Financial Factbook 2018

TOAGOSEI

Management's Discussion & Analysis

The financial section was translated into English based on some disclosed documents including the securities report of the Japanese version and is provided for information purpose only.

Overview of Fiscal 2018

During the reporting term (January 1 to December 31, 2018), the growth of the domestic economy lacked strength, with slowing export levels toward the latter half of the year in spite of steadily improving employment and income conditions. As for the global economy, the US economy progressed favorably as a whole, but uncertainty over the future deepened mainly due to the growing wave of protectionism represented by the US-China trade war and fluctuations in the financial and capital markets.

In the overall surroundings of Toagosei Group (hereinafter "the Group"), demand for general-purpose products remained steady on the back of the moderately recovering domestic economy, while factors such as rising raw material and fuel prices and prominent decreases in the demand for some electronics-related products from the second half of the year put downward pressure on income.

As a result, net sales in the reporting term increased by 3.7% year on year on a consolidated basis to ¥150,066 million, while operating income decreased by 6.0% to ¥16,408 million, ordinary profit decreased by 5.9% to ¥17,403 million, and net income attributable to owners of parent decreased by 1.3% to ¥12,748 million.

Sales by Segment

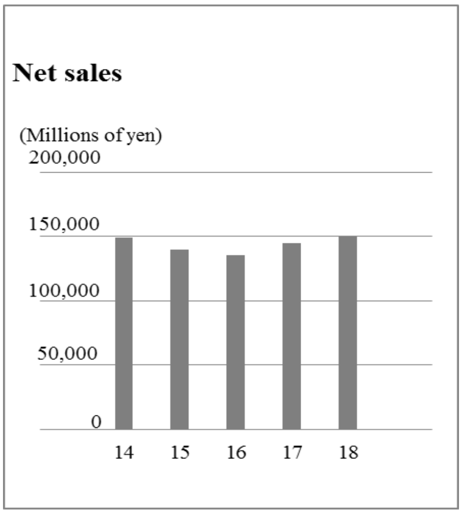
Commodity Chemicals

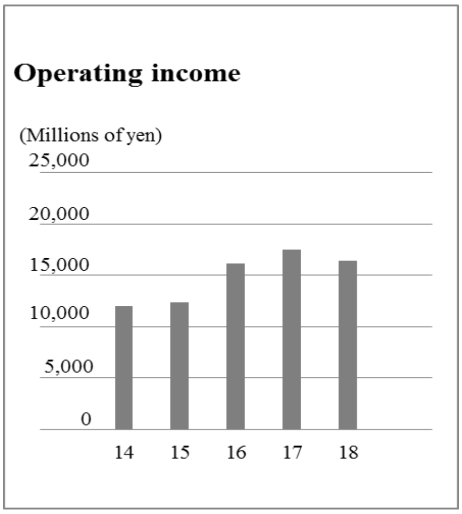
In Commodity Chemicals, sales of electrolytic products increased as the overall sales volume progressed steadily and the sales prices of caustic soda optimized in the first half of the year took effect. Sales of acrylic monomer products increased due to optimized sales prices in response to rising raw material prices, although sales volume decreased mainly because a subsidiary in Singapore suspended production of some products. Sales of industrial gas increased thanks to steady demand in Japan. As a result, sales in this segment increased by 4.9% year on year to ¥69,908 million.

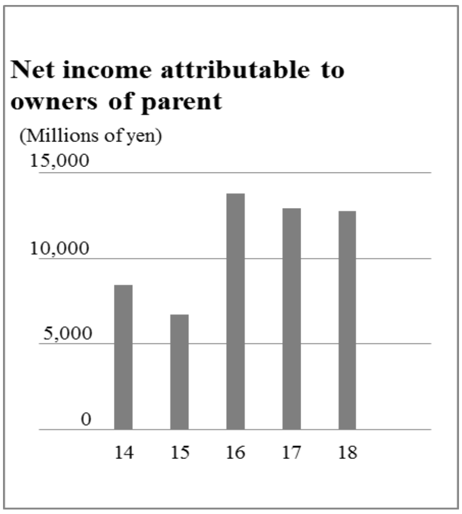
Although income from acrylic monomer products decreased mainly due to the effect of decreased sales and large-scale regular repairs in Japan, segment income increased by 14.8% to ¥6,654 million thanks to expanded income from caustic soda and industrial gas.

Polymer & Oligomer

Sales of acrylic polymers increased thanks to a sales expansion of high-value-added products mainly used for lithium-ion rechargeable batteries and cosmetic raw materials. Sales of acrylic oligomers increased because of strong sales in the domestic and overseas markets. Sales of polymer flocculants increased due to a rise in sales volume and progress in the optimization of sales prices. As a result, sales in this segment increased by 5.0% year on year to ¥29,506 million.







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Segment income decreased by 32.8% to ¥2,977 million due to downward pressure on income mainly associated with measures taken in response to a production increase of acrylic polymers and increased costs related to a launch of operations at a subsidiary in Thailand, in addition to delays in the optimization of sales prices in response to rising raw material prices.

Adhesive Material

Sales of instant glues decreased mainly due to the effect of declining sales in overseas markets, although steady domestic sales to convenience stores and for industrial applications continued. Sales of functional adhesives increased mainly due to solid sales of products for automotive-related materials, despite sluggish demand for reactive adhesives mainly used for high-performance information devices. As a result, sales in this segment decreased by 0.8% year on year to ¥11,914 million.

Segment income decreased by 3.5% to ¥2,567 million mainly due to the effect of decreased sales of instant glues and high-value-added functional adhesives in overseas markets.

Performance Chemicals

Sales of high-purity inorganic chemicals increased mainly due to a rise in sales volume of high-purity products such as liquid hydrogen chloride on the back of ongoing vigorous demand for semiconductors. Sales of inorganic functional materials decreased mainly due to the effect of declining exports of inorganic antimicrobial agents and sluggish shipments of electronics-related products. As a result, sales in this segment increased by 3.9% year on year to ¥8,095 million.

Segment income increased by 6.3% to ¥2,548 million due to the contribution from expanded sales of high-purity inorganic chemicals, although income from inorganic functional materials decreased mainly due to the effect of a drop in sales.

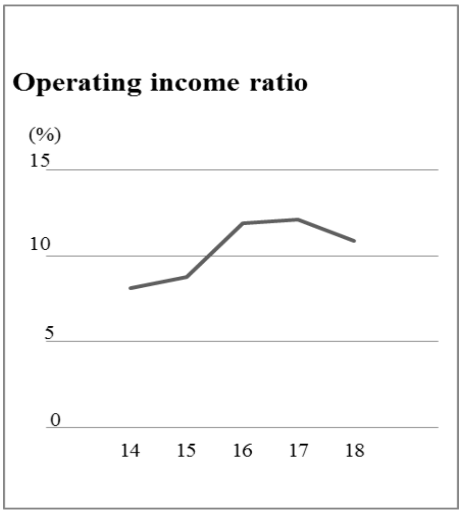
Plastics

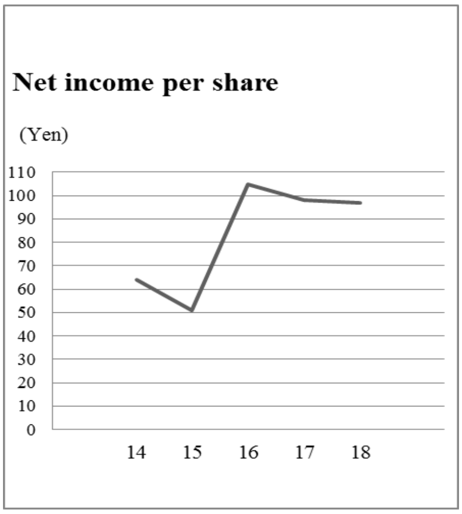
Sales of piping equipment decreased mainly due to the effect of delays in construction resulting from bad weather in the summer and intensified sales competition. Sales of products for construction and civil engineering increased mainly due to a rise in numbers of orders received. Nursing care product sales increased mainly due to sales of new products. Sales of elastomer compounds increased mainly due to expanded sales volume. As a result, sales in this segment increased by 1.3% year on year to ¥27,167 million.

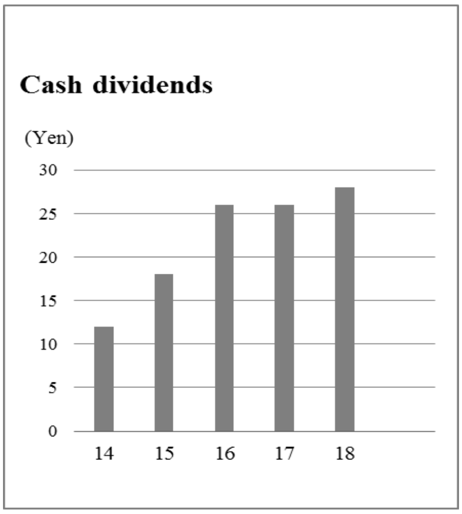
Segment income dropped by 26.7% to ¥1,427 million affected by deteriorated profitability of piping equipment mainly due to rising raw material costs, despite expanded earnings from nursing care products and products for construction and civil engineering.

Other Businesses

Sales for this segment, which comprises new product development operations, goods transportation services, and trading house operations, increased by 3.7% year on year to ¥3,474 million, and segment income totaled ¥230 million.







(Notes) 1. We have executed a two-for-one reverse stock split effective on July 1, 2015. Net income per share is calculated assuming that the two-for-one reverse stock split was executed at the beginning of fiscal 2012.
2. For fiscal 2015, the total annual dividend of ¥18 per share consists of an interim dividend of ¥6 per share and a term-end dividend of ¥12 per share. As we implemented a two-for-one reverse stock split effective on July 1, 2015, the interim dividend of ¥6 per share is an amount before the reverse stock split and the term-end dividend of ¥12 per share is an amount after the reverse stock split.

Cash Flows

Cash and cash equivalents at end of the year stood at ¥44,990 million, an increase of ¥2,853 million from the previous term-end.

Net cash provided by operating activities increased by ¥4,675 million year on year to ¥19,841 million due to a decrease in income taxes paid, although income before income taxes declined.

Net cash used in investing activities decreased by ¥11,276 million to ¥11,910 million because no major changes in fund management of over three months took place in the course of the year, despite a rise in purchases of property, plant and equipment.

Net cash used in financing activities increased by ¥861 million to ¥4,908 million due to rises in purchase of shares of a consolidated subsidiary and partial repayment of long-term debt.

Business Performance Prospects for Fiscal 2019

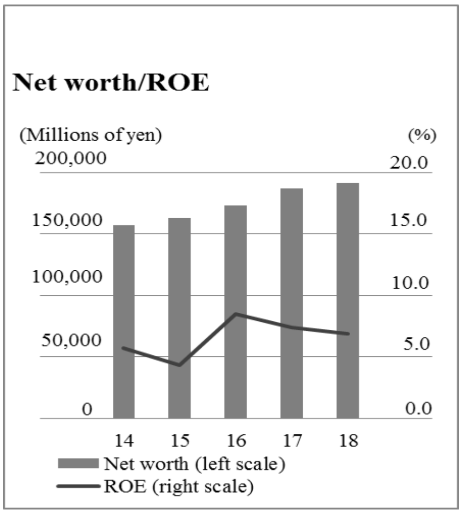
For the current term ending December 31, 2019, we forecast net sales of ¥150.0 billion, operating income of ¥16.5 billion, and net income attributable to owners of parent of ¥11.9 billion.

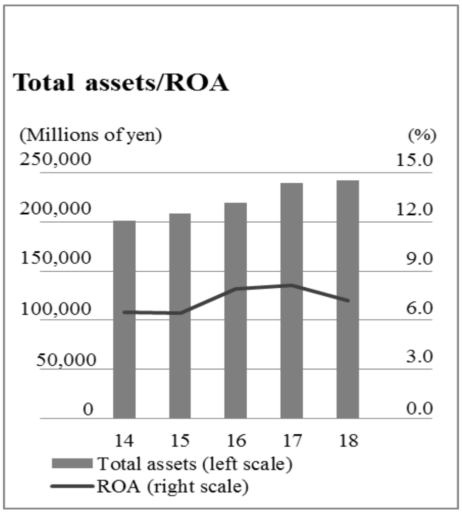
Economic Prospects for Fiscal 2019

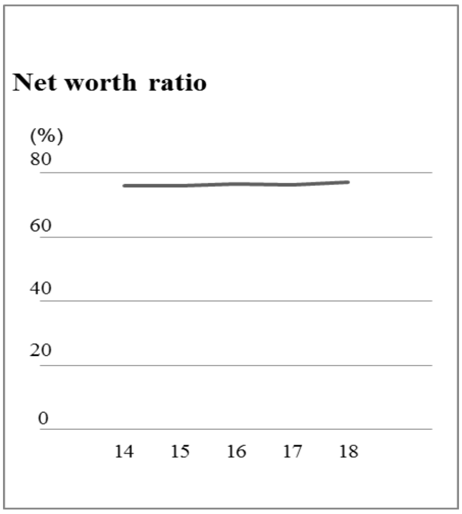
As for future prospects, we expect that the global economy will remain deeply uncertain as various issues left unresolved in 2018 intensify, such as growing protectionism originating from the US, the slowdown in the Chinese economy, and the development of Brexit. The Japanese economy is expected to continue enjoying improved employment conditions, but there remain concerns over how the unstable global economy and consumption tax rate hike upcoming in October will affect the real economy. The chemical industry is expected to encounter continued difficulties in forecasting future trends such as price fluctuations in crude oil and other resources, import and export trends in chemical products made from US shale, and the direction of environmental regulations in China and other countries.

Basic Policy on Shareholder Returns and Dividends for Fiscal 2018 and 2019

Our basic shareholder return policy is to pay stable dividends of ¥20 per share annually, taking into account the performance for the fiscal year in question, the future outlook, and forecast performance figures.







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For fiscal 2018 ended December 31, 2018, we made a term-end dividend payment of ¥14 per share. As we have already paid an interim dividend of ¥14 per share, the total annual dividend will be ¥28 per share.

The Company has revised the Toagosei Group Basic Policy on Corporate Governance and makes it a basic shareholder return policy to continue paying a stable dividend targeting a consolidated payout ratio of 30% or more in and after the term ending December 31, 2019. The Company will determine the dividend by comprehensively considering the strengthening of the management structure, enhancement of internal reserves, and the future outlook and progress of its businesses.

For the current term ending December 31, 2019, we are planning an annual dividend of ¥30 per share (payout ratio of 33.2%) consisting of an ordinary dividend of ¥28 (payout ratio of 31.0%) and a commemorative dividend of ¥2 for the 75th anniversary of the Company's foundation, based on the above basic policy and consolidated business performance prospects for the term ending December 31, 2019.

Business Risks

(1) Cost competition

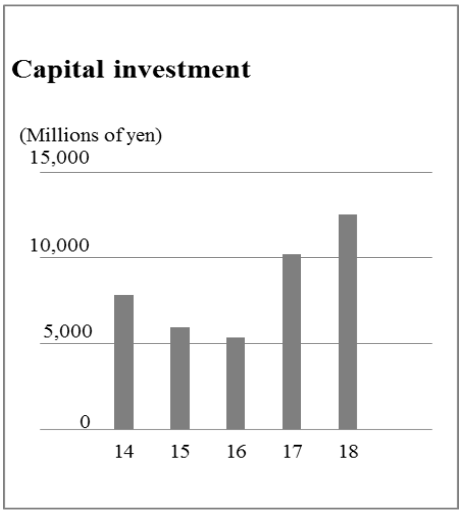
The Group manufactures and sells many products that are difficult to differentiate from those of other companies in terms of their function and performance. Given the present trend of intensifying price competition, there is a possibility that the Group, despite its efforts to strengthen marketing activities and reduce costs, may not be able to maintain its competitive edge over rival companies that are able to sell products with the same qualities at lower prices. This could adversely affect the business performance and financial position of the Group.

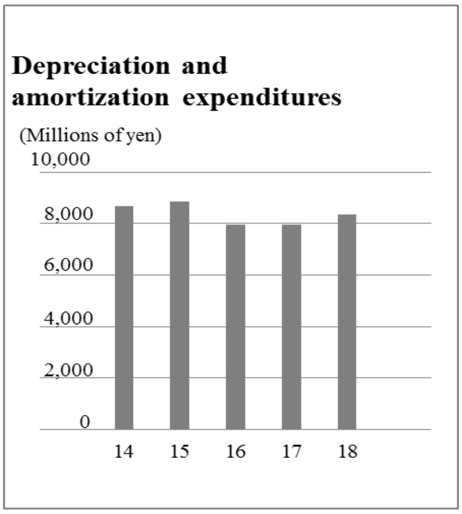
(2) Changes in the price of crude oil and naphtha

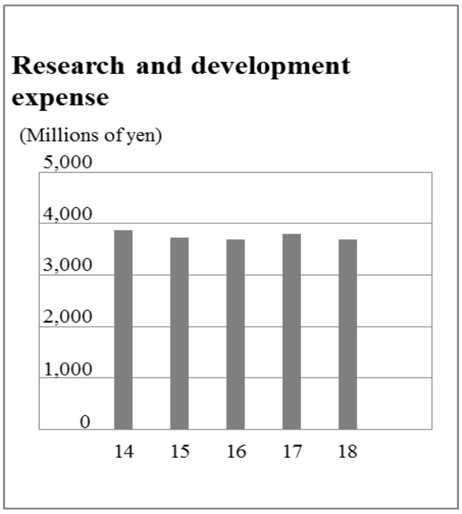
The purchase prices of the major raw materials of products manufactured and sold by the Group are affected by changes in crude oil and naphtha prices. Therefore, if the Group is unable to sufficiently raise its product prices, and/or if the Group is unable to rationalize its operations sufficiently to offset the rising prices of crude oil and naphtha, there is a possibility that the Group's business performance and financial position will be adversely affected.

(3) Product liability

In spite of our efforts to ensure a high level of product quality, there is a possibility that a customer or other party may experience financial losses or other forms of damage as a result of an unexpected defect in products manufactured and sold by the Group. As not all losses incurred will be covered by product liability insurance, this factor may adversely affect the business performance and financial position of the Group.







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(4) Impact of natural disasters

The production plants of the Group are located mostly in the Tokai Region of Japan, which is said to be particularly at risk of the occurrence of a major earthquake. If such an earthquake were to occur, substantial losses, including the suspension of operations, could result, and this would adversely affect the business performance and financial position of the Group.

(5) Major litigation

In the event of a major lawsuit being brought against the Group in the future, there is a possibility that this will adversely affect the Group's business performance and financial position.

(6) Deferred tax assets

The deferred tax assets of the Group are based on an amount that is recorded after judging the potential for collection based on forecasts of future taxable income. If such forecasts deviate significantly from actual results, there is a possibility that this will adversely affect the business performance and financial position of the Group.

(7) Changes in foreign currency exchange rates

For the reporting period, overseas sales of the Group accounted for 16.4% of total sales. The Group includes nine overseas consolidated subsidiaries and one overseas affiliated company subject to the equity method. There is therefore a possibility of a change in exchange rates adversely affecting the business performance and financial position of the Group.

(8) Changes in interest rates

The Group has been raising funds for its business operations and there is a possibility that a change in interest rates will influence the business performance and financial position of the Group.

(9) Application of accounting for the impairment of fixed assets

In line with accounting law in Japan, the Group has applied impairment accounting for fixed assets. As a result, in the event of a significant future decline in market prices of land, and/or a deterioration in the Group's operating environment, there is a possibility of the posting of a substantial impairment loss, which would adversely affect the Group's business performance and financial position.

The Group is fully aware of the risks outlined above, and has measures in place to minimize their impact on operating results and financial position, at the Group and Group company level.

Estimates or projections included in this report are based on facts known to the Company's management as of the time of writing, and actual results may therefore differ substantially from such statements.

1. [Consolidated Financial Statements and Others]

(1) [Consolidated Financial Statements]

i) [Consolidated Balance Sheets]

December 31,		2017		2018
				(Millions of yen)
Assets				
Current assets				
Cash and deposits		29,636		32,676
Notes and accounts receivable	*5	42,583	*5	45,154
Securities		47,000		46,000
Inventories	*1	16,005	*1	16,541
Deferred tax assets		770		846
Other current assets		1,313		1,531
Allowance for doubtful receivables		(35)		(39)
Total current assets		137,273		142,712
Fixed assets				
Property, plant and equipment				
Buildings and structures, net		18,579		20,740
Machinery, equipment and other, net		20,762		23,624
Tools, furniture and fixtures, net		1,770		1,940
Land		17,210		17,240
Leased assets, net		128		135
Construction in progress		4,211		3,401
Total property, plant and equipment	*3, *4	62,663	*3, *4	67,083
Intangible fixed assets		505		640
Investments and other assets				
Investment securities	*2	35,238	*2	27,792
Net defined benefit asset		1,934		1,514
Deferred tax assets		50		42
Other assets	*2	1,687		2,199
Allowance for doubtful receivables		(15)		(14)
Total investments and other assets		38,896		31,535
Total fixed assets		102,064		99,259
Total assets		239,338		241,971

See accompanying notes to consolidated financial statements.

(Millions of yen)

December 31,		2017		2018
Liabilities				
Current liabilities				
Notes and accounts payable	*5	15,149	*5	16,472
Short-term bank loans		6,503		2,503
Lease obligations		49		51
Accrued income taxes		2,124		2,864
Accrued bonuses for employees		17		19
Other current liabilities	*5	13,188	*5	12,935
Total current liabilities		37,032		34,847
Long-term liabilities				
Long-term debt		5,647		9,189
Lease obligations		88		94
Deferred tax liabilities		5,860		3,148
Net defined benefit liability		162		153
Other long-term liabilities		3,059		3,242
Total long-term liabilities		14,818		15,828
Total liabilities		51,850		50,675
Net Assets				
Shareholders' equity				
Common stock		20,886		20,886
Capital surplus		16,498		16,499
Retained earnings		130,488		139,682
Treasury stock		(289)		(296)
Total shareholders' equity		167,584		176,771
Accumulated other comprehensive income				
Unrealized holding gain on available-for-sale securities		13,082		8,307
Translation adjustments		1,884		1,617
Remeasurements of defined benefit plans		73		(277)
Total accumulated other comprehensive income		15,040		9,647
Non-controlling interests		4,862		4,876
Total net assets		187,487		191,296
Total liabilities and net assets		239,338		241,971

See accompanying notes to consolidated financial statements.

ii) [Consolidated Statements of Income and Consolidated Statements of Comprehensive Income]
[Consolidated Statements of Income]

(Millions of yen)

Years ended December 31,		2017		2018
Net sales		144,708		150,066
Cost of sales	*1	102,106	*1	107,879
Gross profit		42,601		42,187
Selling, general and administrative expenses				
Selling expenses	*2	15,385	*2	15,605
General and administrative expenses	*3, *4	9,762	*3, *4	10,173
Total selling, general and administrative expenses		25,148		25,779
Operating income		17,453		16,408
Non-operating income				
Interest income		77		96
Dividend income		740		772
Equity in earnings of affiliates		338		165
Rent income on non-current assets		134		237
Other		180		215
Total non-operating income		1,472		1,486
Non-operating expenses				
Interest expenses		96		90
Foreign currency exchange losses		38		100
Environment readiness fee		154		135
Inactive facilities expenses		68		62
Other		75		103
Total non-operating expenses		433		491
Ordinary profit		18,492		17,403
Extraordinary gains				
Gain on sales of non-current assets	*5	369	*5	5
Subsidy income		37		325
Gain on sales of investment securities		446		3
Total extraordinary gains		853		334
Extraordinary losses				
Loss on disposal of non-current assets	*6	444	*6	240
Loss on sales of shares of subsidiaries and affiliates		—		5
Impairment loss on property, plant and equipment	*7	205		—
Total extraordinary losses		650		245
Income before income taxes		18,695		17,491
Income taxes -- Current		5,062		5,088
Income taxes -- Deferred		382		(555)
Total income taxes		5,445		4,532
Net income		13,250		12,959
Net income attributable to non-controlling interests		339		210
Net income attributable to owners of parent		12,911		12,748

See accompanying notes to consolidated financial statements.

[Consolidated Statements of Comprehensive Income]

Years ended December 31,		2017		2018
				(Millions of yen)
Net income		13,250		12,959
Other comprehensive income				
Unrealized holding gain on available-for-sale securities		5,130		(4,770)
Translation adjustments		(6)		(309)
Remeasurements of defined benefit plans, net of tax		369		(350)
Total other comprehensive income	*1	5,494	*1	(5,430)
Comprehensive income		18,744		7,528
Comprehensive income attributable to:				
Owners of the parent		18,369		7,355
Non-controlling interests		374		173

See accompanying notes to consolidated financial statements.

iii) [Consolidated Statements of Changes in Net Assets]

(Millions of yen)

Year ended December 31, 2017	Shareholders' equity				
	Common stock	Capital surplus	Retained earnings	Treasury stock	Total shareholders' equity
Balance at beginning of the year	20,886	16,799	120,999	(278)	158,407
Changes during the year:					
Cash dividends			(3,422)		(3,422)
Net income attributable to owners of parent			12,911		12,911
Purchase of treasury stock				(11)	(11)
Gain on sales of treasury stock		0		0	0
Change in ownership interest of parent due to transactions with non-controlling interests		(300)			(300)
Net changes in items other than shareholders' equity					
Total changes during the year	—	(300)	9,488	(11)	9,176
Balance at end of the year	20,886	16,498	130,488	(289)	167,584

Year ended December 31, 2017	Accumulated other comprehensive income					
	Unrealized holding gain on available-for-sale securities	Translation adjustments	Remeasurements of defined benefit plans	Total accumulated other comprehensive income	Non-controlling interests	Total net assets
Balance at beginning of the year	7,955	1,922	(296)	9,582	5,012	173,003
Changes during the year:						
Cash dividends						(3,422)
Net income attributable to owners of parent						12,911
Purchase of treasury stock						(11)
Gain on sales of treasury stock						0
Change in ownership interest of parent due to transactions with non-controlling interests						(300)
Net changes in items other than shareholders' equity	5,127	(38)	369	5,458	(150)	5,308
Total changes during the year	5,127	(38)	369	5,458	(150)	14,484
Balance at end of the year	13,082	1,884	73	15,040	4,862	187,487

See accompanying notes to consolidated financial statements.

(Millions of yen)

Year ended December 31, 2018	Shareholders' equity				
	Common stock	Capital surplus	Retained earnings	Treasury stock	Total shareholders' equity
Balance at beginning of the year	20,886	16,498	130,488	(289)	167,584
Changes during the year:					
Cash dividends			(3,554)		(3,554)
Net income attributable to owners of parent			12,748		12,748
Purchase of treasury stock				(7)	(7)
Gain on sales of treasury stock		0		0	0
Change in ownership interest of parent due to transactions with non-controlling interests					—
Net changes in items other than shareholders' equity					
Total changes during the year	—	0	9,194	(6)	9,187
Balance at end of the year	20,886	16,499	139,682	(296)	176,771

Year ended December 31, 2018	Accumulated other comprehensive income					
	Unrealized holding gain on available-for-sale securities	Translation adjustments	Remeasurements of defined benefit plans	Total accumulated other comprehensive income	Non-controlling interests	Total net assets
Balance at beginning of the year	13,082	1,884	73	15,040	4,862	187,487
Changes during the year:						
Cash dividends						(3,554)
Net income attributable to owners of parent						12,748
Purchase of treasury stock						(7)
Gain on sales of treasury stock						0
Change in ownership interest of parent due to transactions with non-controlling interests						—
Net changes in items other than shareholders' equity	(4,775)	(267)	(350)	(5,393)	13	(5,379)
Total changes during the year	(4,775)	(267)	(350)	(5,393)	13	3,808
Balance at end of the year	8,307	1,617	(277)	9,647	4,876	191,296

See accompanying notes to consolidated financial statements.

iv) [Consolidated Statements of Cash Flows]

(Millions of yen)

Years ended December 31,	2017	2018
Operating activities		
Income before income taxes	18,695	17,491
Depreciation and amortization	7,944	8,374
Impairment losses on property, plant and equipment	205	—
Increase in allowance for doubtful receivables	1	3
Increase (decrease) in other provisions	(1)	2
Increase in net defined benefit asset	(172)	(84)
Increase (decrease) in net defined benefit liability	4	(8)
Interest and dividend income	(818)	(868)
Interest expense	96	90
Foreign currency exchange loss (gain)	(17)	94
Gain on sales of investment securities	(446)	(3)
Equity in earnings of affiliates	(338)	(165)
Loss on sales of shares of subsidiaries and affiliates	—	5
Gain on sales of non-current assets	(369)	(5)
Subsidy income	(37)	(325)
Loss on disposal of non-current assets	444	240
Increase in receivables	(2,282)	(2,638)
Increase in inventories	(1,841)	(604)
Increase in payables	1,416	1,364
Other, net	(1,105)	(421)
Subtotal	21,378	22,541
Interest and dividends received	1,253	1,223
Interest paid	(94)	(95)
Subsidy income received	37	325
Income taxes paid	(7,407)	(4,153)
Net cash provided by operating activities	15,166	19,841
Investing activities		
Decrease (increase) in time deposits	(6,842)	764
Net increase in securities	(9,000)	—
Purchases of investment securities	(1,016)	(10)
Proceeds from sales of investment securities	589	6
Proceeds from sales of shares of subsidiaries and affiliates	—	599
Purchases of property, plant and equipment	(6,388)	(11,668)
Proceeds from sales of property, plant and equipment	336	18
Other, net	(865)	(1,618)
Net cash used in investing activities	(23,186)	(11,910)

See accompanying notes to consolidated financial statements.

Years ended December 31,		2017		2018
				(Millions of yen)
Financing activities				
Proceeds from long-term debt		—		3,700
Repayment of long-term debt		(158)		(4,158)
Payments from changes in ownership interests in subsidiaries that do not result in change in scope of consolidation		—		(679)
Proceeds from sales of treasury stock		0		0
Purchases of treasury stock		(11)		(7)
Repayment of lease obligations		(59)		(51)
Cash dividends to shareholders		(3,421)		(3,553)
Cash dividends paid to non-controlling interests		(397)		(159)
Net cash used in financing activities		(4,047)		(4,908)
Effect of exchange rate changes on cash and cash equivalents		(27)		(168)
Net increase (decrease) in cash and cash equivalents		(12,095)		2,853
Cash and cash equivalents at beginning of the year		54,231		42,136
Cash and cash equivalents at end of the year	*1	42,136	*1	44,990

See accompanying notes to consolidated financial statements.

[Notes]

(Basis for Preparation of Consolidated Financial Statements)

1. Scope of consolidation

(1) Consolidated subsidiaries: 21

Consolidated subsidiaries are shown in “4. Information on Subsidiaries and Affiliates” under “I. Overview of the Company.”

Effective from the current fiscal year, Aronkasei (Thailand) Co., Ltd. is included in the scope of consolidation due to its establishment.

(2) Unconsolidated subsidiaries: 3

A major unconsolidated subsidiary is Toa Kenso Co., Ltd. The unconsolidated subsidiaries have an immaterial effect on the Company’s consolidated financial statements as a whole in terms of the sum of total assets, the sum of net sales, the sum of net income/loss, and the sum of retained earnings.

2. Application of equity method

(1) Unconsolidated subsidiaries and affiliates which are accounted for by the equity method

Affiliates: 1 Partnership: 1

Chubu Liquid Oxygen Co., Ltd.

Elmer’s & Toagosei Co.

(2) Unconsolidated subsidiaries and affiliates which are not accounted for by the equity method

Unconsolidated subsidiaries: 3

Affiliates: 10

Toyo Denka Kogyo Co., Ltd.

(3) Reason for exclusion from application of equity method accounting:

Because the effect of their net income/loss and retained earnings on the Company’s consolidated financial statements is immaterial and they are not important as a whole in accounting terms.

3. Fiscal year-end of consolidated subsidiaries

The fiscal year-end of consolidated subsidiaries is the same as the Company’s consolidated fiscal year-end.

4. Accounting policies

(1) Basis and method for valuation of major assets

1) Securities

Available-for-sale securities

Marketable securities classified as available-for-sale securities

Marketable securities classified as available-for-sale securities are carried at fair value determined based on the average of quoted prices (or their equivalent) in the one-month period prior to the balance sheet date with changes in unrealized holding gain or loss, net of the applicable income taxes, included directly in net assets.

Non-marketable securities classified as available-for-sale securities

Non-marketable securities classified as available-for-sale securities are carried at cost. Cost of securities sold is determined by the moving average method.

2) Derivative

Derivative financial instruments are carried at fair value.

3) Inventories

Inventories are stated at the lower of cost or net selling value, cost being determined by the moving average method. (The balance sheet amounts are written down if there is any decrease in profitability.)

(2) Depreciation and amortization of major depreciable and amortizable assets

1) Property, plant and equipment (excluding leased assets)

Depreciation of property, plant and equipment is calculated by the straight-line method based on the estimated useful lives of the respective assets and their residual value.

The useful lives for major property, plant and equipment are as follows:

Buildings and structures	2–75 years
Machinery, equipment and other	2–17 years
Tools, furniture and fixtures	2–20 years

2) Intangible fixed assets (excluding leased assets)

Amortization of intangible fixed assets, primarily consisting of software, is calculated by the straight-line method based on the estimated useful lives of the respective assets in this category (5 years for software).

3) Leased assets (leased assets relating to finance lease transactions that do not transfer ownership)

Depreciation of leased assets shall be calculated based on the assumption that the useful lives equal the lease term and the residual value is zero.

(3) Posting standards for providing major allowance

1) Allowance for doubtful receivables

The allowance for bad debts and doubtful receivables in respect of individual bad debts is provided in an amount sufficient to cover credit losses based on the collectability of individual receivables. The allowance for receivables other than those described above is based on past credit loss experience.

2) Accrued bonuses for employees

Accrued bonuses for employees are provided at the estimated amounts expected to be paid to employees for one consolidated subsidiary.

(4) Accounting methods relating to retirement benefits

1) Periodic allocation of estimated retirement benefits

In calculating retirement benefit obligation, the benefit formula basis is applied for allocation of projected retirement benefit to the periods until the end of the current fiscal year.

2) Amortization of actuarial gain or loss and prior service costs

Actuarial gain or loss of the Company is amortized in the year following the year in which the gain or loss is recognized by the straight-line method over the average remaining years of service of the eligible employees (primarily 10 years) when incurred in each fiscal year.

Prior service costs are expensed using the straight-line method over the average remaining years of service of the eligible employees (primarily 10 years) when incurred.

3) Adoption of the simplified method in SMEs

In calculating net defined benefit liability and retirement benefit expenses, some consolidated subsidiaries adopt the simplified method where the projected benefit obligation is an estimated amount of retirement benefits, assuming that all employees terminate their services on the balance sheet date for their own convenience.

(5) Foreign currency translation

Receivables and payables in foreign currencies are translated into yen at the rates of exchange in effect at the balance sheet date, and the resulting translation gain or loss is charged or credited to income.

Assets and liabilities of the foreign consolidated subsidiaries are translated at the same exchange rates. Revenue and expense accounts of the foreign consolidated subsidiaries are translated at periodical average rates during the fiscal year. The resulting translation gain or loss is included in “Translation adjustments” and “Non-controlling interests” under “Net assets.”

(6) Scope of funds in the consolidated statements of cash flows
Funds (cash and cash equivalents) in the consolidated statements of cash flows comprise cash on hand, bank deposits available for withdrawal on demand and readily available short-term investments with maturities of three months or less, which are exposed to minor risk of fluctuation in value.

(7) Other important items concerning the preparation of consolidated financial statements
Consumption taxes and others
Consumption taxes are excluded from the transaction accounts.

(New Accounting Pronouncements)
“Implementation Guidance on Tax Effect Accounting” (ASBJ Guidance No. 28 issued on February 16, 2018)
“Implementation Guidance on Recoverability of Deferred Tax Assets” (ASBJ Guidance No. 26 issued on February 16, 2018)

(1) Outline
The treatment of taxable temporary differences related to shares of subsidiaries, etc. on the non-consolidated financial statements has been reviewed and the treatment of recoverability of deferred tax assets at companies that fall under (Classification 1) has been clarified.

(2) Planned date of application
The Company plans to apply the above guidances, etc. from the beginning of the year ending December 31, 2019.

(3) Effect of the application of the above guidances, etc.
The Company is currently assessing the effects at the time of preparation of these consolidated financial statements.

“Accounting Standard for Revenue Recognition” (ASBJ Statement No. 29 issued on March 30, 2018)
“Implementation Guidance on Accounting Standard for Revenue Recognition” (ASBJ Guidance No. 30 issued on March 30, 2018)

(1) Outline
The standards, etc. listed above are comprehensive accounting standards for revenue recognition. Revenue is to be recognized by applying the five steps below.
Step 1: Identify the contract(s) with a customer
Step 2: Identify the performance obligations in the contract
Step 3: Determine the transaction price
Step 4: Allocate the transaction price to the performance obligations in the contract
Step 5: Recognize revenue when (or as) the entity satisfies a performance obligation

(2) Planned date of application
The Company plans to apply the above standards, etc. from the beginning of the year ending December 31, 2022.

(3) Effect of the application of the above standards, etc.
The Company is currently assessing the effects at the time of preparation of these consolidated financial statements.

(Notes to Consolidated Balance Sheets)
*1. Components of inventories:

(Millions of yen)

December 31,	2017	2018
Merchandise and finished products (including semi-finished products)	10,625	11,146
Work in process	504	505
Raw materials and supplies	4,875	4,890
Total	16,005	16,541

*2. Investments in unconsolidated subsidiaries and affiliates were as follows:

(Millions of yen)

December 31,	2017	2018
Investment securities (stocks)	2,242	1,625
Other (investments and other assets)	100	—

*3. Assets pledged as collateral:
December 31, 2017

Assets pledged as collateral		
Classification	Book value (Millions of yen)	Type of security interests
Buildings and structures	6,259	Plant foundation
Machinery, equipment and other	6,905	ditto
Tools, furniture and fixtures	676	ditto
Land	4,136	ditto
Total	17,977	

(Note) The assets described above are pledged as collateral, but there are no corresponding secured obligations.

December 31, 2018

Assets pledged as collateral		
Classification	Book value (Millions of yen)	Type of security interests
Buildings and structures	6,668	Plant foundation
Machinery, equipment and other	8,110	ditto
Tools, furniture and fixtures	750	ditto
Land	4,136	ditto
Total	19,667	

(Note) The assets described above are pledged as collateral, but there are no corresponding secured obligations.

*4. Accumulated depreciation of property, plant and equipment:

(Millions of yen)

December 31,	2017	2018
	184,284	189,325

*5. Notes matured at the balance sheet date and cash settlement payable as of the balance sheet date (method of cash settlement payable at due date with the same terms as notes) are treated as if they were settled on the maturity date. Because the balance sheet date of the current fiscal year fell on a holiday for financial institutions, the notes matured and cash settlement payable at the balance sheet date were excluded from the balance as of the end of the current fiscal year.

(Millions of yen)

December 31,	2017	2018
Notes and accounts receivable	4,723	5,024
Notes and accounts payable	2,068	1,870
Other (Current liabilities)	616	465

6. Contingent liabilities and secured liabilities:

(Millions of yen)

December 31,		2017	2018
Employees	Guarantees against loans from financial institutions	241	213
Hokuriku Liquid Oxygen Co., Ltd.	ditto	—	37
Total		241	251

(Notes to Consolidated Statements of Income)

*1. Inventories as at the fiscal year-end represent the book value written-down due to a decrease in profitability. The following losses on devaluation of inventories were included in cost of sales (the amount stated is the amount after offset by reversal):

Years ended December 31,	2017	2018 (Millions of yen)
	19	86

*2. Major items of selling expenses:

Years ended December 31,	2017	2018 (Millions of yen)
Transportation expenses	8,077	8,528
Salaries	2,034	1,979
Bonuses	834	827
Retirement benefit expenses	158	135
Depreciation and amortization	149	147

*3. Major items of general and administrative expenses:

Years ended December 31,	2017	2018 (Millions of yen)
Salaries	2,333	2,419
Bonuses	1,150	1,210
Retirement benefit expenses	245	215
Depreciation and amortization	694	761

*4. Research and development cost included in general and administrative expenses and manufacturing cost:

Years ended December 31,	2017	2018 (Millions of yen)
	3,795	3,686

*5. Components of gain on sales of non-current assets:

Years ended December 31,	2017	2018 (Millions of yen)
Land, etc.	369	5

*6. Components of loss on disposal of non-current assets:

Years ended December 31,	2017	2018 (Millions of yen)
Machinery, equipment and other	16	52
Disposal costs	356	169
Buildings and structures, etc.	71	17

*7. Impairment loss:

Year ended December 31, 2017

The Company and its consolidated subsidiaries have recognized impairment losses on the following classes of assets:

Location	Major use	Category	Impairment loss (Millions of yen)
Takaoka city, Toyama	Idle assets	Buildings	122
Takaishi city, Osaka	Facilities for manufacturing ethylene carbonate	Machinery, etc.	46
Minato-ku, Nagoya city	Facilities for manufacturing ethylene carbonate	Machinery, etc.	36
Total			205

(Outline and grouping method)

The Company and its consolidated subsidiaries have grouped business-use assets according to the minimum independent cash-flow-generating unit and have grouped idle assets according to their respective units.

The Company wrote down the book values of business-use assets that experienced drops in profitability to their respective recoverable amounts. In addition, the Company wrote down the book values of idle assets that the Company does not plan to use for specific purposes in the future to their respective recoverable amounts. Accordingly, ¥205 million of impairment losses were recognized in the statement of income.

(Components of impairment loss)

The impairment losses consisted of ¥123 million for buildings, ¥76 million for machinery, and ¥6 million for other.

(Calculation of recoverable amounts, etc.)

For business-use assets, the recoverable amounts applicable to assets for which impairment losses were recognized for the corresponding year ended December 31, 2017 were measured using the utility value, which was calculated by discounting future cash flows at 8.1%. For idle assets, the recoverable amounts were calculated using the net sales value based on real estate appraisal.

Year ended December 31, 2018

Not applicable.

(Notes to Consolidated Statements of Comprehensive Income)

*1. Reclassification adjustment and tax effect of other comprehensive income:

Years ended December 31,	2017	2018
	(Millions of yen)	
Unrealized holding gain on available-for-sale securities		
Amount arising during the fiscal year	7,819	(6,832)
Reclassification adjustment	(446)	(3)
Amount before tax effect	7,373	(6,836)
Tax effect	(2,242)	2,066
Unrealized holding gain on available-for-sale securities	5,130	(4,770)
Translation adjustments		
Amount arising during the fiscal year	(6)	(309)
Amount before tax effect	(6)	(309)
Tax effect	—	—
Translation adjustments	(6)	(309)
Remeasurements of defined benefit plans, net of tax		
Amount arising during the fiscal year	385	(564)
Reclassification adjustment	146	60
Amount before tax effect	532	(504)
Tax effect	(162)	153
Remeasurements of defined benefit plans, net of tax	369	(350)
Total other comprehensive income	5,494	(5,430)

(Notes to Consolidated Statements of Changes in Net Assets)

Year ended December 31, 2017

1. Matters related to the type and total number of issued shares and the type and total number of shares of treasury stock:

(Thousands of shares)

Type of shares	Number of shares at beginning of the year	Increase in the number of shares in the year	Decrease in the number of shares in the year	Number of shares at end of the year
Issued shares				
Common stock	131,996	—	—	131,996
Total	131,996	—	—	131,996
Treasury stock				
Common stock (Notes 1, 2)	353	8	0	361
Total	353	8	0	361

(Notes) 1. The increase in the number of treasury stock (common stock) is due to purchase of less-than-one-unit shares.
2. The decrease in the number of treasury stock (common stock) is due to sales of less-than-one-unit shares.

2. Matters related to dividends

(1) Amount of dividends paid

Resolution	Type of shares	Gross amount (Millions of yen)	Dividend per share (Yen)	Record date	Effective date
March 30, 2017 104th Annual Shareholders' Meeting	Common stock	1,711	13.00	December 31, 2016	March 31, 2017
July 28, 2017 Board of Directors	Common stock	1,711	13.00	June 30, 2017	September 6, 2017

(2) Dividends whose record date was in the year ended December 31, 2017 but whose effective date was in the year ended December 31, 2018

Resolution	Type of shares	Gross amount (Millions of yen)	Source of dividends	Dividend per share (Yen)	Record date	Effective date
March 29, 2018 105th Annual Shareholders' Meeting	Common stock	1,711	Retained earnings	13.00	December 31, 2017	March 30, 2018

Year ended December 31, 2018

1. Matters related to the type and total number of issued shares and the type and total number of shares of treasury stock:

(Thousands of shares)

Type of shares	Number of shares at beginning of the year	Increase in the number of shares in the year	Decrease in the number of shares in the year	Number of shares at end of the year
Issued shares				
Common stock	131,996	—	—	131,996
Total	131,996	—	—	131,996
Treasury stock				
Common stock (Notes 1, 2)	361	5	0	366
Total	361	5	0	366

(Notes) 1. The increase in the number of treasury stock (common stock) is due to purchase of less-than-one-unit shares.
2. The decrease in the number of treasury stock (common stock) is due to sales of less-than-one-unit shares.

2. Matters related to dividends

(1) Amount of dividends paid

Resolution	Type of shares	Gross amount (Millions of yen)	Dividend per share (Yen)	Record date	Effective date
March 29, 2018 105th Annual Shareholders' Meeting	Common stock	1,711	13.00	December 31, 2017	March 30, 2018
July 31, 2018 Board of Directors	Common stock	1,842	14.00	June 30, 2018	September 6, 2018

(2) Dividends whose record date was in the year ended December 31, 2018 but whose effective date is in the year ending December 31, 2019

Resolution	Type of shares	Gross amount (Millions of yen)	Source of dividends	Dividend per share (Yen)	Record date	Effective date
March 28, 2019 106th Annual Shareholders' Meeting	Common stock	1,842	Retained earnings	14.00	December 31, 2018	March 29, 2019

(Notes to Consolidated Statements of Cash Flows)

*1. Reconciliation of the balance of cash and cash equivalents in the consolidated statement of cash flows to cash and deposits included in the consolidated balance sheet:

Years ended December 31,	2017	2018
	(Millions of yen)	
Cash and deposits	29,636	32,676
Securities	47,000	46,000
Time deposits with terms in excess of 3 months	(16,499)	(15,686)
Negotiable certificate of deposit with terms in excess of 3 months	(18,000)	(18,000)
Cash and cash equivalents	42,136	44,990

(Lease Transactions)

1. Finance leases (lessee)

Finance lease transactions that do not transfer ownership

1) Leased assets

Property, plant and equipment

Consists of buildings and structures, machinery, equipment and other, and tools, furniture and fixtures

2) Depreciation of leased assets

As described in "4. Accounting policies (2) Depreciation and amortization of major depreciable and amortizable assets."

2. Operating leases

Future minimum lease payments under noncancelable operating leases:

December 31,	2017	2018
		(Millions of yen)
Due within one year	20	24
Due after one year	3	1
Total	24	26

(Impairment loss)

No impairment loss is allocated to leased assets.

(Financial Instruments)

1. Matters related to the status of financial instruments

(1) Policies on financial instruments
When managing surplus funds, the Group limits the application of such funds to highly secure financial assets, mainly short-term bank deposits, and it procures funds mainly through bank borrowings. Derivative transactions are used to hedge interest fluctuation risk present in borrowings, but are not used for speculative or trading purposes.

(2) Description of financial instruments and associated risks
Notes and accounts receivable, which represent trade receivables, are exposed to client-based credit risk. Furthermore, foreign currency denominated trade receivables are also subject to exchange rate fluctuation risks. In order to counter such risk, foreign currency borrowings are used when necessary as a means of hedging the net position of foreign currency denominated trade payables. Securities and investment securities are primarily negotiable certificate of deposits, held-to-maturity securities and shares related to businesses, and are thus exposed to risk stemming from fluctuations in market value.
Notes and accounts payable, which represent trade payables, are due within one year. A portion of these are foreign currency denominated items related to payment for raw material imports, which are subject to exchange rate fluctuation risk. These are constantly maintained within the balance of receivables denominated in the same foreign currencies. Borrowings are used to procure funds necessary for operational transactions and capital expenditures. A portion of these borrowings bearing variable interest rates are exposed to interest rate fluctuation risk. Derivative transactions (interest rate swap transactions) are used as a means of hedging.

(3) Risk management systems related to financial instruments

1) Management of credit risk (risk associated with non-performance of a contract by a business partner etc.)
The departments in charge of Company operations regularly monitor the trade receivable status of all business partners in accordance with the Regulations on Selling in order to identify business partner-based credit risk associated with the deterioration of financial circumstances or other causes at an early stage and reduce it. In case of the consolidated subsidiaries, their divisions or accounting departments also manage the financial and credit status of their business partners pursuant to their own regulations. Derivative transactions are entered into only with highly rated financial institutions.
The maximum credit risk value as of the date of closing of consolidated accounts for the current term is expressed by the value of financial assets in the consolidated balance sheet which are subject to credit risk.

2) Management of market risk (risk associated with exchange rate and interest rate fluctuations)
When necessary, the Company uses borrowings denominated in foreign currencies to hedge its foreign currency denominated trade receivables and trade payables. Interest rate swaps are used to reduce risk associated with fluctuations in interest expenses related to borrowings.
The Company regularly confirms the fair value of securities and investment securities and the financial condition of the issuers (its business partners) and continually reviews its shareholdings with a view to maintaining and strengthening comprehensive relations with its business partners and in consideration of the economic rationality of holding their shares.
Derivative transactions are executed and managed in accordance with internal regulations that stipulate transaction authority.

3) Management of liquidity risk associated with procuring funds (the risk of being unable to execute a payment on the due date)
The Company and its consolidated subsidiaries have formulated cash flow management plans and manage liquidity risk by, for example, keeping a certain amount of cash reserves on hand.

(4) Supplementary information regarding the fair value of financial instruments
The fair value of financial instruments consists of their market price-based value, and, if a market price is not available, their logically calculated value. Variable factors are incorporated into the calculations of the fair value, and different fair values are possible depending on the differing assumptions used.

2. Fair value of financial instruments
The fair value and carrying value of financial instruments and the difference between both values are shown below. Financial instruments whose fair value is extremely difficult to determine, are not included in the table below. (Please refer to Note 2.)

(Millions of yen)

December 31, 2017	Carrying value	Fair value	Difference
(1) Cash and deposits	29,636	29,636	—
(2) Notes and accounts receivable	42,583	42,583	—
(3) Securities and investment securities:			
Available-for-sale securities	79,280	79,280	—
Total assets	151,500	151,500	—
(1) Notes and accounts payable	15,149	15,149	—
(2) Short-term bank loans	6,503	6,503	—
(3) Long-term debt	5,647	5,750	103
Total liabilities	27,299	27,402	103

December 31, 2018	Carrying value	Fair value	Difference
			(Millions of yen)
(1) Cash and deposits	32,676	32,676	—
(2) Notes and accounts receivable	45,154	45,154	—
(3) Securities and investment securities:			
Available-for-sale securities	71,452	71,452	—
Total assets	149,283	149,283	—
(1) Notes and accounts payable	16,472	16,472	—
(2) Short-term bank loans	2,503	2,503	—
(3) Long-term debt	9,189	9,296	107
Total liabilities	28,164	28,272	107

(Note 1)
Valuation method of financial instruments and matters related to securities

Assets

(1) Cash and cash equivalents, and (2) Notes and accounts receivable

As all of these are settled within a short span of time, the fair value is virtually identical to the carrying value. Therefore, the carrying value is used.

(3) Securities and investment securities

In the case of the fair value of securities and investment securities, shares are stated at the exchange-listed price and securities are stated at the exchange-listed price or the price quoted by the correspondent financial institution. In the case of those available-for-sale securities which are settled within a short span of time, the fair value is virtually identical to the carrying value. Therefore, the carrying value is used. With regard to notes to securities by purpose of holding, please refer to the note entitled "Securities."

Liabilities

(1) Notes and accounts payable, and (2) Short-term bank loans

As all of these are settled within a short span of time, the fair value is virtually identical to the carrying value. Therefore, the carrying value is used.

(3) Long-term debt

The fair value of long-term debt is calculated as the present value by discounting the total principal and interest on the borrowings by the interest rate which would be assumed if new, similar borrowings were made.

(Note 2)
Financial instruments whose fair value is extremely difficult to determine:

(Millions of yen)

December 31,	2017	2018
Investments in subsidiaries and affiliates		
Investments in unconsolidated subsidiaries and affiliates	2,242	1,625
Available-for-sale securities:		
Unlisted securities	715	715
Total	2,958	2,340

It is extremely difficult to determine the fair value of these items, as they do not have market prices and future cash flow cannot be estimated. Therefore, they are not included in "Assets: (3) Securities and investment securities."

(Note 3)
The redemption schedule for monetary claims, held-to-maturity securities and available-for-sale securities with maturities subsequent to the consolidated balance sheet date:

(Millions of yen)

December 31, 2017	1 year or less	Over 1 year to 5 years	Over 5 years to 10 years	Over 10 years
Cash equivalents	29,630	—	—	—
Notes and accounts receivable	42,583	—	—	—
Securities and investment securities:				
Available-for-sale securities with maturities (negotiable certificate of deposit)	47,000	—	—	—
Total	119,213	—	—	—

(Millions of yen)

December 31, 2018	1 year or less	Over 1 year to 5 years	Over 5 years to 10 years	Over 10 years
Cash equivalents	32,670	—	—	—
Notes and accounts receivable	45,154	—	—	—
Securities and investment securities:				
Available-for-sale securities with maturities (negotiable certificate of deposit)	46,000	—	—	—
Total	123,825	—	—	—

(Note 4)
The repayment schedule for long-term debt, lease obligations, and other interest-bearing debt subsequent to the consolidated balance sheet date:

(Millions of yen)

December 31, 2017	1 year or less	Over 1 year to 2 years	Over 2 years to 3 years	Over 3 years to 4 years	Over 4 years to 5 years	Over 5 years
Short-term bank loans	2,345	—	—	—	—	—
Long-term debt	4,158	158	158	4,558	143	630
Lease obligations	49	37	28	15	4	1
Total	6,552	195	186	4,573	147	631

(Millions of yen)

December 31, 2018	1 year or less	Over 1 year to 2 years	Over 2 years to 3 years	Over 3 years to 4 years	Over 4 years to 5 years	Over 5 years
Short-term bank loans	2,345	—	—	—	—	—
Long-term debt	158	158	4,558	143	140	4,190
Lease obligations	51	42	29	16	3	0
Total	2,554	200	4,587	159	143	4,190

(Securities)
1. Marketable securities classified as available-for-sale securities:

(Millions of yen)

December 31, 2017	Type	Carrying value	Acquisition cost	Unrealized gain (loss)
Securities whose carrying value exceeds their acquisition cost	(1) Stock	31,652	12,941	18,710
Securities whose acquisition cost exceeds their carrying value	(1) Stock	627	695	(67)
	(2) Other	47,000	47,000	—
	Subtotal	47,627	47,695	(67)
Total		79,280	60,637	18,643

(Millions of yen)

December 31, 2018	Type	Carrying value	Acquisition cost	Unrealized gain (loss)
Securities whose carrying value exceeds their acquisition cost	(1) Stock	23,286	11,148	12,138
Securities whose acquisition cost exceeds their carrying value	(1) Stock	2,165	2,497	(331)
	(2) Other	46,000	46,000	—
	Subtotal	48,165	48,497	(331)
Total		71,452	59,645	11,806

2. Marketable securities classified as available-for-sale securities sold during the fiscal year ended:

December 31, 2017 (Millions of yen)

Classification	Sales amount	Total gain on sales	Total loss on sales
Stock	589	446	—

December 31, 2018 (Millions of yen)

Classification	Sales amount	Total gain on sales	Total loss on sales
Stock	6	3	—

3. Other securities for which impairment loss was recognized:
No impairment loss on investment securities was recognized for the current fiscal year.
In the accounting for impairment, an impairment loss is recognized for all securities of which the fair values as of the consolidated balance sheet date decline more than 50% from the acquisition cost, and at an amount deemed necessary for securities of which the fair values as of the same date decline between 30% and 50% in consideration of recoverability and other factors.

(Retirement Benefit Plans)

1. Outline of adopted retirement benefit plans for employees
The Company and its consolidated subsidiaries adopt a defined benefit plan and a defined contribution plan, either funded or unfunded, to provide for retirement benefits for employees.
Under defined benefit corporate pension plans (all the plans are funded), a lump-sum or annuity is paid based on accumulated points according to a qualification grade.
Under defined contribution pension plans, a premium calculated by the qualification grade is expensed when contributed.
Under retirement lump-sum payment plans (consisting of funded plans and unfunded plans), salaries and lump-sum payments based on length of service are paid as retirement benefits.
In addition, under the retirement lump-sum payment plans adopted by some of the consolidated subsidiaries, net defined benefit liability and retirement benefit expenses are calculated in accordance with the simplified plan.

2. Defined benefit plan
(1) Reconciliation of opening and closing balance of retirement benefit obligation (excluding plans using the simplified method)

(Millions of yen)

Years ended December 31,	2017	2018
Balance of retirement benefit obligation at beginning of year	11,266	11,365
Service cost	543	538
Actuarial gain or loss	4	53
Retirement benefits paid	(448)	(587)
Balance of retirement benefit obligation at end of year	11,365	11,370

(2) Reconciliation of opening and closing balance of plan assets (excluding plans using the simplified method)

(Millions of yen)

Years ended December 31,	2017	2018
Balance of plan assets at beginning of year	12,495	13,300
Expected return on plan assets	124	133
Actuarial gain or loss	390	(511)
Contribution from employer	737	551
Retirement benefits paid	(448)	(587)
Balance of plan assets at end of year	13,300	12,884

(3) Reconciliation of opening and closing balance of net defined benefit liability under the plans using the simplified method

(Millions of yen)

Years ended December 31,	2017	2018
Balance of net defined benefit liability at beginning of year	158	162
Retirement benefit expenses	14	15
Retirement benefits paid	(7)	(18)
Contribution to plan	(2)	(4)
Other	0	(0)
Balance of net defined benefit liability at end of year	162	153

(4) Reconciliation of the ending balance of retirement benefit obligations and plan assets and the net defined benefit liability and the net defined benefit asset included in the consolidated balance sheets

(Millions of yen)

December 31,	2017	2018
Funded retirement benefit obligations	11,576	11,579
Plan assets	(13,404)	(12,981)
	(1,828)	(1,402)
Unfunded projected benefit obligations	56	41
Net amount of relevant liabilities and assets on the consolidated balance sheets	(1,772)	(1,360)
Net defined benefit liability	162	153
Net defined benefit asset	(1,934)	(1,514)
Net amount of relevant liabilities and assets on the consolidated balance sheets	(1,772)	(1,360)

(Note) Includes the plans using the simplified method.

(5) Retirement benefit expenses and components thereof

(Millions of yen)

Years ended December 31,	2017	2018
Service cost	543	538
Expected return on plan assets	(124)	(133)
Amortization of actuarial gain or loss	199	108
Amortization of prior service cost	(53)	(48)
Retirement benefit expenses calculated using the simplified method	14	15
Retirement benefit expenses related to the defined benefit plan	579	481

(6) Remeasurements of defined benefit plans, net of tax
The components of items (before tax) reported under remeasurements of the defined benefit plans, net of tax were as follows:

	(Millions of yen)	
Years ended December 31,	2017	2018
Prior service cost	(53)	(48)
Actuarial gain or loss	585	(456)
Total	532	(504)

(7) Remeasurements of defined benefit plans
The components of items (before tax) reported under remeasurements of the defined benefit plans were as follows:

	(Millions of yen)	
December 31,	2017	2018
Unrecognized prior service cost	(519)	(471)
Unrecognized actuarial gain or loss	413	870
Total	(105)	398

(8) Matters regarding plan assets
1) Major components of the plan assets
The percentages of the major asset types accounting for the total plan assets were as follows:

December 31,	2017	2018
Bonds	37.5%	39.3%
Stocks	19.8	16.9
General accounts of life insurance companies	37.4	38.9
Other	5.3	4.9
Total	100.0	100.0

2) Method for setting the long-term rate of the expected return on plan assets
To determine the long-term rate of the expected return on plan assets, we take into account the current and projected distribution of plan assets and the current and anticipated long-term yield rates of the various assets that constitute the plan assets.

(9) Matters regarding the assumptions for actuarial calculations
Key assumptions for actuarial calculations (representing weighted averages)

Years ended December 31,	2017	2018
Discount rate	0.0%	0.0%
Long-term rate of the expected return on plan assets	1.0	1.0

3. Defined contribution plan
The amounts required to be contributed by the Company and consolidated subsidiaries are ¥297 million each for the previous and the current fiscal years.

(Stock Options, etc.)
Not applicable.

(Tax Effect Accounting)
1. Significant components of deferred tax assets and liabilities:

	(Millions of yen)	
December 31,	2017	2018
Deferred tax assets		
Elimination of unrealized profit	1,417	1,412
Accrued costs of removing facilities	618	576
Depreciation	531	490
Net operating loss carry forwards	353	460
Loss on valuation of investment securities	323	323
Impairment loss on property, plant and equipment	408	244
Accrued enterprise tax	146	198
Valuation loss on inventories	90	103
Net defined benefit liability	49	46
Loss on valuation of golf club membership	41	41
Other	343	278
Gross deferred tax assets	4,325	4,175
Valuation allowance	(1,729)	(969)
Total deferred tax assets	2,596	3,205
Deferred tax liabilities		
Unrealized holding gain on available-for-sale securities	(5,550)	(3,484)
Reserve for reduction entry	(958)	(1,078)
Net defined benefit asset	(589)	(461)
Securities returned from retirement benefit trust	(221)	(221)
Undistributed earnings of overseas partnerships	(214)	(185)
Reserve for special account for reduction entry	(78)	—
Other	(23)	(34)
Total deferred tax liabilities	(7,635)	(5,465)
Net deferred tax assets (liability)	(5,039)	(2,259)

2. Major reasons for which the effective tax rates reflected in the consolidated statements of income differ from the statutory tax rates:

December 31,	2017	2018
Statutory tax rate	30.70%	30.70%
Effect of:		
Permanent difference – entertainment expenses	0.22	0.25
Permanent difference – dividend income	(0.32)	(0.32)
Inhabitants' per capita taxes	0.41	0.43
Equity in earnings of affiliates	(0.56)	(0.29)
Valuation allowance	(0.00)	(3.83)
Different tax rates applied to income of foreign consolidated subsidiaries	(0.36)	(0.05)
Tax deduction of experiment and research expenses	(1.19)	(1.21)
Other, net	0.22	0.22
Effective tax rates.	29.13	25.91

(Asset Retirement Obligations)
Not applicable.

(Rental properties, etc.)
Disclosure on rental properties, etc. is not required because rental properties, etc. are not significant in the Group.

(Segment Information, etc.)

[Segment Information]

1. Outline of Reportable Segments

(1) Methods for Determining Reportable Segments

The reportable segments of the Company and its consolidated subsidiaries are defined as operating segments for which discrete financial information is available and reviewed by the Board of Directors regularly in order to make decisions about resources to be allocated to individual segments and assess performance.

Group operating divisions are organized based on products and services and the operating divisions are responsible for comprehensive domestic and overseas comprehensive plans as to the products and services. The five reportable segments of the Company are “Commodity Chemicals,” “Polymer & Oligomer,” “Adhesive Material,” “Performance Chemicals,” and “Plastics” based on similarity of economic characteristics, and nature of products and services.

(2) Major products attributable to each reportable segment

Reportable segment	Major products
Commodity Chemicals	Caustic soda, caustic potash, sodium hypochlorite and other electrolytic products, sulfuric acid, industrial gases, acrylic acids, acrylate esters and other acrylic monomers
Polymer & Oligomer	Acrylic polymers, polymer flocculants, UV-Curable Resins and other acrylic oligomers, etc.
Adhesive Material	Instant glues, functional adhesives, etc.
Performance Chemicals	High purity inorganic chemicals, inorganic functional materials, etc.
Plastics	Piping equipment products, products for construction and civil engineering, nursing care products, elastomer compounds, etc.

2. Method of calculating net sales, income and loss, assets, liabilities and others

The accounting method applied to the reportable segments is the same as described in “Basis for Preparation of Consolidated Financial Statements.”

Segment income of the reportable segments is based on operating income.

Intersegment sales or transfer amounts are determined chiefly on the basis of market prices.

3. Information about the amounts of net sales, profit (loss), assets and other items for each reportable segment

(Millions of yen)

Year ended December 31, 2017	Reportable segments						Others (Note 1)	Total	Adjustments (Note 2)	Consolidated (Note 3)
	Commodity Chemicals	Polymer & Oligomer	Adhesive Material	Performance Chemicals	Plastics	Total				
Sales										
Sales to third parties	66,630	28,096	12,010	7,791	26,828	141,358	3,350	144,708	—	144,708
Intersegment sales	3,223	1,339	478	42	19	5,104	7,115	12,219	(12,219)	—
Net sales	69,853	29,436	12,489	7,834	26,848	146,462	10,465	156,927	(12,219)	144,708
Segment income	5,795	4,429	2,659	2,397	1,946	17,228	218	17,446	6	17,453
Segment assets	59,442	24,057	12,007	6,773	43,842	146,124	1,511	147,636	91,702	239,338
Other items										
Depreciation	4,421	912	413	456	1,093	7,297	70	7,367	577	7,944
Investment in associates accounted for using equity method	712	—	100	—	—	812	—	812	—	812
Increase in tangible and intangible fixed assets	3,389	3,123	408	395	2,481	9,798	80	9,879	342	10,221

(Notes)
1. The Others segment includes business operations relative to research and development, transportation and trading firm business.
2. “Adjustments” were as follows:
   (1) The adjustments to segment income include intersegment eliminations.
   (2) The adjustments to segment assets include corporate assets of ¥122,981 million that are not allocated to any reportable segments, and intersegment eliminations.
   (3) The adjustments to depreciation include mainly corporate expenses that are not allocated to any reportable segments.
   (4) The adjustments to increase in tangible and intangible fixed assets include mainly capital investment in corporate assets that are not allocated to any reportable segments.
3. Segment income is reconciled with operating income on the consolidated statements of income.
4. Depreciation in the table above includes amortization of long-term prepaid expense.

(Millions of yen)

Year ended December 31, 2018	Reportable segments						Others (Note 1)	Total	Adjustments (Note 2)	Consolidated (Note 3)
	Commodity Chemicals	Polymer & Oligomer	Adhesive Material	Performance Chemicals	Plastics	Total				
Sales										
Sales to third parties	69,908	29,506	11,914	8,095	27,167	146,592	3,474	150,066	—	150,066
Intersegment sales	3,800	1,283	149	50	23	5,307	3,572	8,879	(8,879)	—
Net sales	73,708	30,790	12,064	8,146	27,190	151,899	7,046	158,946	(8,879)	150,066
Segment income	6,654	2,977	2,567	2,548	1,427	16,174	230	16,404	3	16,408
Segment assets	61,040	27,355	11,561	7,900	43,542	151,398	1,749	153,147	88,823	241,971
Other items										
Depreciation	4,541	1,099	430	493	1,125	7,689	70	7,759	614	8,374
Investment in associates accounted for using equity method	699	—	—	—	—	699	—	699	—	699
Increase in tangible and intangible fixed assets	3,241	3,247	398	1,607	3,466	11,960	201	12,162	358	12,521

(Notes)

1. The Others segment includes business operations relative to research and development, transportation and trading firm business.
2. “Adjustments” were as follows:
   (1) The adjustments to segment income include intersegment eliminations.
   (2) The adjustments to segment assets include corporate assets of ¥117,757 million that are not allocated to any reportable segments, and intersegment eliminations.
   (3) The adjustments to depreciation include mainly corporate expenses that are not allocated to any reportable segments.
   (4) The adjustments to increase in tangible and intangible fixed assets include mainly capital investment in corporate assets that are not allocated to any reportable segments.
3. Segment income is reconciled with operating income on the consolidated statements of income.
4. Depreciation in the table above includes amortization of long-term prepaid expense.

[Related Information]

Year ended December 31, 2017

1. Information related to geographic region

(1) Net sales

(Millions of yen)

Japan	Asia	North America	Other	Total
120,472	18,277	3,057	2,900	144,708

(Note) Net sales are classified into countries and regions based on geographic location of the customer.

(2) Information related to property, plant and equipment
This information is not required to be disclosed because the amount of property, plant and equipment in Japan exceeded 90% of the amount on the consolidated balance sheet.

2. Information on major customer
This information is not required to be disclosed because net sales to any particular customer are less than 10% of the net sales on the consolidated statements of income.

Year ended December 31, 2018

1. Information related to geographic region

(1) Net sales

(Millions of yen)

Japan	Asia	North America	Other	Total
125,498	18,321	3,309	2,936	150,066

(Note) Net sales are classified into countries and regions based on geographic location of the customer.

(2) Information related to property, plant and equipment
This information is not required to be disclosed because the amount of property, plant and equipment in Japan exceeded 90% of the amount on the consolidated balance sheet.

2. Information on major customer
This information is not required to be disclosed because net sales to any particular customer are less than 10% of the net sales on the consolidated statements of income.

[Impairment loss on non-current assets by reportable segment]

Year ended December 31, 2017 (Millions of yen)

Commodity Chemicals	Polymer & Oligomer	Adhesive Material	Performance Chemicals	Plastics	Others	Adjustment	Total
82	—	—	—	—	—	122	205

(Note) ¥122 million of adjustment of impairment loss was recorded for buildings of idle assets.

Year ended December 31, 2018
Not applicable.

[Balance of goodwill by reportable segment]
Not applicable.

[Gain on negative goodwill by reportable segment]
Not applicable.

[Related party information]
Not applicable.

(Per Share Information)

Years ended December 31,	2017	2018
		(Yen)
Net assets per share	1,387.36	1,416.24
Net income per share	98.08	96.85

(Notes)

1. Diluted net income per share is not disclosed because no potential shares exist.
2. The basis for calculation of "net income per share" is as follows:

Years ended December 31,	2017	2018
Net income per share		
Net income attributable to owners of parent (Millions of yen)	12,911	12,748
Amounts not belonging to shareholders of common stock (Millions of yen)	—	—
Net income attributable to owners of parent relating to common stock (Millions of yen)	12,911	12,748
Average number of common shares during the fiscal year (Thousands of shares)	131,639	131,632

3. The basis for calculation of "net assets per share" is as follows:

December 31,	2017	2018
Total amount of net assets (Millions of yen)	187,487	191,296
Amount deducted from the total amount of net assets (Millions of yen)	4,862	4,876
(including non-controlling interests)	(4,862)	(4,876)
Amount of net assets at the end of the fiscal year attributable to common stock (Millions of yen)	182,624	186,419
Number of common shares used for calculating net assets per share (Thousands of shares)	131,634	131,629

(Subsequent Events)
Not applicable.

v) [Supplementary Financial Schedules]

[Schedule of bonds and debentures]
Not applicable.

[Schedule of borrowings, etc.]

Classification	Beginning balance (Millions of yen)	Ending balance (Millions of yen)	Average interest rate (%)	Due date of repayment
Short-term bank loans	2,345	2,345	0.474	—
Long-term debt scheduled to be repaid within one year	4,158	158	0.970	—
Lease obligations scheduled to be repaid within one year	49	51	—	—
Long-term debt (excluding debt scheduled to be repaid within one year)	5,647	9,189	0.644	From 2020 to 2027
Lease obligations (excluding obligations scheduled to be repaid within one year)	88	94	—	From 2020 to 2025
Other interest-bearing debt	—	—	—	—
Total	12,287	11,838	—	—

(Notes)

1. "Average interest rate" presents the weighted average interest rate against the term-end balance of borrowings.
2. "Average interest rate" for lease obligations is not required to be disclosed because lease obligations are stated in the consolidated balance sheets in the amount before deducting the amount equivalent to related interest expenses, which are included in the total lease payments.
3. The projected repayment amounts of long-term debt and lease obligations (excluding debt and obligations scheduled to be repaid within one year) within five years after the consolidated balance sheet date are as follows.

(Millions of yen)

	Over 1 year to 2 years	Over 2 years to 3 years	Over 3 years to 4 years	Over 4 years to 5 years
Long-term debt	158	4,558	143	140
Lease obligations	42	29	16	3

[Schedule of asset retirement obligations]
Not applicable.

(2) [Other]

Quarterly data for the current fiscal year ended December 31, 2018

Cumulative periods	First quarter (From January 1 to March 31, 2018)	Second quarter (From January 1 to June 30, 2018)	Third quarter (From January 1 to September 30, 2018)	Current fiscal year (From January 1 to December 31, 2018)
Net sales (Millions of yen)	36,549	73,148	109,537	150,066
Income before income taxes (Millions of yen)	4,365	8,578	12,912	17,491
Net income attributable to owners of parent (Millions of yen)	3,063	5,998	8,963	12,748
Net income per share (Yen)	23.27	45.57	68.09	96.85

Accounting period	First quarter (From January 1 to March 31, 2018)	Second quarter (From April 1 to June 30, 2018)	Third quarter (From July 1 to September 30, 2018)	Fourth quarter (From October 1 to December 31, 2018)
Net income per share (Yen)	23.27	22.30	22.52	28.76