



OJI HOLDINGS



Renovating the 1st floor entrance of Oji Holdings head office building (scheduled to open in Oct. 2022).  
Creating a space where you can feel "nature" and "forests" in Ginza, Tokyo, under the concept of "forest fields".

# FY2022-2024 Medium-term Management Plan



May 31, 2022  
Oji Holdings Corporation

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# **I . FY2019-2021 Medium-term Management Plan**



# 1. Group's Basic Policy

## Achievement

## Ongoing Challenges

### Profitability Improvement of Domestic Business

- **Optimization of Production Structure**  
Shutting / utilizing own facilities, etc.
- **Expansion of Growing Businesses**  
Building new plants of corrugated containers and household papers, biomass power plants, etc.



- **Strengthen highly-expected businesses besides optimization**

Restructuring across group segments

Expansion of eco-friendly businesses

### Expansion of Overseas Business

- **Expansion of Packaging Business**  
Starting up containerboard machine in Malaysia, 4 corrugated container plants in SE Asia & India
- **Expansion of Disposable Diaper, Thermal Paper and Pulp Businesses**



- **Further expand overseas business utilizing existing units**

M&A, Strategic investment

Synergize group businesses and units

### Promotion of Innovation

- **Development of Materials and Products**

- **Expedite commercialization**

Eco-friendly materials & products (Substitutes for plastic, Biomass plastic & film, etc.)

Advancement into medical fields (Establishment of Oji Pharma, Oji Medicinal Plants Laboratory)

Total Solution (Launching auto-packaging system, Domestic integrated production of liquid packaging, etc.)

### Contribution to a Sustainable Society

- Establishment of "Environmental Vision 2050" & "Environmental Action Program 2030"
- Fixation of Sustainable Business Model



- **Execute Action Plans**

Convert energy

Expand plantation

Increase renewable energy consumption

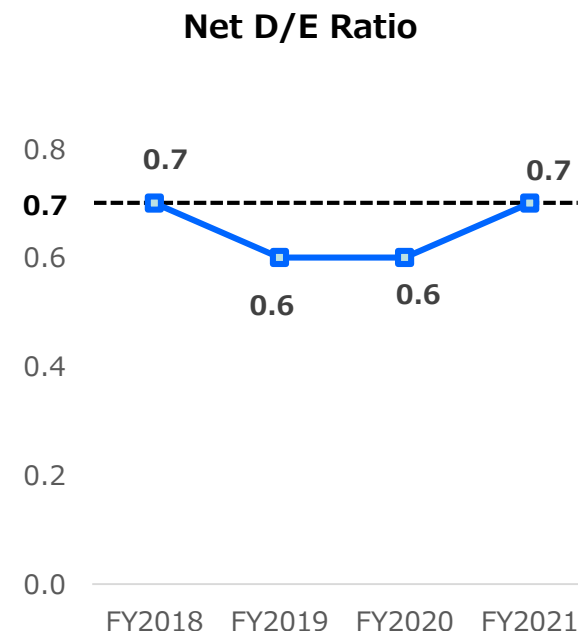
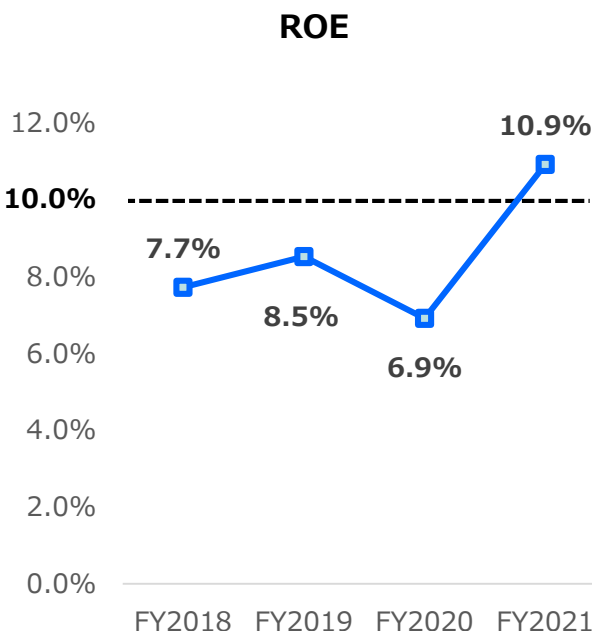
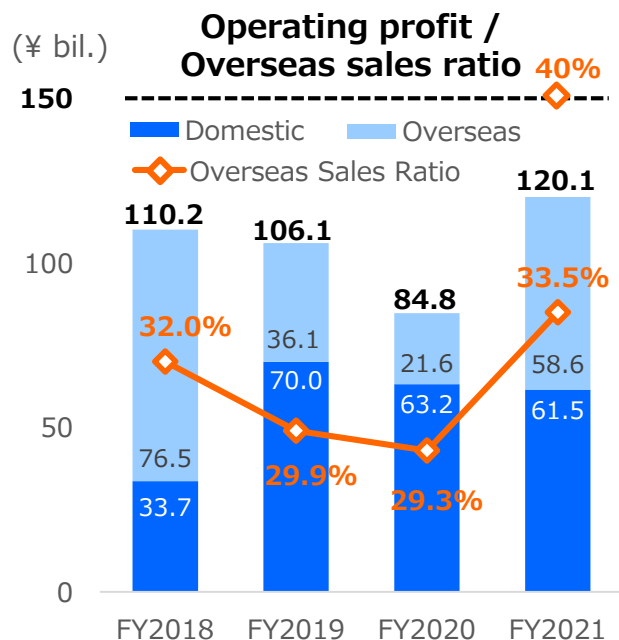


## 2. Numerical Management Targets

Numerical Management Targets for FY2021			FY2021 Results
Operating profit (consolidated)	More than <b>¥150.0 billion</b>	Continue stable profit of more than ¥100.0 billion	<b>¥120.1 billion</b>
Overseas sales ratio	<b>40%</b>	Aim for 50% at an early point	<b>33.5%</b>
ROE	<b>10.0%</b>		<b>10.9%</b>
Net D/E Ratio	<b>Status quo*</b>	*FY2018 Result : 0.7	<b>0.7</b>



Record profits were achieved, although some numerical targets were missed due to the impact of Covid-19 and other factors.





## **II. Long-term Vision**

# 1. Management Policies

## Management Philosophy

**Creation of  
Innovative Value**

**Contribution to Future  
and the World**

**Harmony with Nature  
and Society**

## 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.



## 2. Mid-to-Long Term Social Issues / Megatrends

### Mid-to-Long Term Social Issues / Megatrends

#### ◆ Importance of Recycling-oriented Society

- Climate Change
- Natural Disaster
- Crisis of Biodiversity
- Exhaustion of Resources  
(incl. food and water issues)
- Environmental Pollution  
(Ocean plastic pollution, etc.)

#### ◆ Growing Concern on Human Rights

#### ◆ Diversified Values and Work Styles

◆ Economic maturity and low birthrate & longevity in developed countries, Economic growth and population increase in developing countries

◆ Longevity, Growing hygiene awareness from pandemic

◆ Technology development, Spread of remote/ non-contact practice from pandemic

◆ Concern on international political / social risks

### The Necessary for OJI Group

✓ Fixation of **Sustainable Business Model**

✓ Promotion of **Green Innovation**

✓ Strengthened Initiatives for Human Rights

✓ Strengthened Initiatives for Inclusion & Diversity

✓ **Expansion & Strengthening of Overseas Business**  
(especially in Southeast Asia)

✓ **Further Transformation of Domestic Business Structure**

( Increasing Demand : Packaging, Household and consumer business  
Decreasing Demand : Newsprint, Printing & Communication paper )

✓ Responsibility for stable procurement of raw materials & stable product supply



# 3. Group's Basic Policy

## Group's Basic Policy "Growth to Evolution"

### 1. Initiatives for Environmental Issues -Sustainability-

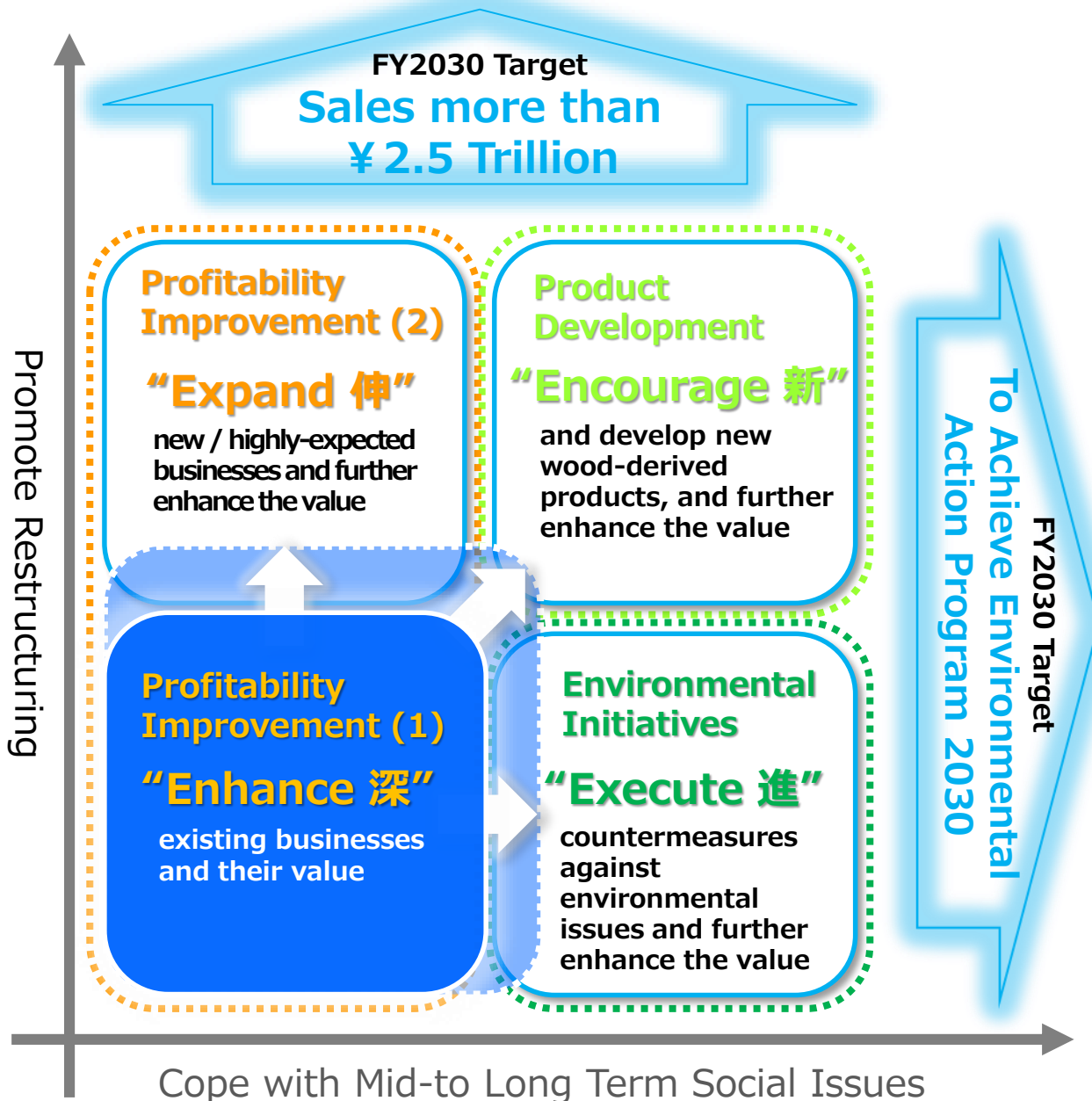
- Reduction of Greenhouse Gas
- Expansion of Net Absorption Volume by Forests

### 2. Initiatives for Profitability Improvement -Profitability-

- Enhancement of Existing Businesses
- Expansion of Highly-expected Businesses

### 3. Initiatives for Product Development -Green Innovation-

- Development of Wood-derived Products



# 4. FY2030 Targets (1) Environmental Action Program 2030


## Environmental Action Program 2030

1

Action on climate change

- ◆ Greenhouse gas (GHG) emissions

At least 70% reduction compared to FY2018




CENIBRA's forest plantation

➔ pg.19-22

2

Abundant forests creation & resource recycling

- ◆ Sustainable forest management (Forest recycling)
- ◆ Resource recycling (Paper & Water recycling, etc.)




Water treatment business / ultrafiltration membrane facilities

➔ pg.18, 23

3

Consideration for ecosystem

- ◆ Challenge for **Zero** environmental impact
- ◆ Biodiversity conservation



Fairy pitta

➔ pg.24

4

Development of trusting relationships with our stakeholders

- ◆ Responsible raw material procurement & manufacturing
- ◆ Expansion of products that contribute to a decarbonized society
- ◆ **Zero** environmental incidents & **Zero** product liability incidents



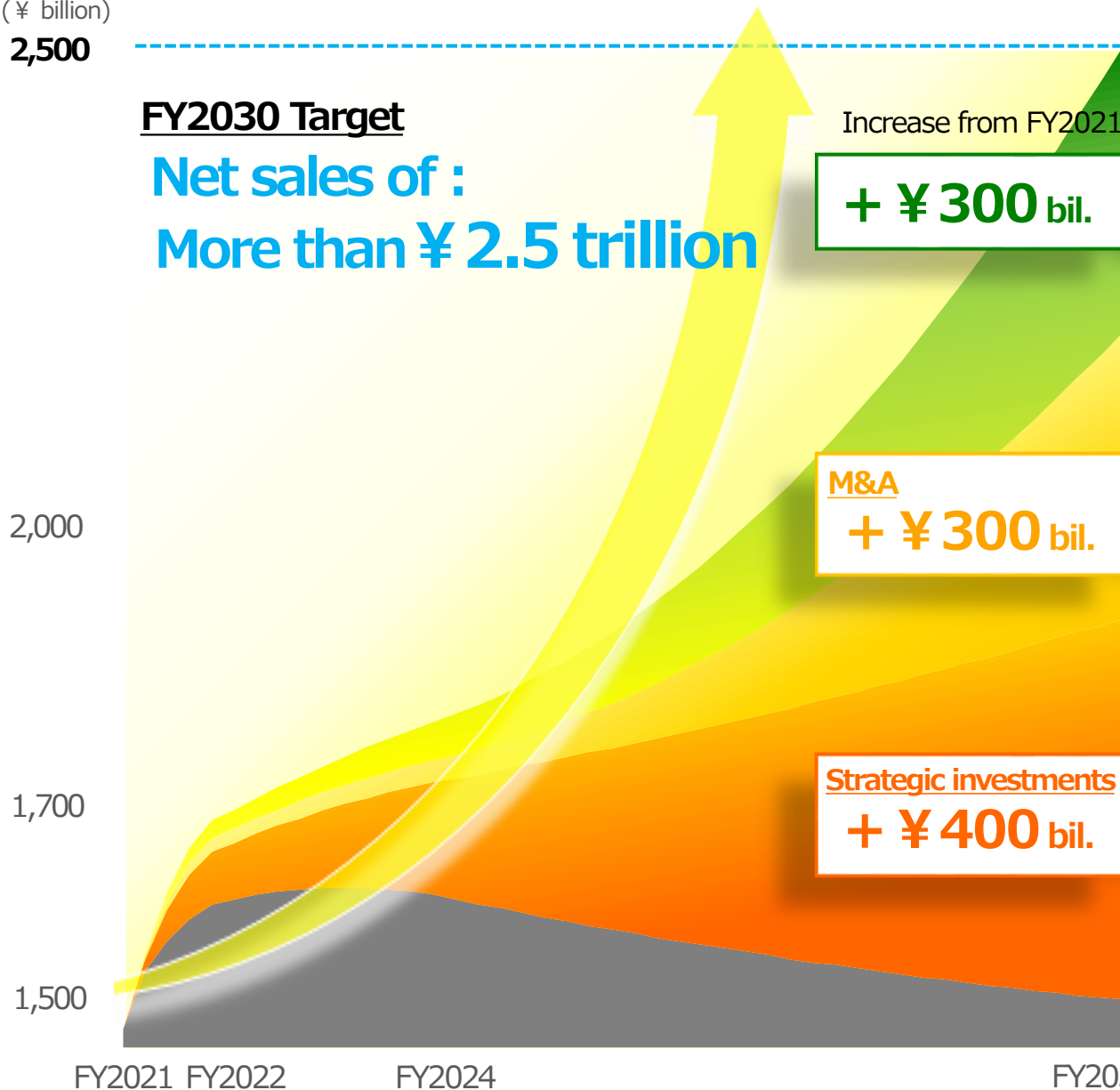
## Environmental Vision 2050 Achieving Net-zero carbon & Harmony with nature and society

# 4. FY2030 Targets (2) Sales Target

(¥ billion)  
2,500

## FY2030 Target

# Net sales of : More than ¥ 2.5 trillion



Increase from FY2021

**+ ¥ 300 bil.**

### Development of new products & eco-friendly products

- ◆ High performance films
- ◆ Renewable energy business
- ◆ Development of new products & eco-friendly products

### Strategic investments & M&A

- ◆ Corrugated container business in Japan & overseas
- ◆ Household paper business & disposable diaper business
- ◆ Overseas imaging media business
- ◆ Pulp business
- ◆ Effective utilization of owned facilities etc.

**M&A**  
**+ ¥ 300 bil.**

**Strategic investments**  
**+ ¥ 400 bil.**

**Existing businesses** (decreasing demand for printing & communications media)

FY2021 FY2022

FY2024

FY2030

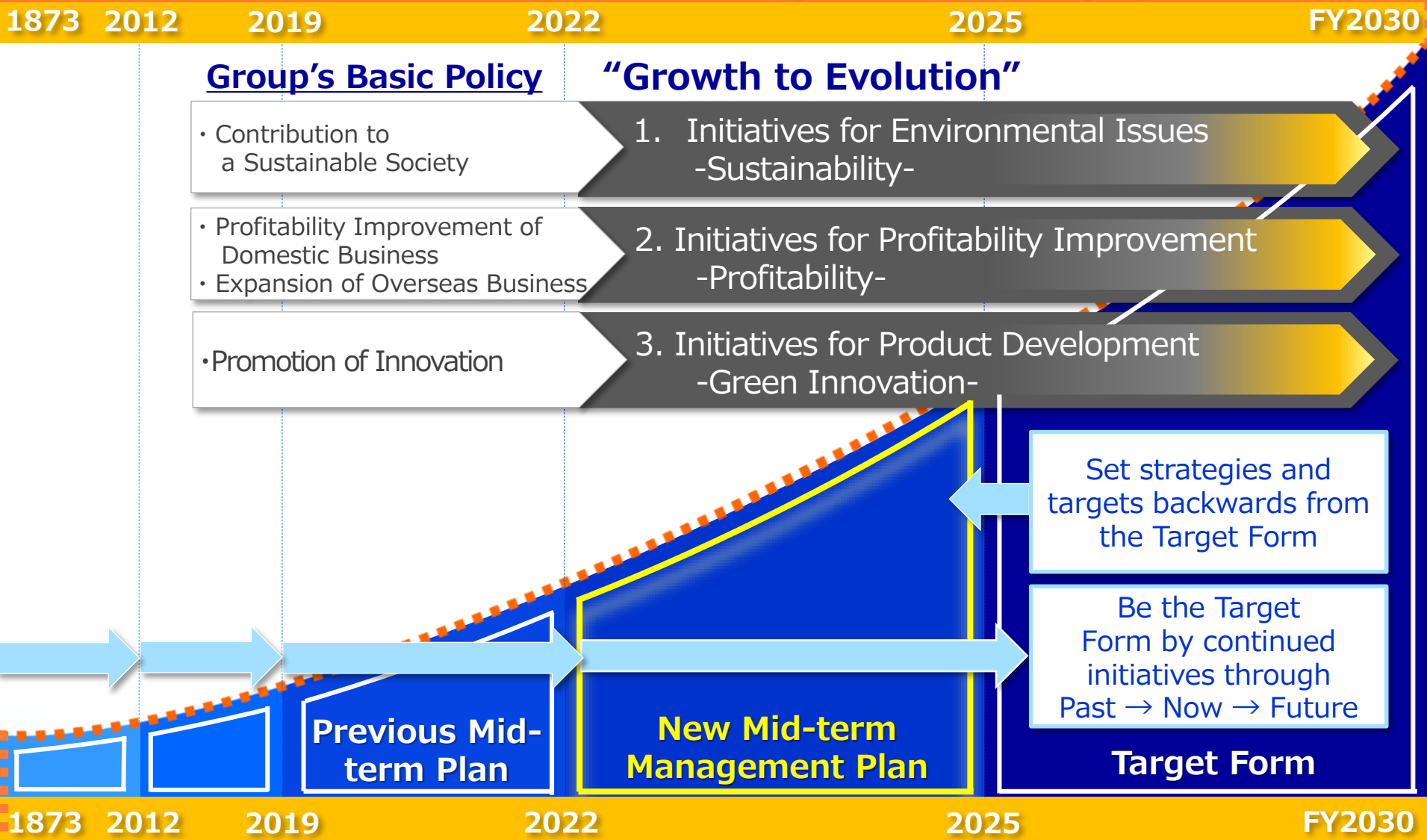


## **Ⅲ. FY2022-2024 Medium-term Management Plan**



# 1. Looking ahead to Long-term Vision

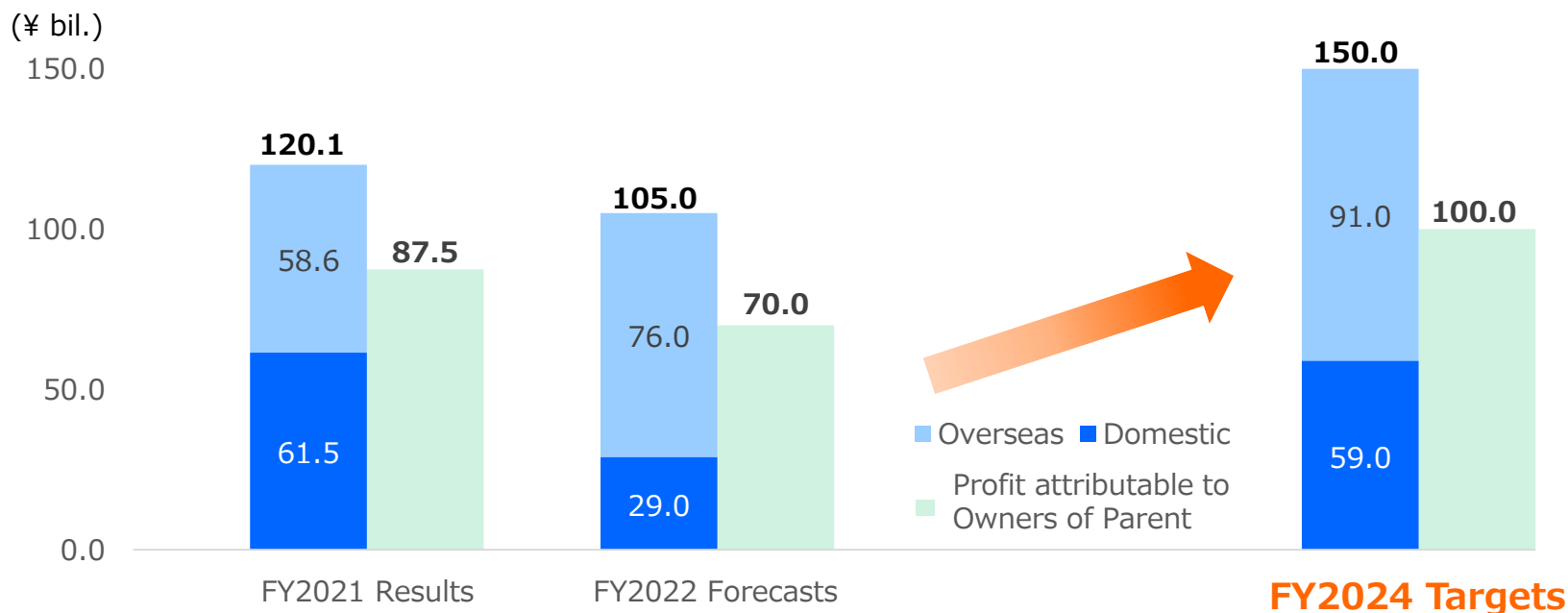
## Towards the realization of Management Philosophy and Purpose



## 2. Numerical Management Targets [FY2024 Targets]

### Numerical Management Targets for FY2024

<b>Operating profit (consolidated)</b>	<b>More than ¥150.0 billion</b>	<b>Overseas Sales Ratio</b>	<b>40%</b> (Aim for 50% in the future)
<b>Profit attributable to Owners of Parent</b>	<b>More than ¥100.0 billion</b> (Continue stable profit of more than ¥100.0 billion)	<b>Net D/E Ratio</b>	<b>0.7 Maintained</b> (End of March 2022 : 0.7)



#### Assumptions for the Medium-term Management Plan

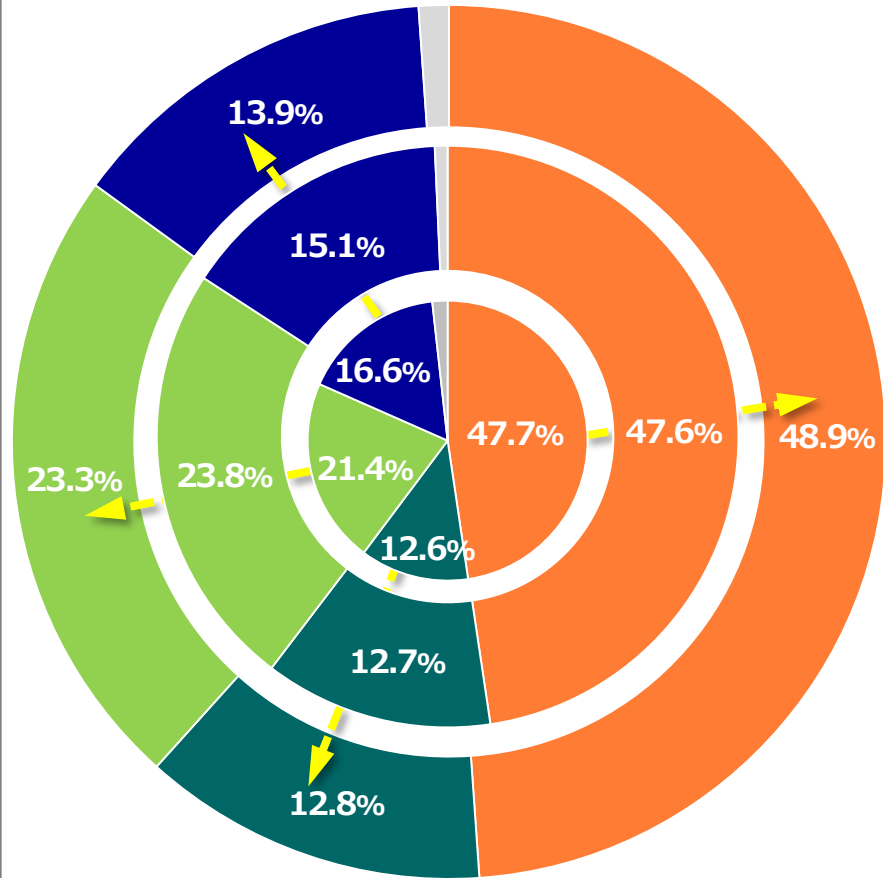
■ Exchange rates : remains at the same level of FY2022F  
130JPY/US\$

■ Product prices : remains at the same level of FY2022F

■ Raw material & fuel prices : remains at the same level of FY2022F  
Coal : Australia coal price 300US\$/t  
Heavy Oil : Dubai crude oil price 100US\$/bbl.

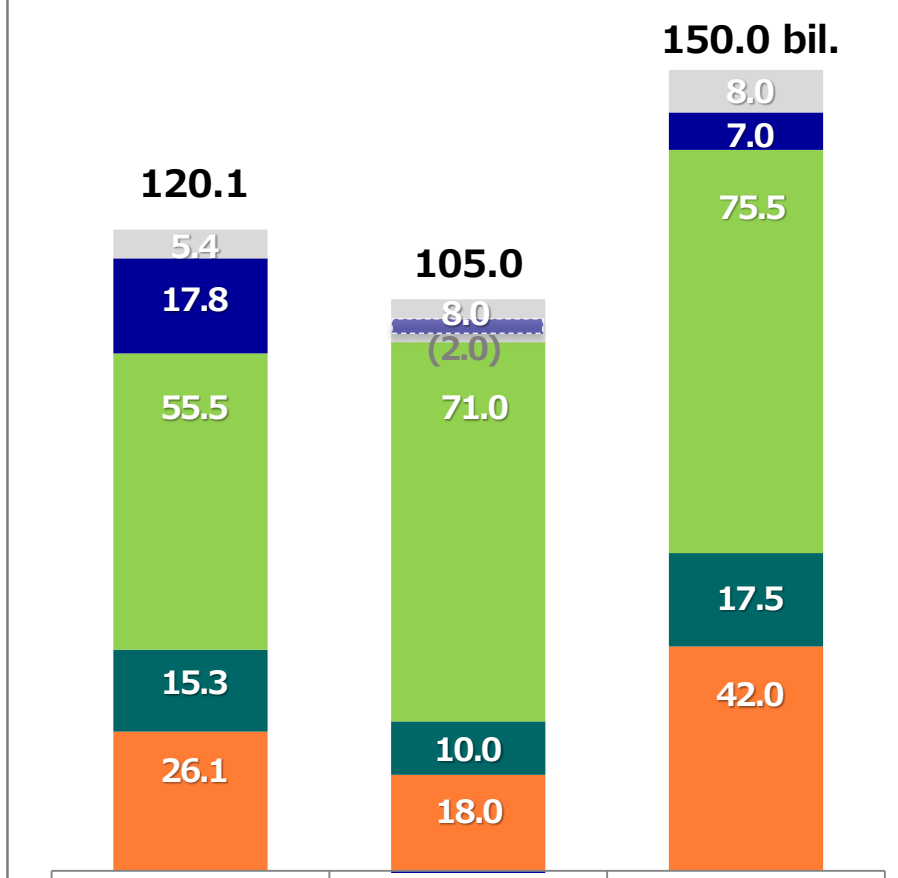
# 3. Sales and Operating Profit by Segment [FY2024 Targets]

### Net Sales by Segment FY2021 → FY2024



FY2021 Results **¥1,470.2 bil.** → FY2022 Forecasts **¥1,700.0 bil.** → FY2024 Targets **¥1,800.0 bil.**

### Operating Profit by Segment FY2021 → FY2024



Legend: Household & industrial materials (orange), Functional materials (teal), Forest resources & environment marketing (green), Printing & communications media (dark blue), Others (grey)

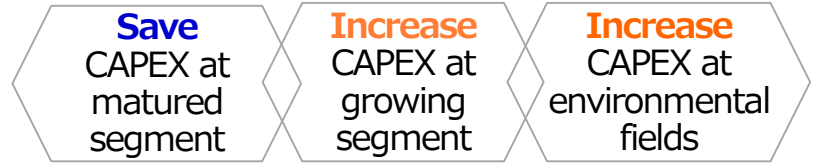
\*Sales include inter-segment sales  
\*Others include adjustment amount

# 4. Financial & Investment Plan

## Financial Plan FY2022-24

- Long-term stable dividend as base policy
- Gradual increase will be considered based on profit/finance status

### Steady & proper execution of Group's Basic Policy



**Dividend ( ¥ 50 bil.)**

**Cash flow  
+ ¥ 600 billion**

\*Assuming D/E: 0.7

**Upkeep  
CAPEX  
( ¥ 150 bil.)**

#### CAPEX to Growing Segments

- Build corrugated container plants in Japan/overseas (Tochigi, Malaysia, Vietnam)
- Install adult disposable diaper machine (Fukushima)
- Install film facilities for next-generation vehicles (Shiga, 2units)
- Install biomass power plant (OJI Green Energy Tokushima)
- Pulp facility improvement (CENIBRA, OjiFS) etc.

#### CAPEX to cope with Environmental Issues

- Expansion of plantation area
- Conversion of coal boilers to gas
- Installation of solar power equipment

**Strategic  
CAPEX  
( ¥ 400 bil.)**

Under  
consideration

Executing  
Environmental



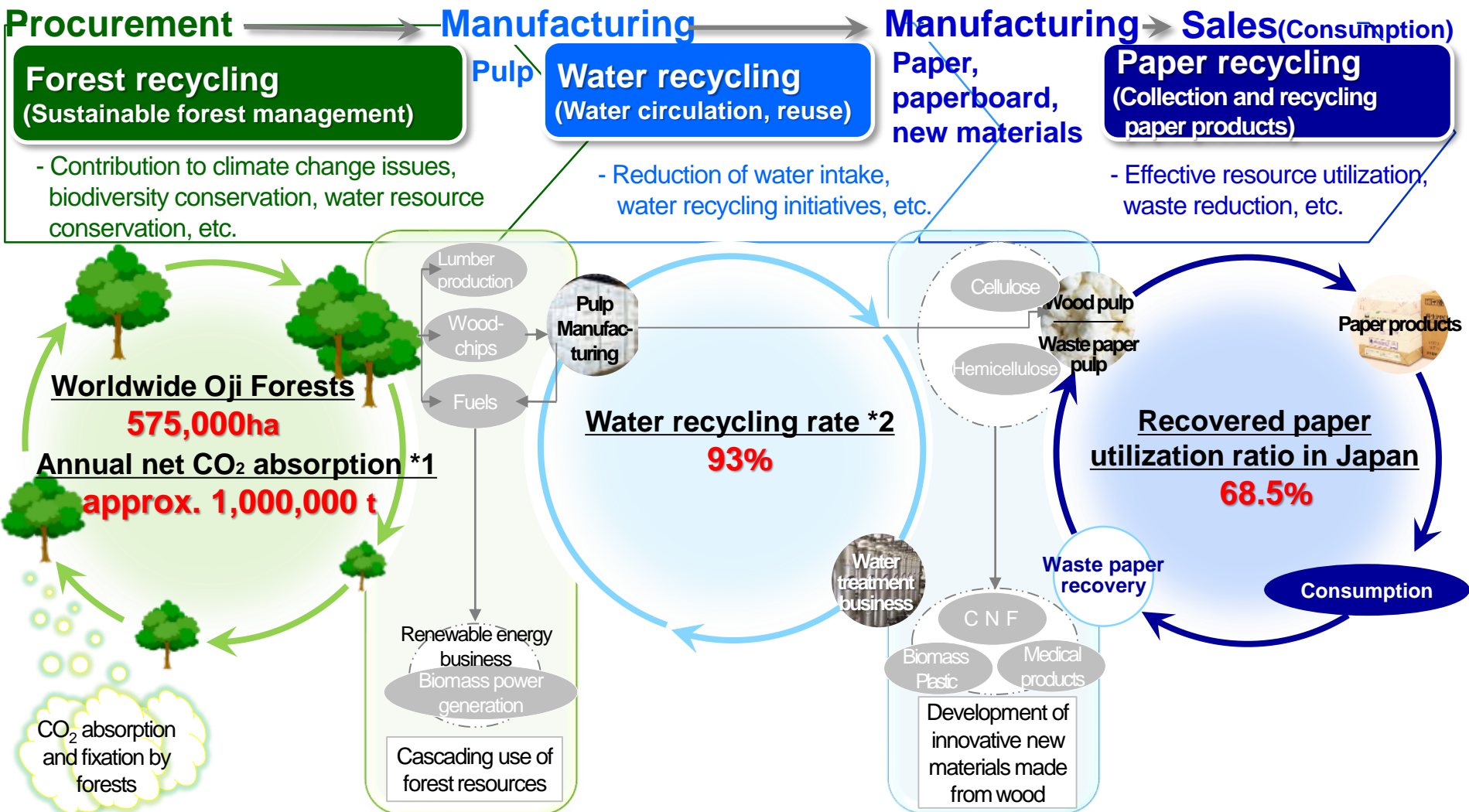


## **IV. Initiatives for Environmental Issues -Sustainability-**

# 1. Sustainable Business Model

## Recycling Business Model

## Sustainable Society



\*1 net CO<sub>2</sub> absorption: annual CO<sub>2</sub> absorption with growth of forests – annual CO<sub>2</sub> emission by harvesting

\*2 water recycling rate : the amount of water recycled / the amount of water intake

# FY2030 GHG reduction target towards net-zero carbon by 2050

### <Reduction of GHG emissions>

**20% reduction**



compared to FY2018(\*1, 2)

= reduction of **1.5 million t-CO<sub>2</sub>e**

Investment by FY2030

¥ **100 billion**

### <Expansion of net CO<sub>2</sub> absorption by forests>

**50% reduction**



compared to FY2018 (\*1)

= reduction of **4.0 million t-CO<sub>2</sub>e**

Investment by FY2030

¥ **100 billion**

**70% reduction**  
compared to FY2018(\*1)



Investment by FY2030

¥ **200 billion in total**

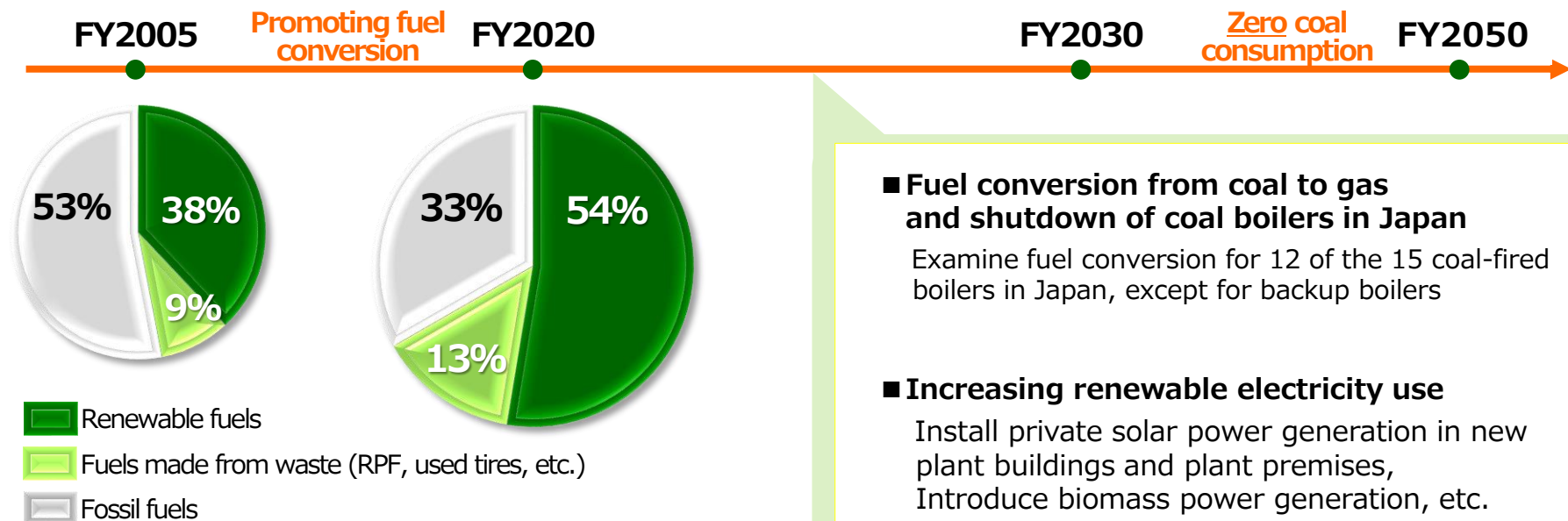
\*1: Includes CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O from renewable fuels and fuels made from waste.

\*2: 41% reduction in domestic CO<sub>2</sub> emissions from fossil fuels and purchased energy (compared to FY2013).

## 2. Action on Climate Change (2) Reduction of GHG Emissions

### Initiatives towards 2030 and 2050 (1) Reduction of GHG emissions

#### Use of Non-fossil Fuels



#### ■ Fuel conversion from coal to gas and shutdown of coal boilers in Japan

Examine fuel conversion for 12 of the 15 coal-fired boilers in Japan, except for backup boilers

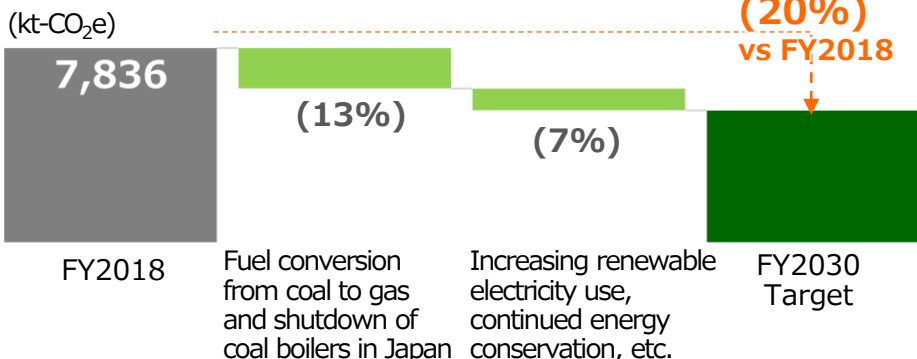
#### ■ Increasing renewable electricity use

Install private solar power generation in new plant buildings and plant premises, Introduce biomass power generation, etc.

Oji Container Tochigi Plant  
Solar power generation  
Startup in  
Mar. 2023 (scheduled)



#### ◆ Prospect for reduction of GHG emissions



#### ■ Continued energy conservation (Improving energy efficiency)

etc.



## 2. Action on Climate Change (3) Expansion of net CO<sub>2</sub> absorption by forests- 1

### Initiatives towards 2030 and 2050

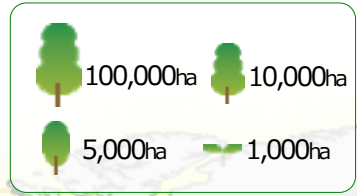
### (2) Expansion of net CO<sub>2</sub> absorption by forests

◆ Oji Forests

**575,000** ha

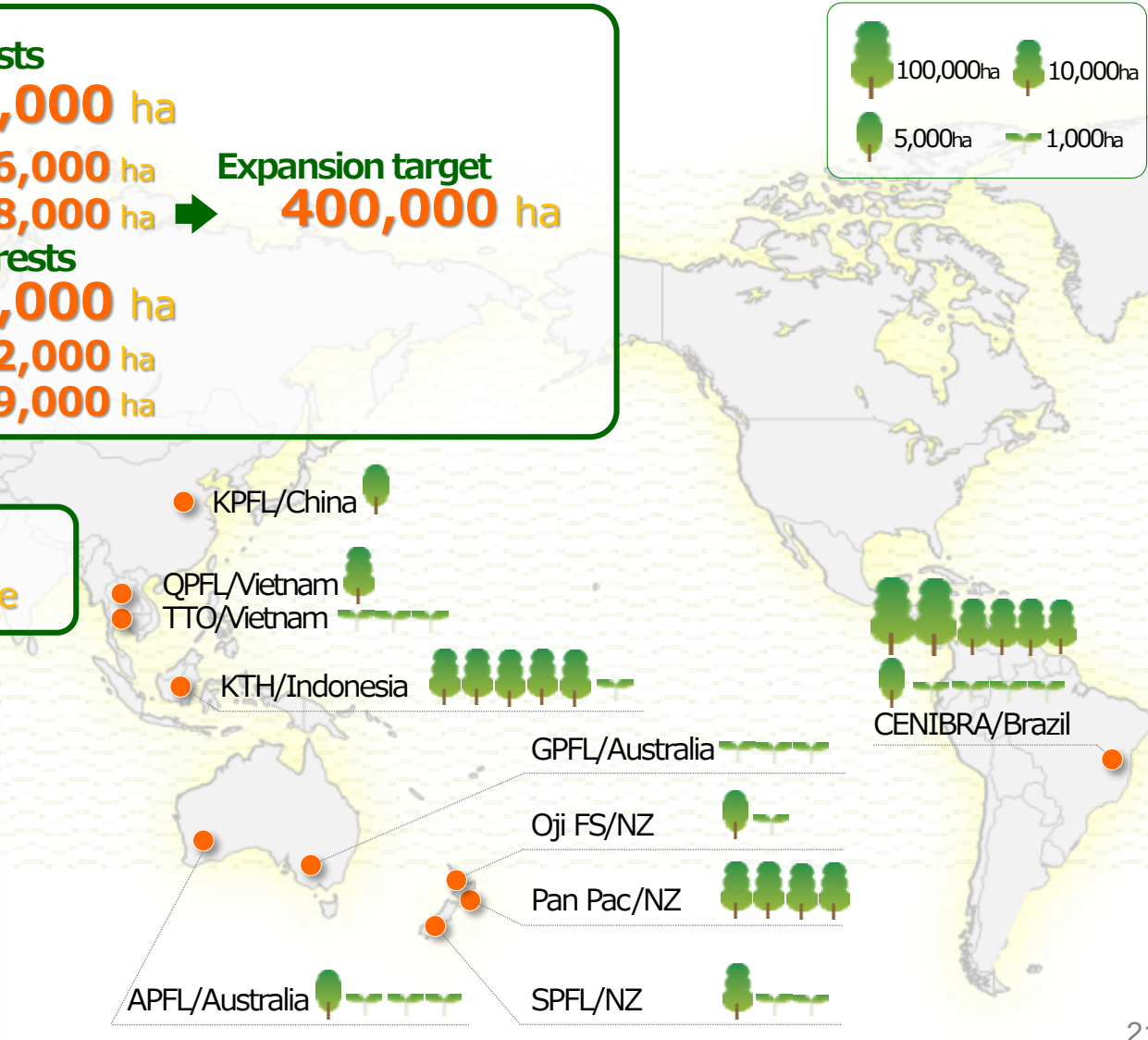
- Production forests **434,000** ha
  - in Japan **176,000** ha
  - overseas **258,000** ha
- Conservation forests **141,000** ha
  - in Japan **12,000** ha
  - overseas **129,000** ha

Expansion target **400,000** ha



◆ Net CO<sub>2</sub> absorption

FY2030 Target **4.0** million t-CO<sub>2</sub>e



## 2. Action on Climate Change (3) Expansion of net CO<sub>2</sub> absorption by forests- 2

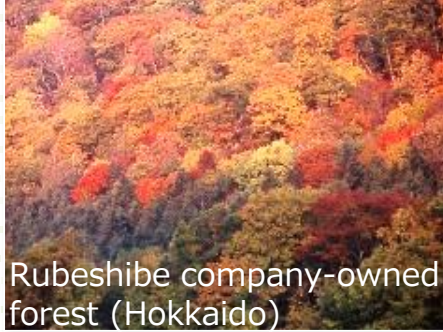


### 《Distribution map of company-owned forest in Japan》

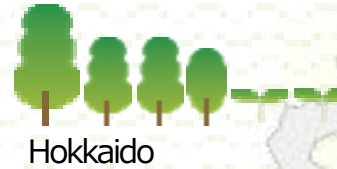
There are 650 company-owned forests throughout Japan from Hokkaido to Kyushu, totaling 188,000 ha, the largest among private companies



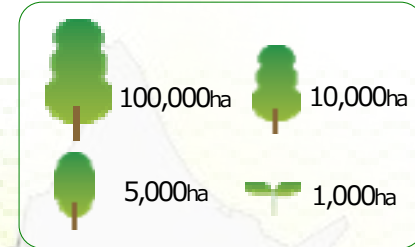
Ishigatanikyō company-owned forest (Hiroshima)



Rubeshibe company-owned forest (Hokkaido)



Hokkaido



Kinki

Chugoku



Tohoku



Engaru company-owned forest (Hokkaido)



Chubu & Kanto



Ichifusa company-owned forest (Miyazaki)



Kyushu

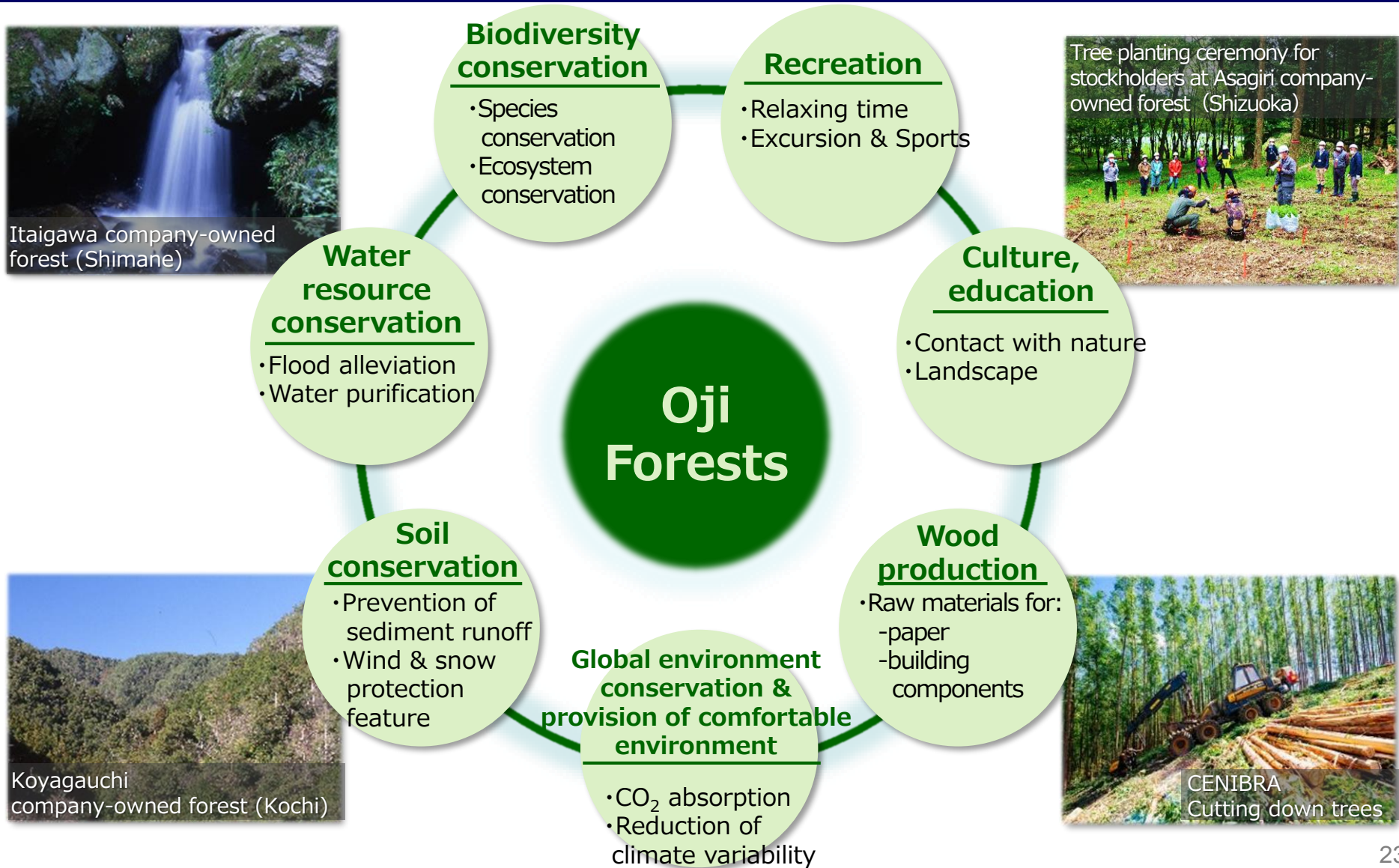


Shikoku



### 3. Abundant Forests Creation and Resource Recycling

## Multifunctional Roles of Forests



## 4. Biodiversity Conservation

### Promotion of ecosystem-friendly forest management and protection & cultivation of rare animals and plants

#### Conservation activities for the endangered fish species "Itou" (Sarufutsu company-owned forest/Hokkaido)

Established "Sarufutsu Itou Conservation Council" with local NPO, administrative bodies, researchers and others.

An area of 2,600 ha including the river zone is designated as a conservation area.



#### Conservation activities for the rare bird species "Kiwi" (Pan Pac/New Zealand)

Activities with the Ministry for the Environment of NZ, citizen volunteers and other parties.

Pan Pac was awarded Community Corporate Sponsor of the Year at a national kiwi conference held by "Kiwis for Kiwi", a kiwi protection organization in 2019.



#### Restoration of ecosystems and protection of rare species (CENIBRA/Brazil)

CENIBRA owns one of the largest overseas forest plantations in the Oji Group: approx. 150,000 ha of forest plantations and 100,000 ha of forest reserve area.

The company has been engaged in activities for breeding "Mutum", an endangered bird species, and returning them to the wild.



#### On joining "the 30by30 Alliance for Biodiversity"

##### "30by30"

Global targets of protecting 30% of land and sea by 2030

The alliance established voluntarily by the Ministry of the Environment of Japan and other government agencies, companies and NPOs, etc.

promotes initiatives aimed at reaching the target across Japan.



## 5. Harmony with Society

### Further promote and practice respect for human rights and contributions to local community and society

#### Oji Group Human Rights Policy

##### 1. Basic Principles

We support and respect international norms based on the United Nations Guiding Principles on Business and Human Rights

##### 2. Human Rights Due Diligence

We continuously work to identify, prevent, alleviate, and remedy negative effects on human rights caused or exacerbated through our business activities and business relationships. We also provide appropriate education to all executives and employees to promote understanding and effective implementation of this policy.

##### 3. Remedy

We strive to remedy the situation via appropriate procedures when a negative effect on human rights is discovered

##### 4. Information Disclosure and Dialog

We disclose and report on the progress of our human rights initiatives on our website and elsewhere.

### Examples of initiatives of Oji Group

#### ■ Consideration for rights of indigenous peoples



Volunteers from the Ainu Association of Akan collecting bark for use in traditional Ainu costumes.

- **Company-owned forest of Oji HD**  
Support for preservation activities of Ainu culture in company-owned forests. Concluded agreements aimed at protecting the forest and inheriting the cultural succession and ensuring harmonious co-existence.

#### ■ Contribution to local community and society



- **CENIBRA/Brazil**  
In cooperation with the local government and departments, CENIBRA provides supports for job creation, qualification acquisition, educational and leisure activities, etc.



- **Nepia SODATERASU, company-managed childcare facility**  
The nursery helps employees balance child-care and work and aims to contribute to elimination of children on the waiting list for nursery schools.





## **V. Initiatives for Profitability Improvement -Profitability-**

# 1. Household and Industrial Materials Businesses (1)

## Long-term Goals:

(Industrial materials business)

Sales target for FY2030

**¥ 1,250 billion**

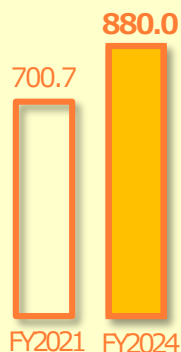
- ◆ Further expand & enhance **packaging business in Southeast Asia, India & Oceania**
- ◆ Expand & enhance **corrugated container business in Greater Tokyo area, Japan**

(Household and consumer products business)

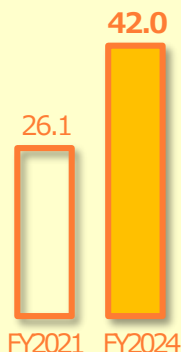
- ◆ Enhance branding & expand sales of **household paper products in Japan**
- ◆ Expand & enhance **overseas disposable diaper business**

## Targets (¥ billion) :

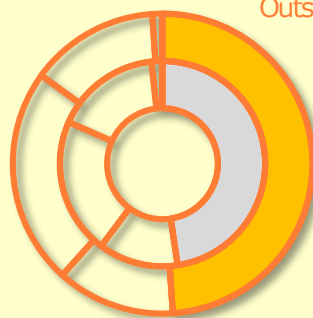
Net sales:



Operating profit:



Sales composition:



\*Inside: FY2021  
Outside: FY2024

FY2021 47.7% → FY2024 **48.9%**



GSPP in Malaysia/new containerboard machine (startup in Oct. 2021)

# 1. Household and Industrial Materials Businesses (2)

## Expansion & enhancement of packaging business in Southeast Asia, India & Oceania

### <Southeast Asia & India>

- Further expand corrugated container business in SE Asia & India, the regions with strong demand
- Utilize the additional containerboard machine to strengthen an integrated production system from base paper to packaging

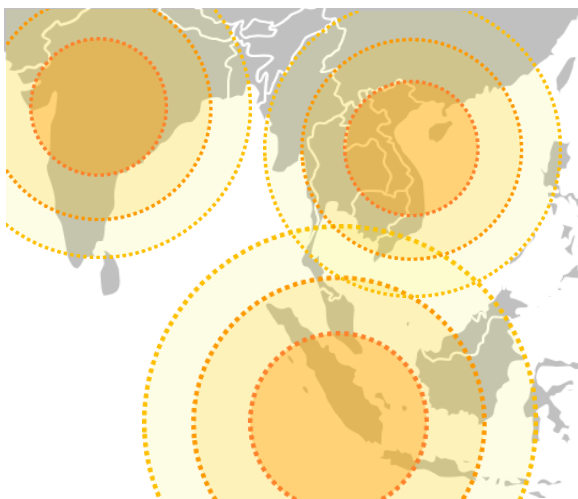
■ Malaysia/new containerboard machine

Startup in Oct. 2021 (production capacity 300,000 t → 750,000t)

■ SE Asia & India/new corrugated container plants

Startup of 9th & 10th plants in Malaysia in Jul. & Sep. 2022 (scheduled)

Startup of 6th & 7th plants in Vietnam in Jul. 2022 & Jul. 2023 (scheduled)



➡ Consider expansion into new countries in addition to existing ones and execute investment without delay

**36 units in 7 countries**

\*Including units under construction

### <Oceania>

**11 units in 2 countries**

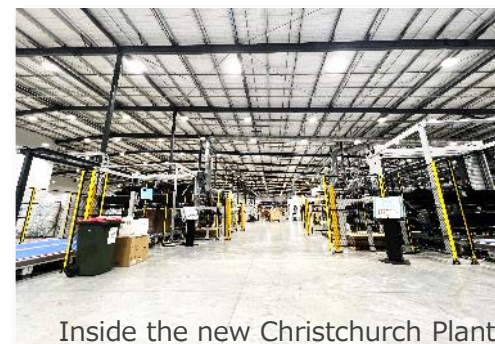
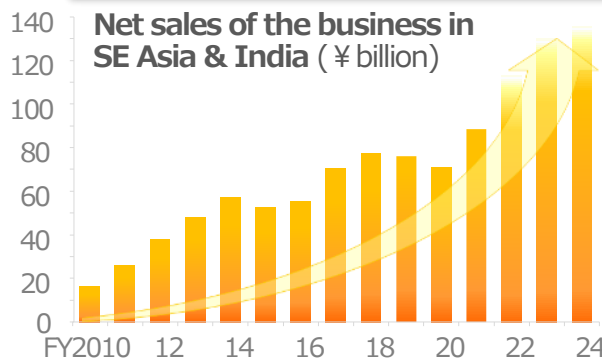
Expand sales of plastic alternative products in addition to expanding corrugated container business

■ Expand corrugated container business

Relocation & startup of Christchurch plant in Jan. 2022 → Consider further expansion

■ Expand sales of plastic alternative products

Capture growing demand & expand sales of plastic alternative products in NZ & Australia



# 1. Household and Industrial Materials Businesses (3)

## Expansion & enhancement of corrugated container business in Japan

Demand in Japan	<ul style="list-style-type: none"> <li>■ Steady growth under COVID-19 pandemic</li> <li>■ Particularly strong in the Greater Tokyo area</li> </ul>
Initiatives	<ul style="list-style-type: none"> <li>■ Construct new corrugated container plants in the Greater Tokyo area</li> <li>■ Build a system for supplying high-quality products in a sustainable &amp; efficient manner by promoting an integrated production system from base paper to packaging</li> </ul>

Morishigyo's new plant, one of the largest in Japan (Funabashi, Chiba)



Morishigyo Chiba Plant

Startup in Jul. 2020

- ▶ Redeveloped an existing logistic base (utilization of Group-owned assets)
- ▶ Consider further production increase to capture robust demand

Oji Container's plant to be relocated & established (Utsunomiya, Tochigi)



Oji Materia Nikko Mill where the new Oji Container Tochigi Plant will be built

Startup in Jan. 2023 (scheduled)

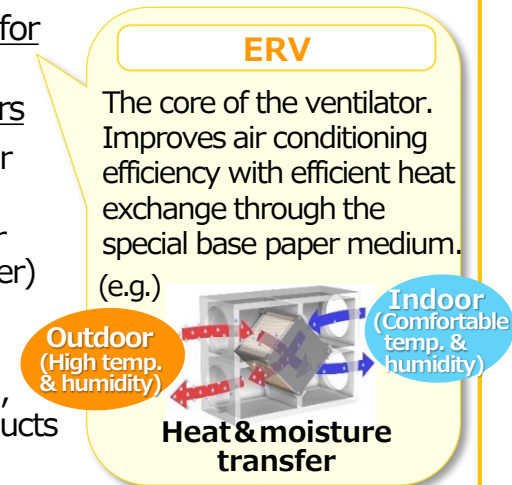
- ▶ Improve competitiveness by building on the site of a containerboard mill

## Expansion of filter business

Expand sales of paper core for energy recovery ventilators (ERV) & filters for air purifiers

- Startup of Nantong Oji Filter in Nov. 2020
- Launch of "Deodorizing filter by application" (Oji Container) in Oct. 2021

- ▶ Expand & enhance existing production system, while developing new products & cultivating new fields



## Expansion of liquid paper container business

Establish sales of base paper, processed paper & filling machines as a set, and aim to expand business overseas

- Started JV business with Ishizuka Glass in Sep. 2020
- Started production of milk carton base paper for the first time in Japan in Aug. 2021

### Oji Group

- Supplying laminated base paper



### Ishizuka Glass

- Manufacturing paper containers
- Sales & maintenance of filling machines



# 1. Household and Industrial Materials Businesses (4)

## Branding enhancement & sales expansion of household paper products in Japan

### <Increasing market share by improving brand value>

- Brand investment to increase awareness of the nepia brand
- New product planning that anticipates needs based on environmental considerations
- Enhancing marketing functions
- ➡ Aim for expansion of market share
- ➡ Consider investment to enhance production system

### ■ Launch of eco-friendly products

- Apr. 2022 Kitchen towel & box tissue with sustainable paper packaging
- Mar. 2022 Mask made of 80% plant-derived materials



**Kitchen towel**

(plastic films → paper packaging)



**Box tissue**

(use of paper for outlet portion & outer packaging)



**Mask**

## Expansion & enhancement of overseas disposable diaper business

### <Expansion of business in key markets in China & Southeast Asia>

- ◆ China: establish strategic products for each sales channel and actively utilize emerging channels
  - ➡ Increase presence in the premium market
- ◆ Malaysia: enhance sales systems, enhance e-commerce sales



PT Oji Indo Makmur Perkasa

### ■ Indonesia/ new diaper processing machine

Startup in Feb. 2022.  
The 3rd machine installed to meet strong demand.



**Sales activities in Indonesia, Malaysia and China**



## 2. Functional Materials Business (1)

### Long-term Goals :

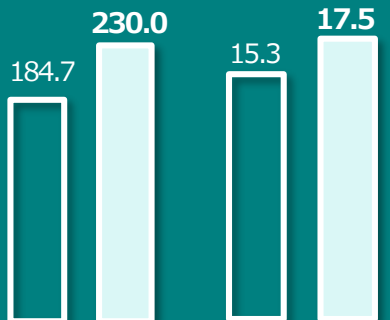
- ◆ Actively develop **high-function and eco-friendly products**
- ◆ Expand global sales of **imaging media business** and enhance competitiveness including printing and converting

Sales target for FY2030

**¥ 400 billion**

### Targets (¥ bil.) :

Net sales :                      Operating profit :



FY2021   FY2024      FY2021   FY2024

Sales composition:

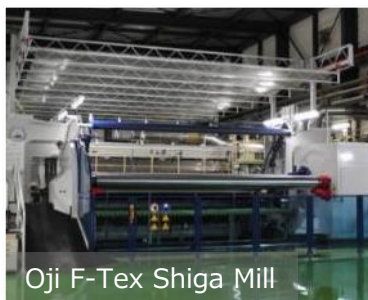


FY2021 12.6% → FY2024 **12.8%**

### Active development of high-function and eco-friendly products

#### <Expansion of film business>

Expand production system to meet growing demands, especially those for next generation vehicles(\*) driven by the shift away from fossil fuels. Aim to contribute to environmental issues and improve profitability.



#### ■ Installation of film machines at Oji F-Text Shiga Mill

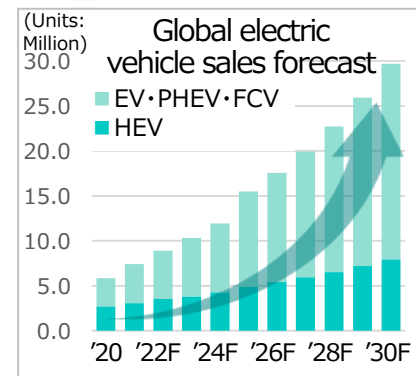
1<sup>st</sup> Machine : startup in Mar.2023  
2<sup>nd</sup> Machine: startup in Nov.2024 (scheduled)

Additional expansion is under consideration



#### ■ Development of eco-friendly film

Successfully developed an eco-friendly biaxially oriented polypropylene film containing plant-derived polylactic acid resin in polypropylene resin in Oct. 2021



Source : Fuji Keizai " In-depth analysis and research on HEV and EV related markets for 2021"

\*Next generation vehicles : electric vehicles (electric vehicles[EV], hybrid vehicles[HEV], plug-in hybrid vehicles[PHEV] and fuel cell vehicles[FCV])

## 2. Functional Materials Business (2)

### Expansion of global sales of imaging media business

Demand for thermal paper for labels and other applications is expected to grow continuously due to the spread of e-commerce and increasing demand for food products

➔ Invest in facilities to enhance competitiveness and expand into downstream businesses such as printing and converting in order to enhance profitability

#### <South America>

Production enhancement of thermal paper machine in Brazil

3<sup>rd</sup> phase of production expansion completed in Jan.2022  
Expand sales mainly in North and South America



Oji Papéis Especiais  
Coating Machine#3



Oji Papéis Especiais

#### <Europe>

Production enhancement of thermal paper machine in Germany

Startup in Jan. 2024 (scheduled)



KANZAN Spezialpapiere



KANZAN  
Spezialpapiere

#### <Southeast Asia>

Enhancing synergies between base paper business and converting business

Expand business, centered on thermal and adhesive paper business, including acquisition of new unites through M&A and enhance synergies among units



- (1) Oji Paper (Thailand)  
Oji Label (Thailand)
- (2) Tele-Paper (M)
- (3) Hyper-Region Labels

**Upstream : Base paper manufacturing(2 co. in Thailand)**  
Production/sales of thermal paper, carbonless paper, adhesive paper/film and release paper

**Downstream : Printing/converting (2 co. in Malaysia)**  
Printing/converting of thermal paper, labels, etc.



Oji Label (Thailand)

# 3. Forest Resources and Environment Marketing Business (1)

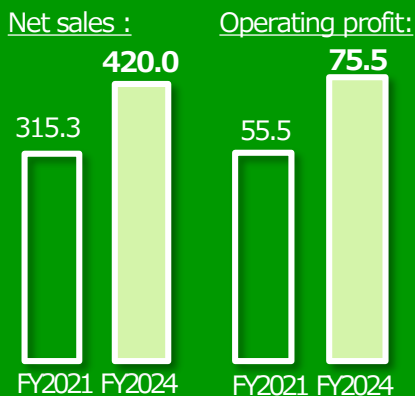
## Long-term Goals:

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

Sales target for FY2030

**¥ 600 billion**

## Targets (¥ bil.) :



Sales composition:



FY2021 21.4% → FY2024 23.3%

## Expansion & enhancement of pulp business

### <CENIBRA/Brazil>

- Enhance cost competitiveness & sales capabilities, and consider further production increase, upon making it a wholly owned subsidiary in May 2021
- Install most advanced & work-saving manufacturing facilities



### <Pan Pac/NZ>

- Consider production increase to meet increased demand



### <Oji Fibre Solutions/NZ>

- Made it a wholly owned subsidiary in Mar. 2022
- Implement measures to stabilize operations, improve yields, and conserve energy by introducing OJI’s know-how and operational management methods

### <Dissolving pulp (DP)>

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

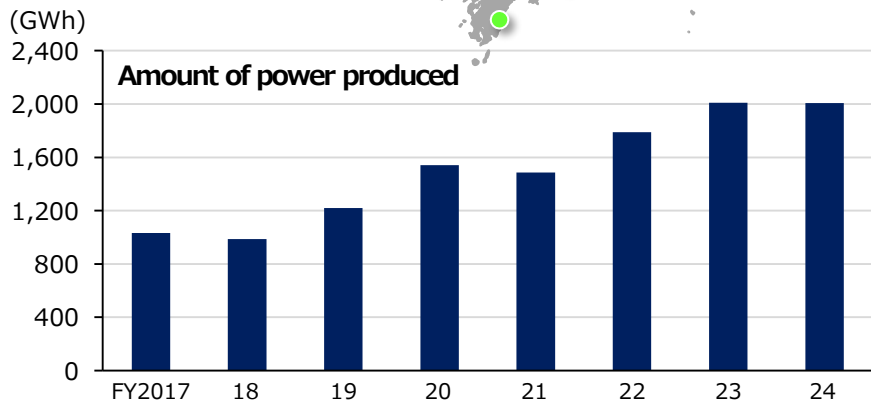
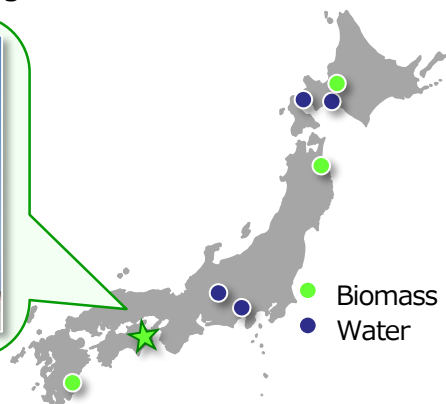


# 3. Forest Resources and Environment Marketing Business (2)

## Expansion of energy business

### <Business expansion by leveraging fuel procurement advantages>

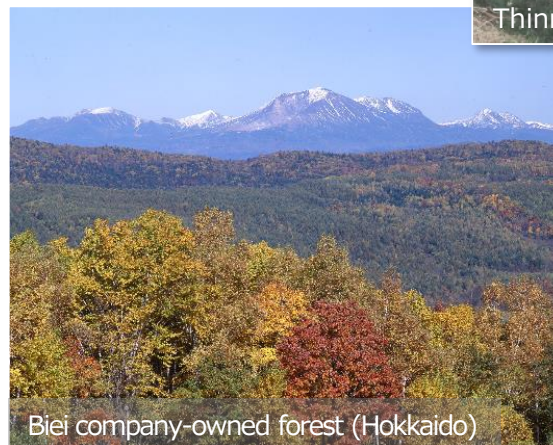
- Expand business of renewable energy such as biomass, wind, and solar
- Further enhance our strength in wood fuel procurement by leveraging our existing bases in Japan & overseas and our accumulated knowledge



## Expansion of lumber processing business

### <Utilization & expansion of company-owned forests in Japan>

- Strengthen synergies with Oji Yoshimoto Ringyo acquired in Aug. 2021
- Promote effective utilization of existing company-owned forests through forest road development and promote acquisition of new forests
- Consider using the sites as wind power generation sites



# 4. Printing and Communications Media Business

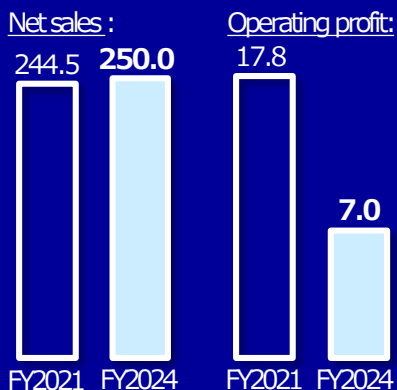
## Long-term Goals:

◆ **Restructure production system & enhance competitiveness** through collaboration with other group segments by maximizing the use of assets owned

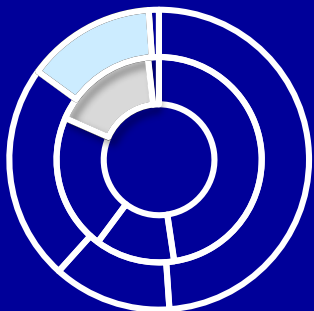
Sales forecast for FY2030

**¥ 150 billion**

## Targets (¥ bil.) :



Sales composition:



FY2021 16.6% → FY2024 13.9%

## Production system restructuring & competitiveness enhancement

### <Optimization of production systems across group segments>

Further optimize production system for the entire group by determining future demand trends, and maximizing effective use of pulp manufacturing facilities, boilers, and other assets



■ Startup of containerboard production at Oji Paper/Tomakomai Mill

Conversion of one newsprint machine to manufacture containerboard.  
Startup in Oct. 2021

Relocation of Oji Materia/Nayoro Mill's specialty liner & specialty paperboard facilities to Tomakomai Mill.  
Startup in Apr. 2022



■ Startup of household base paper production at Jiangsu Oji Paper (China)

Utilization of existing printing paper & pulp manufacturing facilities (e.g. home-made pulp & boilers, etc.) to build a new household base paper machine.  
Startup in 2020





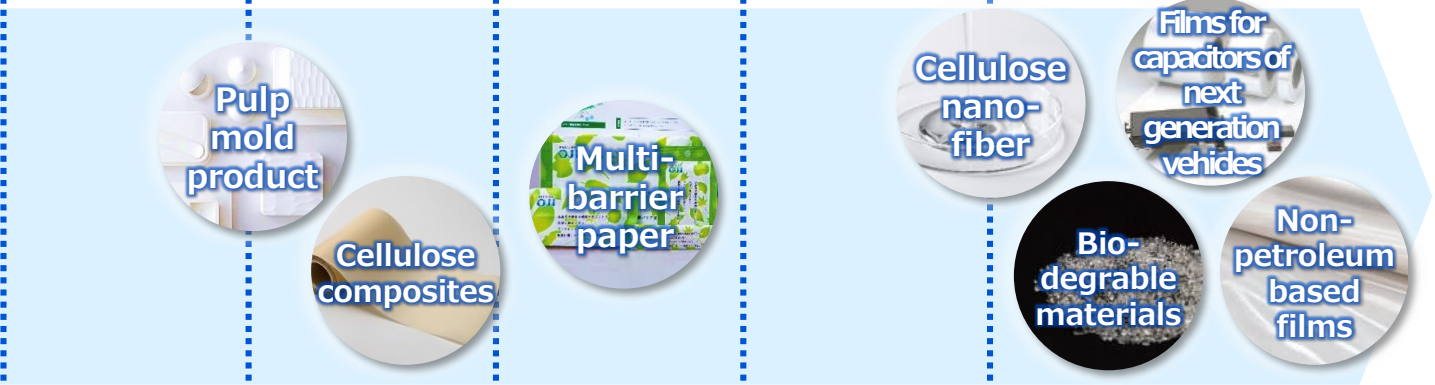
## **VI. Initiatives for Product Development -Green Innovation-**

# 1. OJI Group's Green Innovation

Creation of **innovative value** based on a range of core technologies accumulated from paper manufacturing and forestation



**Eco-friendly materials and products**  
 To help solve social issues such as climate change and the problems of marine plastic litter



**Entry into medical field**  
 Utilizing our knowledge and know-how for medical care of the future



**Total solution**  
 Aiming for contribution to industrial development by understanding needs and seeds

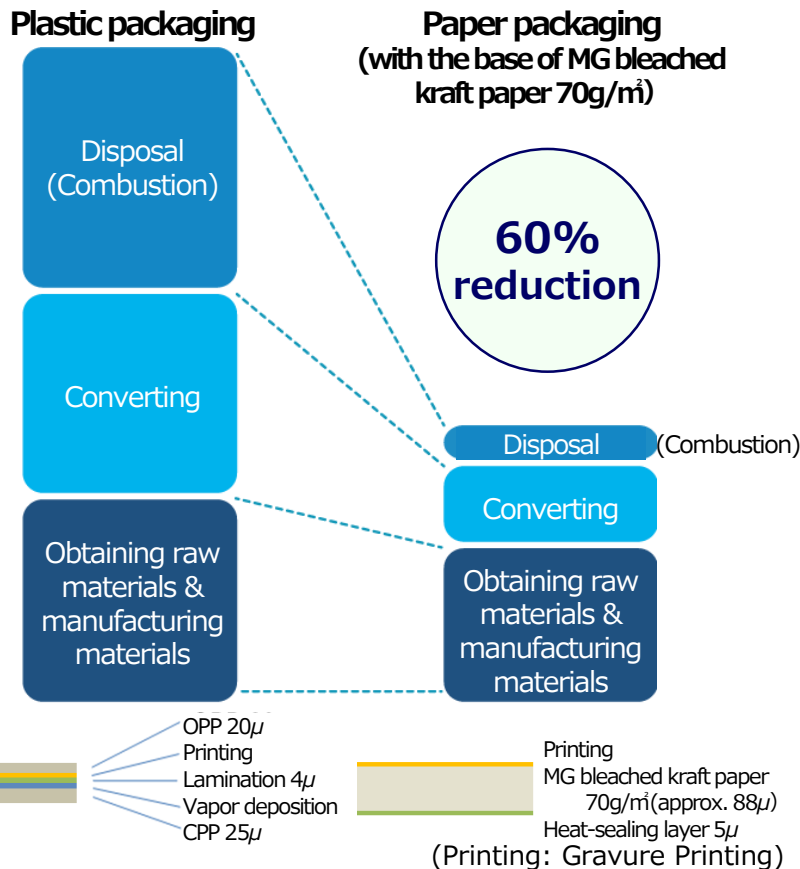


Contribution to a sustainable society

## 2. Eco-friendly Materials & Products (1)

### CO<sub>2</sub> emission reduction rate per 1m<sup>2</sup> of packaging material

- Calculation based on LCA (Life Cycle Assessment) methodology
- 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>



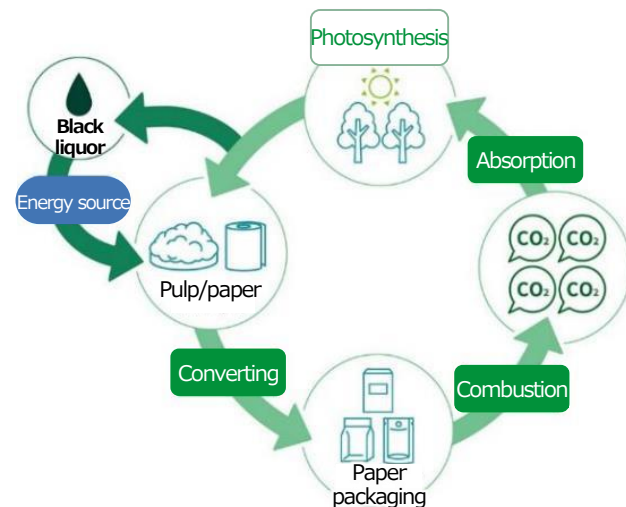
### Paper materials as carbon neutral materials

If approx. 1.35 million tons of the plastic film for packaging used in Japan per year is replaced with paper, approx. **6 million t-CO<sub>2</sub>e** of CO<sub>2</sub> can be reduced

➡ Equivalent to the amount emitted by **710,000 people** in Japan per year (8.5t-CO<sub>2</sub>e per person)

- CO<sub>2</sub> produced during combustion is offset by that absorbed during the growing phase of trees
- Black liquor and bark utilized as energy during production

➡ **Carbon-neutral materials that do not increase CO<sub>2</sub> in the atmosphere during manufacturing and disposal**

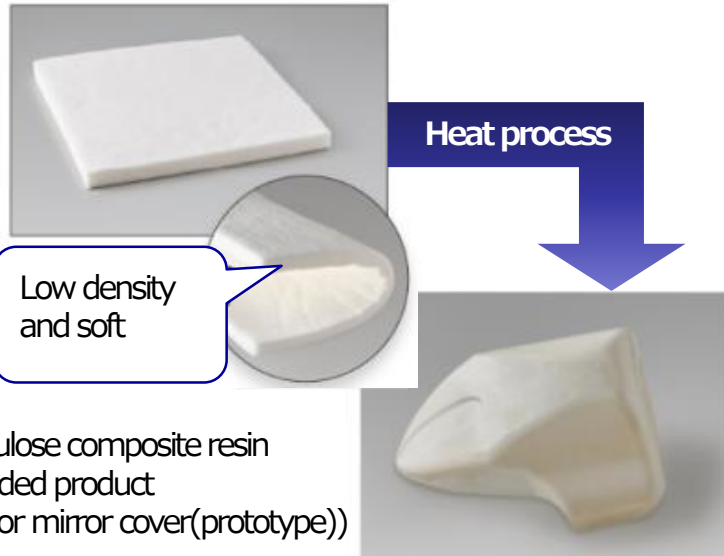


## 2. Eco-friendly Materials & Products (2)



### Cellulose mats

- Unique non-woven fabric manufacturing technology (totally dry system) applied to uniformly disperse cellulose and polyolefin fibers
- Can be molded into three-dimensional shapes with a squeeze, because of its low density and softness
- The consumption of petroleum-based plastics can be reduced by up to 70%
- More resistant to deformation and cracking than plastic
- Assumed practical use in automotive components



### SILBIO BARRIER

(Packaging material with high barrier properties)

- Lineup with diverse features such as light shielding and transparency
- Adopted as a coffee bean packaging materials (to be launched in summer 2022 (scheduled))



### Polylactic acid laminated paper

- Uses plant-derived polylactic acid (PLA), instead of petroleum-based plastics
- Biodegrade under composting conditions without increasing CO<sub>2</sub> in the atmosphere when burned
- Contributes to the reduction of petroleum-based plastics and has heat sealability and water and oil resistance equivalent to conventional laminated paper





## 2. Eco-friendly Materials & Products (3)

### Biomass plastic films

- **Alphan G** is polypropylene film that contains plant-derived polylactic acid (PLA)
- Utilizes raw material resin mixing & film forming technologies, cultivated through manufacturing of thin films for capacitors
- Registered for Biomass mark of Japan Organics Recycling Association



### Wood-derived biomass plastic

- Successfully produced polylactic acid from trees obtained through sustainable forest management
- Wood is inedible biomass and less likely to be affected by fluctuations in supply and demand due to the food situations
- Promote technological development for mass production

PLA pellets (prototype)



### CNF (Cellulose Nanofiber)

- Can be manufactured using less energy through Oji's unique "Phosphate Esterification Method"
- Expected to be applied in many fields by utilizing its features such as transparency, lightness, durability, resistance to deformation and high viscosity

Phosphate esterification + mechanical treatment



Wood

Pulp

CNF

### Possible applications



Cosmetics  
(adapted as product)



Concrete pump primer  
(adapted as product)



Automotive components  
(CNF composites with resin:  
under development)

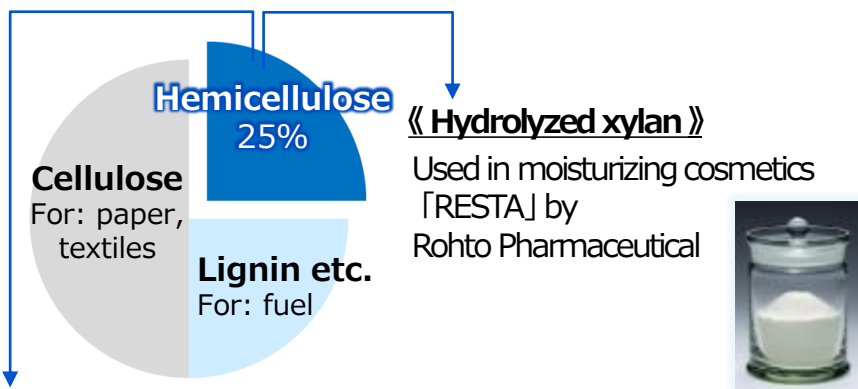


# 3. Entry into Medical Field

## Wood-derived pharmaceutical products

### Hemicellulose in Medical and Healthcare Applications

- Hemicellulose, a major wood fiber components, is extracted and refined through the Oji Group's unique technology
- Adopted as a cosmetic raw material. Also, **Sulfated Hemicellulose** is developed as active pharmaceutical components



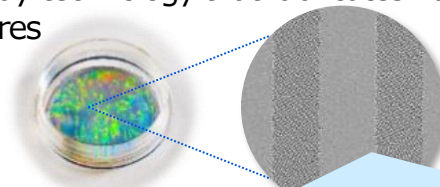
### Active pharmaceutical components : Sulfated Hemicellulose

- ✓ Therapeutic agents for animal arthritis
- ✓ Anticoagulants for human artificial dialysis



## Cell culture substrates

- Developed cell culture substrate **ND Cell Aligner** using nano-dot array technology that fabricates nano-level microstructures



### Examples of cell culturing (culturing cardiomyocytes differentiated from iPS cells (human))



Flat surface substrate



Patterned substrate

※Fluorescent staining: α-Actinin

**Cardiomyocyte cells are oriented along the stripe direction**

- Nano-pillar and flat regions interleaved in parallel stripes
- Cells exhibit bioactivity similar to that of in vivo
- Feasibility studies are underway with universities in Japan for use in pharmaceutical development and regenerative medicines



- Established Oji Pharma in Apr. 2020 with the aim of commercializing the medical and healthcare field
- Promote development of wood-derived components as active pharmaceutical components together with domestic and overseas pharmaceutical companies and universities



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**Beyond the Boundaries**



OJI HOLDINGS



Sarufutsu company-owned forest and Mokeuni Swamp (Hokkaido)