SHOWA DENKO K.K.

2/14/2019

2018 Consolidated Financial Results (Summary)

Ⅰ. Results for 2018

1. Summary

(Unit: billions of yen, except for "per share" indicators)

Items	2017 Jan.1 - Dec.31	2018 Jan.1 - Dec.31	Increase/ decrease
Net sales	780.4	992.1	211.7
Operating income	77.7	180.0	102.3
Net income attributable to owners of the parent	37.4	111.5	74.1
Net income attributable to owners of the parent per share	¥262.44	¥758.15	¥495.71
Stockholders' equity per share	¥2,473.06	¥3,057.16	¥584.10
End of term dividends per share ＊	¥50.00	¥120.00(planned)	¥70.00

*SDK resolved payment of dividends of Yen 30 per share based on the record date of May 11, 2017 at the extraordinary general meeting of shareholders held on June 27, 2017, and paid dividends on the next day. The table above does not include this amount.
The tentative accounting policy applied to calculation of 2017 financial results due to consolidation of former SGL GE Holding GmbH was finalized when the Company settled accounts for the third quarter of 2018. Accordingly, the amounts of depreciation and amortization and some other costs for the year ending December 2017 were changed.
This report on 2018 financial results includes those retroactively changed numbers for the year ending December 2017.

2. Net sales and Operating income by Segment (Year to year comparison)

(Unit: billions of yen)

Segment		2017 Jan.1 - Dec.31	2018 Jan.1 - Dec.31	Increase/ decrease
Net sales	Petrochemicals	251.1	268.9	17.8
	Chemicals	148.8	156.5	7.8
	Electronics	123.1	105.8	-17.2
	Inorganics	73.4	266.1	192.7
	Aluminum	105.4	108.3	2.8
	Others	133.6	143.4	9.8
	Adjustments	-55.1	-56.9	-1.9
	Total	780.4	992.1	211.7
Operating income	Petrochemicals	33.4	20.3	-13.0
	Chemicals	16.5	17.4	0.9
	Electronics	21.9	12.4	-9.5
	Inorganics	7.0	132.4	125.5
	Aluminum	6.7	4.9	-1.8
	Others	0.6	2.9	2.3
	Adjustments	-8.4	-10.4	-2.0
	Total	77.7	180.0	102.3

3. Net sales and Operating income by Segment (Quarterly transition)

(Unit: billions of yen)

Segment		2018 CQ1 Jan.1 - Mar.31	2018 CQ2 Apr.1 - Jun.30	2018 CQ3 Jul.1 - Sept.30	2018 CQ4 Oct.1 - Dec.31
Net sales	Petrochemicals	53.8	61.6	76.2	77.3
	Chemicals	36.0	38.6	40.5	41.5
	Electronics	27.7	26.6	27.1	24.4
	Inorganics	51.4	65.0	75.7	74.0
	Aluminum	24.8	28.4	27.8	27.2
	Others	34.3	35.3	36.0	37.8
	Adjustments	-13.4	-14.5	-14.1	-14.9
	Total	214.7	241.2	269.1	267.2
Operating income	Petrochemicals	3.3	4.1	8.1	4.9
	Chemicals	3.6	4.1	4.9	4.8
	Electronics	2.9	2.8	4.5	2.3
	Inorganics	24.8	33.3	39.8	34.6
	Aluminum	1.3	1.4	1.4	0.9
	Others	0.8	0.5	0.8	0.8
	Adjustments	-2.5	-2.5	-2.7	-2.7
	Total	34.3	43.6	56.6	45.5

Ⅱ. Forecast for 2019

1. Summary

(Unit: billions of yen, except for net income/share and cash dividends/share)

Items	2018	2019 Forecast	Increase/ decrease
Net sales	992.1	1,100.0	107.9
Operating income	180.0	190.0	10.0
Net income attributable to owners of the parent	111.5	120.0	8.5
Net income attributable to owners of the parent per share	¥758.15	¥822.61	¥64.46
End of term dividends per share ＊	¥120.00(planned)	¥130.00	¥10.00

2. Net sales and Operating income by Segment

(Unit: billions of yen)

Segment		2018	2019 Forecast	Increase/ decrease
Net sales	Petrochemicals	268.9	290.0	21.1
	Chemicals	156.5	166.0	9.5
	Electronics	105.8	106.0	0.2
	Inorganics	266.1	340.0	73.9
	Aluminum	108.3	110.0	1.7
	Others	143.4	142.0	-1.4
	Adjustments	-56.9	-54.0	2.9
	Total	992.1	1,100.0	107.9
Operating income	Petrochemicals	20.3	18.0	-2.3
	Chemicals	17.4	15.0	-2.4
	Electronics	12.4	12.5	0.1
	Inorganics	132.4	148.0	15.6
	Aluminum	4.9	5.5	0.6
	Others	2.9	1.5	-1.4
	Adjustments	-10.4	-10.5	-0.1
	Total	180.0	190.0	10.0

SiC epitaxial wafers business was transferred from the Others segment to the Electronics segment at the beginning of 2019.
However, these segment-wise numbers for 2018 are based on the segmentation before this change.

(Note) Amount of "Adjustment" includes company-wide costs which are not allocated to each segment.

Ⅲ. Cash flow

(Unit: billions of yen)

Cash flows from:	2017	2018	Increase/ decrease	2019 Forecast	Increase/ decrease
Operating activities	67.2	149.8	82.5	135.0	-14.8
Investing activities	-29.9	-49.3	-19.5	-80.0	-30.7
Free cash flow	37.4	100.4	63.1	55.0	-45.4
Financing activities	-18.4	-61.1	-42.7	-22.8	38.3
Newly consolidated	1.6	-3.4	-5.0	0.0	3.4
Net increase in cash	20.6	36.0	15.4	32.2	-3.8

Ⅳ. Reference

(Unit: billions of yen, expect for total number of employees, exchange rate and domestic naphtha price)

Items	2017	2018	Increase/ decrease	2019 Forecast	Increase/ decrease
Capital expenditures	41.8	41.7	-0.1	64.3	22.5
Depreciation and amortization	38.6	39.5	0.9	39.4	0.0
R&D expenditures	18.5	19.7	1.2	22.6	2.8
Gap between interest expense and interest/dividend income	-1.2	-0.6	0.6	0.0	0.6
Total number of employees	10,864	10,634	-230	10,942	308
Exchange rate (yen/US$)	112.2	110.4	Yen appriciated by 1.8	105.0	Yen appriciated by 5.4
Domestic naphtha price (yen/kl)	40,400	51,100	10,700	53,400	2,300
Interest-bearing debt	346.7	288.0	-58.8	300.0	12.0
Total assets	1,027.0	1,075.7	48.7		

Notes : The above forecast is based on the information available as of today and assumptions as of today regarding risk factors that could affect our future performance. Actual results may differ materially from the forecast due to a variety of risk factors, including, but not limited to, the economic conditions, costs of naphtha and other raw materials, demand or market conditions for our products such as graphite electrodes and other commodities, and foreign exchange rates. We undertake no obligation to update the forward-looking statements unless required by law.

SHOWA DENKO K.K.

Consolidated Financial Statements

For the year ended December 31, 2018

Ⅰ. Consolidated Financial Results

Feb 14th, 2019

(¥ in millions, US$ in thousands, except for net income attributable to owners of the parent per share)

(1) Results of operations:

	Results for the year ended December 31			
	2017	2018	Increase (Decrease)	2018
	¥	¥	%	$
Net sales	780,387	992,136	27.1	8,938,162
Operating income	77,708	180,003	131.6	1,621,649
Ordinary income	63,851	178,804	180.0	1,610,848
Net income attributable to owners of the parent	37,404	111,503	198.1	1,004,535
Net income attributable to owners of the parent per share: Basic	262.44	758.15	—	6.83
Net income attributable to owners of the parent per share: Diluted	—	—	—	—
	%	%		
Net income on equity	11.5	27.9		
Ordinary income on total assets	6.5	17.0		
Operating income to net sales	10.0	18.1		

Notes

Important changes in accounting policies : not applicable

Comprehensive income:

Results for the year ended December 31,2018 ¥ 92,055 million

Results for the year ended December 31,2017 ¥ 63,165 million

(2) Financial position:

(¥ in millions, US$ in thousands, except for net income per share)

	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2018
	¥	¥	$
Total assets	1,026,999	1,075,746	9,691,405
Total equity	368,994	465,340	4,192,251
Total equity per share	2,473.06	3,057.16	27.54
	%	%	%
Stockholders' equity ratio	34.3	41.5	41.5

(3) Cash flows:

(¥ in millions, US$ in thousands)

	Results for the year ended December 31		
	2017	2018	2018
	¥	¥	$
Cash flows from operating activities	67,235	149,785	1,349,415
Cash flows from investing activities	(29,866)	(49,338)	(444,487)
Cash flows from financing activities	(18,370)	(61,061)	(550,104)
Cash and cash equivalents at end of the year	76,833	112,835	1,016,532

(4) Dividends:

	2017	2018	2019 forecast
End of Q1 dividends per share (¥)	—	—	—
End of Q2 dividends per share (¥)	0.0	20	50
End of Q3 dividends per share (¥)	—	—	—
End of Term dividends per share (¥)	50.0	100.0	80.0
Total of dividend per share above (¥)	50.0	120.0	130.0
Total dividends (¥ in millions)	11,425	17,593	—
	%	%	%
Payout ratio (consolidated)	30.5	15.8	15.8
Net assets dividend yield (consolidated)	3.5	4.3	—

The Company resolved payment of dividends of ¥30 per share based on the record date of May 11, 2017 at the extraordinary general meeting of shareholders held on June 27, 2017, and paid dividends on the next day. "Total dividends" mentioned in the table above include this amount of dividends per share.

Ⅱ. Forecast of performance for the year ending December 31, 2019

(¥ in millions, US$ in thousands, except for net income per share)

	1st half		fiscal year	
	¥	$	¥	$
Net sales	520,000	4,684,685	1,100,000	9,909,910
Operating income	91,000	819,820	190,000	1,711,712
Ordinary income	90,500	815,315	185,000	1,666,667
Net income attributable to owners of the parent	63,000	567,568	120,000	1,081,081
Net income attributable to owners of the parent per share: Basic	431.87	3.89	822.61	7.41

※The above forecast is based on the information available at this point of time. Actual results may differ materially due to a variety of reasons, including such economic factors as fluctuations in foreign currency exchange rates as well as market supply and demand conditions.

Notes

＊ The tentative accounting policy applied to calculation of 2017 financial results due to consolidation of former SGL GE Holding GmbH was finalized when the Company settled accounts for the third quarter of 2018. Accordingly, the amounts of depreciation and amortization and some other costs for the year ending December 2017 were changed. This report on 2018 financial results includes those retroactively changed numbers for the year ending December 2017.

＊ The U.S. dollar is valued at ¥111.00 throughout this statement for convenience only.

[Business Results and Financial Conditions]
1. Analysis of business results

(1) Summary
In 2018, the Japanese economy continued to recover gradually. Though natural disasters had negative impacts on the Japanese economy, consumer spending showed a steady change against the background of good employment situation. Corporate earnings continued to improve, and production increased. Yen depreciated against dollar due to rising interest rates in the U.S. As for overseas economies, the U.S. economy continued to recover. The European economy recovered gradually. The economies of ASEAN countries also recovered gradually. However, the Chinese economy begun decelerating in the second half of the year due to intensifying trade friction between China and the U.S. Moreover, mood of uncertainty over future prospects for global economy has been enhanced by global issues such as intensifying tense atmosphere about international trade caused by changes in the trade policy of the U.S. Government and Brexit issue. Extension of the effect of these issues to Japan is a matter of concern.

In the petrochemicals industry, domestic plants to produce ethylene and its derivatives maintained high operating rates due to lively demand from East Asia including China. However, international market prices of petrochemicals declined at the end of the year due to a sharp drop in crude-oil prices. In the electronics parts/materials industry, production of semiconductors and display panels maintained high levels both at home and abroad, despite a decrease in shipment volumes of smartphones at the end of the year.

Under these circumstances, aiming to achieve continuous growth of the Showa Denko Group through execution of its medium-term business plan “Project 2020+” which started in 2016, the Group reformed its business structure, strengthened its revenue base, and enhanced its corporate value. In addition, the Group announced its new medium-term business plan “The TOP 2021” in December 2018, and started it in January 2019. It is very important for the Showa Denko Group to enhance the value of the Group and satisfy all stakeholders including shareholders, customers, suppliers, local communities and employees in order that the Group continuously grows and become trusted and acclaimed by society. The Showa Denko Group defines this idea as the Group’s business philosophy, thereby promoting management to maximize shareholders’, customers’ and social value. The Group will change its course toward long-term business growth, strengthen its earning power and reduce the range of fluctuation in income through promotion of “The TOP 2021,” enhance the value of the Group, and establish a stable foundation which will continuously support the Group’s growth far into the future.

The Group recorded consolidated net sales of ¥992,136 million in 2018, up 27.1% from the previous year. The sales in the Electronics segment decreased due to a decrease in shipment volumes of HD media for mobile PCs. However, the sales in the Inorganics segment considerably increased due partly to the realization of the effect of the business integration in our graphite electrode business, which took place in the second half of 2017, and a rise in market prices of graphite electrodes. In the Petrochemicals segment, sales increased due to a rise in market prices of products resulting from a rise in raw naphtha price, despite a decrease in production resulting from the large-scale periodic shutdown maintenance of ethylene production facilities. Sales in the Chemicals, Aluminum, and Others segments also increased due to higher shipment volumes.

Operating income of the Group substantially increased by 131.6% from the previous year, to ¥180,003 million. In the Petrochemicals segment, operating income decreased due

mainly to the large-scale shutdown maintenance. The Electronics and Aluminum segments also recorded lower income. However, the Inorganics segment recorded considerably higher income due to the effect of the business integration in its graphite electrode business and a rise in the market prices of graphite electrodes. The Chemicals and Others segments also recorded higher income. As a result, the Group recorded ordinary income of ¥178,804 million, up 180.0% from the previous year.

The Group recorded net income attributable to owners of the parent of ¥111,503 million in 2018, significantly up 198.1% from the previous year. The Group recorded extraordinary losses due partly to the posting of impairment losses in its domestic aluminum can business and other businesses. The Group also recorded an increase in income taxes. However, its net income attributable to owners of the parent significantly increased in the end.

(Unit: millions of yen)

	2017 Jan.-Dec.	2018 Jan.-Dec.	Increase/decrease
Sales	780,387	992,136	211,749
Operating income	77,708	180,003	102,295
Ordinary income	63,851	178,804	114,953
Net income attributable to owners of the parent	37,404	111,503	74,099

(2) A breakdown of net sales and operating income by segment (January 1 - December 31, 2018)

[Petrochemicals segment]
In the Petrochemicals segment, sales increased 7.1%, to ¥268,879 million. Production of ethylene and propylene decreased from the previous year due to periodic shutdown maintenance of ethylene production facilities (from early March to late April, which is conducted once in every four years. Sales of olefins increased due to a rise in the market prices of products resulting from a rise in raw naphtha price, despite a decrease in production quantities resulting from the large-scale periodic shutdown maintenance of ethylene production facilities. Sales of organic chemicals increased due to a rise in prices of products including ethyl acetate and vinyl acetate. Operating income of the segment decreased 39.0%, to ¥20,333 million due mainly to the large-scale periodic shutdown maintenance and a decrease in the spreads between raw naphtha price and market prices of major olefin products.

(Unit: millions of yen)

	2017 Jan.-Dec.	2018 Jan.-Dec.	Increase/decrease
Sales	251,128	268,879	17,751
Operating income	33,357	20,333	-13,024

[Chemicals segment]
In the Chemicals segment, sales increased 5.2%, to ¥156,541 million. Production of liquefied ammonia slightly decreased from the previous year. However, production of high-purity gases for electronics increased. In the basic chemicals business, sales of liquefied ammonia slightly decreased due to a decrease in shipment volumes. However, sales of acrylonitrile and chloroprene rubber increased due to a rise in market prices. Sales of electronic chemicals increased due to higher shipment volumes of high-purity gases for electronics caused by an increase in production in the semiconductor and display

panel industries. Sales of industrial gases increased due to higher shipment volumes of carbon dioxide and dry ice. Sales of functional chemicals increased due to a rise in sales prices of products reflecting a rise in prices of raw materials. Operating income of the segment increased 5.6%, to ¥17,393 million.

(Unit: millions of yen)

	2017 Jan.-Dec.	2018 Jan.-Dec.	Increase/decrease
Sales	148,758	156,541	7,782
Operating income	16,474	17,393	919

[Electronics segment]
In the Electronics segment, sales decreased 14.0%, to ¥105,823 million. Production of HD media decreased from the previous year due mainly to a weakness in shipment volumes of HD media for use in PCs, though the demand for HD media for use in servers for data centers remained strong. Thus the sales of HD media decreased, reflecting a decrease in sales volumes. Sales of compound semiconductors increased due to higher shipment volumes. However, sales of rare earth magnetic alloys decreased due to reforms in business structure. Sales of lithium ion battery (LIB) materials increased due to higher shipment volumes to China. Operating income of the segment decreased 43.5%, to ¥12,397 million.

(Unit: millions of yen)

	2017 Jan.-Dec.	2018 Jan.-Dec.	Increase/decrease
Sales	123,064	105,823	-17,241
Operating income	21,925	12,397	-9,528

[Inorganics segment]
In the Inorganics segment, sales increased 262.4%, to ¥266,149 million. Production of graphite electrodes increased from the previous year due to an increase in the output from the electric steel industry as the customer. Sales of graphite electrodes significantly increased due to consolidation of SHOWA DENKO CARBON Holding GmbH in the second half of 2017, in addition to a rise in sales prices of graphite electrodes in the global market caused by the increase in production of electric steel in China resulting from enforcement of stricter environmental policy, and the tight supply-demand situation resulting from an electric steel production in global scale, especially in the U.S. market. Sales of ceramics decreased due mainly to a fall in shipment volumes of general-purpose alumina caused by SDK's withdrawal from PT. Indonesia Chemical Alumina, despite an increase in shipment volumes of abrasives and fine ceramics for electronics. The segment recorded operating income of ¥132,445 million, an increase of ¥125,466 million.

(Unit: millions of yen)

	2017 Jan.-Dec.	2018 Jan.-Dec.	Increase/decrease
Sales	73,442	266,149	192,707
Operating income	6,979	132,445	125,466

[Aluminum segment]
In the Aluminum segment, sales increased 2.7%, to ¥108,254 million. Production of high-purity foil for aluminum electrolytic capacitors increased from the previous year. Sales of rolled products increased due to higher shipment volumes of high-purity foil for aluminum electrolytic capacitors for use in industrial equipment and automotive

applications. Sales of aluminum specialty components slightly increased due to a rise in product prices caused by a rise in the price of aluminum ingot. Sales of aluminum cans slightly decreased due to lower shipment volumes to the domestic market. Operating income of the segment decreased 26.2%, to ¥4,942 million due partly to a rise in the price of aluminum ingot.

(Unit: millions of yen)

	2017 Jan.-Dec.	2018 Jan.-Dec.	Increase/decrease
Sales	105,439	108,254	2,815
Operating income	6,697	4,942	-1,755

[Others segment]
In the Others segment, sales increased 7.3%, to ¥143,413 million. Shoko Co., Ltd.'s sales increased. Sales of SiC epitaxial-wafers for power devices also increased due to an increase in shipment volumes. Operating income of the segment increased 357.0%, to ¥2,893 million.

(Unit: millions of yen)

	2017 Jan.-Dec.	2018 Jan.-Dec.	Increase/decrease
Sales	133,624	143,413	9,789
Operating income	633	2,893	2,260

(3) Major steps taken or decided in 2018
[General]

- Started new medium-term consolidated business plan "The TOP 2021"
  In January 2019, SDK started its new medium-term consolidated business plan "The TOP 2021" for the 2019-2021 period. Under the new medium-term business plan "The TOP 2021," the Showa Denko Group will change its course toward long-term business growth and concentrate on expansion of the Group's "KOSEIHA Businesses" (individualized businesses) that maintain profitability and stability at high levels. The Group will positively invest in plants and equipments and implement discontinuous investment including M&A, thereby establishing a stable foundation which will continuously support the Group's growth far into the future. With regard to return to shareholders, the Group will not only strive to continue high dividends but also consider buying treasury stock in timely and continuous manner, aiming to realize total return ratio of 30% by 2021. For details of the new medium-term business plan, please refer to "2. Management Policy, (1) Medium to long-term business strategy" on page 14.

- Incorporated into all of 4 ESG investment indexes
  In July 2018, SDK was incorporated continuously for two straight years into three ESG indexes for investment: "FTSE Blossom Japan Index" provided by FTSE International Limited and Frank Russel Company (FTSE Russel, a member of London Stock Exchange Group); "MSCI Japan ESG Select Leaders Index" and "MSCI Japan Empowering Women Index" provided by MSCI Incorporated (MSCI). FTSE and MSCI are world-famous index providers. FTSE Blossom Japan Index is designed to provide market participants with a tool to identify and measure the performance of Japanese companies that demonstrate strong environment, social and governance (ESG) practices. MSCI Japan ESG Select Leaders Index is constructed using the MSCI Japan IMI Top 500 Index (parent index) and targets best ESG performers among issues included in the parent index. MSCI Japan Empowering Women Index evaluates companies promoting and maintaining gender

diversity. In addition to these three ESG indexes, in October 2018, SDK was newly incorporated into an environmental stock index, “S&P/JPX Carbon Efficient Index.” Government Pension Investment Fund (GPIF) of Japan has been utilizing abovementioned four stock price indexes to implement full-scale “ESG conscious investment.” Moreover, SDK has been included in the “SNAM Sustainability Index,” which is provided by Sompo Japan Nipponkoa Asset Management Co., Ltd. (SNAM), for seven consecutive years and the “Morningstar Socially Responsible Investment Index (MS-SRI),” which is provided by Morningstar Japan K.K., for five consecutive years.

- Offered treasury stock through International Offering

On March 6, 2018, SDK’s Board of Directors resolved that the Company would offer 6 million shares of its treasury stock through an international offering, and SDK completed delivery of those shares to investors on March 23, 2018. With regard to funds of about ¥26.1 billion which SDK received through this transaction, SDK has used a part of them for repayment of a bank loan which the Company borrowed in order to acquire SGL GE Holding GmbH in October 2017, and will use the remaining part for investment at home and abroad to expand production capacities of its plants to produce high-purity gases for electronics and other products.

- Implemented early repayment of subordinated loan

In October 2018, SDK made early repayment of ¥24 billion that it raised in a subordinated loan (the Subordinated Loan) in April 2014. The Subordinated Loan, with a 75% equity credit acknowledged by Japan Credit Rating Agency, Ltd., has contributed to improvement of SDK’s financial strength. Since the financing through the Subordinated Loan, SDK has advanced structural reform and expanded its individualized businesses, resulting in stronger business foundation and higher profitability, and also achieved financial level targeted in its medium-term business plan. These accomplishments led to SDK’s conclusion that it has completed the important task of enhancing its financial standing with the Subordinated Loan. SDK made an early repayment of the Subordinated Loan based on its judgment that the early repayment reduces financial costs and makes its financial strategy more flexible, which will increase shareholder value.

- Repurchased own shares

At its Board of Directors meeting held on December 11, 2018, SDK resolved to repurchase its own shares, aiming to enhance return to shareholders, improve capital efficiency and implement agile capital policies corresponding to changes in the business environment. SDK started to repurchase own shares on December 12, 2018, and completed repurchase of 2,648,300 shares for about ¥10 billion by December 18, 2018.

- Awarded preferential negotiating rights for establishment and operation of R&D complex from Yokohama City

In October 2018, SDK was awarded preferential negotiating rights in a public competition for “The project to establish and operate R&D base in Moriya/Ebisu area at the Keihin Seaside Zone” hosted by Yokohama City. SDK has been operating its main plant to manufacture ceramics in Yokohama City since 1933 when Nihon Alumina Kogyosho, one of predecessors of SDK, started operation. Now SDK’s base in Yokohama has many functions including development of materials for lithium ion batteries and other advanced batteries, development of thermo-conductive fillers, and engineering. Taking advantage of the Moriya/Ebisu area which is easily accessed from cities at home and abroad, the Showa Denko Group will establish a new complex, “Stage for Fusion,” which will function as the global center of the Group’s R&D activities, where diverse talented persons gather from all over the world and work together.

- SDK and Cinnamon starts to develop database system equipped with AI to utilize technical documents

In July 2018, SDK and Cinnamon Inc. (Cinnamon) decided to jointly develop a database system equipped with artificial intelligence (AI) to utilize technical documents. SDK and Cinnamon will promote the development of a database system with the object of utilizing technical documents, in which the system will be equipped with AI-based automatic OCR technology to accurately digitize data on paper containing handwritten characters and highly convenient data search function. The two parties will aim to create an intensely practical database system through close cooperation between Cinnamon which has deep expertise and programming technology on AI and image analysis, and SDK which holds abundant real data (technical documents) that contain expertise in many fields including petrochemical, carbon, and aluminum products. This development program has been accredited as a project to be subsidized by the New Energy and Technology Development Organization (NEDO) as a part of NEDO's "Program to Support Joint Development of AI Systems."

- Acquired naming rights to athletic facilities of Oita Sports Park

In October 2018, SDK acquired the naming rights to athletic facilities of Oita Sports Park in Oita City, where SDK's Oita Complex is located, from Oita Prefecture. The naming rights are valid for five years, from March 1, 2019 to February 29, 2024. The rights cover 7 athletic facilities including the main multipurpose stadium, tennis courts and a baseball stadium. SDK will nickname these 7 facilities with names which include our company name, "Showa Denko." For example, SDK will nickname the main multipurpose stadium "Showa Denko Dome Oita." A part of the fee for the naming rights SDK will pay to Oita Prefecture is to be used for promotion of sports and regional development. It is our pleasure to contribute to promotion of sports and regional development in Oita Prefecture in this way, and SDK aims to enhance its CSR activities further.

[Petrochemicals segment]

- Completed expansion of n-propyl acetate plant

SDK expanded its capacity to produce n-propyl acetate (NPAC), which is used in solvents for special gravure printing, from 16,000 tons a year to 18,200 tons a year through modifications to facilities during the period of regular shutdown maintenance of Oita Complex which was implemented in March and April 2018. NPAC is an acetate-based solvent with high safety mainly used for ink for special gravure printing on packaging materials for food. The demand for NPAC is increasing as safe and easy-to-use substitute for toluene and methyl ethyl ketone which has been used as solvent for ink, due to the revision of the Air Pollution Control Act in which a tighter control has been introduced over the emission of volatile organic components. In recent years, the demand for NPAC has been increasing more than 10% a year. SDK will strengthen its system to stably supply NPAC in order to cope appropriately with the expansion of the market.

- JXTG Energy and SDK receive subsidy for project to strengthen bases of petroleum complexes in Oita Complex Area

A joint project of SDK and JXTG Nippon Oil & Energy Corporation (JXTG Energy) to strengthen cooperation between oil refinery and petrochemical complex in Oita complex area (Oita City) has been adopted as a subject for the "2018 Subsidy Program to Support Projects to Enhance Resilience of Oil Supply System" (a program to subsidize projects to strengthen business bases of petroleum complexes among programs to enhance productivity and resilience of petroleum complexes) to which Consortium for Resilient Oil

Supply System (CROS) organized public invitation. Details of the project are “increasing the number of propylene rectifying towers” and “establishment of an ethane holder.” By interchanging and utilizing products through pipelines, the two parties gain advantages. “Subsidy Program to Support Projects to Enhance Resilience of Oil Supply System” is institutionalized by the Agency of Natural Resources and Energy. Through this joint project, SDK and JXTG Energy will make the most of strong points of facilities in the oil refinery and the petrochemical complex in Oita complex area, and make these complexes prosper with global competitiveness.

[Chemicals segment]

- Expanded high-purity hydrogen bromide plant

SDK expanded its annual capacity to produce high-purity hydrogen bromide (HBr) from 600 tons to 900 tons, 1.5 times as much as the previous level. The expanded plant started to produce HBr in March 2018. HBr is a specialty gas mainly used for fine-etching of polysilicon in the manufacturing process of semiconductors including DRAMs and NAND flash memories. The demand for HBr has been increasing due to ongoing expansion of the market for semiconductors caused by acceleration in the spread of IoT, big dada analysis, and automatic driving. SDK will continue responding quickly to the expansion of the electronic parts and materials industry’s demand for HBr and scaling up its high-purity specialty gas business.

- Opened the second branch of Shanghai Showa Chemicals Co., Ltd. aiming to strengthen sales of high-purity gases for electronics in China

In March 2018, SDK established a branch of Shanghai Showa Chemicals Co., Ltd. (SSC) in Wuhan, Hubei Province, China, aiming to strengthen its business to sell high-purity gases for electronics in China. Semiconductor and flat panel display industries are growing rapidly in China due to the Chinese government’s policy for the development of these industries and the increase in the global demand for electronic devices. In the past, SDK shipped all of its high-purity gases for electronics to be used by customers in China from SSC located in Shanghai. This time, however, SDK decided to establish a branch of SSC and its warehouse in Wuhan because there has been construction of large factories in Middle China to manufacture semiconductor chips and flat panel displays. The Showa Denko Group will continue enriching its network of bases to sell and distribute high-purity gases for electronics in China, aiming to expand the business in each region of the country and respond properly to the expansion of our customers’ businesses.

[Electronics segment]

- SDK’s 3.5-inch Media Now Used in World’s-Largest-Capacity 16TB HDD

In January 2019, SDK announced that hard disk (HD) media produced and sold by the Company were adopted in a new model of 3.5-inch 16 terabyte (TB) hard disk drive (HDD) which represents the world’s largest storage capacity for this size available on the market.*1 SDK’s 3.5-inch HD media were adopted into Toshiba Electronic Devices & Storage Corporation’s HDD for near-line storage, “MG08,” which realized the total storage capacity of 16TB, the world’s largest storage capacity for this size, with Conventional Magnetic Recording (CMR).*2 SDK started supplying its 3.5-inch HD media for this application, using the ninth-generation perpendicular magnetic recording (PMR) technology which realizes storage capacity of 1.8TB/platter. In 2005, SDK became the world’s first to manufacture and sell PMR-technology-based HD media. These days, servers in data centers to store data require HDDs with ever larger storage capacities due to the spread of cloud computing and moving image contents. HD media are key components of HDDs, significantly influencing their storage capacity, and SDK has been speedily launching largest-level-capacity HD media. As the world’s largest independent

HD media supplier, SDK will continue contributing to the expansion of storage capacities of HDDs in accordance with the company's motto of "Best in Class."

*1: As of January 8, 2019

*2: Conventional Magnetic Recording (CMR): CMR HDD uses PMR-technology-based HD media and realizes high-density data recording without using Shingled Magnetic Recording (SMR) technology. CMR HDD features random access to data faster than that of SMR HDD.

- Signed an agreement to transfer the Company's rare earth magnetic alloy R&D sector

In November 2018, SDK agreed to transfer its business sector which conducts research and development on rare earth magnetic alloys to TDK Corporation. The assets subject to this transfer consisted mainly of a business sector which conducts R&D in Chichibu Plant and SDK's intellectual property rights on rare earth magnetic alloys. However, SDK will continue production of rare earth magnetic alloys in its Chichibu Plant even after the transfer.

[Inorganics segment]

- Completed expansion of capacity for titanium oxide nanoparticles

In November 2018, SDK completed expansion of the capacity to produce nanoparticle titanium oxide, which has been sold under the trade name of *Super-Titania*™, at its wholly owned subsidiary Showa Denko Ceramics Co., Ltd. *Super-Titania*™ is used in the production of multilayer ceramic capacitors (MLCCs). MLCCs are installed in many information devices including smartphones which require downsizing and weight saving, and in digital home appliances including flat-screen TVs. In addition, MLCCs are now widely applied to onboard equipment, and the demand for MLCCs has been growing. *Super-Titania*™ can be used not only as raw material for manufacturing of MLCCs but also as an ingredient of various filling materials and for other services. The Showa Denko Group will continue to meet customer requirements, stably supply high-quality products, and establish leading positions on the market.

- Completed transfer of the Company's whole shares in ICA

In December 2018, SDK completed transfer of its whole shares (20%) in PT. INDONESIA CHEMICAL ALUMINA (ICA) to PT ANTAM Tbk (ANTAM) on the sale of SDK's shares in ICA. Until completion of this transaction, ICA was SDK's affiliated company accounted for by the equity method, while ANTAM remains the parent company of ICA as the majority shareholder.

[Aluminum segment]

- Showa Aluminum Can completed second production base in Vietnam

In June 2018, Showa Aluminum Can Corporation (SAC), a consolidated subsidiary of SDK, completed construction of its subsidiary's new factory to produce aluminum cans in Quang Nam Province, which is in the suburbs of Da Nang City in mid Vietnam, and started operation of the factory. The new factory is Hanacans Joint Stock Company's second production base in Vietnam, and its production line has annual production capacity of 700 million can bodies. Hanacans, which is a Vietnamese subsidiary of SAC, is now also working to increase the capacity of the lines to produce can ends set at its factory in Bach Nin Province in the suburbs of Hanoi. When this work was finished in October 2018, Hanacans' two factories' total capacity to produce can bodies and can ends became that for 2 billion cans a year. Since its acquisition of Hanacans in 2014, SAC has been introducing its leading-edge production technologies and quality control system into Hanacans, and successfully increasing Hanacans' sales in Vietnam centering on northern part of the country. SAC will pursue further increase in its aluminum can sales in mid Vietnam through its effort to make Hanacans' new aluminum can factory the one that quickly and timely offers the best quality products in the region which meet needs of the

market.

- New aluminum can JV completed construction of a factory in Thailand

In December 2018, SDK, Showa Aluminum Can Corporation (SAC), which is a consolidated subsidiary of SDK, and Carabao Group Public Company Limited (CBG), which is a leading beverage maker headquartered in Bangkok, Thailand, jointly had a ceremony for the completion of a new aluminum can factory owned and operated by Asia Can Manufacturing Co., Ltd. (ACM). ACM is a can manufacturing company established as a joint venture among SDK, SAC and CBG, and had been conducting the project to construct the new factory since then. After the start-up of operations of the new factory, ACM will mainly manufacture aluminum cans for CBG's beverages for export from Thailand. CBG aims to expand its overseas sales, centering on Southeast Asian countries, China and the United Kingdom. ACM will support CBG's overseas operations through stable supply of high-quality aluminum cans manufactured by leading-edge technologies and quality management system built up by SAC over many years. As a result of the completion of the new aluminum can factory of ACM, Showa Denko Group's capacity to manufacture aluminum cans in Southeast Asia has been expanded to 3 billion cans a year, including that of Hanacans Joint Stock Company of Vietnam which has capacity to produce 2 billion cans a year.

- Strengthened R&D function for aluminum alloy materials

In February 2018, SDK established a laboratory named "Aluminum Product Evaluation Center" in its Kitakata Plant located in Fukushima Prefecture. Kitakata Plant is SDK's base to develop and manufacture cast and forged aluminum products. SDK's aluminum products including *SHOTIC*™ are acclaimed by car manufacturers for their high strength, high abrasion resistance, and low thermal expansivity. In order to contribute to further weight reduction of cars, we should furthermore improve our aluminum alloy production technology, aiming to realize higher strength. In the new laboratory, we will develop alloys with higher performance. In addition, the Group aims to propose new multi-material products through composition of organic, inorganic, and metal materials by strengthening the Group's analysis technology, which will be realized by close cooperation among Aluminum Product Evaluation Center, Analysis & Physical Properties Center, and Computational Science and Technology Information Center. Thus the Group will continue striving to give birth to sprouts of new businesses which will contribute to further growth of the Group in the future.

[Others Segment]

- Decided to start the third time expansion of high-grade SiC epitaxial-wafer production facilities in these 2 years

SDK decided to farther expand its capacity to produce high-quality-grade silicon carbide (SiC) epitaxial wafers for power semiconductors, which have already been marketed under the trade name of "High-Grade Epi" (HGE), in addition to currently conducted expansion work of the HGE production facilities. SDK has been gradually expanding its capacity to produce HGE, which was 3,000 wafers* per month in 2017 before these expansion works. After the additional expansion work decided this time, which is to be finished in February 2019, SDK's HGE production capacity will be 9,000 wafers per month, which is three times as much as that in 2017. SDK's SiC epitaxial wafer business has been acclaimed by power semiconductor manufacturers, which are our customers, for the lowest incidence of crystal defects and the highest homogeneity of wafers in the world. SDK decided this time again to farther expand the HGE production facilities in order to respond to the growing need of our customers for HGE resulting from rapid growth of the market for SiC-based power semiconductors. When compared with the currently

mainstream silicon-based semiconductors, SiC-based power semiconductors can operate under high-temperature, high-voltage, and high-current conditions, while conserving energy. These features enable device manufacturers to produce smaller, lighter, and more energy-efficient next-generation power control modules. In addition to the use in power modules for dispersion type power sources to utilize new energy sources, power modules for servers in data centers, and inverter modules for railcars, SiC-based power semiconductors are now replacing conventional silicon-based semiconductors for use in on-board battery chargers and rapid charging stations for EVs, in parallel with rapid expansion of the EV market. SDK will continue improving the quality of its SiC epitaxial wafer products and supplying them to the rapidly growing SiC power semiconductor market in timely and stable manner, while securing top-level market share.

*This number is based on a conversion into SiC epitaxial wafers for power devices having withstanding voltage of 1,200 V.

(4) Projections for 2019

a) Overall performance forecast

In 2019, the Japanese economy is expected to continue gradual recovery. While corporate earnings are expected to be stagnated mainly in export sector due to slowdown in the Chinese economy, consumer spending is expected to show a steady change due to improvements in employment environment and personal income environment. As for overseas economies, the US economy will continue to recover gradually, though rises in interest rates are expected. As for the European economy, major countries will show mild recovery. However, we have to pay close attention to the progress in the process of the United Kingdom's secession from the European Union. The Chinese economy is expected to slow down due to intensifying trade friction between China and the U.S. Economic growth of ASEAN countries is expected to slow down.

There will be downward risk factors for the Japanese and global economies such as the planned consumption tax increase in Japan, the unforeseeable effect of US administration's policies on international trade, trade friction between China and the U.S., Brexit issue, and the possible wide fluctuations in exchange rates and market prices of natural resources. Thus the business environment will remain severe.

Under these circumstances, the Showa Denko Group started its new medium-term consolidated business plan "The TOP 2021" in January 2019. On the basis of its business philosophy, the Group will promote management to maximize shareholders', customers' and social value. The Group will change its course toward long-term business growth, strengthen its earning power and reduce the range of fluctuation in income through promotion of "The TOP 2021," enhance the value of the Group, and establish a stable foundation which will continuously support the Group's growth far into the future.

The Group's performance forecast for 2019 is as follows.

(Unit: millions of yen)

	Results for the term ended Dec. 31, 2018	Forecast for the term ending Dec.31, 2019	Increase/ decrease	Rate of change (%)
Net sales	992,136	1,100,000	107,864	10.9
Operating income	180.003	190,000	9,997	5.6
Ordinary income	178,804	185,000	6,196	3.5
Net income attributable to owners of the parent	111,503	120,000	8,497	7.6

The above forecast is based on the assumption that the exchange rates and the naphtha price will be ¥105.0/$, ¥126.0/€ and ¥53,400/KL for 2019, respectively.

b) Net sales and operating income by business segment

[Net sales]

(Unit: millions of yen)

	Results for the term ended Dec. 31, 2018	Forecast for the term ending Dec. 31, 2019	Increase/ decrease
Petrochemicals	268,879	290,000	21,121
Chemicals	156,541	166,000	9,459
Electronics	105,823	106,000	177
Inorganics	266,149	340,000	73,851
Aluminum	108,254	110,000	1,746
Others	143,413	142,000	-1,413
Adjustments	-56,922	-54,000	2,922
Total	992,136	1,100,000	107,864

[Operating income]

(Unit: millions of yen)

	Results for the term ended Dec. 31, 2018	Forecast for the term ending Dec. 31, 2019	Increase/ decrease
Petrochemicals	20,333	18,000	-2,333
Chemicals	17,393	15,000	-2,393
Electronics	12,397	12,500	103
Inorganics	132,445	148,000	15,555
Aluminum	4,942	5,500	558
Others	2,893	1,500	-1,393
Adjustments	-10,400	-10,500	-100
Total	180,003	190,000	9,997

The above forecast is based on the information available as of February 14, 2019 and our assumptions as of the same date about risk factors that could affect our future performance. Actual results may differ materially due to a variety of reasons.

SiC epitaxial wafers business was transferred from the Others segment to the Electronics segment at the beginning of 2019. However, these segment-wise numbers for 2018 are based on the segmentation before this change.

2. Financial conditions for the January 1 – December 31, 2018 period

(1) Assets, liabilities and net assets

Total assets at the end of the year amounted to ¥1,075,746 million, an increase of ¥48,747 million from the level at December 31,2017. Total assets increased due mainly to the increase in accounts receivable-trade and inventories resulting from rises in market prices of graphite electrodes and their raw materials. Interest-bearing debt decreased ¥58,758 million, to ¥287,968 million. Total liabilities decreased ¥47,599 million, to ¥610,406 million, due mainly to the decrease in interest-bearing debt, despite an increase in accounts payable-trade. Net assets at the end of the year amounted to ¥465,340 million, up ¥96,346 million, due partly to the posting of net income attributable to owners of the parent.

(2) Cash flows in 2018

Net cash provided by operating activities increased ¥82,550 million from the previous year, to ¥149,785 million, due partly to the increase in income before income taxes and minority interests. Net cash used in investing activities increased ¥19,472 million, to ¥49,338 million, due partly to a decrease in proceeds from repayment of time deposits. Thus, free cash flow ended up in the proceeds of ¥100,447 million, an improvement of ¥63,078 million. Net cash used in financing activities increased ¥42,691 million due to the reduction in interest-bearing debt, and ended up in the payment of ¥61,061 million. As a result, and due partly to the influence of exchange rate fluctuations, cash and cash equivalents at December 31, 2018 increased ¥36,002 million from the end of the previous year, to ¥112,835 million.

(3) Cash flow projections for 2019

Cash flows from operating activities will decrease. As for net cash used in investing activities, payment will increase from that in 2018. Thus, free cash flow in 2019 is expected to decrease by around ¥45,400 million from ¥100,447 million in 2018, to the proceeds of ¥55,000 million. Interest bearing debt at the end of the year will be ¥300,000 million, up around ¥12,000 million.

(4) Trends in cash flow indexes

	2015	2016	2017	2018
Equity ratio	31.5%	31.8%	34.3%	41.5%
Equity ratio on a market value basis	21.6%	25.6%	66.8%	44.3%
Debt maturity (years)	6.0	5.2	5.2	1.9
Interest coverage ratio	14.9	21.4	23.8	35.1

[Notes]
Equity ratio: Equity / Total assets
Equity ratio on a market value basis: Total market value of listed shares / Total assets
Debt maturity (years): Interest-bearing debt / Cash flows from operating activities
Interest coverage ratio: Cash flows from operating activities / Interest payment

- Each index is calculated by relevant formulas with financial figures quoted from the consolidated financial statements.
- Equity is calculated by deducting minority interests from total net assets.
- Total market value of listed shares is calculated by multiplying the closing share price at the year-end by the number of shares issued, after deducting treasury stock.
- As to the cash flows, the amount of “cash flows from operating activities” in the consolidated cash flow statement is used.
- “Interest-bearing debt” refers to loans payable, commercial paper, and bonds as listed among liabilities on the consolidated balance sheet.
- As to the interest payment, the amount of “interest expense” in the consolidated cash flow statement is used.

3. Management Policy

(1) Medium to long-term business strategy

1) New medium-term business plan "The TOP 2021" (announced in December 2018)

In January 2019, the Showa Denko Group started its new medium-term consolidated business plan "The TOP 2021." Under this business plan, the Group will change its course toward long-term business growth, thereby establishing a stable foundation which will continuously support the Group's growth far into the future.

It is very important for the Showa Denko Group to continue constructive communication with all stakeholders including shareholders, customers, suppliers, local communities, and employees, aiming to satisfy them and enhance the value of the Group in order that the Group continuously grows and is trusted and acclaimed by society. The Showa Denko Group defines this idea as the Group's business philosophy, thereby promoting management to maximize shareholders', customers' and social value.

2) Basic strategy under "The TOP 2021"

The Group defined its Mission, Vision and Value as follows, aiming to realize the Group's business philosophy.

Mission (The meaning of our existence): We will satisfy all stakeholders.

Vision (Our goal): KOSEIHA Company

KOSEIHA Company is an aggregate of KOSEIHA Businesses. KOSEIHA Business is a business in which SDK has a top market share in the market of appropriate size (Operating margin of 10% or more; Operating income of billions of yen or more; Stable profitability tolerant to environmental change)

Value (Means to realize Vision): Maximization of CUSTOMER Experience

(Maximization of the value that our customer experiences)

The Group redefined its business portfolio in accordance with each business's battlefield, financial goal and course of action.

a) Drastic improvement in existing businesses (Enhance / Grow / Change)

Enhance: Businesses categorized into this are positioned as businesses that should continuously improve profitability. These businesses compete in mature markets and enhance offering value by evolving business models.

We will aim to make petrochemicals, industrial gases and basic chemicals businesses No.1 in specific regions/fields. As for HD media and graphite electrode businesses, we will aim to make these businesses global No.1 by taking advantage of our superiority in technology and quality and deepening customer relations at home and abroad.

Grow: Businesses categorized into this are positioned as businesses that should realize high growth rate and high profitability simultaneously. We will accelerate growth of these businesses in growing market at home and abroad.

We will aim to make our electronic chemicals business global No.1 in terms of market share, growth rate and profitability. We will also aim to make our advanced battery materials, electronics materials and SiC

epitaxial wafer for power devices businesses establish leading presence in target markets (i.e., establish bases for rapid growth and high profitability).

Change: Businesses categorized into this are positioned as businesses that should increase sales while maintaining profitability. We will change business models of them, considering expansion into downstream.
We will aim to make our aluminum can and aluminum rolled products businesses expand overseas business activities. We will also aim to make our aluminum specialty components, functional chemicals, and ceramics businesses shift to solution oriented businesses, and change them to high-value adding businesses.

b) Creation of new businesses (**Create**)
Aiming to create new businesses, the Group will take strategic discontinuous measures such as M&As in addition to R&D to realize organic growth of the Group.

c) Inter-business cooperation
The Group has wide-ranging-businesses and materials-related-technologies concerning inorganics, organics, aluminum, etc. The Group also has elemental technologies concerning process design, process analysis, evaluation, etc. We will aim to offer new added-value and solutions in growing markets through combination of these existing businesses and technologies. As the first case of such inter-business cooperation, we started a project to create new composite materials for cars in January 2019. This new project will offer solutions such as composite materials to optimize light weight/rigidity, heat radiation/heat storage, electrical insulation and adhesion between different materials, adapted to future changes in automotive industry which will change the industry's requirements for materials.

d) Strengthening base of strategy
To conduct business activities globally and realize continuous business growth, the Showa Denko Group must fulfill corporate social responsibility and promote integrated Group management with awareness of future changes in market environment and technologies, in order to contribute to solution of social issues known as Sustainable Development Goals (SDGs). Therefore, the Group will promote various measures which will also be incorporated into the next medium-term consolidated business plan starting in January 2022, including strengthening of R&D functions and marketing functions, and introduction of AI/IoT.

(2) Performance targets
Under the new medium-term consolidated business plan "The TOP 2021," the Group set its performance targets as follows.

(Unit: Billion yen)

	2019 – 2021 (3-year total)
Net sales	3,400
Operating income	480
Operating margin	14.1%
Net income attributable to owners of the parent	330
ROA	12.6%
ROE	19.5%

Note 1: ROA is based on operating income, and the simple average of 3 years.
Note 2: ROE is the simple average of 3 years.

(3) Financial strategy

1) Basic strategy

To realize continuous growth of the Group, we set clear criteria for capital investment based on capital costs, and carefully select investments, while maintaining positive stance on capital investment. We will also implement discontinuous investment including M&A. We will improve business efficiency through productivity improvement and use of Cash Conversion Cycle (CCC) as management tool. Aiming to improve return to shareholders, the Group will make its best effort to realize total return ratio of 30% by 2021. The Group will not only strive to continue high dividends but also consider buying treasury stock in timely and continuous manner.

2) Financial targets

We set specific targets for D/E ratio, total return ratio and total investment, and will strive to achieve them. We will aim to upgrade our rating from current A- positive to A or higher.

D/E ratio:	About 0.5 times (as of December 31, 2021)
Total return ratio:	About 30% (in 2021)
Total investment:	¥400 billion (2019 – 2021 total)

Note: Total investment is the total of capital investment (investment in facility improvement = ¥120 billion, investment in organic growth = ¥130 billion), and investment in M&A = ¥150 billion.

4. Our view on selection of accounting standard

The Group executes its consolidated financial statements in accordance with the Japanese standards. We judge our financial statements appropriately indicate the Group's financial conditions and business performances. As for IFRS, we will continue carefully observing movements and trends of the standard and its system.

Consolidated Balance Sheets

(¥ in millions, US$ in thousands)

	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2018
Assets	¥	¥	$
Current assets			
Cash and deposits	77,248	113,186	1,019,692
Notes and accounts receivable-trade	176,021	203,730	1,835,409
Merchandise and finished goods	54,903	65,882	593,535
Work in process	15,829	26,160	235,676
Raw materials and supplies	44,181	60,758	547,370
Deferred tax assets	6,898	3,747	33,760
Other	34,964	28,202	254,068
Allowance for doubtful accounts	(2,849)	(1,386)	(12,482)
Total current assets	407,194	500,280	4,507,029
Noncurrent assets			
Property, plant and equipment			
Buildings and structures, net	85,930	78,777	709,699
Machinery, equipment and vehicles, net	151,634	146,764	1,322,195
Tools, furniture and fixtures, net	7,109	6,773	61,015
Land	244,713	234,987	2,117,002
Construction in progress	16,548	11,106	100,054
Total property, plant and equipment	505,933	478,406	4,309,964
Intangible assets			
Other	12,817	14,950	134,689
Total intangible assets	12,817	14,950	134,689
Investments and other assets			
Investment securities	89,167	71,886	647,618
Net defined benefit asset	232	249	2,243
Deferred tax assets	1,080	1,590	14,320
Other	20,805	16,717	150,605
Allowance for doubtful accounts	(10,229)	(8,332)	(75,062)
Total investments and other assets	101,054	82,109	739,724
Total noncurrent assets	619,805	575,466	5,184,376
Total assets	1,026,999	1,075,746	9,691,405
Liabilities			
Current liabilities			
Notes and accounts payable-trade	120,762	139,420	1,256,039
Short-term loans payable	86,699	61,747	556,276
Current portion of long-term loans payable	57,432	41,403	373,000
Commercial papers	5,000	20,000	180,180
Accounts payable-other	67,082	56,471	508,751
Provision for repairs	4,143	64	574
Provision for bonuses	2,949	3,516	31,678
Provision for stock payment	5	5	46
Provision for business structure improvement	137	129	1,161
Other	27,625	39,425	355,182
Total current liabilities	371,835	362,181	3,262,888
Noncurrent liabilities			
Bonds payable	42,000	42,000	378,378
Long-term loans payable	155,594	122,818	1,106,469
Deferred tax liabilities	12,880	6,683	60,211
Deferred tax liabilities for land revaluation	32,488	32,324	291,208
Provision for repairs	117	1,102	9,926
Provision for stock payment	96	156	1,407
Provision for business structure improvement	3,574	2,876	25,906
Provision for loss on guarantees	2,640	—	—
Net defined benefit liability	18,966	22,018	198,365
Other	17,814	18,248	164,397
Total noncurrent liabilities	286,170	248,226	2,236,266
Total liabilities	658,005	610,406	5,499,154
Net assets			
Shareholders' equity			
Capital stock	140,564	140,564	1,266,338
Capital surplus	61,663	78,911	710,911
Retained earnings	100,076	197,717	1,781,230
Treasury stock	(10,503)	(11,659)	(105,038)
Total shareholders' equity	291,800	405,532	3,653,441
Accumulated other comprehensive income			
Valuation difference on available-for-sale securities	16,547	7,489	67,465
Deferred gains or losses on hedges	3,781	836	7,535
Revaluation reserve for land	29,541	33,281	299,831
Foreign currency translation adjustment	15,516	7,069	63,681
Remeasurements of defined benefit plans	(4,716)	(8,244)	(74,270)
Total accumulated other comprehensive income	60,670	40,431	364,241
Non-controlling interests	16,524	19,377	174,568
Total net assets	368,994	465,340	4,192,251
Total liabilities and net assets	1,026,999	1,075,746	9,691,405

Consolidated Statements of Income

(¥ in millions, US$ in thousands)

	Results for the year ended Dec.31 2017 and 2018		
	2017	2018	2018
	¥	¥	$
Net sales	780,387	992,136	8,938,162
Cost of sales	602,888	705,003	6,351,379
Gross profit	177,498	287,133	2,586,784
Selling, general and administrative expenses	99,790	107,130	965,135
Operating income	77,708	180,003	1,621,649
Non-operating income			
Interest income	581	809	7,287
Dividends income	1,312	1,545	13,920
Equity in earnings of affiliates	—	1,253	11,290
Rent income on noncurrent assets	1,381	1,366	12,305
Miscellaneous income	1,166	1,248	11,246
Total non-operating income	4,441	6,221	56,048
Non-operating expenses			
Interest expenses	3,100	2,983	26,871
Equity in losses of affiliates	7,689	—	—
Loss on mothballing of operation	1,579	1,479	13,321
Miscellaneous expenses	5,930	2,959	26,658
Total non-operating expenses	18,298	7,420	66,849
Ordinary income	63,851	178,804	1,610,848
Extraordinary income			
Gain on sales of investment securities	408	1,521	13,703
Gain on bargain purchase	7,141	—	—
Gain on liquidation of subsidiaries	15	361	3,254
Other	1,067	218	1,961
Total extraordinary income	8,632	2,100	18,918
Extraordinary loss			
Loss on sales and retirement of noncurrent assets	5,329	5,196	46,811
Impairment loss	7,204	22,573	203,362
Provision for loss on guarantees	2,640	—	—
Other	6,778	7,626	68,703
Total extraordinary losses	21,952	35,395	318,877
Profit before income taxes	50,531	145,509	1,310,890
Income taxes	10,814	28,756	259,067
Net income	39,717	116,752	1,051,823
Net income attributable to non-controlling interests	2,313	5,249	47,287
Net income attributable to owners of the parent	37,404	111,503	1,004,535

Consolidated Statements of Comprehensive Income

(¥ in millions, US$ in thousands)

	Results for the year ended Dec.31 2017 and 2018		
	2017	2018	2018
	¥	¥	$
Profit	39,717	116,752	1,051,823
Other comprehensive income:			
Valuation difference on available-for-sale securities	12,133	(9,127)	(82,228)
Deferred gains or losses on hedges	3,479	(2,942)	(26,508)
Foreign currency translation adjustments	1,519	(7,667)	(69,070)
Remeasurements of defined benefit plans, net of tax	6,294	(3,556)	(32,034)
Share of other comprehensive income of entities accounted for using equity method	22	(1,405)	(12,655)
Total other comprehensive income	23,447	(24,697)	(222,495)
Comprehensive income	63,165	92,055	829,327
(Comprehensive income attributable to)			
Comprehensive income attributable to owners of the parent	60,579	87,463	787,953
Comprehensive income attributable to non-controlling interests	2,586	4,593	41,375

Consolidated Statements of Changes in Net Assets

For the year ended December 31, 2017

(¥ in millions)

	Shareholders' equity					Valuation and translation adjustments						Non-controlling interests	Total net assets
	Capital stock	Capital surplus	Retained earnings	Treasury stock	Total shareholders' equity	Valuation difference on available-for-sale securities	Deferred gains or losses on hedges	Revaluation reserve for land	Foreign currency translation adjustment	Remeasurements of defined benefit plans	Total valuation and translation adjustments		
Balance at December 31, 2016	140,564	62,033	65,358	(10,502)	257,453	4,519	320	31,026	14,239	(10,996)	39,107	14,671	311,231
Changes of items during the period													
Dividends from surplus			(4,285)		(4,285)								(4,285)
Net income			37,404		37,404								37,404
Purchase of treasury stock				(11)	(11)								(11)
Disposal of treasury stock		0		10	10								10
Increase by increase of consolidated subsidiaries			229		229								229
Decrease by increase of consolidated subsidiaries			(97)		(97)								(97)
Change of scope of equity method													-
Change in treasury shares of parent arising from transactions with non-controlling shareholders		(370)			(370)								(370)
Reversal of revaluation reserve for land			1,486		1,486								1,486
Others			(20)		(20)								(20)
Net changes of items other than shareholders' equity						12,028	3,461	(1,485)	1,277	6,281	21,563	1,854	23,416
Total changes of items during the period	-	(370)	34,718	(1)	34,347	12,028	3,461	(1,485)	1,277	6,281	21,563	1,854	57,763
Balance at December 31, 2017	140,564	61,663	100,076	(10,503)	291,800	16,547	3,781	29,541	15,516	(4,716)	60,670	16,524	368,994

For the year ended December 31, 2018

(¥ in millions)

	Shareholders' equity					Total accumulated other comprehensive income						Non-controlling interests	Total net assets
	Capital stock	Capital surplus	Retained earnings	Treasury stock	Total shareholders' equity	Valuation difference on available-for-sale securities	Deferred gains or losses on hedges	Revaluation reserve for land	Foreign currency translation adjustment	Remeasurements of defined benefit plans	Total valuation and translation adjustments		
Balance at December 31, 2017	140,564	61,663	100,076	(10,503)	291,800	16,547	3,781	29,541	15,516	(4,716)	60,670	16,524	368,994
Changes of items during the period													
Dividends from surplus			(10,117)		(10,117)								(10,117)
Net income			111,503		111,503								111,503
Purchase of treasury stock				(10,015)	(10,015)								(10,015)
Disposal of treasury stock		17,248		8,859	26,107								26,107
Increase by increase of consolidated subsidiaries													-
Decrease by increase of consolidated subsidiaries													-
Change of scope of equity method			(6)		(6)								(6)
Change in treasury shares of parent arising from transactions with non-controlling shareholders		0			0								0
Reversal of revaluation reserve for land			(3,740)		(3,740)								(3,740)
Others													-
Net changes of items other than shareholders' equity						(9,058)	(2,945)	3,740	(8,447)	(3,528)	(20,239)	2,853	(17,387)
Total changes of items during the period	-	17,248	97,641	(1,157)	113,732	(9,058)	(2,945)	3,740	(8,447)	(3,528)	(20,239)	2,853	96,346
Balance at December 31, 2018	140,564	78,911	197,717	(11,659)	405,532	7,489	836	33,281	7,069	(8,244)	40,431	19,377	465,340

For the year ended December 31, 2018

(US$ in thousands)

	Shareholders' equity					Total accumulated other comprehensive income						Non-controlling interests	Total net assets
	Capital stock	Capital surplus	Retained earnings	Treasury stock	Total shareholders' equity	Valuation difference on available-for-sale securities	Deferred gains or losses on hedges	Revaluation reserve for land	Foreign currency translation adjustment	Remeasurements of defined benefit plans	Total valuation and translation adjustments		
Balance at December 31, 2017	1,266,338	555,523	901,583	(94,619)	2,628,825	149,072	34,067	266,138	139,783	(42,484)	546,576	148,869	3,324,270
Changes of items during the period													
Dividends from surplus			(91,144)		(91,144)								(91,144)
Net income			1,004,535		1,004,535								1,004,535
Purchase of treasury stock				(90,229)	(90,229)								(90,229)
Disposal of treasury stock		155,387		79,810	235,197								235,197
Increase by increase of consolidated subsidiaries													-
Decrease by increase of consolidated subsidiaries													-
Change in treasury shares of parent arising from transactions with non-controlling shareholders		1			1								1
Reversal of revaluation reserve for land			(33,693)		(33,693)								(33,693)
Others													-
Net changes of items other than shareholders' equity						(81,607)	(26,532)	33,693	(76,102)	(31,786)	(182,334)	25,699	(156,635)
Total changes of items during the period	-	155,388	879,647	(10,419)	1,024,616	(81,607)	(26,532)	33,693	(76,102)	(31,786)	(182,334)	25,699	867,981
Balance at December 31, 2018	1,266,338	710,911	1,781,230	(105,038)	3,653,441	67,465	7,535	299,831	63,681	(74,270)	364,241	174,568	4,192,251

Consolidated Statements of Cash Flows

(¥ in millions, US$ in thousands)

	Results for the year (Jan. 1-Dec. 31)		
	2017	2018	2018
	¥	¥	$
Net cash provided by (used in) operating activities			
Income before income taxes and minority interests	50,531	145,509	1,310,890
Depreciation and amortization	38,565	39,459	355,489
Impairment loss	7,204	22,573	203,362
Amortization of negative goodwill	(12)	(19)	(167)
Increase (decrease) in allowance for doubtful accounts	2,757	(2,134)	(19,224)
Increase (decrease) in provision for business structure improvement	2,106	(704)	(6,339)
Increase (decrease) in provision for loss on guarantees	2,640	(2,640)	(23,783)
Increase (decrease) in net defined benefit liability	(10,610)	3,522	31,732
Interest and dividends income	(1,893)	(2,354)	(21,207)
Interest expenses	3,100	2,983	26,871
Equity in (earnings) losses of affiliates	7,689	(1,253)	(11,290)
Loss (gain) on sales and valuation of investment securities	(358)	1,062	9,567
Loss on retirement of noncurrent assets	5,310	4,851	43,706
Loss (gain) on sales of noncurrent assets	(880)	141	1,274
Decrease (increase) in notes and accounts receivable-trade	(23,253)	(29,583)	(266,509)
Decrease (increase) in inventories	(12,005)	(40,469)	(364,587)
Increase (decrease) in notes and accounts payable-trade	10,172	20,397	183,757
Other, net	(8,712)	6,162	55,518
Subtotal	72,351	167,506	1,509,060
Interest and dividends income received	4,410	4,005	36,085
Interest expenses paid	(2,828)	(4,269)	(38,459)
Income taxes paid	(6,698)	(17,457)	(157,270)
Net cash provided by (used in) operating activities	67,235	149,785	1,349,415
Net cash provided by (used in) investing activities			
Payments into time deposits	(9,606)	(172)	(1,547)
Proceeds from withdrawal of time deposits	23,268	210	1,890
Purchase of property, plant and equipment	(38,872)	(41,269)	(371,792)
Proceeds from sales of property, plant and equipment	1,067	392	3,528
Purchase of investment securities	(1,646)	(703)	(6,337)
Proceeds from sales of investment securities	15,086	3,975	35,811
Purchase of investments in subsidiaries resulting in change in scope of consolidation	(14,827)	-	-
Net decrease (increase) in short-term loans receivable	(754)	197	1,776
Payments of long-term loans receivable	(1,045)	(2,950)	(26,575)
Collection of long-term loans receivable	609	672	6,058
Other, net	(3,145)	(9,690)	(87,300)
Net cash provided by (used in) investing activities	(29,866)	(49,338)	(444,487)
Net increase (decrease) in short-term loans payable	19,921	(24,507)	(220,782)
Net increase (decrease) in commercial papers	-	15,000	135,135
Proceeds from long-term loans payable	22,328	33,206	299,149
Repayment of long-term loans payable	(44,813)	(81,559)	(734,768)
Redemption of bonds	(10,000)	-	-
Purchase of treasury shares	(12)	(10,016)	(90,238)
Proceeds from sales of treasury shares	0	26,104	235,172
Cash dividends paid	(4,277)	(10,084)	(90,847)
Cash dividends paid to non controlling shareholders	(1,648)	(2,365)	(21,302)
Other, net	130	(6,840)	(61,622)
Net cash provided by (used in) financing activities	(18,370)	(61,061)	(550,104)
Effect of exchange rate change on cash and cash equivalents	953	(3,231)	(29,108)
Net increase (decrease) in cash and cash equivalents	19,952	36,154	325,716
Cash and cash equivalents at beginning of period	56,186	76,833	692,193
Increase in cash and cash equivalents from newly consolidated subsidiary	696	-	-
Decrease in cash and cash equivalents resulting from exclusion of subsidiaries	-	(153)	(1,377)
Cash and cash equivalents at end of period	76,833	112,835	1,016,532

SEGMENT INFORMATION

(a) The operations of the Companies for the year ended December 31, 2017 and 2018 were summarized by business segment as follows:

Year ended December 31, 2017	Millions of yen							
	Petrochemicals	Chemicals	Electronics	Inorganic	Aluminium	Others	Elimination	Consolidated
Sales								
Outside customers	¥240,685	¥131,540	¥120,593	¥65,199	¥96,827	¥125,544	¥—	¥780,387
Inter-segment	10,443	17,218	2,471	8,243	8,612	8,080	(55,067)	—
Total	251,128	148,758	123,064	73,442	105,439	133,624	(55,067)	¥780,387
Operating income (loss)	¥33,357	¥16,474	¥21,925	¥6,979	¥6,697	¥633	(¥8,357)	¥77,708
Assets	¥146,608	¥215,641	¥144,939	¥204,546	¥169,561	¥166,540	(¥20,836)	¥1,026,999
Depreciation	6,850	8,460	9,598	5,574	5,356	1,614	1,113	38,565
Amortization of (negative) goodwill	—	(260)	12	8	228	(0)	—	(12)
Investments in non-consolidated subsidiaries and affiliates	11,148	2,301	—	1,789	—	340	—	15,578
Capital expenditures	2,836	9,627	11,242	8,289	8,022	1,154	617	41,787

Year ended December 31, 2018	Millions of yen							
	Petrochemicals	Chemicals	Electronics	Inorganic	Aluminium	Others	Elimination	Consolidated
Sales								
Outside customers	¥258,035	¥139,041	¥104,351	¥257,525	¥99,078	¥134,106	¥—	¥992,136
Inter-segment	10,844	17,499	1,472	8,624	9,176	9,307	(56,922)	—
Total	268,879	156,541	105,823	266,149	108,254	143,413	(56,922)	992,136
Operating income (loss)	¥20,333	¥17,393	¥12,397	¥132,445	¥4,942	¥2,893	(¥10,400)	¥180,003
Assets	¥156,169	¥218,256	¥128,956	¥300,197	¥150,117	¥164,695	(¥42,643)	¥1,075,746
Depreciation	5,046	8,806	9,195	7,967	5,655	1,549	1,242	39,459
Amortization of (negative) goodwill	—	(260)	12	8	222	(1)	—	(19)
Investments in non-consolidated subsidiaries and affiliates	10,718	3,421	—	1,824	—	388	—	16,352
Capital expenditures	5,051	8,048	8,397	8,127	5,521	4,092	2,491	41,727

Year ended December 31, 2018	Thousands of U.S. dollars							
	Petrochemicals	Chemicals	Electronics	Inorganic	Aluminium	Others	Elimination	Consolidated
Sales								
Outside customers	$2,324,641	$1,252,623	$940,097	$2,320,045	$892,593	$1,208,162	$—	$8,938,162
Inter-segment	97,694	157,652	13,261	77,694	82,667	83,845	(512,812)	—
Total	2,422,335	1,410,275	953,359	2,397,739	975,260	1,292,008	(512,812)	8,938,162
Operating income (loss)	$183,178	$156,696	$111,686	$1,193,195	$44,520	$26,066	($93,692)	$1,621,649
Assets	$1,406,926	$1,966,266	$1,161,768	$2,704,479	$1,352,403	$1,483,739	($384,175)	$9,691,405
Depreciation	45,456	79,336	82,835	71,777	50,943	13,951	11,191	355,489
Amortization of (negative) goodwill	—	(2,344)	106	76	2,004	(9)	—	(167)
Investments in non-consolidated subsidiaries and affiliates	96,561	30,824	—	16,435	—	3,495	—	147,315
Capital expenditures	45,508	72,506	75,645	73,218	49,737	36,869	22,438	375,921

(b) The operations of the Companies for the year ended December 31, 2017 and 2018 were summarized by geographic area as follows:

Year ended December 31, 2017	Millions of yen			
	Japan	Asia	Others	Total
Sales	¥504,162	¥230,644	¥45,580	¥780,387
	Japan	Others	Total	
Tangible fixed assets	¥402,889	¥103,045	¥505,933	

Year ended December 31, 2018	Millions of yen			
	Japan	Asia	Others	Total
Sales	¥551,333	¥239,885	¥200,919	¥992,136
	Japan	Others	Total	
Tangible fixed assets	¥379,577	¥98,829	¥478,406	

Year ended December 31, 2018	Thousands of U.S. dollars			
	Japan	Asia	Others	Total
Sales	$4,966,960	$2,161,125	$1,810,077	$8,938,162
	Japan	Others	Total	
Tangible fixed assets	$3,419,613	$890,351	$4,309,964	

(c) The impairment loss and the (negative) goodwill of the Companies for the year ended December 31,2017 and 2018 were summarized by business segment as follows:

Year ended December 31, 2017	Millions of yen							
	Petrochemicals	Chemicals	Electronics	Inorganic	Aluminium	Others	Elimination	Total
Impairment loss	¥289	¥649	¥3,945	¥2,312	¥2	¥7	¥—	¥7,204
Goodwill								
Amortization	—	48	44	8	282	28	—	410
Unamortized balance	—	186	288	46	2,660	148	—	3,328
Negative goodwill								
Amortization	—	308	33	—	54	28	—	422
Unamortized balance	—	2,088	325	—	540	231	—	3,184

Year ended December 31, 2018	Millions of yen							
	Petrochemicals	Chemicals	Electronics	Inorganic	Aluminium	Others	Elimination	Total
Impairment loss	¥7	—	¥4,964	¥79	¥9,642	¥7,880	¥—	¥22,573
Goodwill								
Amortization	—	48	44	8	276	27	—	404
Unamortized balance	—	134	244	38	2,278	122	—	2,815
Negative goodwill								
Amortization	—	308	33	—	54	28	—	422
Unamortized balance	—	1,780	293	—	486	17	—	2,575

Year ended December 31, 2018	Thousands of U.S. dollars							
	Petrochemicals	Chemicals	Electronics	Inorganic	Aluminium	Others	Elimination	Total
Impairment loss	$65	$—	$44,723	$716	$86,869	$70,990	$—	$203,362
Goodwill								
Amortization	—	431	399	76	2,487	246	—	3,638
Unamortized balance	—	1,208	2,195	341	20,518	1,097	—	25,359
Negative goodwill								
Amortization	—	2,774	293	—	483	255	—	3,805
Unamortized balance	—	16,037	2,637	—	4,377	150	—	23,201