



OJI HOLDINGS



Full scale product relaunch of
"Hana-celeb" celebrating its 15th anniversary

A time limited event, Hana-celeb Café "HANAYASHIKI",
held to commemorate the product relaunch (October 2018)



Summary of Financial Business Results

November 12, 2018

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《Reference Materials》

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I . 1st-half of FY2018 Result Overview

1. Financial Highlights of 1st-half of FY2018 (consolidated)

(¥ billion)

	1st-half of FY2017	1st-half of FY2018	Increase (Decrease)
Net Sales	718.4	761.9	43.5
Operating Profit	26.6	54.7	28.1
Ordinary Profit	24.2	53.4	29.2
Profit Attributable to Owners of Parent	16.5	26.8	10.3
Depreciation	35.2	34.3	(0.9)
Overseas Sales Ratio	29.9%	32.4%	2.5%
Operating Profit of Overseas Companies	18.2	39.7	21.5
Average Exchange Rate (¥/US\$)	111.1	110.3	(0.8)
Number of Consolidated Companies	Domestic 92 Overseas 105 Total 197	91 95 186	(1) (10) (11)

Domestic (1) : (1)[Corrugated container company]

Overseas (11) : +1[Disposable diaper sales company in Malaysia], (7)[Corrugated container companies in Malaysia],
 (2)[Paper bag companies in China], (1)[Folding carton company in Thailand], (1)[Paper sales company in China]

Equity Method Affiliates (1) [Domestic]

2. Breakdown of Increase/Decrease in Operating Profit

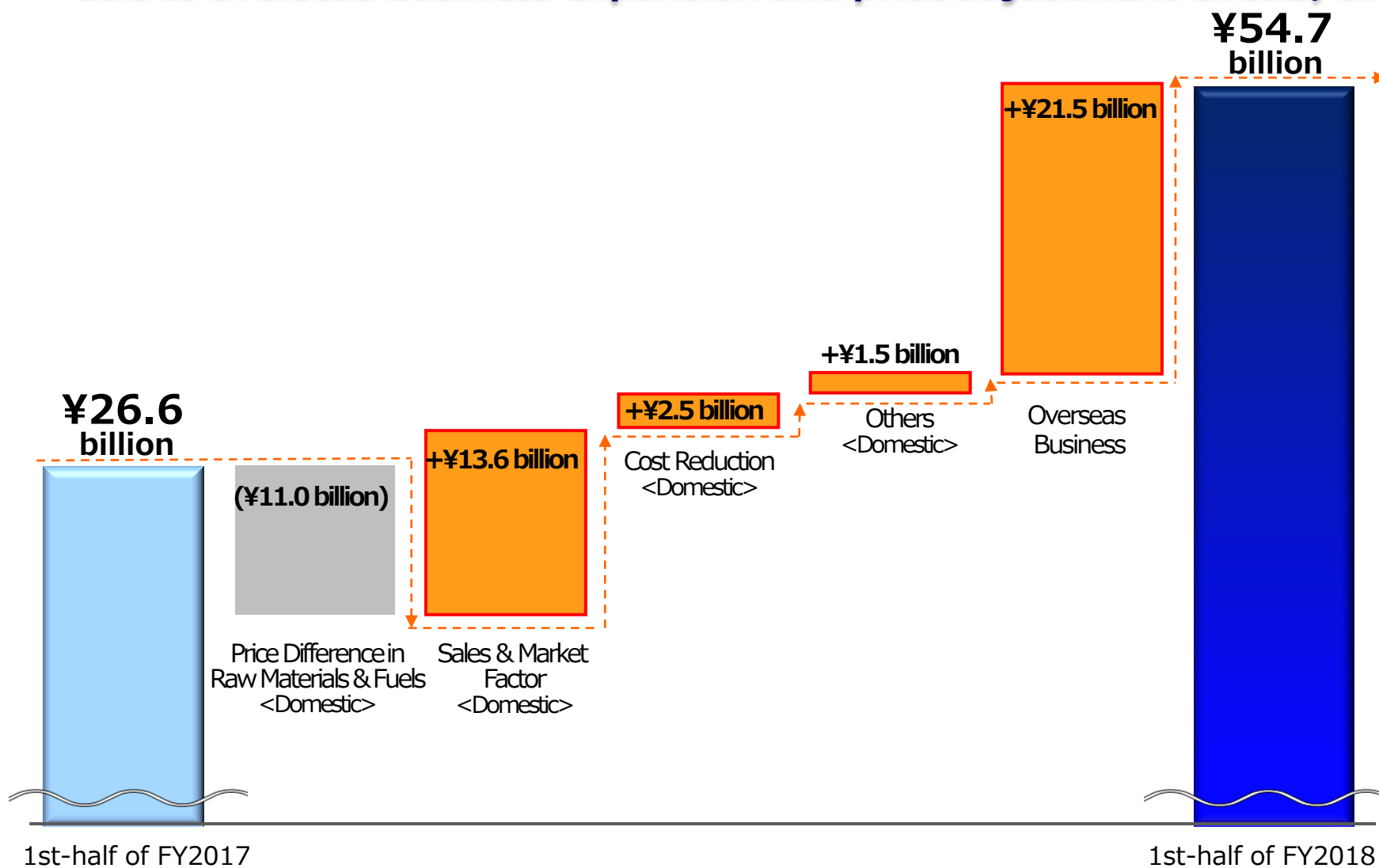
[1st-half of FY2017 to 1st-half of FY2018] (consolidated)



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Profit increase of **¥28.1 billion**

despite rise in raw material and fuel prices,
due to overseas business expansion and price adjustment effects, etc.



3. Sales and Operating Profit by Segment

[1st-half of FY2018 Result]

(¥ billion)

	1st-half of FY2017		1st-half of FY2018		Increase (Decrease)	
	Sales	Operating Profit	Sales	Operating Profit	Sales	Operating Profit
Household & Industrial Materials	317.2	(0.2)	332.7	10.3	15.5	10.5
Functional Materials	106.5	8.9	110.5	8.9	4.0	0.0
Forest Resources & Environment Marketing	142.2	14.7	162.8	32.5	20.6	17.8
Printing & Communications Media	148.0	(0.9)	147.3	(2.6)	(0.7)	(1.7)
Others	4.6	4.1	8.7	5.6	4.1	1.5
Total	718.4	26.6	761.9	54.7	43.5	28.1

*1: Sales include intra-segment sales *2: Others include adjustment amount

4. Analysis of Increase/Decrease in Profit by Segment

(1) Household and Industrial Materials



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1st-half of FY2017

1st-half of FY2018

Increase (Decrease)

Sales

Operating Profit

Sales

Operating Profit

Operating Profit

¥317.2 billion **¥(0.2billion)** Domestic **¥(2.5billion)**
Overseas **¥2.3 billion**

¥332.7 billion **¥10.3 billion** Domestic **¥5.6 billion**
Overseas **¥4.7 billion**

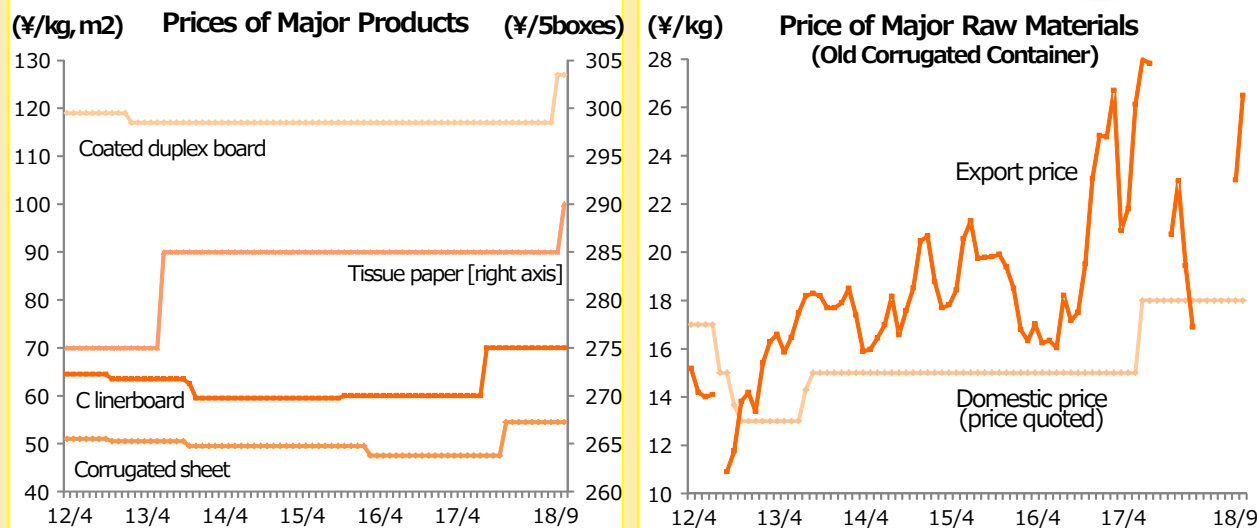
+¥10.5billion Domestic **+¥8.1 billion**
Overseas **+¥2.4 billion**

Domestic +¥8.1 billion

Sales&marketfactor +¥14.7 bil.

Price difference in
raw materials& fuels (¥5.6 bil.)

etc.



Sales of Major Products (*)		1st-half of FY2017			1st-half of FY2018			Increase (Decrease)		
		Sales Volume	Unit Price	Sales Amount	Sales Volume	Unit Price	Sales Amount	Sales Volume	Year-on Year	Unit Price
		1,000 t (or) million m2 (or) million pcs	¥/kg (or) m2	¥ billion	1,000 t (or) million m2 (or) million pcs	¥/kg (or) m2	¥ billion	1,000 t (or) million m2 (or) million pcs	%	¥/kg (or) m2
Paperboard	Domestic & Overseas	1,816	61.82	112.3	1,803	66.60	120.1	(13)	99.3%	4.79
Corrugated sheet & container (million m2)	Domestic & Overseas	1,978	62.91	124.4	2,013	65.84	132.5	35	101.8%	2.92
Disposable diaper (million pcs)	Domestic & Overseas	442	-	-	561	-	-	118	126.7%	-

*Total of Group's consolidated manufacturing companies, with intra-Group consumption included

4. Analysis of Increase/Decrease in Profit by Segment

(2) Functional Materials



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1st-half of FY2017

1st-half of FY2018

Increase (Decrease)

Sales

Operating Profit

Sales

Operating Profit

Operating Profit

¥106.5billion

¥8.9 billion

Domestic ¥6.3 billion
Overseas ¥2.6billion

¥110.5 billion

¥8.9 billion

Domestic ¥5.7billion
Overseas ¥3.2billion

¥0.0 billion

Domestic (¥0.6billion)
Overseas +¥0.6billion

Domestic (¥0.6 billion)

Sales&marketfactor +¥0.8 bil.

Price difference in
raw materials& fuels (¥2.0 bil.)

etc.

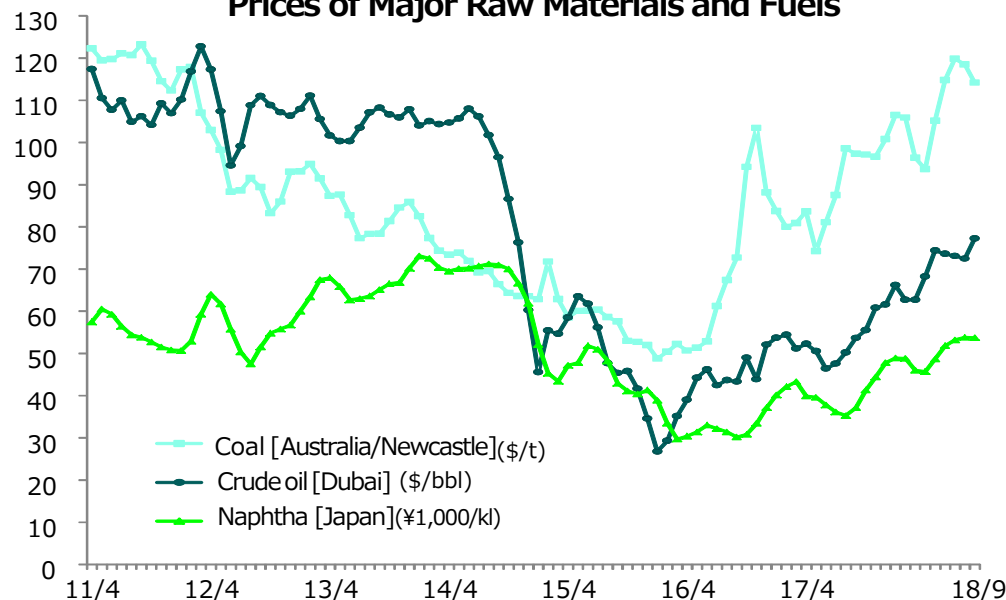
Overseas +¥0.6 billion

Sales&marketfactor +¥2.9 bil.

Price difference in
raw materials& fuels (¥2.0 bil.)

etc.

Prices of Major Raw Materials and Fuels

Sales of
Major Products (*)

1st-half of FY2017

1st-half of FY2018

Increase (Decrease)

Sales Volume
million m2Unit Price
¥ / m2Sales Amount
¥ billionSales Volume
million m2Unit Price
¥ / m2Sales Amount
¥ billionSales Volume
million m2Year-on Year
%Unit Price
¥ / m2Sales Amount
¥ billionThermal paper
(million m2)Domestic &
Overseas

1,522

19.46

29.6

1,732

19.09

33.1

210

113.8%

(0.37)

3.4

*Total of Group's consolidated manufacturing companies, with intra-Group consumption included

4. Analysis of Increase/Decrease in Profit by Segment

(3) Forest Resources and Environment Marketing



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1st-half of FY2017

Sales

Operating Profit

¥142.2 billion

¥14.7 billion

Domestic ¥2.6 billion
Overseas ¥12.1 billion

1st-half of FY2018

Sales

Operating Profit

¥162.8 billion

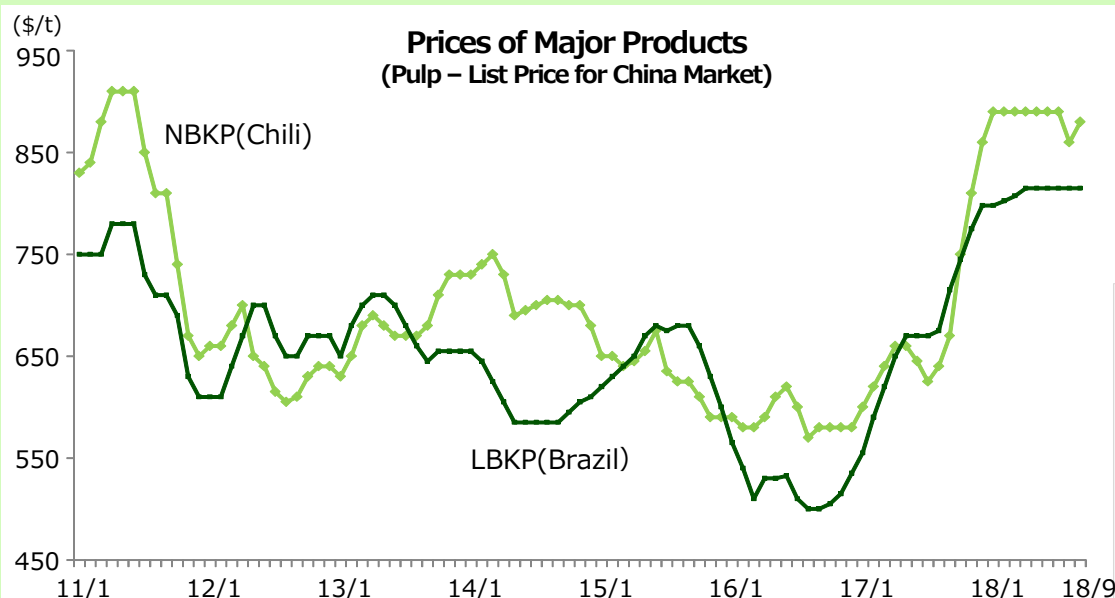
¥32.5 billion

Domestic ¥2.3 billion
Overseas ¥30.2 billion

Increase (Decrease)

Operating Profit

+¥17.8 billion

Domestic (¥0.3 billion)
Overseas +¥18.1 billion

Overseas +¥18.1 billion

Rise in pulp prices +¥22.2 bil.

Price difference in raw materials & fuels (¥2.8 bil.) etc.

NBKP

680
\$/t

+205\$/t

885
\$/t880
\$/t880
\$/t

LBKP

680
\$/t

+125\$/t

805
\$/t805
\$/t815
\$/t2017
(Average of Jan.-Dec.)2018
(Estimate)2nd Half of 2018
(Assumption)Reference
(Recent result)

Sales of Major Products (*)		1st-half of FY2017			1st-half of FY2018			Increase (Decrease)			
		Sales Volume 1,000t (or) GWh	Unit Price ¥/kg	Sales Amount ¥ billion	Sales Volume 1,000t (or) GWh	Unit Price ¥/kg	Sales Amount ¥ billion	Sales Volume 1,000t (or) GWh	Year-on Year %	Unit Price ¥/kg	Sales Amount ¥ billion
Market pulp	Domestic & Overseas	1,131	63.65	72.0	1,140	79.91	91.1	8	100.7%	16.26	19.1
Electric power (GWh)	Domestic	515	-	-	503	-	-	(12)	97.6%	-	-

*Total of Group's consolidated manufacturing companies, with intra-Group consumption included

4. Analysis of Increase/Decrease in Profit by Segment

(4) Printing and Communications Media



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1st-half of FY2017

1st-half of FY2018

Increase (Decrease)

Sales

Operating Profit

Sales

Operating Profit

Operating Profit

¥148.0 billion

¥(0.9 billion)

Domestic ¥(2.1 billion)
Overseas ¥1.2 billion

¥147.3 billion

¥(2.6 billion)

Domestic ¥(4.1 billion)
Overseas ¥1.5 billion

(¥1.7 billion)

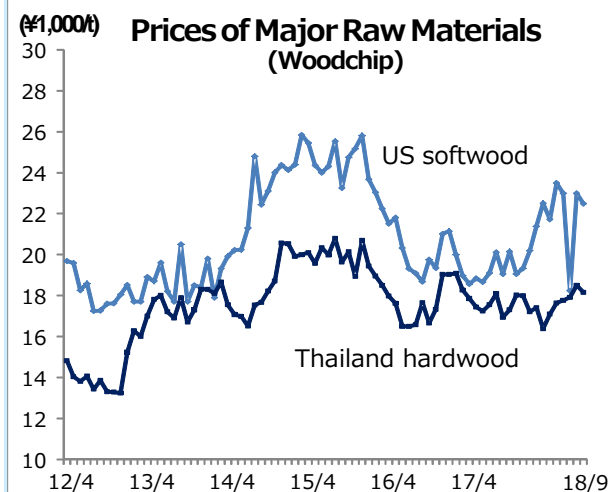
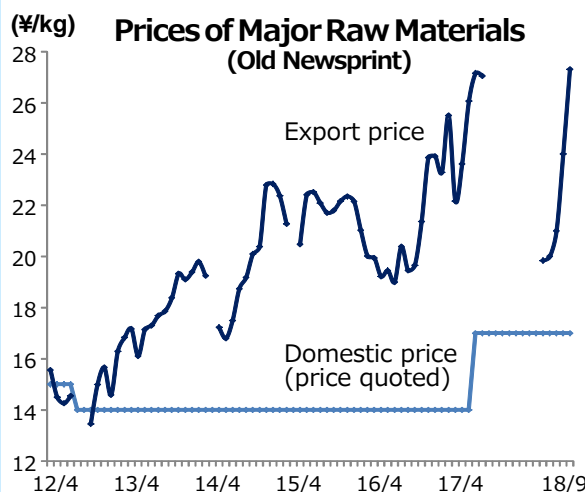
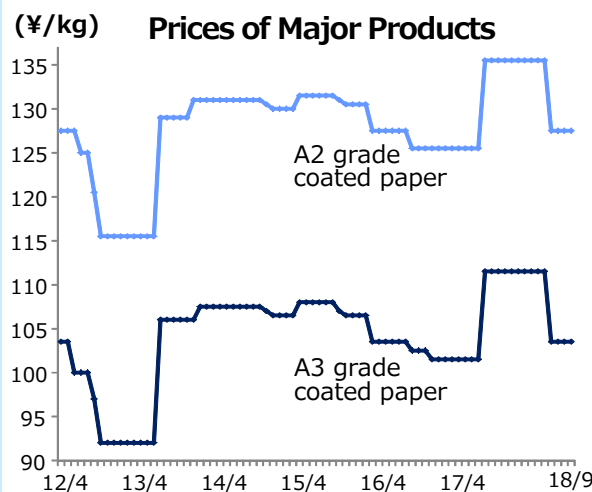
Domestic ¥(2.0 billion)
Overseas +¥0.3 billion

Domestic (¥2.0 billion)

Price difference in raw materials & fuels (¥3.4 bil.)
Sales & market factor (¥2.1 bil.)
Cost reduction +¥1.5 bil. etc.

Overseas +0.3 billion

Sales & market factor +¥2.1 bil.
Price difference in raw materials & fuels (¥1.7 bil.)
etc.



Sales of Major Products (*)	1st-half of FY2017			1st-half of FY2018			Increase (Decrease)			
	Sales Volume 1,000 t	Unit Price ¥/kg	Sales Amount ¥ billion	Sales Volume 1,000 t	Unit Price ¥/kg	Sales Amount ¥ billion	Sales Volume 1,000 t	Year-on Year %	Unit Price ¥/kg	Sales Amount ¥ billion
Newsprint, printing & communication paper Domestic	1,161	105.19	122.1	1,143	103.53	118.4	(17)	98.5%	(1.66)	(3.7)

*Total of Group's consolidated manufacturing companies, with intra-Group consumption included

Ⅱ. FY2018 Financial Forecast

1. Financial Forecast for FY2018 (consolidated)

(¥ billion)

	FY2017	FY2018F	Increase (Decrease)
Net Sales	1,485.9	1,550.0	64.1
Operating Profit	70.8	110.0	39.2
Ordinary Profit	66.0	100.0	34.0
Profit Attributable to Owners of Parent	36.2	50.0	13.8
Depreciation	71.9	69.0	(2.9)
Overseas Sales Ratio	31.0%	32.4%	1.4%
Operating Profit of Overseas Companies	46.5	80.4	33.9
Average Exchange Rate (¥/US\$)	110.9	110.2	(0.7)

*The above forecasts are based on the forecasts of economic conditions made at the time of publication.
As such, actual results may differ from these forecasts due to various unforeseen circumstances.

Assumptions for FY2018 Financial Forecast

◆ Raw Material & Fuel Prices

- Woodchip :
based on current contract
- Recovered paper :
price to remain static at current level
- Coal
based on current contract

◆ Effects of Fluctuation on Operating Profit (per annum)

- Exchange rate Japanese Yen : approx. ¥0.34 billion with a fluctuation of US\$ by 1% (strong US\$ -)
- Brazilian Real : approx. ¥0.32 billion with a fluctuation of US\$ by 1% (strong US\$ +)
- New Zealand Dollar : approx. ¥0.87 billion with a fluctuation of US\$ by 1% (strong US\$ +)
- Price of recovered paper : approx. ±¥4.10 billion with a fluctuation of ¥1/kg
- Price of Dubai crude oil : approx. ±¥0.30 billion with a fluctuation of US\$1/bbl
(heavy oil, bunker, naphtha and others)
- Price of pulp : approx. ±¥2.32 billion with a fluctuation of US\$10/t (high price +)

2. Breakdown of Increase/Decrease in Operating Profit

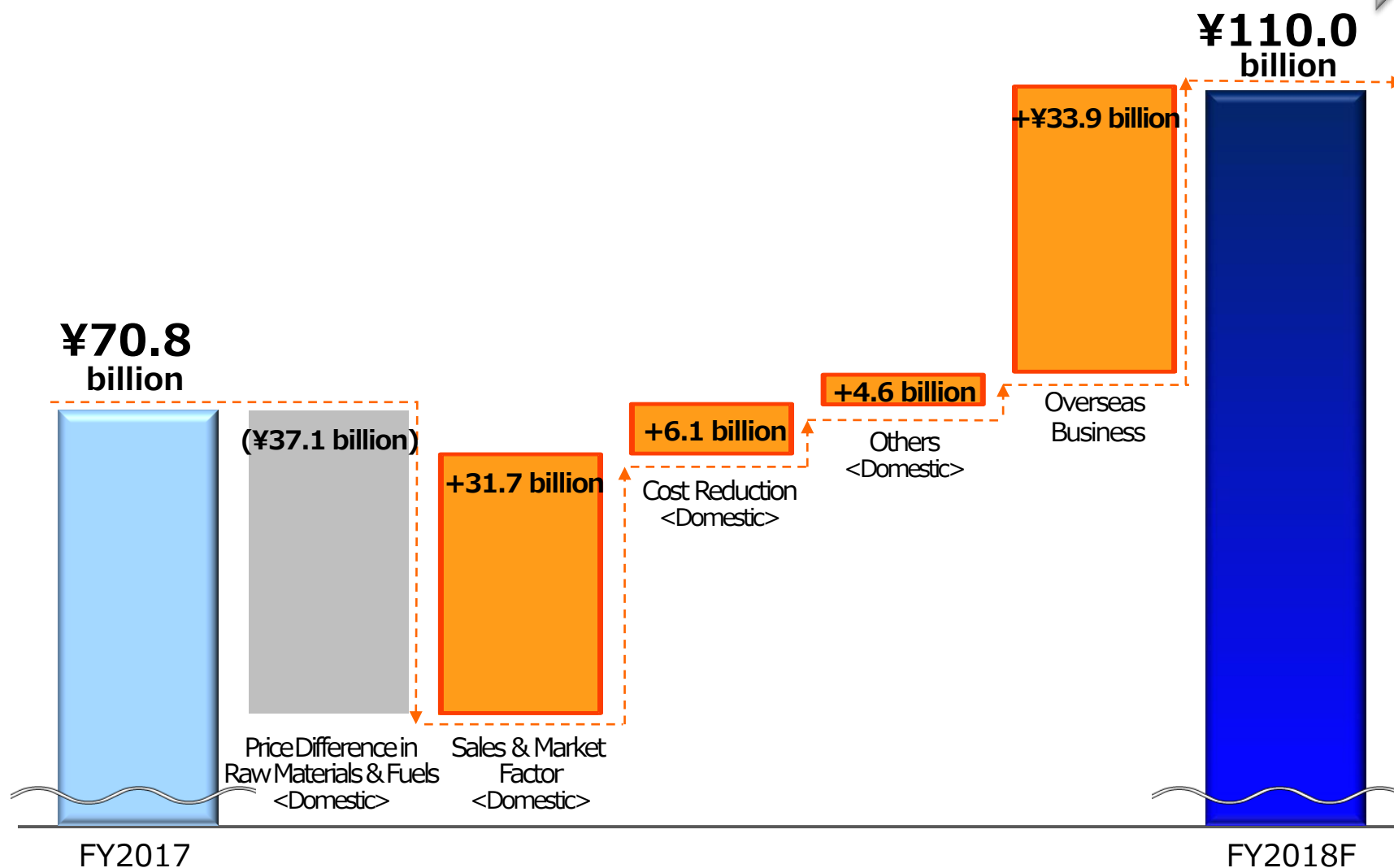
[FY2017 to FY2018 Forecast] (consolidated)



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Profit increase of ¥39.2 billion

**due to price adjustment of paper products,
overseas business expansion, and cost reduction efforts, etc.**



3. Sales and Operating Profit by Segment

[FY2018 Forecast]



(¥ billion)

	FY2017		FY2018F		Increase (Decrease)	
	Sales	Operating Profit	Sales	Operating Profit	Sales	Operating Profit
Household & Industrial Materials	651.3	5.4	690.0	20.0	38.7	14.6
Functional Materials	220.8	18.6	226.0	19.0	5.2	0.4
Forest Resources & Environment Marketing	298.5	39.0	327.0	67.0	28.5	28.0
Printing & CommunicationsMedia	305.4	(1.2)	297.0	(5.0)	(8.4)	(3.8)
Others	9.9	9.0	10.0	9.0	0.1	0.0
Total	1,485.9	70.8	1,550.0	110.0	64.1	39.2

*1: Sales include intra-segment sales *2: Others include adjustment amount

4. Influences of Changes in External Environment



(¥billion/year)

			Household & Industrial Materials	Functional Materials	Forest Resources & Environment Marketing	Printing & Commu- nications Media	Total
Impact on operating profit from:							
Changes in exchange rates							
USD-based transactions (USD stronger by 10%)	Japanese Yen (JPY)	110.00 JPY/USD	↓	→	→	↓	(6.8)
	Brazilian Real (BRL)	3.60 BRL/USD	→	→	↑	→	+3.2
	New Zealand Dollar (NZD)	1.41 NZD/USD	↑	→	↑	→	+8.7
Conversion of profit in foreign currency to JPY (JPY weaker by 10%)	US Dollar (USD)	110.00 JPY/USD	↑	↑	↑	→	+3.4
	Brazilian Real (BRL)	30.55 JPY/BRL	→	↑	→	→	+0.4
	New Zealand Dollar (NZD)	78.00 JPY/NZD	↑	→	↑	→	+1.9
Changes in pulp prices (USD10/t stronger)			↓	↓	↑	↓	+2.3

+ : Improve
() : Worsen

III. Group Management Targets

1. Management Plans

(1) Management Philosophy/Management Strategies



Management Philosophy

~Desired Future Image of Oji Group~

Creation of
Innovative Values

Contribution to
Future and the World

Harmony with
Nature and Society

「Beyond
the Boundaries」

Management Strategies

~Group Fundamental Policies and Numerical Management Targets~

~FY2016-18 Group Fundamental Policies~

Expansion of Overseas Businesses

**Concentration /
Advancement of Domestic Businesses**

Enhancement of Financial Foundation

~Numerical Management Targets FY2018(*)~

<Operating Profit>
(consolidated)

¥100.0 billion

<Overseas Sales Ratio>

35% (Future target 50%)

<Interest-bearing Debt>

¥700.0 billion

* formulated in FY2015

1. Management Plans

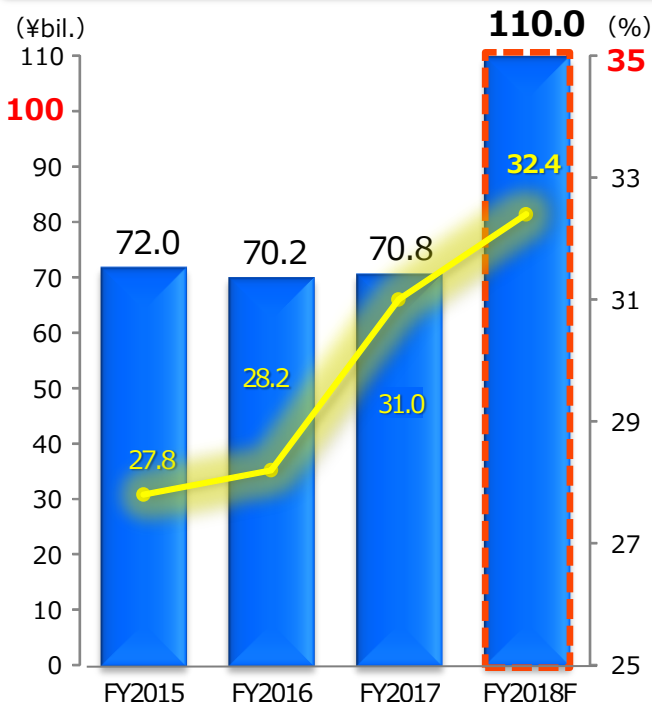
(2) Progress of FY2018 Mid-term Management Plan



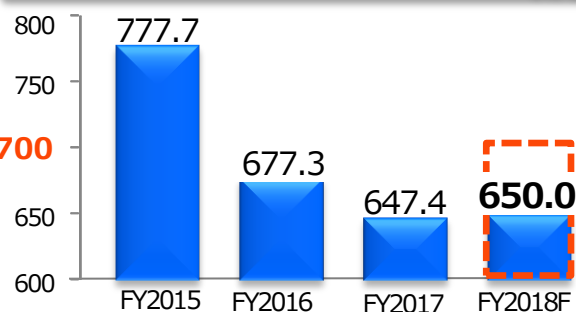
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Operating Profit: **¥110.0 bil.** (Achieving the target)

Overseas Sales Ratio: **32.4%** (target: 35%)



Interest-bearing Debt: **¥650.0 bil.** (Achieving the target)



FY2018 Dividend: increase planned (¥10.0 → ¥12.0)

Actions for Numerical Management Targets 2018

Household & Industrial Materials	[Domestic]	<ul style="list-style-type: none"> Industrial materials: profitability enhancement/cost reduction <ul style="list-style-type: none"> * O&CIvory Board: sales expansion of high-grade boxboard * O&CPaper Bag HD: restructuring of paper bag business Disposable diapers: competitiveness enhancement (machine establishment, product launch)
	[Overseas]	<ul style="list-style-type: none"> Packaging: Expansion in [SE Asia/Oceania/India] Disposable diapers: <ul style="list-style-type: none"> * Manufacturing/sales in [Malaysia/Indonesia], export to [China]
Functional Materials	[Domestic]	<ul style="list-style-type: none"> Launch/sales expansion of R&D-oriented/high value-added products
	[Overseas]	<ul style="list-style-type: none"> Thermal paper/functional materials <ul style="list-style-type: none"> * Capacity enhancement (OPE[Brazil], KANZAN[Germany]) * M&A/establishment of printing/converting sites (HRL•TP[Malaysia], OMPC[Myanmar])
Forest Resources & Environment Marketing	[Domestic]	<ul style="list-style-type: none"> Renewable energy: <ul style="list-style-type: none"> * Hydroelectric (revamp)/biomass (boiler construction)
	[Overseas]	<ul style="list-style-type: none"> Pulp: <ul style="list-style-type: none"> * Establishment of new dry pulp machine (Jiangsu Oji Paper[China]) * Productivity/competitiveness enhancement (CENIBRA[Brazil], Jiangsu Oji Paper[China], Oji Fibre Solutions[NZ])
Printing & Communications Media	[Domestic]	<ul style="list-style-type: none"> Restructuring of manufacturing system/cost reduction <ul style="list-style-type: none"> * Machine shut-down: Oji Paper Kasugai Mill's #4 Machine
	[Overseas]	<ul style="list-style-type: none"> Continual cost reduction (Jiangsu Oji Paper[China])
Others	[Domestic & Overseas]	<ul style="list-style-type: none"> New materials/technologies development (CNF, water treatment technology, medicinal plants) Sales of idle assets (real estate, stocks), etc.

IV. Topics

(1) Southeast Asia : Corrugated Container Business - 1

Vigorously expand corrugated container business in SE Asia where strong performance continues

Further Enhancement of Corrugated Container Business

Plant Establishment [planned]

India	2 sites	{Dec. 2018} {Mar. 2020}
Vietnam	1 site	{Jul. 2019}
Cambodia	1 site	{Jan. 2020}

Capacity Enhancement [planned] (Malaysia)

Installation of
containerboard machine
[Apr. 2021] ➔ **+450,000t/yr**

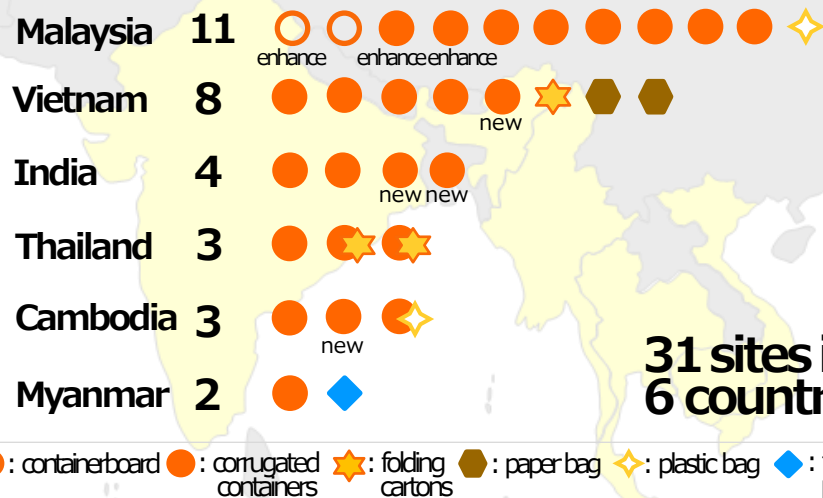
Capacity enhancement at 2 corrugated container plants → **Double** production at each plant
[Dec. 2018]



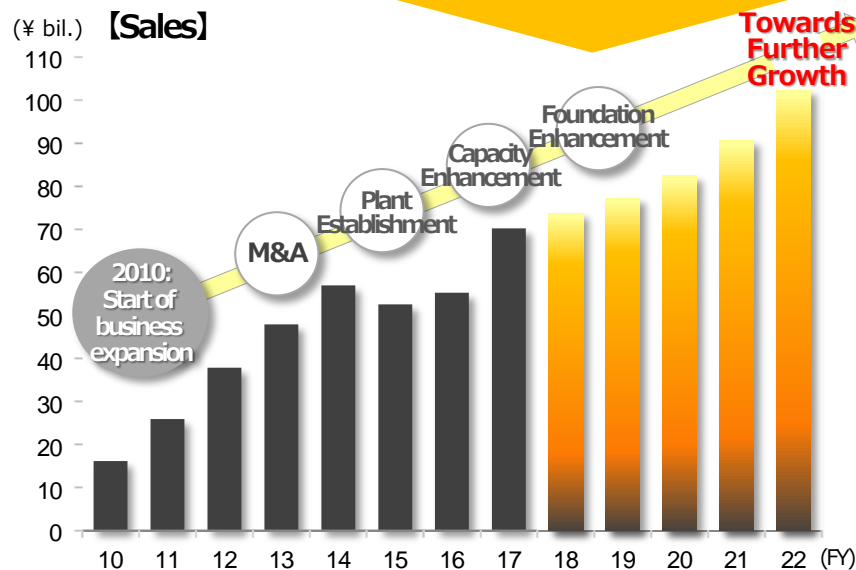
1st Plant at Phnom Penh, Cambodia

Consider entry into new countries (i.e. Indonesia, Philippines, etc.)

【Packaging Business in SE Asia: Manufacturing sites by lineup】



31 sites in 6 countries



1. Business Strategies

(1) Southeast Asia : Corrugated Container Business - 2

Installation of containerboard machine in Malaysia

Operation Commencement

April 2021 (planned)

Objectives

Improve self-sufficiency rate of base paper

→ Further integrate corrugated container business

Production Capacity

+450,000 t/year

Meet the demands for increasingly higher quality products

Business Foundation

- Acquisition of long-term water intake right (completed)
- Renovation of equipment for energy supply and water treatment

Enhance cost competitiveness and develop foundation for expanding corrugated container business

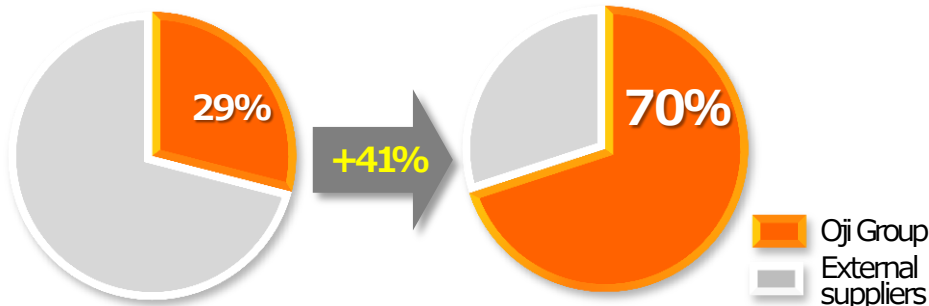


GSPP headquarters plant which expects new containerboard machine

Self-sufficiency Rate of Containerboard in SE Asia

【Before the installation】

【After the installation】



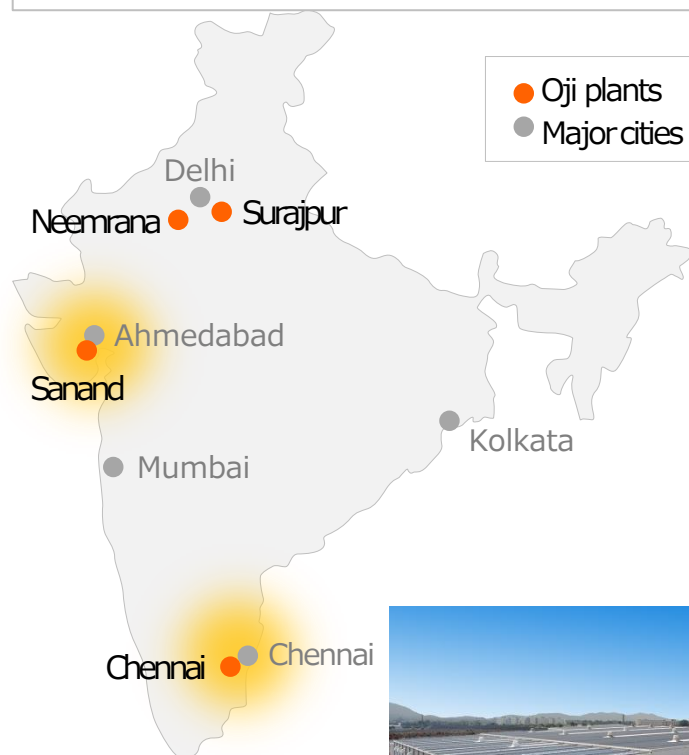
To corrugated container plants inside/outside the region
(24 in SE Asia, including 8 in Malaysia)

1. Business Strategies

(1) Southeast Asia : Corrugated Container Business - 3

Business expansion in India

Oji Group Corrugated Container Plants in India



[1st plant] Oji India Packaging / Neemrana Plant (Jul. 2014)

[2nd plant] Oji Interpack India / Surajpur Plant (Dec. 2015)

[3rd plant] Oji Interpack India / Chennai Plant (under construction)
Oji India Packaging / Chennai Plant

Operation Commencement

Dec. 2018 (planned)

Location

Chennai, Tamil Nadu
(Vallam Vadagal Industrial Estate)

Business Lineup

(1) Heavy-duty corrugated containers [1st phase]
(2) General corrugated containers [2nd phase]

[4th plant] Oji India Packaging / Sanand Plant (construction planned)

Operation Commencement

Mar. 2020 (planned)

Location

Gujarat
(Sanand Industrial Estate)



Oji India Packaging's Neemrana Plant

1. Business Strategies

(2) Domestic Corrugated Container Business



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New Plant Establishment

Decision made to establish a new plant under Morishigyo in the Kanto region , where demand growth is expected in the future

Location

Funabashi-shi, Chiba

Production Capacity

20 million m2/month

Operation Commencement

Sequentially from April 2020 (planned)

-Further promote integrated business of base paper and converting

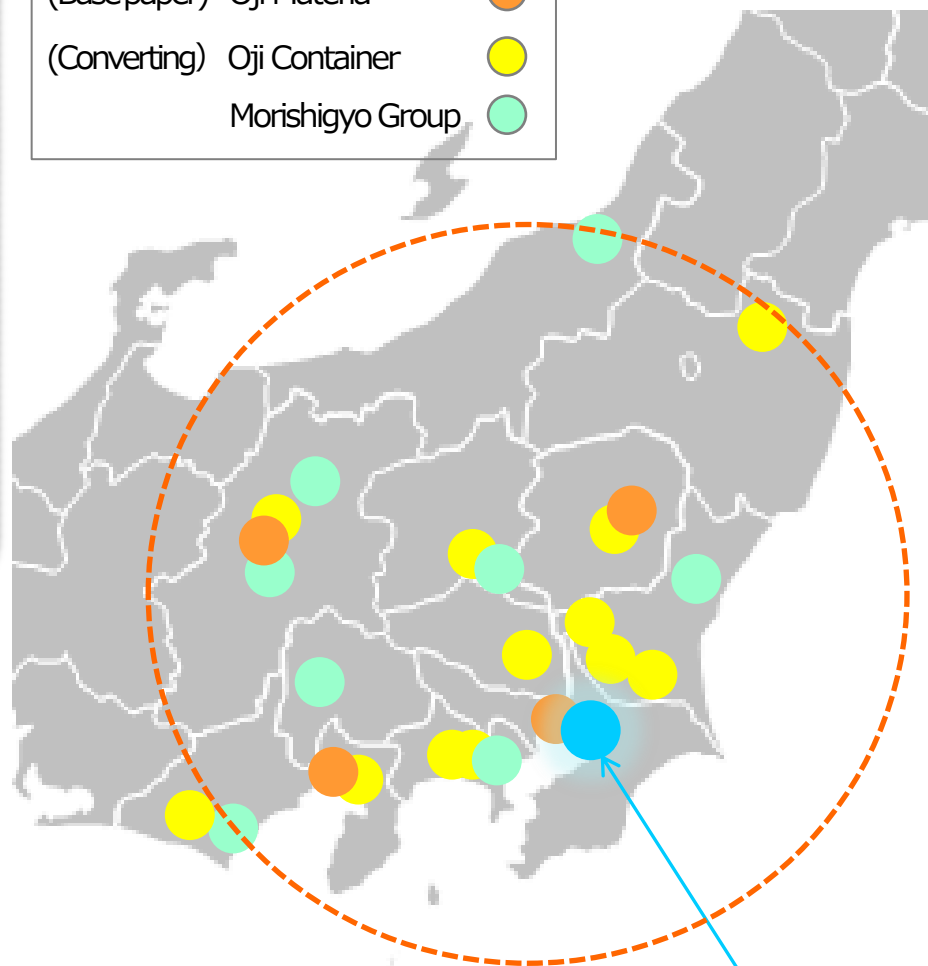
-Increase supply volume and strengthen competitiveness



Morishigyo's existing corrugated container plant (Gunma Morishigyo)

Corrugated Container Plants in the Kanto Region

- (Base paper) Oji Materia ●
- (Converting) Oji Container ●
- Morishigyo Group ●



Planned location of the plant establishment

1. Business Strategies

(3) Overseas Disposable Diaper Business

Promote business expansion in growing markets of SE Asia and China

◆ Establishment of Own Disposable Diaper Factory [Indonesia/Oji Indo JV Company]

Operation Commencement

Beginning of 2020 (planned)

Background

Jan. 2015 Establishment of manufacturing/sales companies (JV with Indofood CBP)

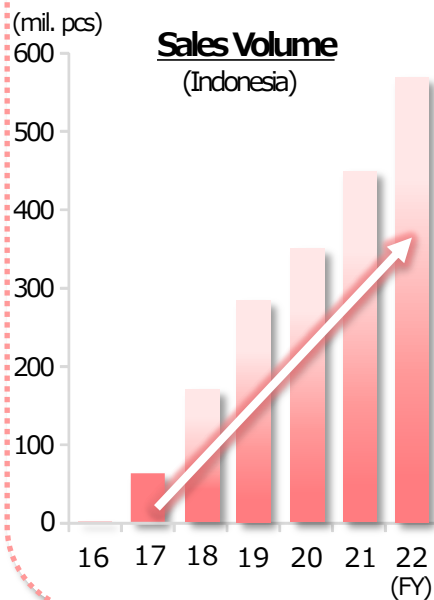
Nov. 2016 Start of sales through OEM

Location

Bekasi, West Java (Suburbs of Jakarta)

Objectives

Strengthen foundation for further business expansion
(Reduce costs by reviewing raw materials and eliminating the need for subcontracting cost)



Enhancement of Sales



1. Business Strategies

(4) Domestic Household Paper / Biomass Power Generation Businesses

Enhance foundation of domestic business, centering on collaboration with Mitsubishi Paper Mills. Both projects are making good progress towards operation commencement in 2019.

Household Paper

MPM Oji Home Products

→ Develop household paper business within Hachinohe Mill of Mitsubishi Paper Mills

Apr. 2019 Operation commencement (planned)

- Utilization of competitive infrastructure of Hachinohe Mill
- Oji's first household paper mill in the Tohoku region
→ Logistics cost reduction



Biomass Power Generation

MPM Oji Eco-Energy

→ Construct a biomass boiler within Hachinohe Mill of Mitsubishi Paper Mills

Jul. 2019 Operation commencement (planned)

- Capacity: ca. 75,000kW
- Sales volume: ca. 530 mil. kWh/yr
- Sales amount: ca. ¥11.0 bil./yr



◆ <Topics> Oji Group's Household Paper Business

Full scale product relaunch of "**Hana-celeb**", a moisture-rich tissue paper celebrating its 15th anniversary

Continue to strengthen development of high quality-added products such as moisture-rich products and environment-conscious products



◆ <Topics> Oji Group's Electric Power Business

Power generation

Biomass: 3 existing boilers have started operation
Hydroelectric: facility revamp, conversion to power sales

Electric power retailing

Steady sales of a JV power retailing company (Oji-Itochu Enex power retailing)

Fuel chip

Establishment of a new fuel chip manufacturing company (Nov. 2018 in Hokuto-shi, Hokkaido)

1. Business Strategies

(5) Oceania Business



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Business Expansion in Oceania

FY2018 Operating Profit (forecast)

+¥11.9 billion (year-on-year)

Oji Fibre Solutions

Business Lineup

Pulp and paper, packaging
(corrugated container,
paper bag, paper cup)

Earnings Improvement

- Introduce Oji Group's know-how and operation management approaches
- Stabilize operation, improve acceptance ratio

Business Expansion

- Acquisition of Oji Cardboard Carton Solutions (Sept. 2017)
- Operation commencement of Yatala Plant in Australia (Oct. 2017)

Pan Pac

Business Lineup

Pulp, lumber

Business Expansion

- Integrated manufacturing of lumber in the South Island of NZ (Otago Plant)



Oji Fibre Solutions' Yatala Plant which commenced operation in Oct. 2017

Australia: 5 sites

Oji Fibre Solutions

Corrugated container : 4
Paper cup : 1

- : Pulp
- ★ : Lumber
- : Paperboard
- : Corrugated container
- ★ : Paper cup
- : Paper bag
- : Other packaging

New Zealand: 10 sites

Oji Fibre Solutions

Pulp : 1
Pulp/paperboard : 1
Paperboard : 1
Corrugated container : 3
Paper bag : 1
Other packaging : 1

Pan Pac

Pulp/lumber : 1
Lumber : 1



Pan Pac's Otago Plant which expands production capacity to enhance lumber business

2. Research and Development

(1) Cellulose Nano-fiber (CNF)



Continue focusing on developing cellulose nano-fiber, a new material

Cellulose nano-fiber (CNF):

Plant fiber (pulp) finely fibrillated to nano-order level.
It is transparent, light and durable, resistant to deformation and demonstrates high thickening effects.

"Phosphate Esterification", one and only efficient manufacturing technology developed by Oji

Features of phosphate esterification

- Easier fibrillation enabled by introducing ionic functional group (phosphate group) on CNF surface, which increases electrostatic repulsion between CNF.
- CNF slurry obtained through the above technology is highly transparent and viscous.
- Continuous transparent sheets are developed with the above CNF as a raw material by taking advantage of its high transparency.
- Succeeded in developing composites with polycarbonate resin of which we currently promote application development by taking advantage of its high transparency.

Oji Group's Cellulose Nano-fiber

Slurry (Also available in powder form)



Typical fiber diameter	3nm	3~100nm
Function	High transparency High viscosity High strength Water-retentivity Thixotropy (*)	High strength Water-retentivity Thixotropy (*)
Application	Cosmetics, Paints, Automobile parts, Thickeners, Reinforcing agents	Automobile parts Thickeners Reinforcing agents

*Thixotropy: property of becoming less viscous when the force is applied, but regaining its viscosity when left to stand.

Continuous Transparent Sheet Oji as "one and only" supplier

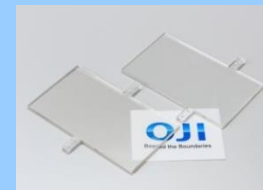


Typical fiber diameter	3nm
Function	High transparency High strength & high modulus Excellent flexibility Excellent thermal dimensional stability (*)
Application	Glass replacement, FRP (**) replacement (for display, front cowl, etc.)

* Thermal dimensional stability: property of being resistant to heat deformation

** FRP: Fiber Reinforced Plastic

Composite with Polycarbonate Resin Oji as "one and only" supplier



Typical fiber diameter	3nm
Function	As transparent as polycarbonate, Impact resistant Improved modulus (by four times) Improved thermal dimensional stability (by three times)
Application	Glass replacement FRP replacement (for light weight window, etc.)

2. Research and Development

(2) Plastic Replacement



A worldwide increase in demand for plastic replacement (review the use of plastic containers and straws)
⇒ Oji Group actively promotes R&D by establishing the Packaging Innovation Center in Apr. 2018

Composite of Biodegradable Plastic and Pulp

○ Development of plastic pellets combining pulp with biodegradable plastic

- Use of pulp improves rigidity and heat resistance of molded products
- Expansion to a wider range of applications is expected



← Plastic pellet

Left: biodegradable plastic by itself
Right: biodegradable plastic combined with pulp

Ex. of molded products →

Top: biodegradable plastic by itself
Bottom: biodegradable plastic combined with pulp



Paper Products with Added Functions

(1) Recyclable packaging materials with barrier properties



Multiple barriers to protect against both water vapor and oxygen

(2) Paper cup traveler lids and base paper for paper straws



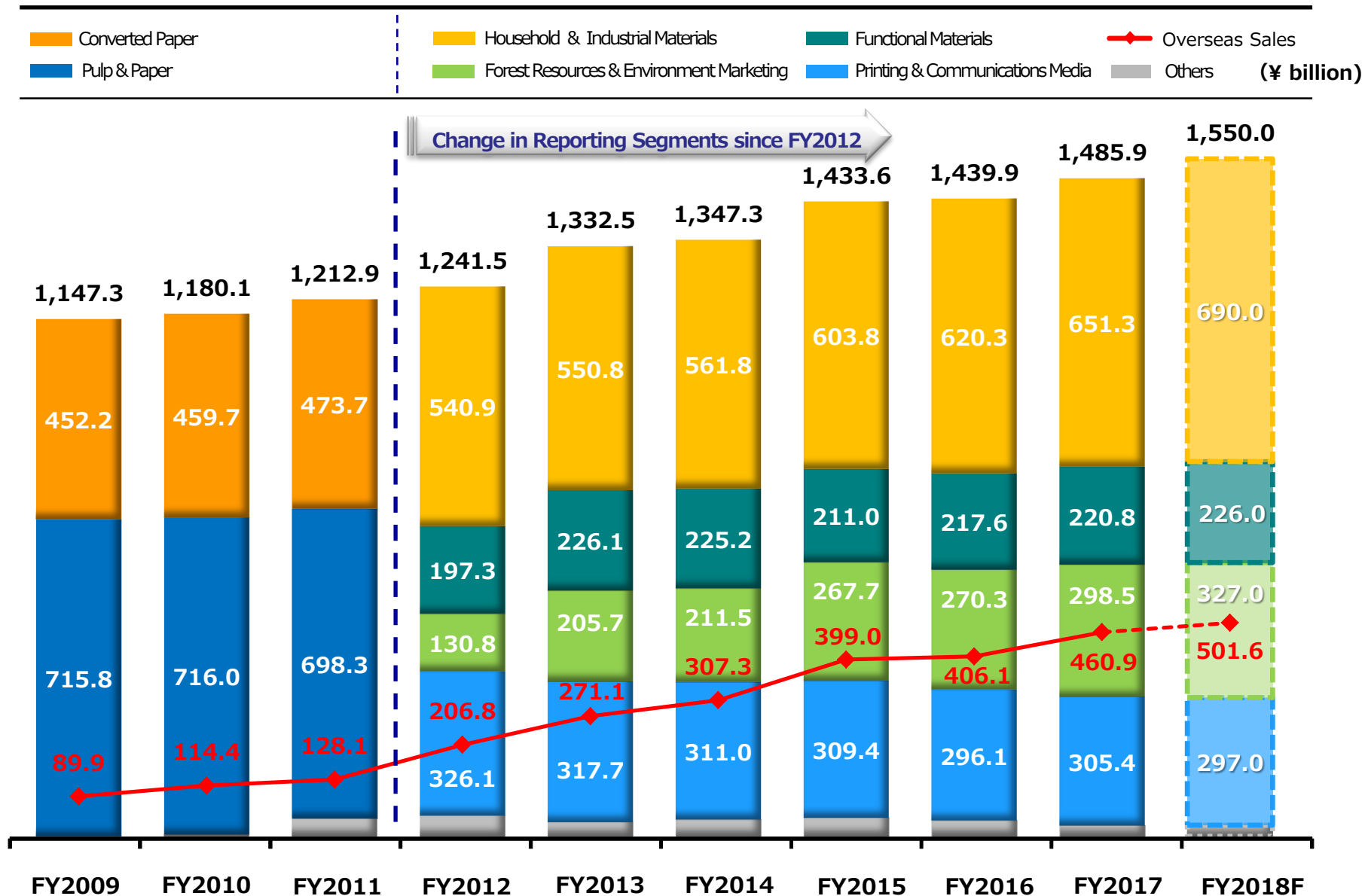
Developed a Paper lid made from pulp

- Used as a lid for paper cups for both hot/cold beverages, thanks to its water/heat resistant property

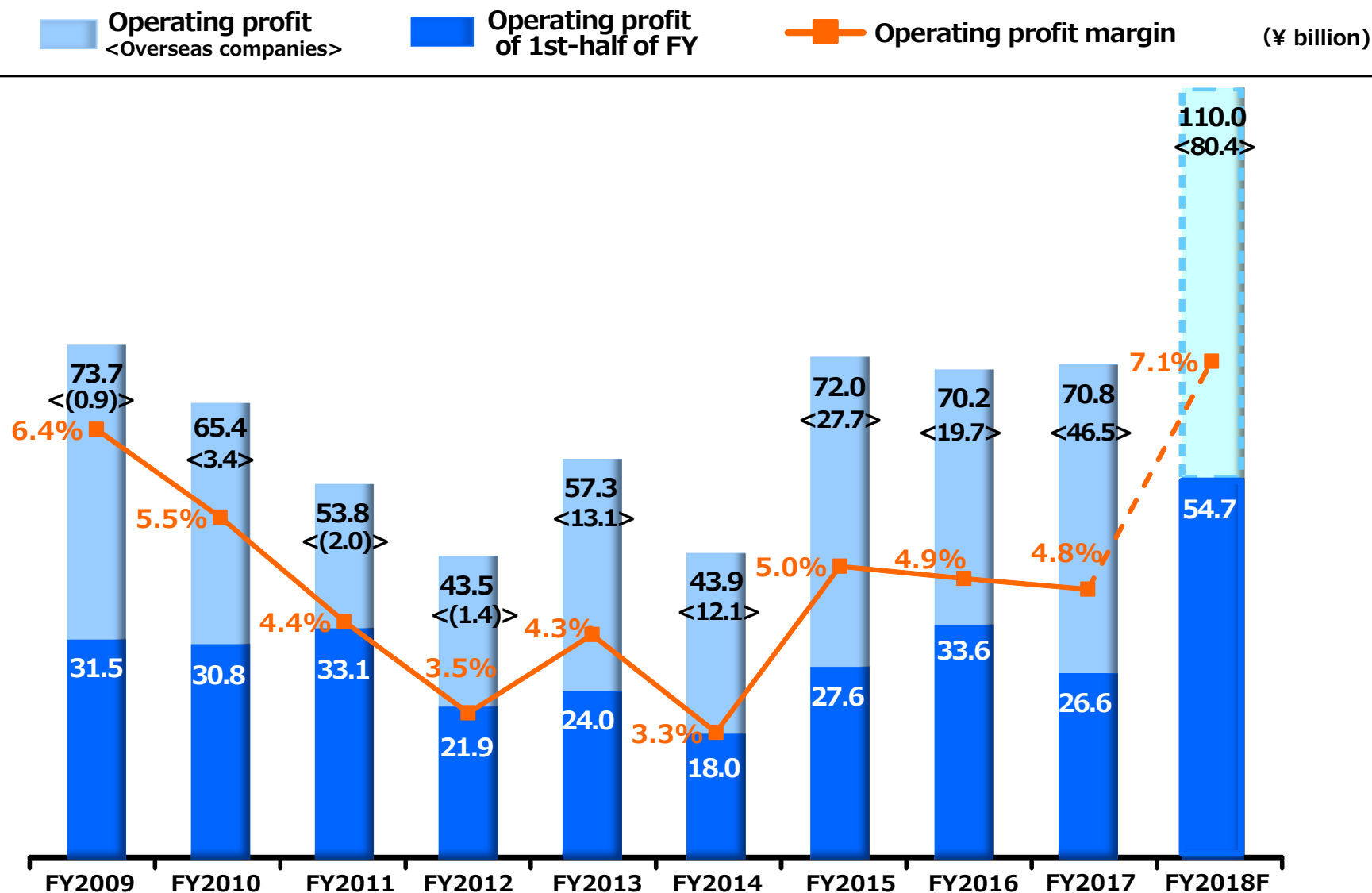
Started sample distribution of water resistant base paper for paper straws

《Reference Materials》

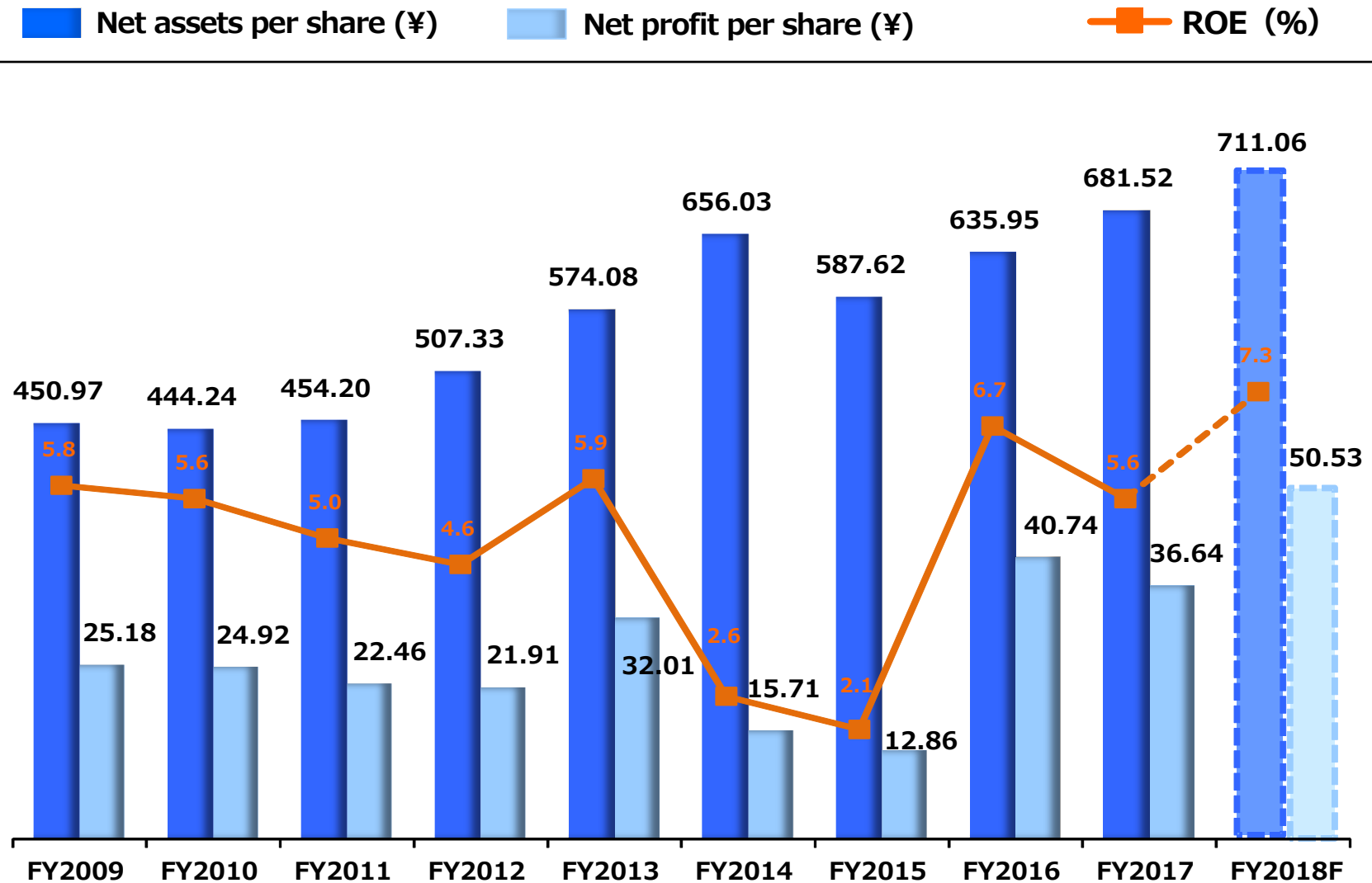
Trends of Net Sales by Segment (consolidated)



Trends of Operating Profit (consolidated)



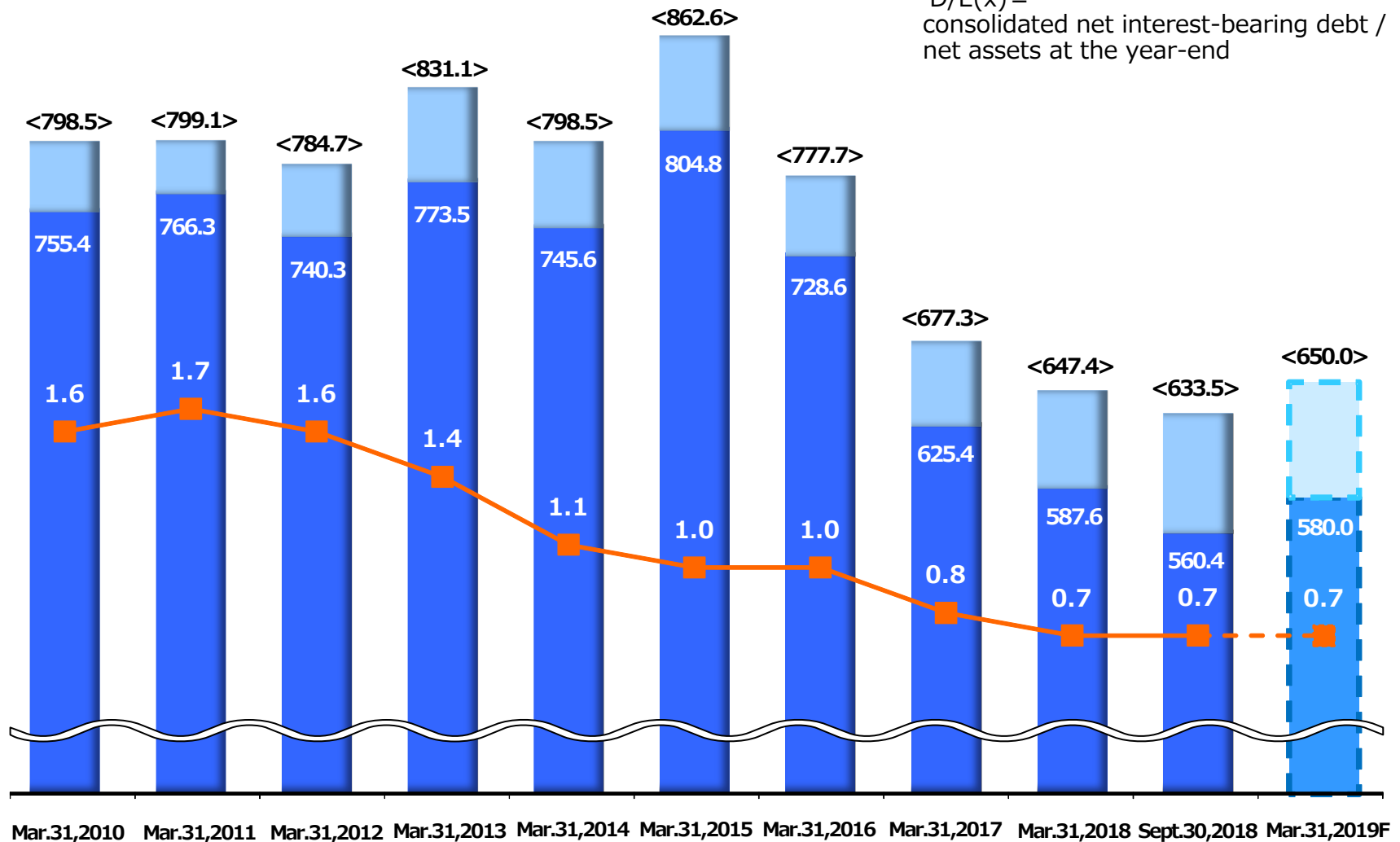
Trends of Return on Equity (ROE)



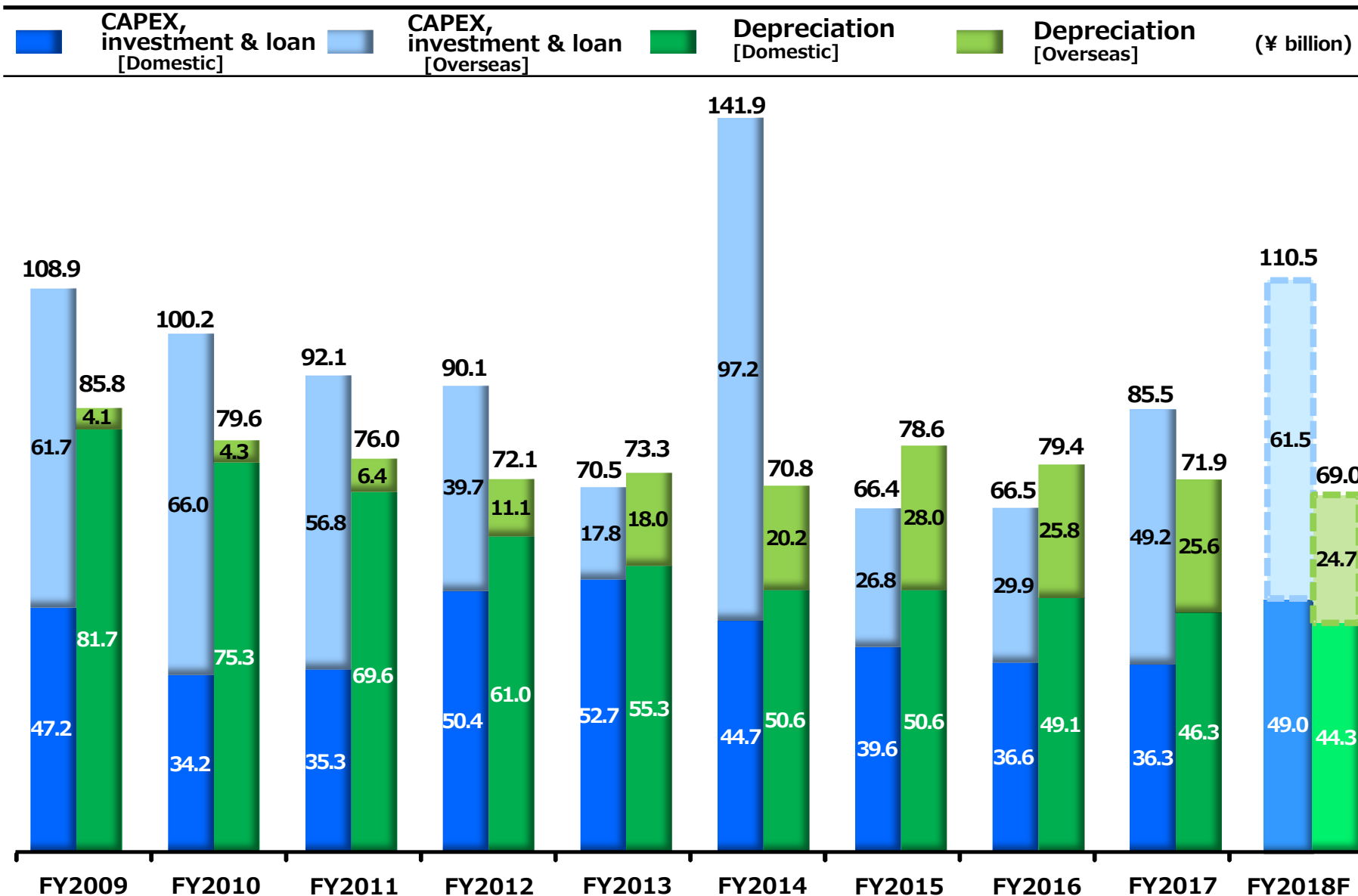
Trends of Net Interest-bearing Debt (consolidated)

■ Consolidated net interest-bearing debt
 ■ <Consolidated interest-bearing debt>
 —■— D/E(x)
 (¥ billion)

*D/E(x) =
 consolidated net interest-bearing debt /
 net assets at the year-end



Trends of CAPEX / Depreciation (consolidated)



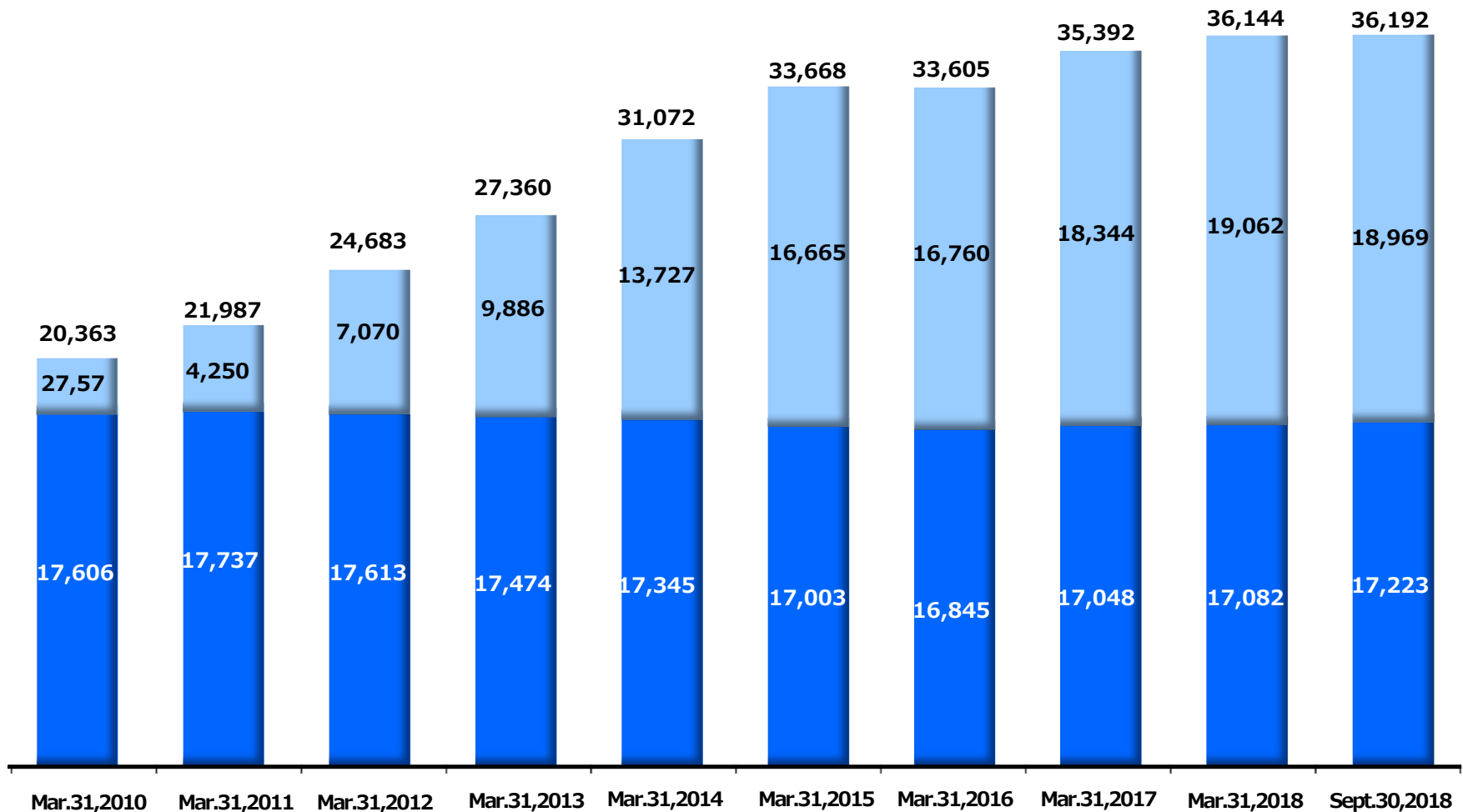
Trends of Employees (consolidated)



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■ **Employees [Domestic] (consolidated)**
■ **Employees [Overseas] (consolidated)**
(person)

*The figures do not include number of temporary employees



1st-half of FY2018 Industry Demand

(1,000t)						
	Domestic Shipments		Custom Cleared Imports*1		Total	
	Year-on-Year		Year-on-Year		Year-on-Year	
Containerboard	4,597	99.7%	24	104.9%	4,621	99.7%
Boxboard	785	102.0%	126	99.4%	910	101.7%
Other Paperboard	327	101.9%	16	115.0%	344	102.4%
Paperboard Total	5,709	100.1%	166	101.5%	5,874	100.2%
Sanitary Paper	866	97.6%	100	99.8%*2	965	97.8%
Packaging Paper	355	101.4%	3	70.9%	358	101.0%
Newsprint	1,275	94.1%	0	3.8%	1,275	93.8%
Printing/Communications Paper	3,471	95.0%	342	67.3%	3,813	91.6%
Miscellaneous Paper	355	94.2%	9	104.0%	364	94.4%
Paper Total	6,321	95.4%	454	72.4%	6,775	93.5%
Paperboard and Paper Total	12,030	97.6%	620	78.5%	12,650	96.5%
(million m ³)						
Corrugated Containers *3	7,185	100.8%			7,185	100.8%

Source: Japan Paper Association - Statistics on Paper and Paperboard; Trade Statistics of Ministry of Finance, Japan; Japan Corrugated Case Association - Production Volume of Corrugated Case

*1: Statistics for customs cleared imports of paper: April 2018 - September 2018(preliminary)

*2: The figure includes secondary products (processed goods)

*3: The figure represents the production volume of corrugated containers



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Oji Hall reopened in October 2018



Beyond the Boundaries

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