimization of the domestic business structure.



Integrated plant for corrugated containers in Tochigi Prefecture (under construction)

**“OJI FLEX PACK’AGE,” automated packaging system**

We sell “OJI FLEX PACK’AGE,” automatic packaging system, which helps packaging adjust flexibly to the product size, and fanfold corrugated sheets “Rakudan,” its packaging material. The introduction of these products helps save packaging labor, reduce packaging materials, and reduce CO<sub>2</sub> due to reduction of delivery burden. This initiative received recognition for its eco-friendliness and improvement and rationalization of packaging, winning four awards including the Logistics Grand Prize, “SDGs Social Contribution Award.”

Going forward, accelerating market deployment of the automated packaging system and ensuring a stable supply system by increasing our supply bases for “Rakudan,” we will continue new development including collaboration with partner companies so that the system can be a solution that our customers use with more confidence.



“OJI FLEX PACK’AGE,” automated packaging system



Liquid Packaging Carton Business

In September 2020, we established a joint company with ISHIZUKA GLASS Co., Ltd. and entered the liquid packaging carton business. To move away from our former dependence on overseas sources of base paper, Oji Materia started production of milk carton base paper for the first time in Japan in August 2021. This enables an integrated production in Japan from raw material pulp manufacturing to printing and converting, as well as a stable supply of safe and secure Japan-made milk carton. Going forward, we will aim to expand this business outside in Japan where demand is expected.



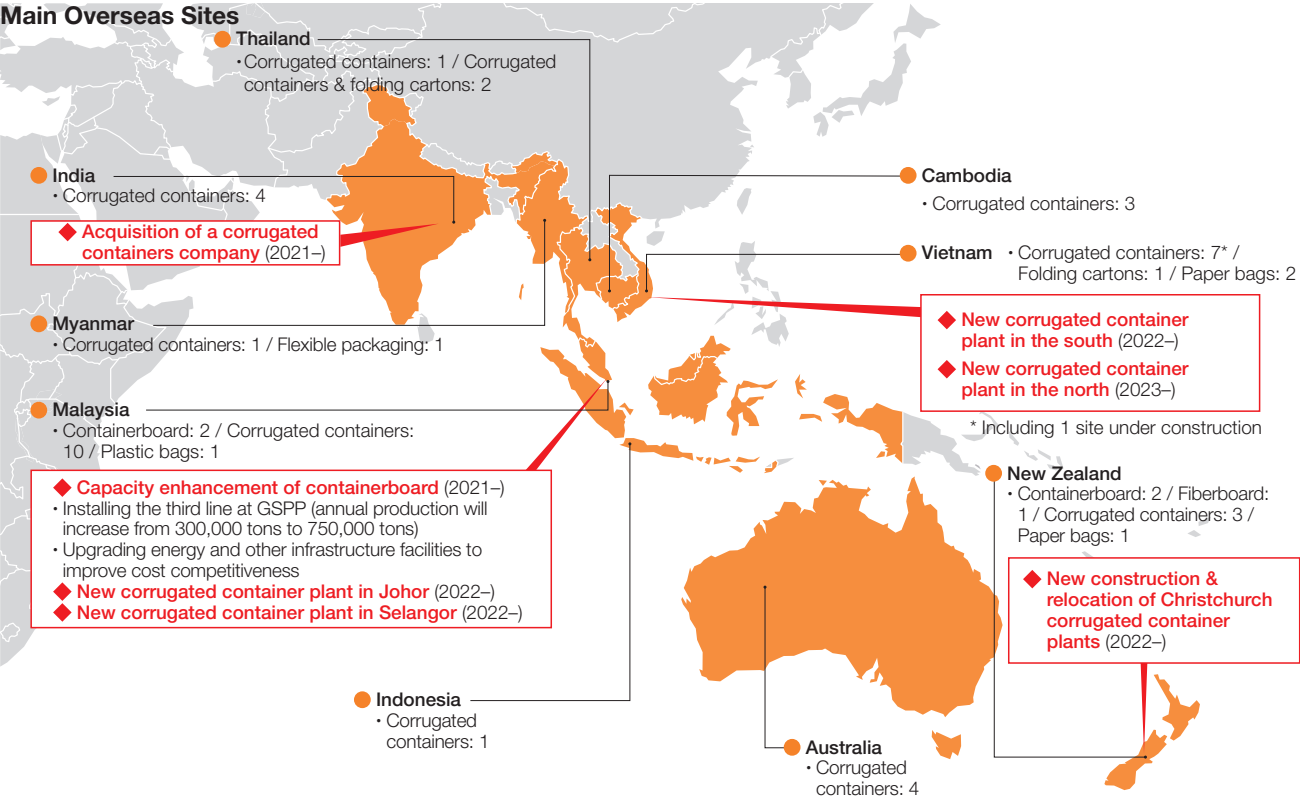
Further Expansion & Enhancement of Packaging Business in Southeast Asia, India and Oceania

To meet the increasing demand for packaging in various regions, we own a total of 47 manufacturing bases in 9 countries throughout Southeast Asia, India, and Oceania, and we are developing our business in the countries.

In Southeast Asia and India, we further enhanced and expanded our business base for containerboard and corrugated containers in an integrated manner by starting operation of a new containerboard machine in Malaysia, starting operation of new corrugated container plants—two in Malaysia and one in Vietnam, and acquiring a corrugated containers company in India, all of which were conducted from 2021 to 2022. In addition, we are constructing a new corrugated container plant in Vietnam to start operation in 2023. In Oceania, in addition to a new plant in Christchurch which was relocated and started operation in 2022, we will explore the possibility of further expanding the corrugated container business. We will also work on the development of plastic alternative products to respond to the expected growing demand.



4th Plant, Ojtex Haiphong in the north of Vietnam (rendering of completed plant)



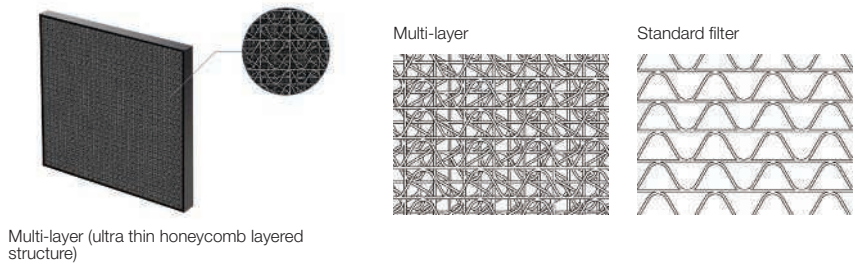
Filter Business

Due to the spread of COVID-19, the demand for ventilators and air purifiers is increasing. In our filter business, we manufacture and sell “Energy recovery ventilators element” which is the core parts of a ventilators and “Coated deodorizing filter” for air purifiers, and continue to steadily expand the business with the start of operation of the second filter factory in China in November 2020.

“Deodorizing filter by application” we newly developed in 2021 was adopted for air purifier 2022 model manufactured by Daikin Industries. Deodorizing filter by application has unique “multi-layer” structure where a thin filter is layered while changing directions, which helps

dramatically increase the efficiency of contact with air, bringing an advantage that the strong deodorizing continues for a long period of time. The filter works well at places or situations with smells, such as entrance, nursing care facilities, life with pets and bathrooms.

We will continue to work on the expansion of the filter business and the development of various filter products which meet customers’ needs.



Sustainable growth through business expansion

S.Pack & Print Public Co., Ltd. has many years of business experience in the south of Thailand, with strong reputation in the market. Our market share in the area ranks first for the folding carton business, and second for the corrugated container business.

To respond to customers’ growing needs particularly for rubber gloves and maintain our status in the market, we undertook investment in key equipment in 2022 to introduce new two offset printing machines.

We strongly believe that this investment will contribute to the double digit growth of sales in our folding carton business, in line with which, it will also contribute to the corrugated container business.

While steadily capturing business opportunities and overcoming challenges and issues, we will fully devote ourselves to playing a part in the Oji Group’s growth strategy in Southeast Asia.

Voice



Wuthichart Anansuthivara  
S.Pack & Print Public Company Limited  
Chief Executive Officer

Topics – Sustainability –

A new plant in Utsunomiya City, Tochigi Prefecture, which is an integrated plant for manufacturing the base paper and processing it for making corrugated containers and will install solar power equipment (scheduled to be completed in March 2023), can reduce GHG emissions associated with delivery of base paper. Therefore, the plant is positioned as a model plant toward the realization of our initiatives for GHG emissions reduction.

We are also working to install solar power equipment in existing plants if their weight does not exceed the allowable roof load or when the roof is repaired, and examining the possibility of fuel conversion for coal-fired boilers.

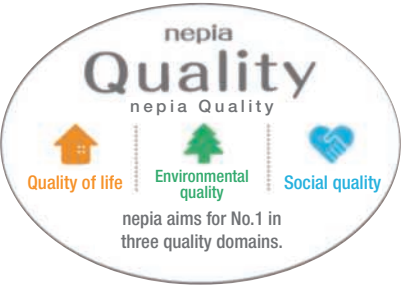
We will work on initiatives for environmental issues along with business expansion.



Solar power equipment at a corrugated container plant of GSPP, Malaysia



Household and Consumer Products Business



Business Overview

We own the household paper brand “nepia.” “Quality of Life” as in the seeking of good texture, comfort, and functionality. “Environmental Quality” as in forest conservation such as the adoption of FSC™ certified paper. “Social Quality” as in aligning with customers’ hope and contributing to society through actions such as taking CSR initiatives. In the pursuit of these three quality domains, Oji Nepia is producing tissue paper, toilet rolls, disposable diapers, and other products indispensable in our daily lives. (FSC™ C018118)



nepia Premium Soft Toilet Rolls



nepia Premium Soft Tissues



nepia Hana Celeb Hana Celeb Tissue Three Packs



nepia Genki! Pants



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Enhancement of Branding and Expansion of Sales of Household Paper Products in Japan

In our household paper business, we obtained the first FSC™ certificate in the industry, and aim to develop items such as eco-friendly products that use biomass ink and paper instead of plastic film, and high-quality products exemplified by “Hana Celeb,” resulting in further improvements in value for the “nepia” brand. We are responding to market trends such as by producing extra-long toilet rolls at the Edogawa Mill, which started commercial production in the fall of 2020 and built a new warehouse within the mill in August 2022. By integrating the household paper processing and distribution bases, we intend to enhance our competitive strength in the household paper and disposable diapers market in the Kanto region.

For the disposable baby diaper business, we are developing products both in Japan and overseas under the unified brand name“Genki!,” which was renewed in April 2021. By that, we strive to enhance the value of the “nepia” brand and expand sales. In Malaysia, we have increased production capacity by restructuring the production system, including the introduction of a new disposable diaper processing machine. In Indonesia, we are working to secure cost competitiveness and strengthen our business base by manufacturing and selling disposable diapers at a local disposable diaper factory of a joint venture company, thereby further expanding our business, including in neighboring countries. In China, we are also incorporating local consumer needs and expanding sales of thin products. We have also been expanding the exports from Japan, mainly by strengthening Vietnamese sales with the scaling up of local retail business.

In the field of disposable diapers for adults, we installed a new processing machine in Fukushima Mill aiming to start commercial production in the fall of 2022 in

response to the expected growth in the population requiring nursing care and support. We will continue to develop products that address the issues faced by Japan’s aging population in the field of nursing care.

Based on the development of products that emphasize environmental friendliness and quality, we aim to further enhance recognition of “nepia,” develop new products and create value, while adapting to customer needs and changing times.



Regular size



Small size

nepia Long Lasting Best Fit Face Mask Block Filter Plus Surgical

Since the outbreak of COVID-19, we have continued to produce mask products. Among them, “nepia Long Lasting Best Fit Face Mask” conforms to Class III, the highest class in medical mask standards. We deliver safety and security to our customers by offering the highest class of medical masks as commercial products.

nepia Hana Celeb Pocket Mask

In April 2022, we developed “nepia Hana Celeb Pocket Mask,” adopting the idea proposed by a student in a “Product Development Class” at “TITAN’s College,” a communication college administered by TITAN. Due to COVID-19, wearing masks has become a daily routine. While more and more people were bringing spare masks when they hang out, they faces the pain point that mask

packages were usually too big to fit in a small bag or pouch. This product has innovatively adopted the packaging of pocket tissue paper and eliminated the pain point.

President Mitsuyo Ota, who is a big fan of nepia Hana Celeb Tissue, proposed a collaboration with Oji Nepia leveraging the Hana Celeb brand for the first time and it was realized.



Regular size



Small size

Disposable diapers for adults

We are offering “nepia Tender” series for medical and welfare facilities. To realize “co-creating nursing care,” more comfortable nursing care for both the providers and

the receivers, we are providing new solutions, products and services through working together with them. In August 2021, we launched “nepia Tender, tape-type, smaller L size,” which delicately responds to changing body forms of users to fit them better. In March 2022, we also launched “Wet towel,” “Buttocks wiper,” “Buttocks cleaning liquid; Tsurunto-san,” and “Nursing care towel; oshibori-no-moto,” now offering a lineup of products designed to reduce the burden of nursing care.



Topics – Sustainability –

nepia krafco mini

In January 2022, we launched a mini size of eco-friendly product “krafco,” which, by packaging tissue papers with paper-derived kraft paper and paper string only. It saves the trouble of separating waste and further contributes to plastic-free (film-free) initiatives and reduction of waste.



nepi-eco series (masks, kitchen towels and tissue papers)

nepi-eco is a series mainly designed to switch packaging materials from petroleum-derived plastic film or ink to biological paper or biomass ink. Including the products manufactured of FSC™ certified paper we have been using, whose specifications help reduce chemical substances in the emissions associated with transportation by increasing each item in volume as much as possible, this series can contribute to the realization of a sustainable society. In the spring of 2022, three new products were added to the series.

We have biomass masks in which 80% of the non-woven fabric materials are derived from plants such as

sugar cane and corn. There is also a kitchen towel that uses paper materials to replace plastic packaging. In the series, we also have boxed tissue in which the plastic opening is replaced by paper alternatives so waste separation is no longer required. It is also engineered for easy folding to further save trouble when dispose of.

Furthermore, in the 2021 survey on brands of companies that, from ordinary citizen’s perspectives, contribute to SDGs\*, Oji Nepia ranked 11th. In the ranking by industry, it ranked second in the “Cosmetics and Toiletries Category.” We believe that this result shows Oji Nepia’s initiatives for SDGs and to realize a low-carbon society are well-evaluated by ordinary citizens.

\* Survey by Sustainable Brands Japan (15,000 samples nationwide, Internet questionnaire, male and female aged 18-79, more than 300 companies)

Oji Nepia continues to work on various initiatives, through production using eco-friendly materials, so that we can contribute to a sustainable society.



nepi-eco Biomass Mask



nepi-eco Kitchen Towel



nepi-eco Tissue 5 packs of 200 pairs



Functional Materials Business

We aim to expand the business by enhancing the added value of existing products and strengthening sales activities for new products.

**Shigeki Aoki**  
President, Functional Materials COMPANY  
Executive Officer  
Oji Holdings Corporation



Glass paper (Oji F-Text)



Slot tickets (Kanzaki Specialty Papers)



Eco Marine Tac™ (Oji Tac)



Film used in capacitors (Oji F-Text)

Specialty Papers Business

The Specialty Papers Business has a lineup of products with advanced special functions such as electrical material paper including insulation materials, dry pulp non-woven fabric excellent in bulkiness and liquid retention, and glass paper excellent in size stability and heat resistance.

Imaging Media Business

The Imaging Media Business at the Oji Group develops thermal recoding media that meet customer needs for household, industrial, logistic, medical and other various uses, leveraging diverse coating technologies such as thermal and inkjet technologies, boasting a top class global market share.

Adhesive Products Business

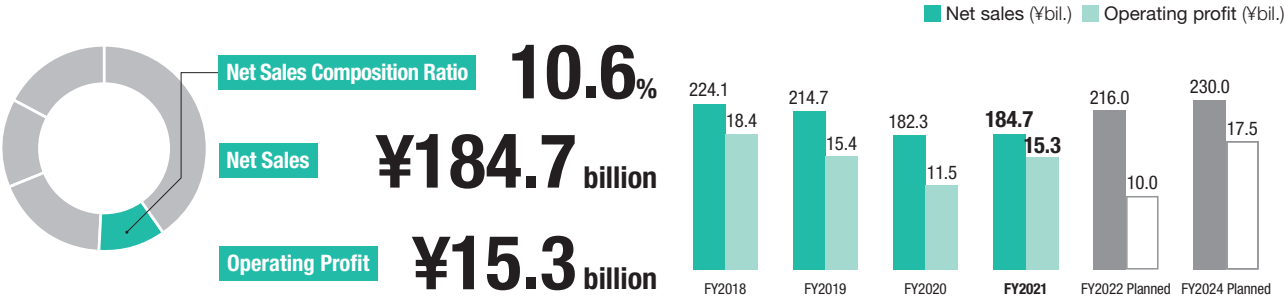
Using proprietary adhesive force control technology, the Adhesive Products Business handles from familiar products like food/beverage labels, courier labels, adhesive tape for packaging, and wound dressings to less familiar, special applications like aluminum tape for construction material and forgery prevention tape.

Film Business

The Film Business handles films for capacitors, essential materials in the power supply units of eco-friendly vehicles, developed based on its thin film technology that produces the world’s thinnest films, and optical double-sided adhesive films and hard-coated films that are adopted for smartphones and other precision devices.

Changes in Net Sales Composition Ratio, Net Sales and Operating Profit

Sales target for FY2030: ¥400.0 billion



Segment Overview

In FY2021, the Functional Materials Business had net sales of 184.7 billion yen (up 2.4 billion yen from FY2020) and operating profit of 15.3 billion yen (up 3.8 billion yen from FY2020). In the midst of the ongoing impact of the COVID-19 pandemic, in the domestic business, sales of films for capacitors for next-generation vehicles with growing social expectation from the perspective of climate change measures and energy conservation, in particular, and films for general industrial use, and packaging films for foodstuffs and sundries remained strong. In the overseas business, sales and profits increased due to a recovery trend in demand, mainly, for thermal papers.

In FY2022, net sales of 216.0 billion yen (up 31.3 billion yen from FY2021) and operating profit of 10.0 billion yen (down 5.3 billion yen from FY2021) are planned.

Actively Develop High-function and Eco-friendly Products

In Japan, we are strengthening the foundation of our existing business by continuously reviewing our production system in response to changes in the demand structure of the functional materials market, thereby enhancing competitiveness and profitability. We have continued to work on the rapid development of high-performance, high-value added products, and developed an automotive window film that combines high heat shielding properties and light transmittance, both of which had been difficult to achieve in the past, “MEGURISH (cotton),” a recyclable resource mixed papermaking that combines conventionally discarded fibers, scraps, and recovered clothing as paper raw materials, and “kinarito,” a biodegradable nonwoven fabric material made mainly from plant-derived cellulose and polylactic acid.

In addition, in response to the global shift to a decarbonized society and the rapid spread of electric vehicles, we have decided to add two production facilities in the Shiga Mill for polypropylene film used in capacitors for motor drive controllers of electric vehicles (scheduled to start operation in 2023 and 2024, respectively). As a result, the production capacity is expected to double from the February 2022 level.

SILBIO series

In the midst of the growing needs for paper products as replacement for plastic packaging, “SILBIO series” has a lineup well-suited for light packaging applications in various fields, including a product that not only provides barrier property to paper packing materials but also has barrier and light-shielding properties as high as aluminum deposited film, a product that has transparency and barrier properties, a product that requires no sealant such as PE. The lineup consists of the following.

“SILBIO BARRIER” which has oxygen barrier property as high as EVOH, and moisture barrier property as high as LDPE, preventing contents from diffusing moisture or scent.

“SILBIO ALBA,” aluminum deposited paper material which has oxygen barrier, moisture barrier, light-shielding and heat sealing properties, and is most suitable for applications requiring high barrier and concealability.

“SILBIO CLEAR” which has a transparent feature in addition to barrier and heat sealing properties, and is most suitable for packaging for items whose contents you want to show such as food and daily products.

“SILBIO EZ SEAL” which has no barrier property, but is specialized in its easy heat sealing feature without using sealant, and is most suitable for secondary and delivery packaging for food, and industrial material packaging. SILBIO series products can bear a paper identification mark.

Currently, the SILBIO series, whose features are well accepted, is adopted as packaging materials for food and soap.





“MEGURISH (cotton)”

In the growing momentum to reduce waste from an environmentally friendly perspective, the clothing industry had an issue with disposing of fibers not used in end products and collected products. Oji F-Tex developed “MEGURISH (cotton),” a recyclable resource mixed papermaking that combines conventionally discarded fibers, scraps, and collected clothing as paper raw materials.

In collaboration with KUSUBASHI MONORI Co., Ltd., an established towel manufacturer in Imabari City, Ehime Prefecture, which is famous for its towel industry, we worked on processing residual towel yarn and scraps generated in its manufacturing process into raw materials for paper, and succeeded in the development of this product by leveraging the Oji Group’s paper and pulp manufacturing technology. The product is adopted for gift boxes and packaging paper for its high-end towel brand.

“MEGURISH (cotton)” serves as an effort to create new value through reusing (upcycling) fibers for raw materials for paper instead of disposing of them. In addition, since different fibers are blended for each production, the color and texture vary a little, depending on production lots. We are proposing this randomness as new value.



Producing packaging paper, etc. using pulp obtained from residual yarn



Recycling residual yarn generated in the towel manufacturing process for paper materials

Expanding Global Sales of Imaging Media Business and Enhancing Competitiveness Including Printing and Converting

Overseas, we have completed to enhance and expand facilities to practically double production capacity and started full operation in Brazil in order to meet strong demand for thermal paper in South America. In Europe, we have decided to expand thermal paper facilities (scheduled to start operation in January 2024). In addition, in September 2022, Adampak Group, a high performance label printing and converting company with its business bases in Southeast Asia and China, became a member of the Oji Group. This addition of the high performance label business for electric products and healthcare products to the thermal paper and adhesive paper business already operating in Thailand and the high performance label printing/converting and cutting/converting business in Malaysia has enabled the integrated production from base paper manufacturing to converting. We are continuing to respond to the demand expected to grow in the Asian area.

We are working to expand our business in line with the economic development in the emerging markets such as Southeast Asia, South America, the Middle East and Africa, and aiming to strengthen competitiveness at existing locations. Based on the Group’s core technologies which are strengths we have cultivated to date in “papermaking,” “converting (functional and adhesive coatings),” and “film forming,” we are advancing our development of eco-friendly materials and products in anticipation of market needs and proactively working to expand into new business areas so as to promptly provide products and services that exceed expectations.

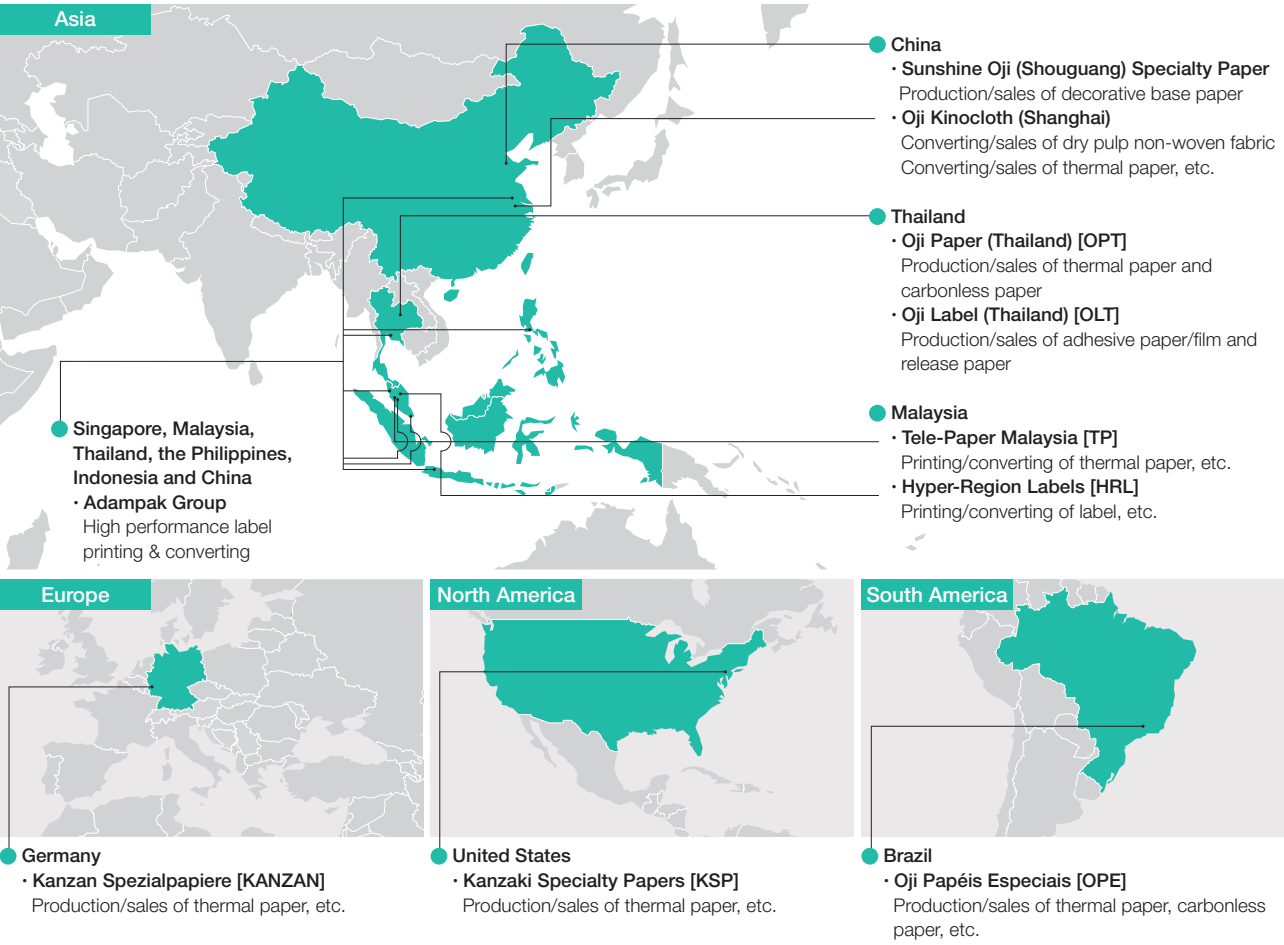


Oji Papéis Especiais



Coater newly installed at Oji Papéis Especiais

Main Overseas Sites



Bright future of thermal paper business

I have been working for paper converting companies for more than 20 years. In early 2018, I started working for Tele-Paper in Malaysia, and then in 2020, I was appointed as Mill Manager of Oji Paper (Thailand).

Seeing a gradual growth in consumption of label-grade thermal paper used for logistics carton, in addition to POS receipt in the thermal paper market in Southeast Asia, we strongly believe the thermal paper business has a bright future.

Thermal paper enables printing of variable information, and the preserving quality of the printed information is being advanced. Thermal paper is now indispensable to our life. I, as Mill Manager, am committed to ensure stable supply of high quality products to our customers.

We will continue to show our presence as a leading company in the thermal paper and non-carbon paper business.

Voice



Huang Chun Wei (James)  
Oji Paper (Thailand) Ltd.  
Deputy Managing Director,  
Mill Manager



Forest Resources and Environment Marketing Business



We are comprehensively leveraging assets owned by the Group, including pulp, renewable energy, afforestation, and lumber processing to promote enhancement of the business.

**Yuji Onuki**  
President, Forest Resources and Environment Marketing COMPANY  
Executive Officer  
Oji Holdings Corporation



Dissolving pulp (for general rayon and special items)



CENIBRA's pulp products warehouse



Nursery where eucalyptus varieties are selected and raised (CENIBRA in Brazil)

Pulp Business

We produce a diverse lineup of pulp grades including hardwood kraft pulp, softwood kraft pulp, and dissolving pulp. With 2.5 million tons per year market pulp supply capacity, we are boosting sales globally including in Asia, Europe and North America.

Energy Business

We are promoting the electric power generation business by establishing and expanding electricity generation facilities using renewable energy, including wood biomass, hydroelectric power, and solar power. Leveraging our sites in Japan and overseas, we are also working to strengthen purchase and market supply of biomass fuels in line with the energy business expansion.

Lumber Processing Business

We are expanding production capacity, and are purchasing and selling lumber and processed lumber products, primarily in Asia and Oceania. In Japan, we are also seeking to strengthen profitability through sales expansion in the building materials field and other measures. We're expanding sales at offices we established in China and Southeast Asia.

Forest Plantation Business

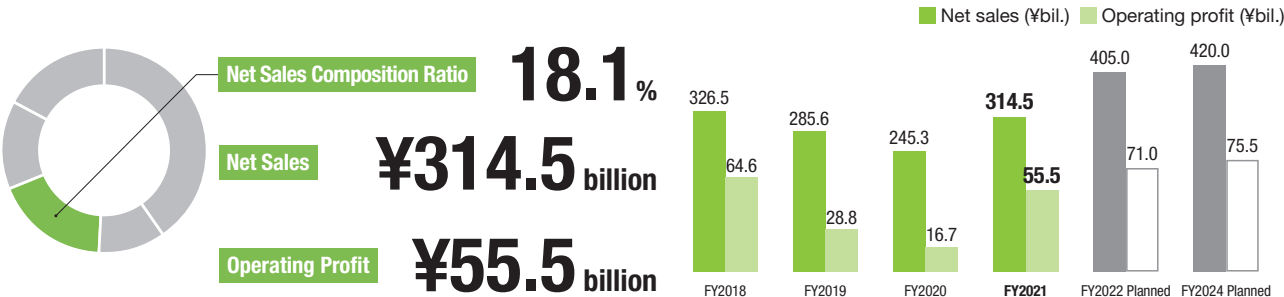
We grow and manage company-owned forests in Japan and overseas. Harvested wood are supplied for pulp raw materials, as well as for a range of applications such as lumber, plywood materials, and biomass fuels. With the goal of 400,000 ha of overseas forest plantations, we are also acquiring lands and expanding forest plantations.

Fuels/Chemicals and Other Material Procurement Business

Our centralized purchasing team buys a variety of chemicals and raw materials that are competitive and sustainable. We are committed to environmentally sustainable and socially responsible procurement in complying with Oji Group Partnership Procurement Policy.

Changes in Net Sales Composition Ratio, Net Sales and Operating Profit

Sales target for FY2030: ¥600.0 billion



Segment Overview

In FY2021, we had net sales of 314.5 billion yen (up 69.2 billion yen from FY2020) and operating profit of 55.5 billion yen (up 38.8 billion yen from FY2020). In the pulp business, we worked to enhance our competitiveness through acquisition of our overseas sites as wholly-owned subsidiaries and other measures. Sales and profits increased due to an increase in the selling price of pulp and a recovery in demand for dissolving pulp. In the energy business, while strengthening the biomass generation business aiming to expand the use of renewable energy, electricity sales decreased due to an increase in in-house electricity consumption as a result of higher capacity utilization at plants.

In FY2022, net sales of 405.0 billion yen (up 90.5 billion yen from FY2021) and operating profit of 71.0 billion yen (up 15.5 billion yen from FY2021) are planned.

Expanding Renewable Energy and Other Energy Businesses

<Business expansion by leveraging fuel procurement advantages>

In the energy business, we are expanding the business with the aim of expanding the use of renewable energy. A biomass power generation facility in Tokushima Prefecture being built as part of a joint venture with ITOCHU ENEX CO., LTD. is preparing for operations to begin in 2022. Additionally, we are reinforcing the biomass fuel business in conjunction with expansion of the energy

business. In Japan, we are increasing production of fuel woodchips by making use of unused wood resources. Overseas, efforts to increase procurement of palm kernel shells for use as fuel continue in Indonesia and Malaysia, while ensuring lawfulness and maintaining sustainability.

Oji Group's Power Generation Sites

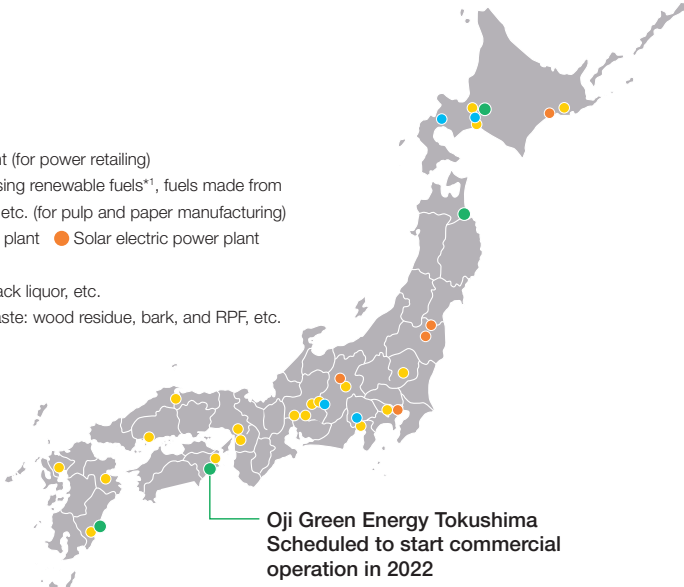
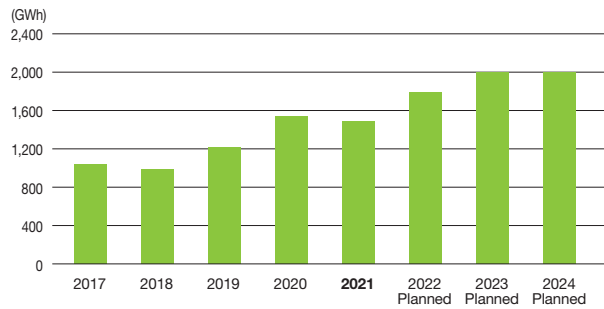
**Oji Green Energy Tokushima**  
Operation to commence in 2022 (within the Oji Paper Tomioka Mill)  
Generating capacity: 74,950 kW  
Joint venture with ITOCHU ENEX

**Others**  
Initiatives that seek to contribute to the development of a low-carbon society including the fuel procurement business for biomass power generation, hydroelectric power business, and other businesses

- Biomass power plant (for power retailing)
- Power generation using renewable fuels\*1, fuels made from waste\*2, fossil fuels, etc. (for pulp and paper manufacturing)
- Hydroelectric power plant
- Solar electric power plant

\*1 Renewable fuels: black liquor, etc.  
\*2 Fuels made from waste: wood residue, bark, and RPF, etc.

Changes in Electricity Sales



Biomass fuels (wood-based fuels)



Enhancement and Expansion of Pulp Business

In the pulp business, we continue to implement strategic profit measures at key business sites to reinforce business foundations that are resilient to fluctuations in pulp markets.

CENIBRA (Brazil)

- Enhance cost competitiveness and sales capabilities, and consider production increase, upon holding all voting rights of the company in May 2021
- Install most advanced & work saving manufacturing facilities

Pan Pac (New Zealand)

- Consider production increase to meet growing demand for folding cartons

Oji Fibre Solutions (New Zealand)

- Made the company a wholly-owned subsidiary in March 2022
- Implement measures to stabilize operations, improve yields, and conserve energy by introducing Oji Group's know-how and operational management methods

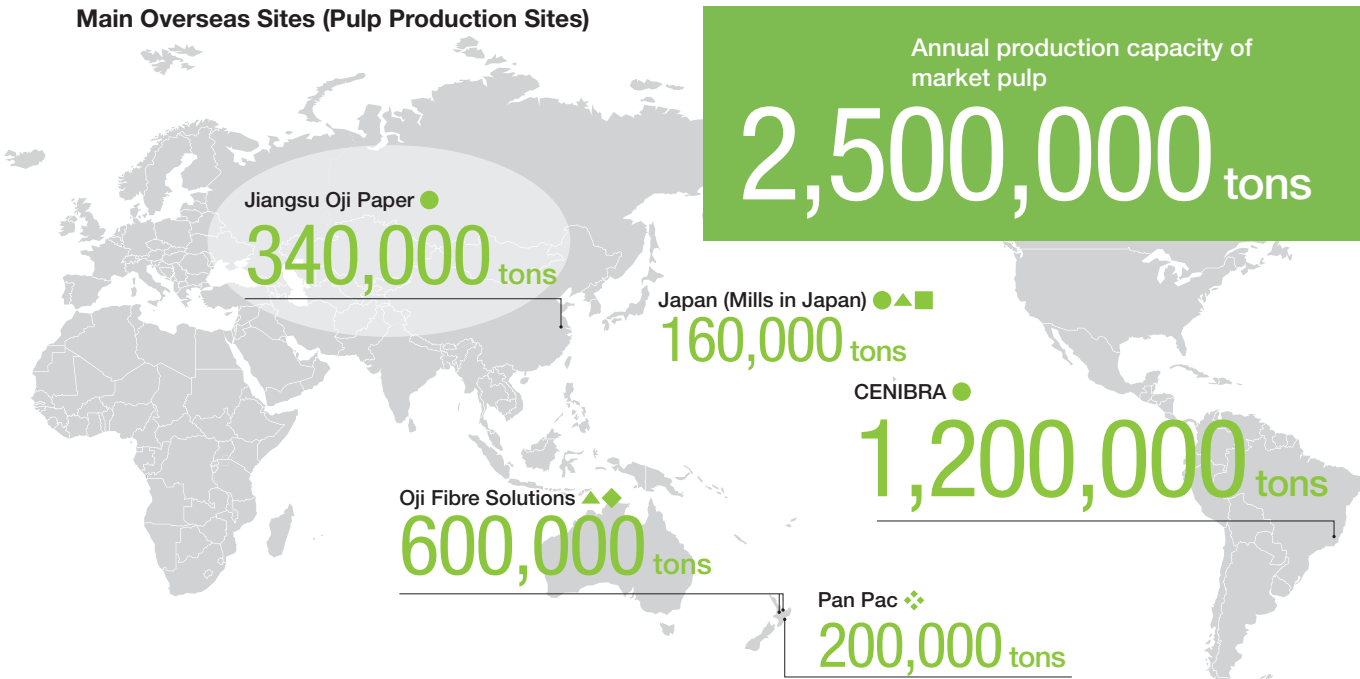
Dissolving pulp

- Consider production and sales increase of dissolving pulp with growth potential in light of increasing demand for apparel



Products are loaded onto a ship (CENIBRA)

Main Overseas Sites (Pulp Production Sites)



CENIBRA Mill (Minas Gerais, Brazil)



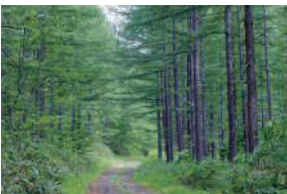
Pan Pac Mill (North Island, New Zealand)

Expanding Lumber Processing Business

<Utilization and expansion of company-owned forests in Japan>

The Oji Group owns and manages 188,000 ha of forests in Japan. This is the largest of all forests owned by private corporate entities in Japan. The Group initially owned forests for producing raw materials for paper. However, later, we have been enhancing the multiple values of forests, including growing raw wood for lumber production and environmental contribution through forest management.

- Promote effective utilization of existing company-owned forests through forest road development and promote acquisition of new forests
- Promote value added utilization of raw wood in our company-owned forests through integration with the



Company-owned forest (Engaru, Hokkaido)



Oji Yoshimoto Seizai's lumber mill

lumber production business, including strengthening synergies with Oji Yoshimoto Ringyo and Oji Yoshimoto Seizai acquired in August 2021

- Collect and utilize unused trees (branches, leaves, tree-tops and other tree parts generated during the felling) for biomass fuels
- Promote efficiency of planting work by utilizing drones to transport seedlings

Topics – Sustainability –

Forestry Activities that Contribute to Achieving the Sustainable Development Goals (SDGs)

The UN Strategic Plan for Forests 2017-2030 indicates that forestry activities contribute to achieving SDGs goals, and establishes six goals for international society to achieve by the year 2030. This section introduces the Oji Group's initiatives towards the second Global Forest Goal, as an example.

Promote the Employment of Local Residents

The forest plantation business (KTH) in Central Kalimantan, Indonesia, creates approximately 5,000 jobs for its planting, harvesting, converting and shipment services, thereby contributing to the local economy.

Social Contribution Activities

In August 2021, the south of Central Kalimantan was hit by torrential rain, resulting in above floor flooding in 12 villages in South Arut and North Arut which are located near KTH's place of business.

KTH provided relief goods (such as approximately 3 tons of rice, 7 thousand packages of rehydratable noodles and 200 boxes of water) to these villages through the Regent of Kobar. (Right picture)

In response to this, Regent Nurhidayah stated, "I do appreciate KTH's sincerity and involvement in the local community, and would like to expect similar assistance from other companies."

We will continue to assist local residents in cooperation with local governments.

Global Forest Goal 2

Enhance forest-based economic, social and environmental benefits



The Global Forest Goal 2 includes 9 goals for SDGs.



Working in the way of Team Spirit to achieve 1 million tons of pulp sales in 2022

As the trading arm of Oji Group, Oji Paper International Trading (Shanghai) Co Ltd (OPIT) is dedicated to marketing pulp and forest-related products to customers in Asia. We have tried to increase pulp sales as much as possible since OPIT's establishment in 2010. We finally have the chance to reach a milestone-1 million tons of pulp sales in 2022.

One million tons is not an easy target to fulfill. We are facing a bunch of challenges and uncertainties: the cooling down of the Chinese economy, global logistic constraints, cost inflation and margin deterioration pressures for suppliers and customers, and unpredictable financial markets.

We, however, have a strong sales team, experienced, energetic but more importantly have a strong team spirit. Also, the market diversification we have been exploring in recent years enables us to minimize the ups and downs risk and to materialize stable sales in today's turbulent market environment.

Voice



James Li  
General Manager, Business Unit,  
Oji Paper International Trading  
(Shanghai)



Printing and Communications Media Business

We are increasing profitability and competitiveness by implementing the production system restructuring, etc. in light of demand structure trends through cooperation across group segments.

**Fumio Shindo**  
President, Printing and Communications Media COMPANY  
Senior Executive Officer  
Oji Holdings Corporation



**Newsprint Business**  
We hold approximately 30% share of the Japanese market for newsprint, and provide newspaper companies throughout the country with a stable supply of high-quality newsprint.



**Printing and Publication Paper Business**  
We have various types of printing paper used for different applications including books, magazines, and catalogs, etc.



**Communications Paper Business**  
We provide various output media for information processing systems, including copying paper and forms.

Collaboration with Other Group Segments by Maximizing the Use of Assets Owned

We are working to improve profitability and competitiveness, including building optimized production systems for the entire group through collaboration with other group segments by determining future demand trends, and maximizing effective use of pulp manufacturing facilities, biomass boilers, and other assets. In October 2021, we converted a newsprint machine to a machine for manufacturing containerboard at Tomakomai Mill. In April 2022, we also started operation of a special liner and special paperboard machine relocated from Nayoro Mill of Oji Materia at the same mill. Other than this, we are producing high-quality dissolving pulp by introducing most advanced continuous industry processes for existing kraft pulp manufacturing facilities at Yonago Mill.

Overseas, utilizing existing pulp manufacturing facilities and biomass boilers, etc., we built a new household base paper machine at Jiangsu Oji Paper (China) (started operation in 2020).

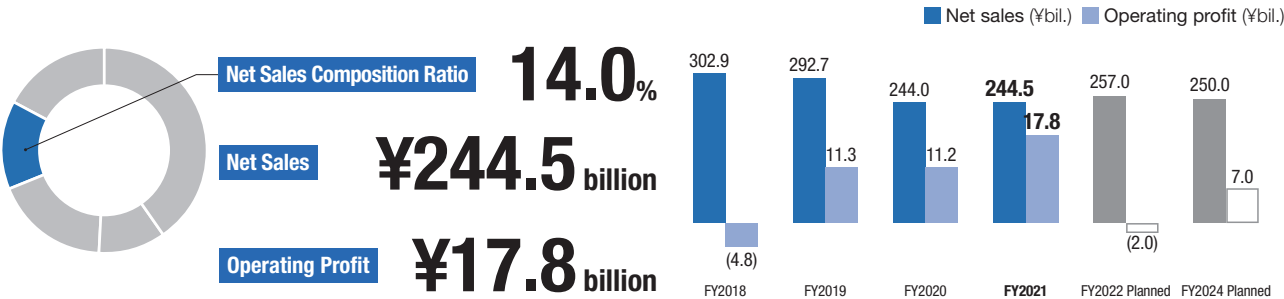


The #L-1 machine (retrofit of the #N-5 machine) at Tomakomai Mill



The #12 machine at the Tomakomai Mill (relocated from Nayoro Mill)

Changes in Net Sales Composition Ratio, Net Sales and Operating Profit Sales forecast for FY2030: ¥150.0 billion

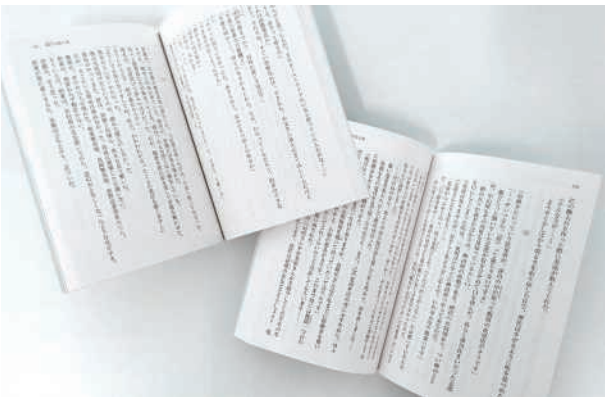


**Segment Overview**  
In FY2021, we had net sales of 244.5 billion yen (up 0.5 billion yen from FY2020) and operating profit of 17.8 billion yen (up 6.6 billion yen from FY2020). While demand for communications paper declined due to the growth of teleworking and the trend of digitization of office documents in addition to continued decline in demand for newsprint and printing paper for publication use, sales volume of printing paper for commercial printing use recovered due in part to the rebound from the stagnation of economic activity. In addition, since the effect of higher raw materials and fuel prices was offset in part by thorough cost savings at each production process, sales and profits increased.  
In FY2022, net sales of 257.0 billion yen (up 12.5 billion yen from FY2021) and operating loss of 2.0 billion yen (down 19.8 billion yen from FY2021) are planned.

Enhancement of Competitiveness through Product Development

In these days, in connection with GX (green transformation) strategy on which importance is placed in business activities, products and services which contribute to the reduction of environmental burden are required to realize a decarbonized and sustainable society. Oji Paper meets our customers' green procurement policy requirements, including by developing light weight printing paper which helps reduce greenhouse gases from production and transport of publications and expanding a lineup of FSC certified PPC paper products based on the principle of sustainable forest management. Working together with a publishers, we have also developed common-use pocketbook paper by integrating the qualities of paper products, each of which was used exclusively for each of the publisher's labels. This contributes to the GX strategy in terms of increased logistics efficiency.

In the meanwhile, we are working on the review of our range of products and consolidation of paper products for offset printing in order to enhance efficiency and energy conservation in the manufacturing process. We also renewed paper products compatible with high-speed ink jet printers for business forms, with respect to which



"Oji Common-Use Pocketbook Paper" we developed

multi-product, small-lot printing will expectedly produce the effect of shorter delivery periods and stock reduction, and these renewed products are well received. As explained above, we capture market needs accurately and work on the product development which contributes to the reduction of environmental burden.

Topics – Sustainability –

To reduce greenhouse gas (GHG) emissions to address climate change issues, we are proactively working to achieve Environmental Action Program 2030 including by improving production efficiency, continuing to reduce energy consumption, and utilizing renewable fuels and waste fuels. A key area for the reduction is the expanded use of non-fossil fuels and biomass fuels as alternatives to coal. We will make specific considerations on the conversion of these fuels, through "Tomakomai Mill #6 Boiler Fuel Conversion Experiment Project," which was adopted by the Ministry of Economy, Trade and Industry for its "Subsidy for Design and Experiment Project toward Facilitation of Investment in Low-carbonization in Base Material Industry."

In addition, in connection with the effective use of resources (paper/water recycling), we are working to protect resources and reduce waste by promoting the use of recovered paper, and promoting the effective use of waste and water resources in our manufacturing processes. Furthermore, we are offering a wide range of environmentally friendly products such as FSC-certified paper, eco mark certified products, products compliant with the Green Purchase Act, thereby addressing environmental issues and contributing to the realization of a sustainable society.



Corporate Management Group and Shared Service Companies



Environmentally-friendly paper food containers proposed by Kyokuyo

Kyokuyo

Kyokuyo Co., Ltd. is a trading company that proposes and develops solutions to customers' problems from users' perspective. It purchases and sells various products of the Oji Group and other companies mainly in paper and packaging fields. These products include synthetic resin materials and products, packaging materials, chemicals, and machinery, from upstream (raw and other materials) to downstream (finished products). Leveraging its proposing ability, development ability and comprehensive ability to accommodate diversifying needs in the changing social environment, it is working to evolve paper and packaging, pursuing to create a more enriched society.



Industrial water production system

Oji Engineering

Oji Engineering Co., Ltd. leverages its technologies accumulated through paper manufacturing to offer one-stop engineering services ranging from facility design to operations. It actively pursues new services, including those relating to waste water treatment in the water environment business, and fuel handling facilities in the biomass power generation business. In addition, it is also promoting technical support for digital transformation (DX), such as enhanced safety education utilizing VR-simulated disaster experience, remote maintenance using drones equipped with thermographic cameras, as well as realization of working style reforms through improved operational efficiency using IoT technology.



Environmentally-friendly containers using biomass plastic

Ginpo Pack

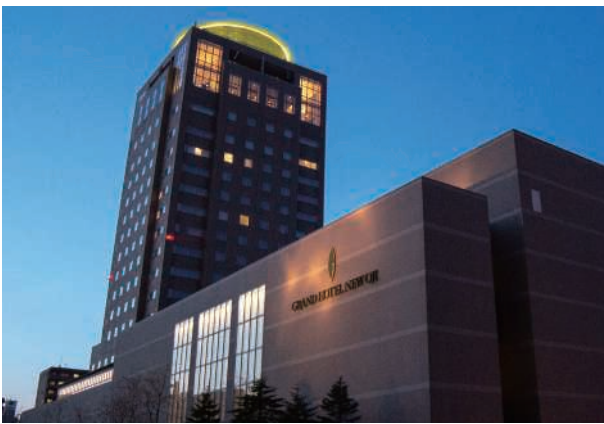
Ginpo Pack Co., Ltd. is a manufacturer which conducts integrated planning, production, and sales of plastic containers for food packing. It offers high-quality packages with unique packaging materials, using its many patents and state-of-art technologies. The new material "Pulfine" in which a high foaming ratio is realized with a single material, is more resistant to heat and more durable than ever and can reproduce steaming hot home cooking when using a microwave oven. Ginpo is also committed to the development of environmentally-friendly containers using plant-derived biomass plastic.



A roll-on roll-off (RORO) ship that can transport vehicles carrying goods

Oji Logistics

As a shared service company, Oji Logistics Co., Ltd. operates mainly domestic and international logistics services for Oji Group products. In addition to the existing operations, this year it made full-scale entry to 3PL (third party logistics) services, using Urayasu Branch as its base. It is now changed into a warehouse, operating 24 hours a day and 365 days a year as a hub for consumer goods and e-commerce whose demand is growing mainly in the Greater Tokyo area. It is also accommodating a change in the operating environment surrounding the logistics industry such as "Logistics 2024 Issue," to earn trust from customers of the Oji Group and other companies.



The Grand Hotel New Oji

Hotel New Oji

Hotel New Oji Co., Ltd. is engaged in the hotel and flight catering businesses. Grand Hotel New Oji, a 16-story city hotel which is located in the center of Tomakomai City, Hokkaido and has a banquet hall with a maximum capacity of 1,000 guests, three restaurants (Japanese, Western and Chinese), bar and shops, is a landmark in Tomakomai. In addition to this hotel business, we prepare a wide variety of high quality inflight meals for domestic and overseas airlines in the catering building at the New Chitose Airport and also load the meals onto aircraft using large, specialized vehicles.



Oji General Hospital

Oji General Hospital

Oji General Hospital has 440 beds (of which 8 are in the ICU) and 24 departments, providing advanced and quality medical care as a key hospital in the Higashi-iburi and Hidaka medical area. It is designated as disaster base hospital, regional cancer treatment collaboration hospital, and regional perinatal maternal and child medical center, and also provides guidance and training for residents as a designated clinical training hospital. In addition, it has the nursing care facility for the elderly, "Care Life Oji," in-house nursing care supporting office Oji, and the central regional comprehensive support center entrusted by Tomakomai City, working to provide secure and safe medical service.



Oji Homes Aoyama (Minamiaoyama, Minato-ku, Tokyo)

Oji Real Estate

Oji Real Estate Co., Ltd. is a general developer active nationwide in the management and effective utilization of the Oji Group's owned land and the development and sales of quality-oriented condominiums, single-family homes and developed residential land, as well as lease and management of office buildings, condominiums, and commercial facilities, and the renovation business. It also has a construction and design division (first-class registered architect office) with good reputation for its technical capability, and conducts design, supervision, and consultation in a wide range of areas including factories and plants as well as public and private facilities.



Drink cartons made using base paper manufactured by the Oji Group

Ishizuka-Oji Paper Packaging

Ishizuka-Oji Paper Packaging Co., Ltd. operates the paper beverage container business by combining the Oji Group's expertise in manufacturing and processing paper with ISHIZUKA GLASS Co., Ltd.'s expertise in processing and filling paper containers for a diverse range of contents. By having in place a domestic integrated production system covering papermaking of base papers through to laminate processing and beverage packaging, and selling superior filling equipment from both Japan and overseas, as well as providing service and maintenance, it is working to ensure the stable supply of high-quality, safe, and dependable products to dairy and beverage manufacturers throughout Japan.