



**ACHIEVING  
SUSTAINABLE  
GROWTH  
THROUGH  
INNOVATION**

Annual Report 2016  
Showa Denko K.K.





# Our Vision

We at the Showa Denko Group will provide products and services that are useful and safe and exceed our customers' expectations, thereby enhancing the value of the Group, giving satisfaction to our shareholders, and contributing to the sound growth of international society as a responsible corporate citizen.



## Profile

Ranking as one of Japan's leading chemical companies, Showa Denko K.K. (SDK) operates in the six major segments of petrochemicals, chemicals, electronics, inorganics, aluminum, and others.

The Showa Denko Group initiated in its medium-term consolidated business plan "Project 2020+" in 2016. Under this new business plan, the Group will expand and strengthen its "individualized businesses," which are expected to maintain their high-level profitability and stability, and promote these businesses in the global market. The Group will enhance its capability to resist fluctuations in market prices by providing customers with attractive products and services. Moreover, the Group will reform its business model, and improve its existing businesses' earning power. Thus, the Group will enhance its corporate value.

In the business portfolio we aim to realize under "Project 2020+," we classified our businesses into four categories: "Growth-accelerating," "Advantage-establishing," "Base-shaping," and "Rebuilding." We defined missions for each business category in order to strengthen our businesses.

In addition, aiming to promote globalization of our business activities and expand our "individualized businesses" further, we will implement strategic capital investment in the growing Asian/ASEAN market, and also pursue growth opportunities in developed countries in Europe and North America.

Concerning our businesses classified as "Growth-accelerating," we decided to strengthen our business in high-purity gases by establishing a joint corporation in South Korea to produce and sell high-purity monofluoromethane gas (CH<sub>3</sub>F). As for our aluminum can business, we installed a new line to produce sleek cans at our production base in Vietnam.

We will further strengthen the earning power of our existing businesses by reforming business models, and also promote M&A and business alliances with other companies aiming to introduce new growth businesses from outside entities.

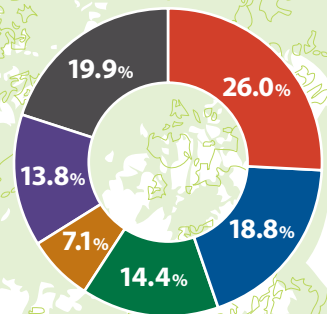
Showa Denko aims to earn the full trust and confidence of the market and society, always managing operations based on the principles of corporate social responsibility. The Company is also committed to the principles of Responsible Care and is vigorously carrying out an action plan to protect the environment as well as health and safety.

## Showa Denko at a Glance

Net sales 2016

# ¥671.2 billion

Note: The ratios of respective segments have been calculated after adding the amount of adjustments to net sales.



### Forward-Looking Statements:

This annual report contains statements relating to management's projections of future profits, the possible achievement of the Company's financial goals and objectives, and management's expectations for the Company's product development program. The Company cannot guarantee that these expectations and projections will be realized or correct. Actual results may differ materially from the results anticipated in the statements included herein due to a variety of factors, including, but not limited to, the economic conditions, costs of naphtha and other raw materials, demand for our products, market conditions, and foreign exchange rates. The timely commercialization of products under development by the Company may be disrupted or delayed by a variety of factors, including market acceptance, the introduction of new products by competitors, and changes in regulations or laws. The foregoing list of factors is not inclusive. We undertake no obligation to update the forward-looking statements unless required by law. Any projections or forecasts in this annual report do not include the effect of planned integration of graphite electrode businesses of SDK and SGL GE, which we announced in October 2016, because the date of business integration has not been specified yet as of the date of publication of this report.



### Petrochemicals

Olefins (ethylene and propylene), polymer (polypropylene), and organic chemicals (vinyl acetate monomer, ethyl acetate, and allyl alcohol)



### Chemicals

Functional chemicals (polymer emulsion and unsaturated polyester resin), industrial gases (liquefied carbon dioxide, dry ice, oxygen, nitrogen, and hydrogen), basic chemicals (liquefied ammonia, acrylonitrile, and chloroprene rubber), and electronic chemicals (high-purity gases for electronics)



### Electronics

Hard disks (HDs), compound semiconductors (LED chips), and rare earth magnetic alloys



### Inorganics

Graphite electrodes and ceramics (alumina and abrasives)



### Aluminum

Rolled products (high-purity foils for capacitors), specialty components (cylinders for laser beam printers [LBPs], forged products, and heat exchangers), and beverage cans



### Others

Lithium-ion battery (LIB) materials, building products, and general trading

See pages 6-7 for segment performances.

# Our Strengths

Showa Denko has many products maintaining high market shares in the world. Let us introduce products of high priority in our business portfolio designed under the medium-term business plan "Project 2020+."

## Advantage-establishing



## Growth-accelerating



## Base-shaping



Global positions are Showa Denko estimates.

### 1 Aluminum laminated film for LIB packaging

**The second largest manufacturer in the world**  
We provide packaging materials for pouch-type lithium ion batteries (LIBs) used in smartphones and tablet PCs. Demand for pouch-type LIBs is growing due to such advantages as high levels of heat dissipation and flexibility in molding.

### 2 SiC epitaxial wafers for power devices

**The second largest independent manufacturer in the world**  
We have been contributing to the commercialization and market expansion of "full SiC" power modules through production of high-grade SiC epi-wafers for power transistors since 2015, in addition to those for diodes. SiC-based power devices are attracting attention due to their features that enable production of smaller, lighter, and more energy-efficient next-generation power control modules.

### 3 High-purity gases for electronics

**The world's largest manufacturer of specialty gases like NH<sub>3</sub>, Cl<sub>2</sub>, HBr, C<sub>2</sub>F<sub>6</sub>, etc.**  
High-purity gases for electronics are used as etching and cleaning gases, and materials for membrane formation, which are necessary for production of electronic devices including semiconductors, LCD panels, and solar batteries.

### 4 Aluminum cans

**The second largest manufacturer in Vietnam and the fourth largest in Japan**  
Since 1971, we have been operating our aluminum can business as a pioneer who produced the first aluminum can for beverages in Japan. In 2014, we acquired the largest can manufacturer in northern Vietnam, aiming to expand our aluminum can business in the ASEAN region, with a focus on the Vietnamese market where rapid market expansion for cans of beer is expected due to population growth and the rise in the standard of living.

### 5 HD media

**The world's largest independent manufacturer**  
HD media, one of the major parts of HD drives, are used in notebook PCs, consumer electronics, and external hard disk drives. Demand is expected to grow further for use in servers for cloud computing.

### 6 Graphite electrodes

**The world's leading manufacturer of large-diameter (30- and 32-inch) graphite electrodes**  
We are a representative manufacturer in Asia of graphite electrodes used in electric arc furnaces for steel production. In terms of large-diameter electrodes of 30 inches or more, we are the leading company in the world.

### 7 High-purity aluminum foil for capacitors

**The world's largest manufacturer**  
We provide high-purity aluminum foil for aluminum electrolytic capacitors, which are widely used in air conditioners, automotive parts, and solar power generation. Our proprietary manufacturing process has enabled us to realize high productivity and quality.

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# Consolidated Five-Year Summary

## Financial Highlights

Showa Denko K.K. and Consolidated Subsidiaries		Millions of yen				Thousands of U.S. dollars (Note 1)	
December 31	2012	2013	2014	2015	2016	2016	
<b>For the year</b>							
Net sales	¥ 739,675	¥ 847,803	¥ 872,785	¥ 775,732	¥ 671,159	\$ 5,761,512	
Petrochemicals	190,939	286,732	281,400	231,288	185,783	1,594,841	
Chemicals	127,252	130,402	138,695	142,292	134,529	1,154,854	
Electronics	163,306	136,548	138,537	131,492	103,339	887,105	
Inorganics	65,573	65,919	67,557	63,476	50,870	436,688	
Aluminum	92,194	90,369	97,946	100,756	98,575	846,211	
Others	135,280	176,516	191,610	147,233	142,364	1,222,110	
Adjustments	(34,870)	(38,684)	(42,959)	(40,805)	(44,301)	(380,296)	
Operating income	28,108	25,953	20,551	33,508	42,053	361,005	
Net income attributable to owners of the parent	9,368	9,065	2,929	921	12,305	105,629	
Net cash provided by operating activities	53,310	63,565	66,996	61,170	68,949	591,891	
Net cash provided by (used in) investing activities	(41,741)	(55,203)	(46,876)	(42,497)	(53,754)	(461,449)	
Free cash flow	11,569	8,362	20,120	18,674	15,195	130,442	
R&D expenditures	20,633	20,435	20,362	20,289	17,313	148,625	
Capital expenditures	42,503	44,370	47,318	44,059	39,276	337,158	
Depreciation and amortization	46,232	39,779	40,673	42,137	38,761	332,741	
<b>At year-end</b>							
Total assets	933,162	985,771	1,009,843	940,494	932,698	8,006,676	
Total net assets	314,966	345,811	319,087	308,142	311,231	2,671,739	
Interest bearing debt	342,262	353,686	383,124	368,835	359,929	3,089,788	
Debt/equity ratio (times)	1.09	1.02	1.20	1.20	1.16		
					Yen	U.S. dollars (Note 1)	
<b>Per share</b>							
Net income — primary (Note 2)	¥ 6.26	¥ 6.06	¥ 1.99	¥ 6.45	¥ 86.27	\$ 0.74	
Net income — fully diluted (Note 2)	—	—	—	—	—	—	
Net assets	182.24	201.27	209.76	2,076.05	2,080.85	17.86	
Cash dividends (applicable to the period) (Note 4)	3.00	3.00	3.00	3.00	—	—	
<b>Number of employees at year-end</b>	9,890	10,234	10,577	10,561	10,146		

The columns for 2012 to 2015 in the above table show summaries of consolidated financial statements for relevant years after amendments announced on April 25, 2017. Those amendments were made mainly to numbers related to sales and cash flows due to corrections in accounting of transactions at our consolidated subsidiaries.

For details, please see <http://www.sdk.co.jp/english/news/2017.html> "SDK Submits Annual Securities Report and Prior-year Amendments."

Notes: 1. Yen amounts have been translated into U.S. dollars, for convenience only, at the rate of ¥116.49 to US\$1.00, the approximate rate of exchange at December 31, 2016.

2. Net income per share has been computed based on the average number of shares of common stock outstanding during the respective fiscal year. Fully diluted net income per share additionally assumes the conversion of the convertible bonds. Diluted net income per share for 2015 and 2014 were not disclosed because there were no dilutive shares. Diluted net income per share for 2013 and 2012 was not disclosed because the Company had no securities with dilutive effects.

3. SDK consolidated every ten shares of its common stock into one share on July 1, 2016. "Per share" indicators for 2015 and 2016 are calculated on the basis of the number of outstanding shares after this consolidation.

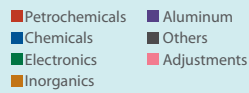
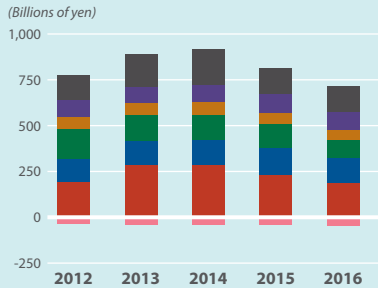
4. SDK plans to resolve payment of a dividend of Yen 30.00 per share based on the record date of May 11, 2017 at the extraordinary general meeting of shareholders to be held in June 2017.

## Non-Financial Highlights

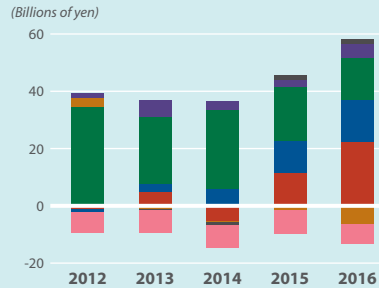
	2011	2012	2013	2014	2015
<b>Environmental data*</b>					
Discharged amounts of greenhouse gases (kt-CO <sub>2</sub> ) (Showa Denko Group)	2,695	2,509	2,679	2,681	2,683
Final landfill volumes of industrial waste (t) (Showa Denko Group)	2,144	2,085	1,360	1,158	851
<b>Social data</b>					
Frequency rate of lost-time injuries (Showa Denko Group)	0.13	0.14	0.22	0.43	0.15

\*Calculated for each environmental fiscal year from April 1 through March 31 of the following year.

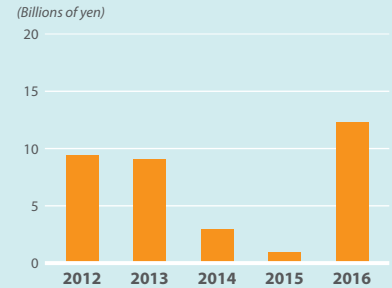
### Net Sales by Segment



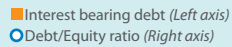
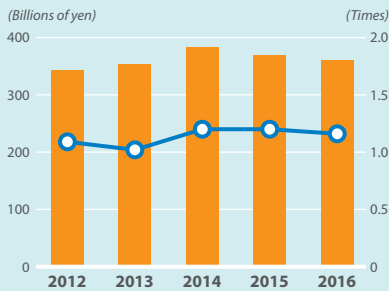
### Operating Income by Segment



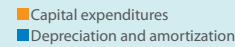
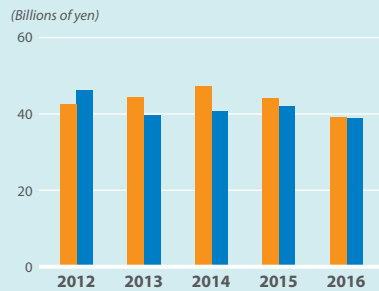
### Net Income Attributable to Owners of the Parent



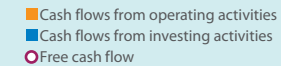
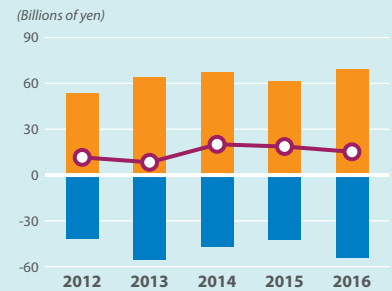
### Interest Bearing Debt Debt/Equity Ratio



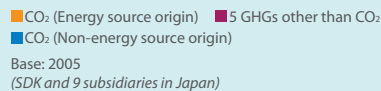
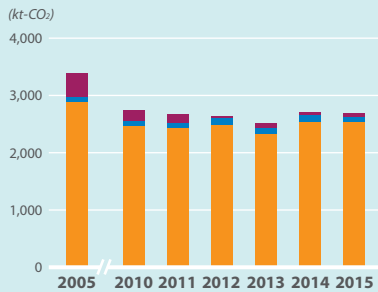
### Capital Expenditures Depreciation and Amortization



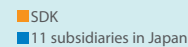
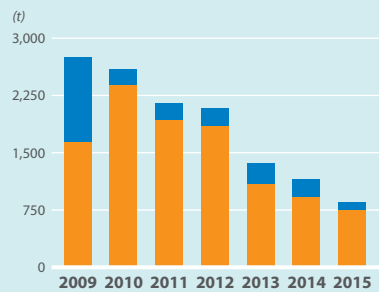
### Cash Flows



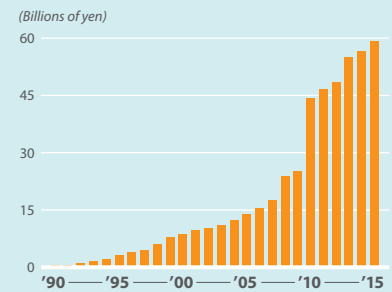
### Trends in Greenhouse Gas Emissions\*



### Trends in the Final Volume of Landfill Disposal\*



### Environment-Related Investment



\*Calculated for each environmental fiscal year from April 1 through March 31 of the following year.

## Message from the Management



**Hideo Ichikawa**  
Chairman of the Board

**Kohei Morikawa**  
President and CEO

To our deep regret, we had to give up the idea of submitting proposals related to the consolidated financial statements to the ordinary general meeting of shareholders held in March 2017 due to a delay in our account settlement procedures caused by the similar delay at our consolidated subsidiary, Shoko Co., Ltd. The delay at Shoko was caused by the emergence of the necessity for Shoko's Special Examination Committee to examine the details of certain transactions between a subsidiary of Shoko and its specific customer and whether similar transactions exist. Therefore, we decided to forgo the appropriation of surplus based on the record date of December 31, 2016.

In April 2017, Shoko Co., Ltd. received a report from the Special Examination Committee. According to the report, it was necessary to correct accounting of relevant transactions in 2016 and prior years, and there was no similar transaction which requires correction of accounting. Based on the report, Showa Denko announced consolidated financial results for 2016 and corrected those for prior years. Showa Denko also decided to convoke an extraordinary general meeting of shareholders on June 27 based on the record date of May 11, 2017, report on 2016 Consolidated Financial Statements to shareholders and propose a resolution to pay a dividend of ¥30 per share.

We sincerely apologize for any inconvenience and anxiety caused by these delays to our shareholders, investors, and other parties concerned. We will give full support to formulation and implementation of specific measures to prevent recurrence of

similar problems, which are to be done by Shoko as early as possible, recognize strengthening of group-wide risk management system as an urgent task, and further strengthen internal control system of the Showa Denko Group.

### Business Results for 2016

With regard to the Showa Denko Group's business environment in 2016, the Japanese economy continued to gradually recover. As for the dollar-yen exchange rates, the appreciation of the yen progressed for quite a while. However, a relatively weak yen against the dollar returned after the presidential election in the U.S. Exports and production by corporations showed signs of recovery. Corporate earnings maintained a high level, though the speed of improvement was not fast. There was an improvement in the employment situation, and consumer spending showed signs of recovery.

As for overseas economies, the U.S. economy continued to recover. As for the European economy, despite some risk factors including terrorist incidents and the United Kingdom's decision to exit from the European Union, there was gradual economic recovery in Germany and the United Kingdom. Though the economies of China and ASEAN countries showed signs of recovery, those of South Korea and Indonesia showed signs of a slowdown during the second half of the year. There was a business slowdown in resource-producing countries and emerging countries, including Russia and Brazil.

In the petrochemical industry, crude oil price, which affect the

demand for and prices of products in the market, remained low. Operating rates at domestic petrochemical plants maintained high levels due to strong demand for petrochemical products in Asia. In the electronic parts/materials industry, production of PCs remained sluggish during the first half of the year. However, that sluggishness eased in the second half of the year. Production of semiconductors increased, especially in the second half of the year, due to increasing demand for memory chips for smartphones and other electronic devices.

The Showa Denko Group started its new medium-term consolidated business plan “Project 2020+” in January 2016. Under this new business plan, in order to achieve continuous growth of the Showa Denko Group, we will expand and strengthen our “individualized businesses,” reform our business structure, and strengthen our revenue base, thereby enhancing our corporate value.

The Group recorded consolidated net sales of ¥671,159 million in 2016, down 13.5% from the previous year. Sales decreased in all segments, including the Petrochemicals segment where sales decreased due to a fall in prices of products resulting from a decline in raw naphtha price. Operating income of the Group increased 25.5%, to ¥42,053 million. The Electronics segment recorded lower income due to lower shipment volumes of HD media. The Inorganics segment also recorded lower income. However, the Petrochemicals segment recorded considerably higher income due to strong demand in Asia. The Chemicals, Aluminum, and Others segments also recorded higher income. In comparison with the target operating income of “Project 2020+” for 2016, which was ¥36,000 million, the Group’s actual operating income for 2016 was higher than that mainly due to cost reductions greater than the target figure, though the yen was stronger than expected against the dollar. The Group recorded net income attributable to owners of the parent of ¥12,305 million in 2016, up 1,236.1% from the previous year due to a significant decrease in extraordinary losses and income taxes.

### Measures Taken in the First Year of “Project 2020+”

In 2016, the first year of the medium-term consolidated business plan “Project 2020+,” we took measures to promote structural reform of the “Rebuilding businesses” including posting an impairment loss in our aluminum specialty components business. We also took measures to expand and strengthen “individualized businesses” including aggressive investment in our business to produce high-purity gases for electronics, and our aluminum can business in Vietnam. In the “Base-shaping businesses,” which include HD media, graphite electrodes, and petrochemicals businesses, we took or decided on drastic measures to strengthen their competitiveness and earning power. The details of these measures are described on pages 9 to 11.

- Rebuilding businesses: Enforced structural reform.  
We enforced structural reform in the aluminum specialty components business, among others, by posting impairment losses.

- Base-shaping businesses: Strengthened revenue base.  
Centering on HD media and graphite electrode businesses, we streamlined production capacities and thoroughly reduced costs.
- Growth-accelerating businesses: Strengthened business activities worldwide, centering on Asia.  
In high-purity gases, aluminum can, and functional chemicals businesses, we made capital investment at home and abroad, and took measures to expand the market.
- Advantage-establishing businesses: Expanded production capacities to cope with market expansion.  
Increased capacities to produce LIB materials and SiC epitaxial wafers for power devices.

While rapid economic growth in emerging countries is bringing about a rise in the standard of living, there is a growing need for concerted efforts to reduce impact on the global environment. We will provide our customers with components, materials, and solutions based on our advanced and proprietary technologies, and contribute toward creating a society where affluence and sustainability are harmonized. Moreover, while promoting our businesses, we will make every effort to ensure safety in operations, promote conservation of resources and energy, reduce the discharge of industrial waste and chemicals, and positively contribute to the preservation of the global environment.



On January 4, 2017, Hideo Ichikawa, the former President and CEO, took office as Representative Director, Chairman of the Board, and Kohei Morikawa, former Managing Corporate Officer, Chief Technology Officer, took office as Representative Director, President and CEO. The new management team will continue strengthening the Group’s earning power and competitiveness through improvement of the business structure.

We look forward to the continued support of shareholders and all other stakeholders.

April 25, 2017

# Message from the Management (cont.)

## Segment Performances

### Petrochemicals Segment



In the Petrochemicals segment, sales decreased 19.7%, to ¥185,783 million. Production of ethylene and propylene decreased slightly from the previous year due to coinciding shutdowns of plants to produce derivatives for periodic maintenance at Oita Complex. Sales of olefins decreased due to a decline in prices of products caused by a drop in the raw naphtha price, despite strong demand for olefins in the Asian market. Sales of organic chemicals also decreased due to a fall in sales prices of vinyl acetate and ethyl acetate resulting from a decline in prices of raw materials. Operating income of the segment significantly increased to ¥20,690 million, up 96.2% due to a decline in prices of raw materials and continued high operating rates in olefins and organic chemicals businesses in response to strong demand in the Asian market.

### Chemicals Segment



In the Chemicals segment, sales decreased 5.5%, to ¥134,529 million. Production of liquefied ammonia and high-purity gases for electronics increased from the previous year. Sales of electronic chemicals increased slightly due to continued high-level shipment volumes, despite the impact of a strong yen. Sales of industrial gases increased slightly. On the other hand, sales of basic chemicals decreased, due partly to a decline in sales prices of some products including acrylonitrile following a fall in raw material prices, despite continuing high shipment volumes of products. Sales of functional chemicals decreased due to the transfer of our phenolic resin business to another company, which took place in the second half of the previous year. Operating income from basic chemicals business increased due to a reduction in costs of materials resulting partly from an increase in the ratio of recycled plastics among raw materials to produce ammonia. Operating income from industrial gases and functional chemicals businesses also increased, while that from electronic chemicals business decreased due to a strong yen. Overall, operating income of the segment rose 29.1%, to ¥13,824 million.

### Electronics Segment



In the Electronics segment, sales decreased 21.4%, to ¥103,339 million. Production of HD media in 2016 decreased from the previous year due to a decrease in shipment volumes of media for PCs, which could not be compensated by the increase in shipment volumes of media for servers. However, shipment volumes of HD media for PCs in the second half of the year recovered from the level of the first half of the year, and that in the fourth quarter of 2016 was

higher than that in the same period of the previous year. Under this market environment, sales of HD media decreased due to the decrease in shipment volumes mentioned above and the impact of a strong yen. Sales of rare earth magnetic alloys and compound semiconductors also decreased. Operating income of the segment decreased 20.4%, to ¥13,907 million due to the decrease in shipment volumes of HD media, especially in the first half of the year, which could not be compensated by the increase in shipment volumes in the second half of the year. Nevertheless, operating income from HD media business in the second half of 2016 increased from that in the same period of the previous year due to the realization of effects of our efforts during the first half of 2016 to streamline production capacity and reinforce cost competitiveness of the HD media business.

### Inorganics Segment



In the Inorganics segment, sales decreased 19.9%, to ¥50,870 million. Production volume of graphite electrodes increased slightly from the previous year. However, sales of graphite electrodes decreased due to a decline in market prices resulting from the adjustment of production in the steel industry in Asia and the U.S. under the influence of overproduction in China. Sales of ceramics decreased due to a decline in shipment volumes. The segment recorded an operating loss of ¥5,758 million, a deterioration of ¥4,510 million. However, aiming to revitalize profitability of the graphite electrode business, the Showa Denko Group took measures to improve cost competitiveness of this business at its production bases in Japan and the U.S.

### Aluminum Segment



In the Aluminum segment, sales decreased 2.2%, to ¥98,575 million. Production of high-purity foil for aluminum electrolytic capacitors increased from the previous year due to an increase in production of air conditioners and electronic parts for automobiles. Sales of rolled products increased due partly to the increase in shipment volumes of high-purity foil for aluminum electrolytic capacitors in China recorded by Showa Denko Aluminum (Nantong) Co., Ltd. in addition to the abovementioned sales increase in the domestic market. Sales of aluminum specialty components decreased due to a fall in aluminum metal price and lower shipment volumes for some automotive applications. Sales of aluminum cans increased due to higher shipment volumes recorded by Hanacans Joint Stock Company of Vietnam. Operating income of the segment increased 72.3%, to ¥4,416 million due to an increase in shipment volumes of rolled products and higher shipment volumes of aluminum cans recorded by Hanacans.

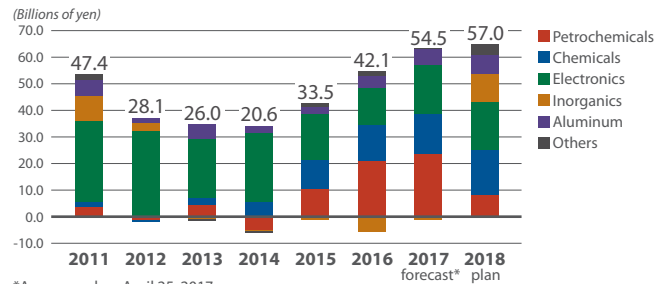


## Others Segment



In the Others segment, sales decreased 3.3%, to ¥142,364 million. Sales of LIB materials increased slightly due to an increase in shipment volumes for automotive applications, in addition to higher shipment volumes for use in smartphones. However, Shoko Co., Ltd.'s sales decreased. Operating income of the segment increased 33.6%, to ¥1,775 million, due partly to higher shipment volumes of LIB materials.

## Earnings structure: Being improved to be "well balanced"



\*Announced on April 25, 2017.  
The total does not match consolidated operating income since adjustments are not included.

## New Medium-Term Business Plan: "Project 2020+" (2016-2020)



**Kohei Morikawa**  
President and CEO

*Morikawa*

As the new President and CEO of Showa Denko, I believe all employees and executives of the Showa Denko Group must have a strong will and make unremitting efforts to realize our idea of changing the Group's unique characteristics into strong points and make the Group an aggregate of "individualized businesses." We will prepare a wide variety of growth stories of the Group, cope with changes in the economic and business environments, and take speedy action, thereby achieving the targets we set out in "Project 2020+."



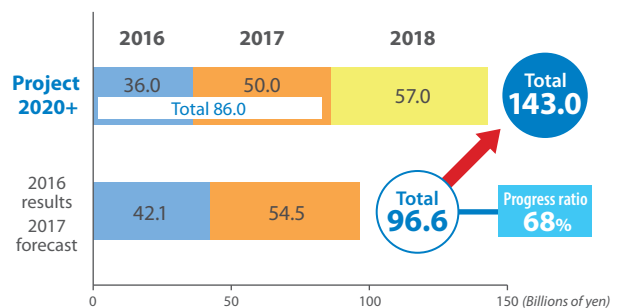
## Numerical Targets

### Numerical Targets

	2015 results	2016 results	2017 forecast	2018 plan	2020 image
Net sales	775.0	671.2	745.0	855.0	930.0
Operating income	33.5	42.1	54.5	57.0	70.0
Net income <sup>1</sup>	0.9	12.3	25.0	30.0	
Free cash flow	18.7	15.2	30.0		
ROA <sup>2</sup>	3.4%	4.5%		6.0%	
ROE	0.3%	4.1%		9.0%	

\*1 Net income attributable to owners of the parent \*2 ROA: Operating income / Total assets  
2017 forecast was announced on April 25, 2017.  
2018 plan and 2020 image were announced in December 2015.

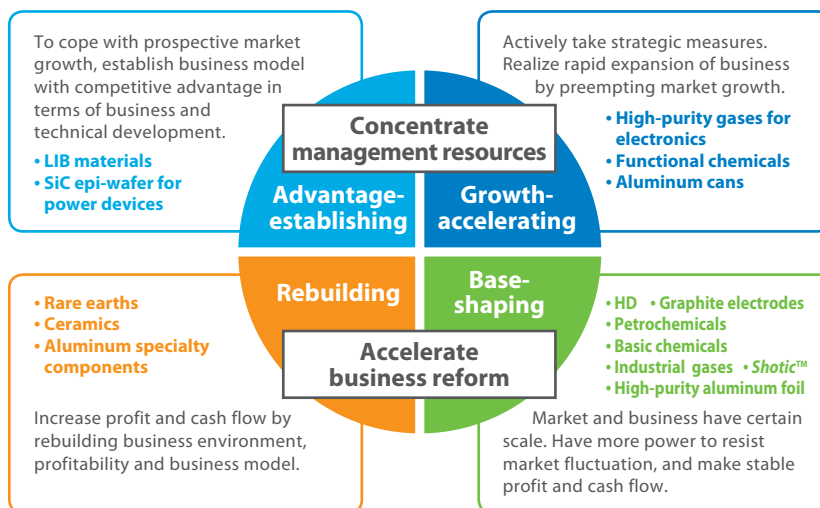
### Operating Income



# Message from the Management (cont.)

## Business Portfolio

The world economy is undergoing drastic changes in market structure. Under the medium-term consolidated business plan "Project 2020+," started in 2016, the Group will expand and strengthen its "individualized businesses," which are expected to maintain their high-level profitability and stability, and promote these businesses in the global market. Aiming to promote expansion in overseas markets, the Group will strive to take growth opportunities not only in the rapidly growing Asian/ASEAN market, but also in the markets of developed countries in Europe and North America, and will provide sophisticated high-performance products and technologies. Thus, we will continue meeting customer requirements and social needs.



## Business Strategy

### Strengthen the Group strategically to achieve sustainable growth

We have designated a five-year period from 2016 to 2020 as a period of strategic growth, aiming to maximize the operating income and cash flow of each business. This will enable us to enhance the earning power of our existing businesses.

#### Boost profitability of existing businesses through renewal of business models

- Maximize operating income and cash flow

#### Expand and create individualized businesses

- Expand individualized businesses
- Generate research results early on
- Make the best use of M&As and partnerships with other companies
- Find growth opportunities overseas

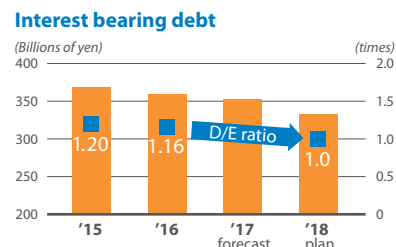
#### R&D strategy

- Concentrate management resources on R&D to strengthen existing businesses and peripheral fields
- Create next-generation businesses/themes by making the best use of open innovation and M&As

For our financial strategy, we will improve the Company's financial standing and strengthen return to shareholders. We will aim to generate ¥68 billion in free cash flow for the three-year period from 2016 to 2018. We aim to lower the D/E ratio to 1.0 times by the end of 2018. In order to further improve our financial standing, we will not only increase our net income but also develop an index

system shared among Group companies to evaluate the efficiency of every investment in order to make efficient use of our assets.

Though we did not set any numerical targets concerning return to shareholders in the past, this time, we have set a target dividend payout ratio of 30%.



### Measures taken in 2016

Additional measures were taken to increase the earning power of the Group.

#### Base-shaping: Executed structural reforms

- HD media:** Streamlined production capacity, Thorough cost reduction
- GE:** Self-help cost reduction effort, Replaced hydropower plants, Decided to acquire SGL GE
- Petrochemicals:** Consolidated polypropylene business
- Shotic™:** Decided to integrate bases in Malaysia and Singapore

#### Growth-accelerating: Deployed globally, centering on Asia

- High-purity gases for electronics:** Capital investment at home and abroad
- Functional chemicals:** Expanded business for infrastructure and cars
- Aluminum cans:** Deeply cultivating Vietnamese market

#### Advantage-establishing: Expanded capacities to meet market growth

- LIB materials:** Expanded production capacity
- SiC epitaxial wafers for power devices:** Started mass production of 6-inch wafers and high-quality wafers.

## Capital Investment Strategy

### Growth-accelerating

Aluminum cans: Expand production facilities in Vietnam  
 High-purity gases for electronics: Expand capacities of base in Japan and abroad  
 Functional chemicals: Expand business in Asia

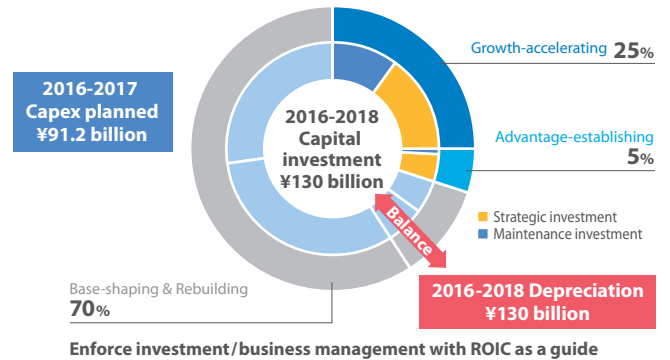
### Advantage-establishing

LIB materials: Expand capacity  
 R&D: Mass production of SiC epitaxial wafers will take off

### Base-shaping

HD: Take the lead in next-generation technology  
 Petrochemicals: Strengthen Oita Complex's cooperation with surrounding facilities

## Carry out positive and strategic investment in Growth-accelerating and Advantage-establishing businesses



## Cost Reduction Strategy

### 2017 cost reduction measures

#### Base-shaping

HD: Increase internal production of substrates, Increase productivity, Reduce fixed costs  
 GE: Reduce labor and raw material costs  
 Chemicals: Improve yields, Reduce distribution costs  
 Aluminum: Improve yields, Reduce fixed costs

“Project 2020+” target: ¥30.0 billion (2016-18 accumulated)

2016-17: Total ¥27.8 billion

## Strategy for Major Businesses

### Growth-accelerating

#### High-purity gases for electronics

We expect that demand for high-purity gases used for processing electronic materials, including semiconductors and LEDs, will remain strong worldwide. The market for semiconductors continues to expand, and progress is being made in the enhancement of microscopic and multi-layer structures in microchips. As such, consumption of high-purity gases in production of semiconductors has been continuously increasing. The global semiconductor market is forecast to grow at an annual rate of about 3% until 2018. However, we expect the global market for high-purity gases to grow at an annual rate of about 10% during the same period, or about three times that of the global semiconductor market. Due to this buoyant demand, we are expanding the ratio of individualized, high-performance, and high-value-added gas products to our overall high-purity gas production. We will expand and strengthen our overseas outlets to supply high-purity gases in order to maximize advantages in our supply chain in terms of distribution, procurement, and marketing. Thus, we aim to set the stage for further growth of our business supplying high-purity gases for electronics.

Product	Use	2015	2016	2017
NH <sub>3</sub>	Film forming	Expansion (China, Taiwan)	Expansion (Japan)	Expansion (Japan)
N <sub>2</sub> O		Expansion (Japan)		
HBr	Etching	Expansion (Japan)	Expansion (Japan)	Expansion (Japan)
Cl <sub>2</sub>		Expansion (Japan) New (Taiwan)	Expansion (Japan)	Expansion (Japan)
Fluorine-based gases			New (Japan, Singapore) Expansion (Japan)	Expansion (Japan)
Infrastructure		Expansion (Taiwan, Singapore)	New (Japan, U.S.) Expansion (Korea)	Expansion (Japan)

Increasing demand for 3D NAND

Demand shifts from film forming gas to etching gas

## Message from the Management (cont.)

### • Decision to establish a monofluoromethane gas JV in South Korea

In December 2016, SDK and SK Materials Co., Ltd., which is headquartered in Yeongju-si, South Korea, concluded an agreement to establish a joint corporation to produce and sell high-purity monofluoromethane gas ( $\text{CH}_3\text{F}$ ) to be used in the manufacturing process of semiconductor chips.  $\text{CH}_3\text{F}$  is a specialty gas used in manufacturing semiconductor chips for micromachining nitride film by etching. Since  $\text{CH}_3\text{F}$ 's etching selectivity is higher than that of other industrial gases, the demand for  $\text{CH}_3\text{F}$  is increasing, especially in the field of micromachining of multi-layer structures of 3D NAND flash. SDK will continue expanding the business to produce and sell high-purity gases for the production of semiconductor memory chips.

### • Increasing capacity to produce high-purity boron trichloride

In March 2016, SDK increased the capacity of the facilities in its Kawasaki Plant to produce high-purity boron trichloride ( $\text{BCl}_3$ ), which is a kind of high-purity gas for electronics, to 1.5 times of the previous level and started operation of the expanded facilities. High-purity  $\text{BCl}_3$  is a specialty gas mainly used for fine etching aluminum circuits in the manufacturing process of LCD panels and silicon semiconductors. In recent years, electronic material manufacturers have been making capital investments in organic light emitting diode (OLED) display panels and low-temperature poly-silicon (LTPS) LCD panels, both of which are equipped with aluminum circuits. Therefore, the demand for high-purity  $\text{BCl}_3$  gas is expected to be stable in the future.

### • Installation of a plant to produce a new grade of super-high-purity solvent, "Solfine™"

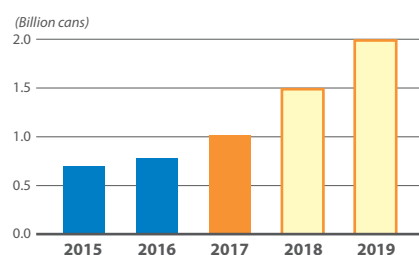
In December 2016, SDK developed new-grade products with enhanced high purity to be added to the lineup of its Solfine™ series high-purity solvents and decided to install a new plant to make the new-grade products at the Tokuyama Plant.

Commercial operation started in June 2017. SDK will offer the new-grade super-high-purity solvents mainly as solvents for photoresist for the manufacture of semiconductor integrated circuits (ICs).

### Aluminum cans

In our business to produce aluminum cans for beverages, we have been pursuing expansion of our business through a combination of the domestic market, where the demand for aluminum cans is expected to remain stable despite saturated demand for canned beer/beer-like beverages, and the overseas market in the ASEAN region, where demand for canned beer/beer-like beverages is rapidly expanding. In response to the expansion of the market for canned beer in Vietnam, where the annual growth rate exceeds 10%, we will explore new opportunities to invest in both Hanacans Joint Stock Company in Vietnam and in Southeast Asia.

### Production by Hanacans of Vietnam

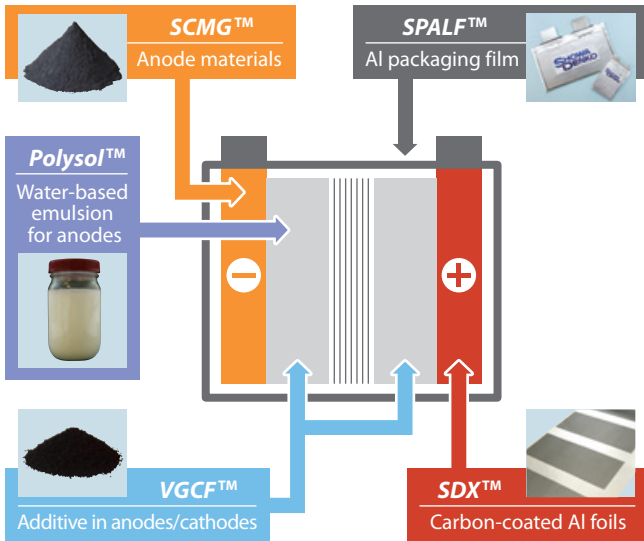


### Advantage-establishing

#### LIB materials

The market for LIB materials is expanding for LIBs for small devices, including smartphones, not only in developed countries but also in emerging and developing countries. On the other hand, the market for materials for large LIBs just started to emerge in the fields of plug-in hybrid electric vehicles (PHEVs) and EVs. In China, where we foresee especially strong demand for large LIBs, the market for EVs has started to emerge as social infrastructure is developed in response to stricter environment policies. The lineup of the Group's LIB materials includes anode materials, conductivity enhancers, and aluminum laminated film for packaging LIBs. The shipment volumes of these LIB materials increased throughout 2016, and to cope with this increase in demand, we started to expand our production facilities for LIB materials. We increased production capacity for SCMG™ anode materials, both at home and abroad. We are also developing Si-graphite composite anode materials. We will ensure stable supply of the VGCF™ conductivity enhancer by boosting productivity. Furthermore, we will expand VGCF™ production capacity to meet growing demand for large LIBs used in cars. We will also respond to growing demand for SPALF™ aluminum laminated film package by improving productivity. Moreover, we will make SPALF™ highly distinctive by enhancing performance, reducing thickness, and enhancing gas permeability.

### SDK's LIB materials

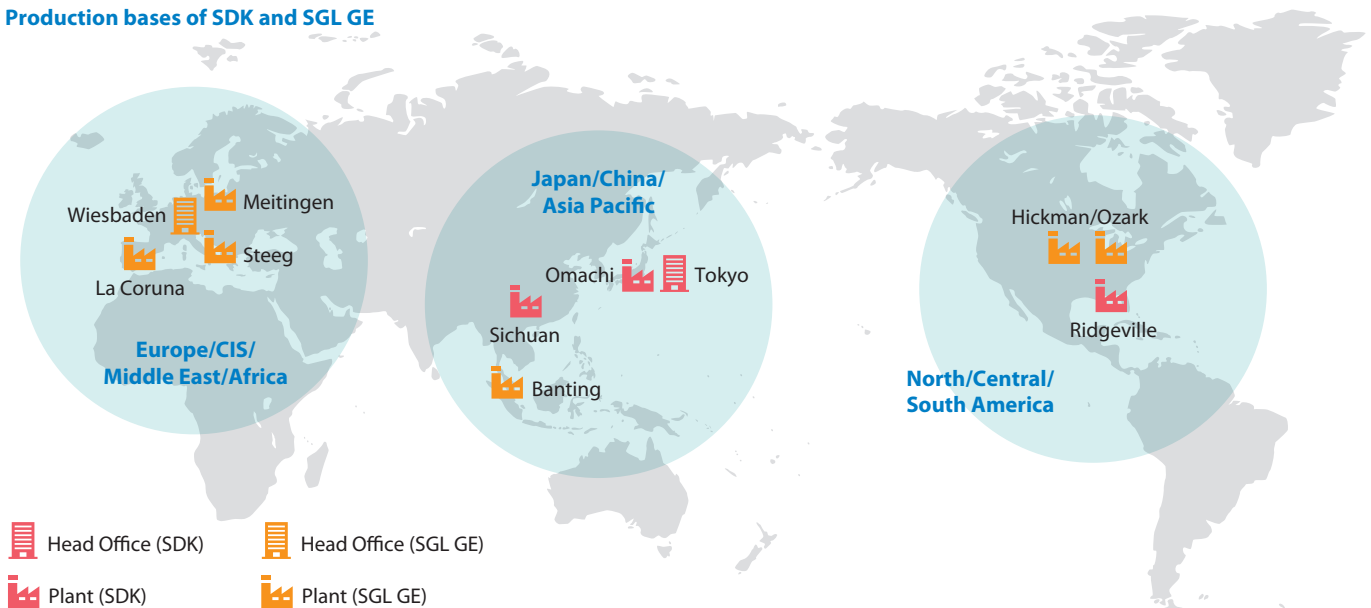


### Base-shaping

#### Graphite electrodes

Growth in global demand for steel is expected to remain low, at around 1% going forward, and it will take time to solve the problem of overcapacity in the Chinese steel industry. However, we expect a gradual recovery in demand for graphite electrodes in and after 2017, due to definitive demand for reusing scrap steel. We will review our production system for graphite electrodes with three production bases located in the United States, Japan and China. In the United States and Japan, we will rebuild optimum production systems that correspond to the scale of demand and establish competitive cost structures to cope with the harsh business environment. Given these circumstances, we decided to integrate the graphite electrode business of SGL GE Holding GmbH (SGL GE) in October 2016. We will maintain top quality in the world and technical advantage, and pursue cost competitiveness and synergistic effects through this acquisition. This acquisition is subject to the approval of the relevant authorities under the applicable competition laws of the relevant countries.

### Production bases of SDK and SGL GE



# Management Team as of March 30, 2017



From top left to bottom right: Akiyoshi Morita, Toshiharu Kato, Keiichi Kamiguchi, Tomofumi Akiyama, Masaharu Oshima, Jun Tanaka, Hideo Ichikawa, Kohei Morikawa, Hidehito Takahashi

## Directors

### HIDEO ICHIKAWA *Representative Director, chairman of the Board*

April 1975	Joined the Company
January 2006	Corporate Officer; General Manager, Corporate Strategy Office
March 2008	Director; Corporate Officer; General Manager, Corporate Strategy Office
September 2008	Director; Corporate Officer; Executive Officer, HD Sector
January 2010	Director; Managing Corporate Officer; Executive Officer, HD Sector
January 2011	President and Chief Executive Officer (CEO)
January 2017	Chairman of the Board

### HIDEHITO TAKAHASHI

April 1986	Joined The Mitsubishi Bank, Ltd. (currently The Bank of Tokyo-Mitsubishi UFJ, Ltd.)
February 2002	Joined GE Japan Holding Corporation
January 2013	President and CEO, GKN Driveline Japan plc
October 2015	Joined the Company, Senior Corporate Fellow, Assistant to President
January 2016	Corporate Officer; General Manager, Corporate Strategy Department
January 2017	Managing Corporate Officer
March 2017	Director; Managing Corporate Officer, in charge of Ceramics and Carbon divisions, Omachi Plant and Corporate Strategy Department

### TOMOFUMI AKIYAMA *Outside Member*

April 1959	Joined Fukoku Mutual Life Insurance Company
July 1998	President, Fukoku Mutual Life Insurance Company
March 2008	Director, of the Company (incumbent)
July 2010	Chairman, Fukoku Mutual Life Insurance Company

### AKIYOSHI MORITA *Outside Member*

April 1967	Joined Toyota Motor Co., Ltd. (currently Toyota Motor Corporation)
June 1999	Senior Managing Director, Toyota Motor Corporation
June 2000	Executive Vice President, Aichi Steel Corporation
June 2004	President, Aichi Steel Corporation
June 2008	Chairman, Aichi Steel Corporation
June 2011	Advisor, Aichi Steel Corporation
March 2012	Director, of the Company (incumbent)
June 2015	Counselor, Aichi Steel Corporation

### KOHEI MORIKAWA *Representative Director, President*

April 1982	Joined the Company
January 2013	Corporate Officer; General Manager, Electronic Chemicals Division
January 2016	Managing Corporate Officer; Chief Technology Officer (CTO)
March 2016	Director; Managing Corporate Officer, in charge of Electronics Chemicals and Functional Chemicals divisions, Business Development Center, Iseaki and Tatsuno plants, and Corporate R&D Department; Chief Technology Officer (CTO)
January 2017	President and Chief Executive Officer (CEO)

### KEIICHI KAMIGUCHI

April 1983	Joined the Company
January 2011	Corporate Officer; General Manager, Corporate Strategy Office
January 2015	Corporate Officer, in charge of Industrial Gases and Basic Chemicals divisions, Kawasaki and Higashinagahara plants
January 2017	Corporate Officer; Chief Risk Management Officer (CRO)
March 2017	Director; Corporate Officer, in charge of Internal Audit, Legal & Intellectual Property, General Affairs & Human Resources and Purchasing & SCM departments; Chief Risk Management Officer (CRO)

### JUN TANAKA

April 1982	Joined the Company
January 2013	Corporate Officer; General Manager, Advanced Battery Materials Department
January 2017	Managing Corporate Officer; Chief Technology Officer (CTO)
March 2017	Director; Managing Corporate Officer, in charge of Electronics Chemicals and Functional Chemicals divisions, Business Development Center, Iseaki and Tatsuno plants, and Corporate R&D Department; Chief Technology Officer (CTO)

### TOSHIHARU KATO

April 1981	Joined Showa Aluminum Corporation
March 2001	Joined the Company
January 2016	Corporate Officer; General Manager, Finance & Accounting Department
January 2017	Corporate Officer; Chief Financial Officer (CFO)
March 2017	Director; Corporate Officer, in charge of Information Systems Department; General Manager, Finance & Accounting Department; Chief Financial Officer (CFO)

### MASAHARU OSHIMA *Outside Member*

April 1974	Joined Nippon Telegraph and Telephone Public Corporation (currently Nippon Telegraph and Telephone Corporation)
November 1995	Professor, Applied Chemistry Department, Graduate School of Engineering, The University of Tokyo
April 2006	Director, Synchrotron Radiation Research Organization, The University of Tokyo
October 2009	Chairman, The Japanese Society for Synchrotron Radiation Research
April 2013	Project Professor, Synchrotron Radiation Research Organization, The University of Tokyo
May 2013	Chairman, The Surface Science Society of Japan
June 2013	Emeritus Professor, The University of Tokyo (incumbent)
April 2014	Project Researcher, Synchrotron Radiation Research Organization, The University of Tokyo (incumbent)
March 2015	Director, of the Company (incumbent)
April 2015	Special Professor, Tokyo City University

## Audit & Supervisory Board Members

### SABURO MUTO

April 1976	Joined the Company
January 2011	Corporate Officer; General Manager, Finance Office
January 2013	Corporate Officer; General Manager, Finance & Accounting Department
January 2014	Chief Financial Officer (CFO)
March 2014	Director; Corporate Officer; General Manager, Finance & Accounting Department
August 2014	Director; Corporate Officer
January 2015	Director; Managing Corporate Officer, in charge of Finance & Accounting and Information Systems departments; Chief Financial Officer (CFO)
March 2017	Audit & Supervisory Board Member

### AKIRA KOINUMA

April 1975	Joined the Company
January 2008	Corporate Officer; Deputy Executive Officer, Technology Headquarters
January 2010	Corporate Officer; Executive Officer, Production Technology Headquarters
March 2011	Director; Corporate Officer; Executive Officer, Production Technology Headquarters
January 2012	Director; Managing Corporate Officer; Executive Officer, Production Technology Headquarters
January 2013	Director; Managing Corporate Officer
January 2015	Director; Senior Managing Corporate Officer, in charge of Production Technology, Energy & Electricity, SPS Innovation, and CSR departments; Chief Technology Officer (CTO)
March 2016	Audit & Supervisory Board Member

### HIROYUKI TEZUKA *Outside Member*

April 1986	Registered with Dai-ichi Tokyo Bar Association Joined Nishimura & Sanada Law Offices (currently Nishimura & Asahi)
September 1992	Clearly, Gottlieb, Steen & Hamilton, New York
January 1993	Admitted to the bar of the State of New York
June 1993	Returned to Nishimura & Sanada Law Offices (currently Nishimura & Asahi) as Partner (incumbent)
March 2008	Audit & Supervisory Board Member, of the Company



Saburo Muto, Yukio Obara, Akira Koinuma, Kiyomi Saito, Hiroyuki Tezuka

### YUKIO OBARA *Outside Member*

July 1969	Joined The Fuji Bank, Limited (currently Mizuho Bank, Limited)
March 2003	Deputy President, Mizuho Bank, Ltd.
June 2004	Corporate Auditor, Mizuho Financial Group, Inc.
June 2005	President & CEO, Mizuho Information & Research Institute, Inc.
March 2010	Chairman of the Board, Shoei Co., Ltd.
March 2010	Audit & Supervisory Board Member, of the Company

### KIYOMI SAITO *Outside Member*

April 1973	Joined Nikkei Inc.
September 1975	Joined Sony Corporation
August 1984	Joined Morgan Stanley investment bank
January 1990	Executive Director, Morgan Stanley investment bank
April 2000	President, JBond Co., Ltd. (currently JBond Totan Securities Co., Ltd.) (incumbent)
April 2011	President, The Totan Information Technology Co., Ltd.
March 2012	Audit & Supervisory Board Member, of the Company

## Corporate Officers and Senior Corporate Fellows

### Chief Executive Officer

#### KOHEI MORIKAWA

#### Senior Managing Corporate Officer

#### JIRO ISHIKAWA

General Manager, HD Division; Officer in charge of Electronics Materials and Advanced Battery Materials divisions

#### Managing Corporate Officers

#### TATSUHARU ARAI

General Manager, Petrochemicals Division;  
Officer in charge of Oita Complex

#### JUN TANAKA

Chief Technical Officer (CTO); Officer in charge of Electronic Chemicals and Functional Chemicals divisions, Business Development Center, Isesaki and Tatsuno plants, and Corporate R&D Department

#### HIDEHITO TAKAHASHI

Officer in charge of Ceramics and Carbon divisions, Omachi Plant, and Corporate Strategy Department

### Corporate Officers

#### ROBERT C. WHITTEN

Assistant to President in charge of the Carbons Business Integration Promotion Team

#### KIICHI KAMIGUCHI

Chief Risk Management Officer (CRO); Officer in charge of Internal Audit, Legal & Intellectual Property, General Affairs & Human Resources, and Purchasing & SCM departments

#### KANJI TAKASAKI

Officer in charge of Aluminum Rolled Products, Aluminum Specialty Components, and Aluminum Can divisions, Oyama and Kitakata plants

#### YOUICHI TAKEUCHI

Oita Complex Representative

#### TAKAYUKI SATO

General Manager, Electronics Materials Division;  
Officer in charge of Chichibu Plant

#### MOTOHIRO TAKEUCHI

General Manager, Corporate Strategy Department

#### TAICHI NAGAI

Officer in charge of Production Technology, Energy & Electricity, and CSR departments

#### KOICHI NISHIMURA

General Manager, Industrial Gas Division;  
Officer in charge of Basic Chemicals Division and Kawasaki and Higashinagahara plants

#### TOSHIHARU KATO

Chief Financial Officer (CFO); General Manager, Finance & Accounting Department;  
Officer in charge of Information Systems Department

#### MASAMICHI YAGISHITA

General Manager, Electronic Chemicals Division;  
Officer in charge of Tokuyama Plant

#### MASUNORI KAIHO

General Manager, Kawasaki Plant

#### HIROSHI DAIO

General Manager, Ceramics Division;  
Officer in charge of Yokohama and Shiojiri plants

#### TAKUJI YAMAMOTO

General Manager, Production Technology Department;  
Officer in charge of SPS Innovation Department

#### MASAO SHIBUYA

General Manager, Advanced Battery Materials Division

#### AKIHIRO JIMBO

General Manager, Basic Chemicals Division

#### TESTUO WADA

General Manager, Business Development Center

### Senior Corporate Fellows

#### HIROSHI SAKAI

General Manager, Technology Development Control Department, HD Division

#### YOSHIYUKI NISHIMURA

Assistant to President in charge of market development for electronics and battery materials

#### TETSU MORIKI

General Manager, Legal & Intellectual Property Department



## Message from Hideo Ichikawa, Chairman of the Board

I took office as Chairman of the Board in January 2017. First of all, we would like to express our apologies for the delay in the announcement of the 2016 consolidated financial results of Showa Denko because of the delay in the announcement of Shoko Co., Ltd. due to the necessity to correct the accounting of transactions conducted by a subsidiary of Shoko and the required time to investigate whether similar transactions were conducted or not.

The Showa Denko Group views the strengthening of corporate governance as one of its top-priority management issues. In December 2015, the Company established Corporate Governance Basic Policies to promote constructive dialogue with stakeholders, thereby increasing corporate value and shareholders' common interests.

Based on the Basic Policies, we updated our Corporate Governance Report and are promoting constructive dialogue with investors and shareholders.

In 2016, we maintained a system under which outside directors account for one-third of the nine-member Board of Directors, as we had in the previous year. For the Audit & Supervisory Board, three out of the five members are outside members. Those outside officers, experts representing each field, gave us valuable advice and comments from various perspectives. Both boards have high attendance rates, and keenly discuss a wide variety of matters relating to the Group's management, including M&As and capital investments.

We at the Showa Denko Group will continue striving to further strengthen our corporate governance and enhance our value. We look forward to the continued support of investors and shareholders.

### 1. Basic Concept regarding Corporate Governance

We will promote corporate governance to ensure the soundness, effectiveness, and transparency of management, and to continue enhancing our corporate value, thereby contributing to the sound growth of society and earning its full trust and confidence. To that end, it is essential for us to strengthen relations with our stakeholders, including shareholders, customers, suppliers, community residents, and employees. Based on the above, we have clarified our mission in the form of the Group's vision, as stated below, and we are working hard to realize this vision.

#### VISION

**We at the Showa Denko Group will provide products and services that are useful and safe and exceed our customers' expectations, thereby enhancing the value of the Group, giving satisfaction to our shareholders, and contributing to the sound growth of international society as a responsible corporate citizen.**

\* Please visit our website (URL: <http://www.sdk.co.jp/english/about/governance.html>) for our "Corporate Governance Basic Policies" (established in December 2015).

### 2. Condition of the Company's Supervisory and Decision-Making Functions

We have adopted the Audit & Supervisory Board system to enhance the fairness and transparency of management, ensuring efficient management of the Company. To clearly separate management supervisory functions from business execution functions, we have introduced the corporate officer system. The top management team, consisting of the President and corporate officers in charge of respective operations, is working to increase the speed of decision making and vitalize operations. Meanwhile, the Company has substantially reduced the number of directors. In addition, we have strengthened the supervisory functions by appointing outside directors. In order to strengthen independence and objectivity of the function of the Board of Directors, and accountability of the Board of Directors, the Company has established the Nomination Advisory Committee and the Remuneration Advisory Committee as advisory bodies to the Board of Directors, while the majority of each Committee consists of independent outside directors and outside members of the Audit & Supervisory Board. At Board meetings held once or twice a month, the Board decides the Company's basic policy and decides, after full deliberation, on matters provided for in the Companies Act and the

Company's Articles of Incorporation as well as important matters for the execution of the Company's operations, ensuring a speedy and vigorous decision-making process. We appoint directors from the viewpoint of strengthening corporate governance, aiming to strengthen the Board of Directors' supervisory functions and ensure the propriety of the decision-making process. We make sure that corporate officers whose duties are primarily business execution will not concurrently serve as directors, in principle. Furthermore, we have abolished the positions of managing directors and senior managing directors to put all directors (except for the Chairman, the President, and the Executive Vice President) on an equal footing, while strengthening the supervision by Audit & Supervisory Board members (including outside members) and mutual supervision among directors. The term of office of directors has been shortened to one year to ensure a quick response to changes in the business environment and to clarify the management responsibility of directors. At the Company's ordinary general meeting of shareholders held on March 30, 2017, nine directors, including three outside directors, were appointed.

### 3. Condition of Business Execution

The Management Committee, which meets once a week in principle and is chaired by the President, deliberates and decides on matters to be referred to the Board of Directors' meetings and important matters pertaining to the overall management of the Company. The decisions are made after deliberations on two occasions. As for investment plans, their risks are examined by task teams before referral to the Management Committee, and their progress is monitored after authorization. The Company's medium-term business plans are decided not only by the Management Committee but also by the participation of all corporate officers.

The Company considers that responsible execution forms the basis of corporate activities. The Company evaluates performances of respective business segments to ensure the effective implementation of the performance-based evaluation system. The Company has Security Export Control and Safety Measures committees under the CSR Committee chaired by the President. The Company also has Responsible Care, Risk Management, Human Rights/Corporate Ethics, and IR promotion councils. These committees and councils investigate, study, and deliberate on specific matters important for the execution of businesses.



#### 4. Condition of Audit & Supervisory Functions

The Company's Audit & Supervisory Board consists of five members, including three outside members. The members attend the Board of Directors' meetings and other important internal meetings, offering opinions as necessary. They audit and supervise the execution of operations through such means as field investigations, hearing sessions, and reading important documents, making proposals and providing advice and recommendations to ensure the sound management of the Company. They are working to strengthen the consolidated audit & supervisory board system in cooperation with auditors of major associated companies.

We have a department for internal audit reporting directly to the President. The Internal Audit Department investigates the overall execution of business, checking for accuracy, propriety, and efficiency. It also investigates the management policies, business plans, and their execution, checking for consistency and soundness. The results of internal auditing are reported to the members of the Audit & Supervisory Board to ensure consistency with their audits.

For matters relating to the environment and safety, the respective divisions in charge conduct Responsible Care audits. KPMG AZSA LLC conducts auditing of the Company based on an auditing contract and an annual plan agreed upon with the Audit & Supervisory Board, and provides the board with audit results. The auditing corporation and the Audit & Supervisory Board exchange information and views from time to time to strengthen their cooperation.

#### 5. Compliance and Risk Management

The Company's Board of Directors has decided to strengthen compliance and promote risk management as key components of the internal control system. The Board will continue to work on these issues.

For the details of our policies on compliance and risk management, please visit our websites:

[http://www.sdk.co.jp/english/csr/risk\\_management.html](http://www.sdk.co.jp/english/csr/risk_management.html)  
<http://www.sdk.co.jp/english/csr/compliance.html>

#### 6. Reaction Policy on Large-Scale Purchases of the Company's Stock Certificates, etc.

The Company believes that the shareholders should be determined through the free movement of the shares in the market. Although proposals regarding the large-scale purchases of the Company's shares are made by specific

persons, the decision whether to sell the Company's shares in response to such a proposal shall eventually be made based on the opinion of the shareholders, which is reached after being given the sufficient information necessary for making an appropriate decision and sufficient time for consideration.

In light of the basic policy stated above, the Company introduced and renewed the "Reaction Policy on Large-scale Purchases of the Company's Stock Certificates (Takeover Defense)," aimed at preventing inappropriate persons from controlling its financial and business policy decisions. However, the Company decided not to renew the term of validity of this Takeover Defense at its Board of Directors' meeting held on March 6, 2017, and the Takeover Defense was repealed at the close of the Company's ordinary general meeting of shareholders held on March 30, 2017 due to the expiration of the validity period.

#### 7. Other

Remuneration, etc., to the members of the Board of Directors and the Audit & Supervisory Board as well as the auditing corporation (for the period from January 1 through December 31, 2016) is as follows:

##### Remuneration, etc., to the board members

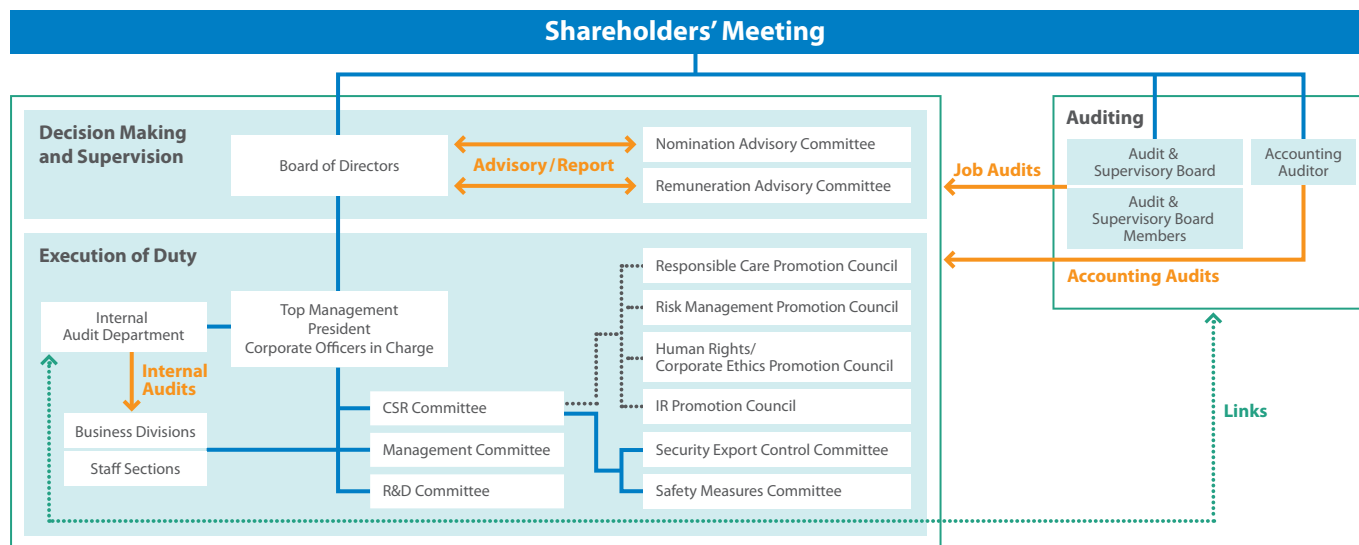
	Number of applicable persons	Paid amount
Members of the Board of Directors (excluding outside members)	7	¥218 million
Members of the Audit & Supervisory Board (excluding outside members)	3	¥ 56 million
Outside board members	6	¥ 68 million
Total	16	¥342 million

##### Remuneration to the auditing corporation

	Paid amount
Name of accounting auditor: KPMG AZSA LLC	
Remuneration for the issuance of auditing certification based on the auditing contract	¥205 million

#### 8. Personal/Financial Relations and Interests between the Company and Outside Board Members

The Company has three outside members each for its Board of Directors and the Audit & Supervisory Board. None of them has special interests in the Company. An outline of the Company's corporate governance system is shown below.



# Research and Development

## Creating new value

In January 2016, the Showa Denko Group started its new medium-term consolidated business plan "Project 2020+." Under this new business plan, the Group will strengthen the revenue bases of its diverse businesses and expand its individualized businesses, aiming to contribute to solving global social issues by providing high-value-added products and services in five market domains, namely, "Infrastructure," "Energy," "Mobility," "Living environment," and "Electronics."

In recent years, customer requirements for materials and parts have diversified so much that it is necessary for us to secure competitiveness by reconciling technologies with products. We think we can take advantage of this diversity in customers' needs by making the most of our wide-ranging chemical technologies that cover inorganic, aluminum, and organic chemicals, and our diverse human resources that support these technologies.

Therefore, we made it our basic policy on R&D to "create new value by forging, polishing, and linking diverse individualized technologies." Under this basic policy, we will deepen and fuse our "diverse business domains," our "core technologies" that consist of elemental technologies with competitive advantage, and our "strategic technologies" that consist of the world-top-level technologies we cultivated over many years. Thus, we will promote R&D in a way that is all our own.

At the beginning of 2016, in order to conduct this individualized R&D, we established the Institute for Integrated Product Development, which we organized by combining with the research facilities of six locations, centering on aluminum and inorganics technologies, with the former Institute for Polymers and Chemicals. On the initiative of this new R&D organization, we will enhance cooperation among divisions and plants, develop our retained materials into multi-material components, and quickly respond to our customers' needs in a creative way.

The Institute for Advanced and Core Technology will deepen our strategic technologies consisting of "nano-carbon, thin-film, and catalyst technologies," and will focus on creating breakthrough technologies that lead to the development of next-generation businesses. On the other hand, in order to realize and maximize the fruits of R&D as early as possible while making our original businesses and technologies the pivot of our R&D activities, we will positively utilize open innovation and M&A, and strengthen cooperation with our partners.

The Showa Denko Group will make its R&D grow strongly at a world level by providing customers with original solutions, deepening and fusing the individualized technologies which are expected to become the sprouts of next-generation growth businesses.



## R&D expenditures in 2016

(Millions of yen)

Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Total
775	2,379	3,503	253	1,843	8,559	17,313

## R&D plan under “Project 2020+”

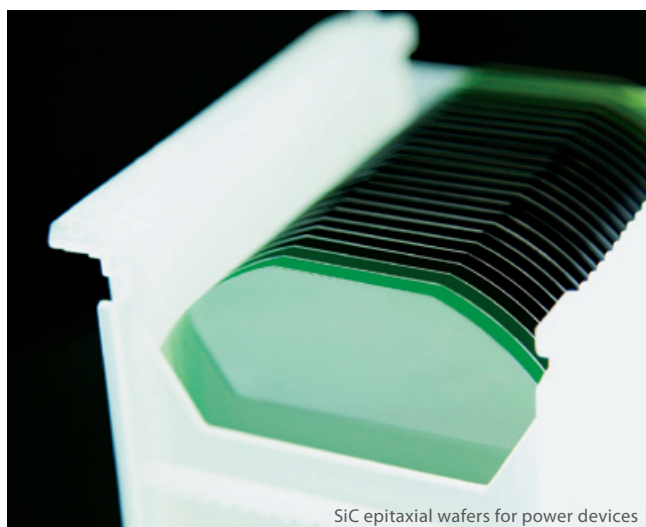
During the first three years of “Project 2020+,” the Group plans to invest ¥60 billion in R&D. We will invest about 70% of our R&D budget in the two market domains of “Energy,” to which we mainly provide LIB materials and SiC epitaxial wafers for power devices, and “Electronics,” to which we mainly provide high-purity gases and solvents for electronics, optical film, and resins for electronics, aiming to accelerate development of new technologies and products. On the other hand, we will invest 30% of our R&D budget in the three other market domains of “Infrastructure,” “Living environment,” and “Mobility,” which are newly defined this time, aiming to expand individualized businesses.

Through these R&D investments, we will create new individualized businesses. At the same time, we aim to contribute to the solution of global social issues by providing high-value-added products and services to the five market domains.

The following are examples of our R&D themes that we expect to become sprouts of next-generation growth businesses.

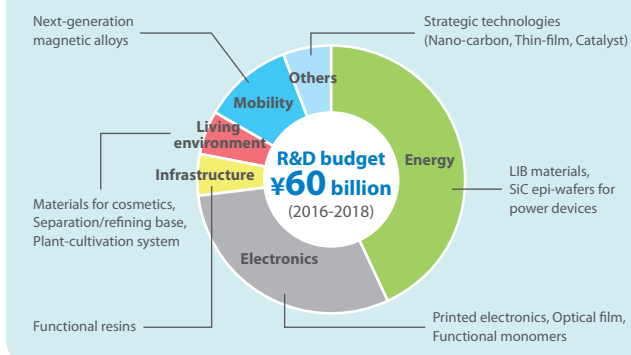
### 1. Power modules

Power modules are a typical and promising example of multi-material components that we design through the application of our proprietary technologies, materials, and solution know-how. Power modules consist of diverse materials, including aluminum, resins, and ceramics. Therefore, designing and producing power modules with multi-material structures require a heat-radiating solution to cope with higher-output and down-sizing, know-how to solve material-matching issues, and sealing agents to bond and seal different materials. We will pioneer the market for SiC-based power modules by responding to such sophisticated needs through the fusion of our individualized technologies in various fields including power elements, heat-radiating panels, insulating sheets, cooling devices, and sealing resins with enhanced heat resistance.



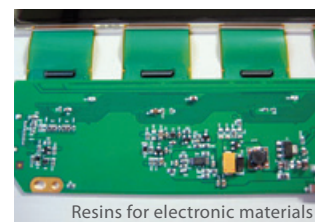
SiC epitaxial wafers for power devices

## Accelerate R&D centering on “Energy” and “Electronics”



### 2. Resins for electronic materials

Resins for electronic materials have various uses, including precision circuit boards for high-definition televisions and smartphones (COF: chip on film) and circuit boards for color filters used in flat panel displays. To

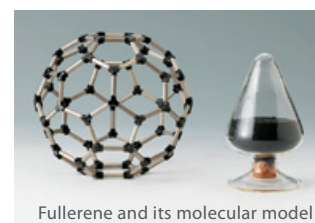


Resins for electronic materials

meet electronic device manufacturers’ demand for slimming of smartphones and higher definition for flat panel displays, resins for electronic materials are required to have improvement in various properties including reliability, flexibility, and thermal resistance. The Showa Denko Group will continue responding speedily to the needs of electronic device manufacturers, who are actively involved in this rapidly changing market, by continuously accumulating and improving its technology for designing various polymers including acrylic, epoxy, and urethane resins, technology for blending additives, and technology for evaluating properties of materials.

### 3. Nano-carbons

We have already started commercial production of VGCF™ carbon nanotube, and we are developing new nano-carbon materials including fullerene and graphene. In the near future, we will develop technologies that give new functions to nano-carbons, including technology to create fullerene derivatives, and technology to produce nano-thin-film materials. We will also establish methods to evaluate nano-materials. Thus, we will promote the application of nano-carbons to composite components, battery/wiring materials, and materials for storage media and devices.



Fullerene and its molecular model

# Corporate Social Responsibility Activities

## Realize safe and stable operations as well as sustainable development

As a corporate group producing and distributing chemicals, we give priority to safety above all else and, by continuing to promote Active Safety\* activities, will make our utmost effort to prevent industrial accidents, equipment-related incidents, and environmental problems from occurring. Moreover, we consider our Responsible Care program, in which we pay close attention to safety, health, and the environment at all stages of the life cycle of chemical substances, to be one of our core CSR activities. Under our Responsible Care action plan, we will implement and further improve activities specified for each category of "Safety and disaster prevention," "Occupational safety and health," "Chemical substance safety," and "Environmental safety." In addition to these activities, we will also work hard to offer products, technologies, and services that will help solve social issues as part of our efforts to achieve sustainable development.

\*Active Safety: The Showa Denko Group's unique activities in which we analyze past accidents and problems, and take measures to prevent their recurrence.

## Ensure strict compliance with legislation and observe social and corporate ethical norms

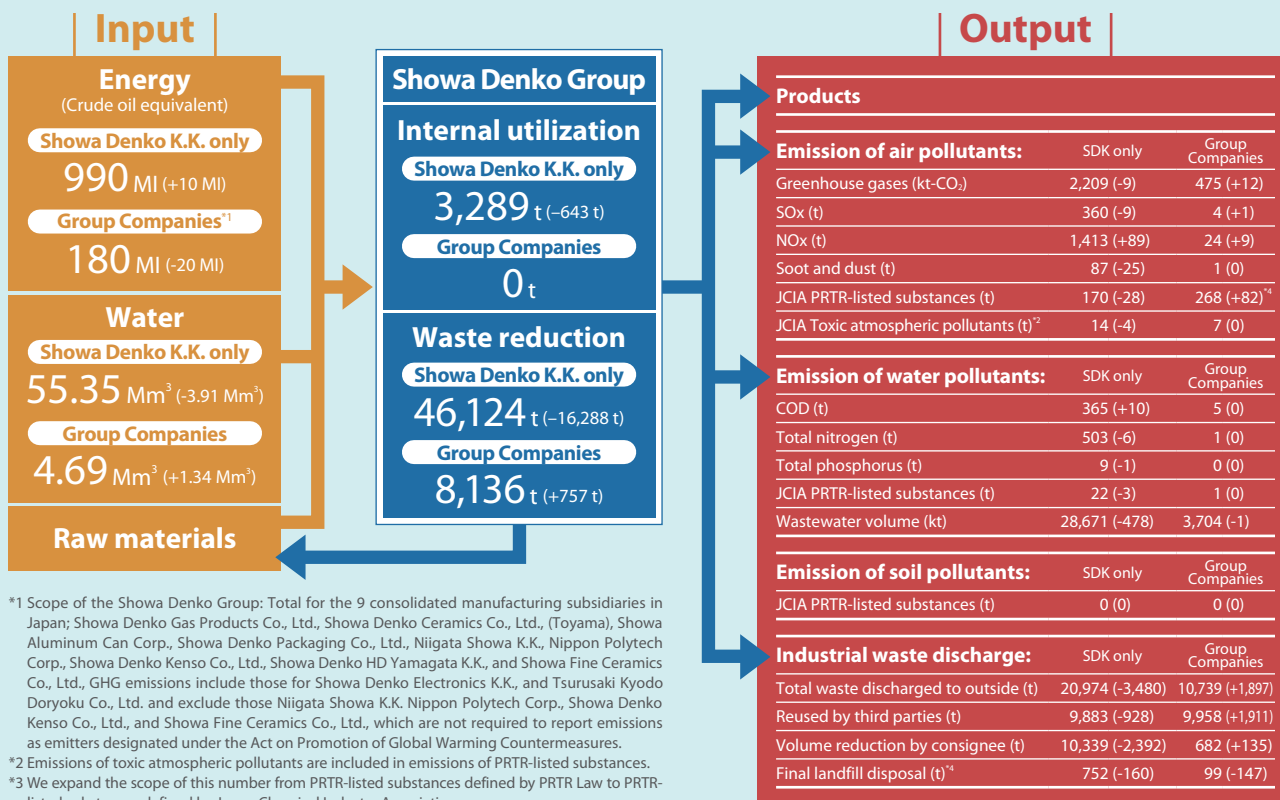
Observing social and corporate ethical norms is one of the most important priorities for the Showa Denko Group and constitutes the basis of our management. We will ensure that all of our employees behave with integrity based on "Our Code of Conduct and Its Practical Guide," which was established to give employees guidelines on what to keep in mind and how to behave in order to realize "Our Vision."

## Promote dialogue with stakeholders

Dialogue with stakeholders is important for us to accurately understand their interest in our environmental, social and governance (ESG) practices and their expectations toward and concerns about the Group. It is also important to enable us to reflect the related findings in our corporate activities. In addition to official meetings with stakeholders organized under various circumstances, we will work to create more opportunities to communicate with stakeholders through our group-wide aluminum can recycling activities, participation in local events, and on other occasions where we contribute to local communities.

## Showa Denko Group's resource use and environmental impact in 2015

Actual values of environmental loads for 2015 are as follows:



\*1 Scope of the Showa Denko Group: Total for the 9 consolidated manufacturing subsidiaries in Japan; Showa Denko Gas Products Co., Ltd., Showa Denko Ceramics Co., Ltd., (Toyama), Showa Aluminum Can Corp., Showa Denko Packaging Co., Ltd., Niigata Showa K.K., Nippon Polytech Corp., Showa Denko Kenso Co., Ltd., Showa Denko HD Yamagata K.K., and Showa Fine Ceramics Co., Ltd., GHG emissions include those for Showa Denko Electronics K.K., and Tsurusaki Kyodo Doryoku Co., Ltd. and exclude those Niigata Showa K.K. Nippon Polytech Corp., Showa Denko Kenso Co., Ltd., and Showa Fine Ceramics Co., Ltd., which are not required to report emissions as emitters designated under the Act on Promotion of Global Warming Countermeasures.

\*2 Emissions of toxic atmospheric pollutants are included in emissions of PRTR-listed substances.

\*3 We expand the scope of this number from PRTR-listed substances defined by PRTR Law to PRTR-listed substances defined by Japan Chemical Industry Association.

\*4 Final landfill disposal: Including only waste generated from production activities during the year

The figures in parentheses represent increases or decreases relative to the previous year.

Please visit our websites

CSR site

<http://www.sdk.co.jp/english/csr.html>

CSR report

<http://www.sdk.co.jp/english/csr/library/report/15891.html>

# Management's Discussion and Analysis

## Results of Operations

Consolidated net sales in 2016 totaled ¥671,159 million (US\$5,762 million), a decrease of ¥104,573 million, or 13.5%, from the previous year. Sales figures decreased in all segments including the Petrochemicals segment where sales decreased due to a fall in product prices, reflecting a decline in raw naphtha price.

The cost of sales decreased ¥108,930 million, or 16.7%, to ¥544,994 million (US\$4,678 million), reflecting the decrease in net sales.

Selling, general and administrative expenses decreased ¥4,189 million, or 4.7%, to ¥84,111 million (US\$722 million). R&D expenditures decreased ¥2,976 million, to ¥17,313 million (US\$149 million).

We recorded operating income of ¥42,053 million (US\$361 million), up ¥8,545 million, or 25.5%, from the previous year due to the major increase in operating income of the Petrochemicals segment resulting from strong demand in Asia, and due also to the increase in operating income of Chemicals, Aluminum, and Others segments. On the other hand, the operating income of the Electronics segment decreased due to lower shipment volumes of HD media. The operating income of the Inorganics segment also decreased.

## Information by Business Segment

A breakdown of net sales and operating income by business segment is as follows.

### Petrochemicals

Production of ethylene and propylene slightly decreased from the previous year due to coinciding shutdowns of plants to produce derivatives for periodic maintenance at Oita Complex in the first half of the year. Sales of olefins decreased due to a decline in prices of products caused by a drop in raw naphtha price, despite strong demand for olefins in the Asian market. Sales of organic chemicals also decreased due to a fall in the sales prices of vinyl acetate and ethyl acetate resulting from a decline in prices of raw materials.

As a result, the Petrochemicals segment's sales decreased ¥45,505 million, or 19.7%, from the previous year, to ¥185,783 million (US\$1,595 million). The segment recorded operating income of ¥20,690 million (US\$178 million), up ¥10,147 million, or 96.2% due to a decline in prices of raw materials and the continued high operating rates in olefins and organic chemicals businesses in response to strong demand in the Asian market.

### Chemicals

Production of liquefied ammonia and high-purity gases for electronics increased from the previous year. Sales of electronic chemicals slightly increased due to continued high-level shipment volumes, despite the

impact of a strong yen. Sales of industrial gases slightly increased. On the other hand, sales of basic chemicals decreased due partly to a decline in the sales prices of some products including acrylonitrile following a fall in prices of raw materials, despite continuously high shipment volumes of products. Sales of functional chemicals decreased due to the transfer of our phenolic resin business to another company, which took place in the second half of the previous year.

As a result, the Chemicals segment's sales decreased ¥7,763 million, or 5.5%, to ¥134,529 million (US\$1,155 million). Operating income from basic chemicals business increased due to a reduction in costs of materials resulting partly from an increase in the ratio of recycled plastics among raw materials to produce ammonia. Operating income from industrial gases and functional chemicals businesses also increased, while that from electronic chemicals business decreased due to a strong yen. Overall, the segment recorded operating income of ¥13,824 million (US\$119 million), up ¥3,118 million, or 29.1% from the previous year.

### Electronics

Production of HD media in 2016 decreased from the previous year due to a decrease in shipment volumes of media for use in PCs, which could not be compensated by the increase in shipment volumes of media for use in servers. However, shipment volumes of HD media for use in PCs in the second half of the year recovered from the level of the first half of the year, and that in the fourth quarter of 2016 was higher than that in the same period of the previous year. Under this market environment, overall sales of HD media decreased due to the decrease in shipment volumes mentioned above and the impact of a strong yen. Sales of rare earth magnetic alloys and compound semiconductors also decreased.

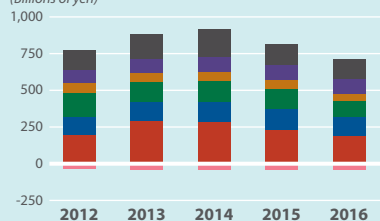
As a result, the Electronics segment's sales decreased ¥28,153 million, or 21.4%, to ¥103,339 million (US\$887 million). Operating income of the segment decreased ¥3,565 million, or 20.4%, to ¥13,907 million (US\$119 million) due to the decrease in shipment volumes of HD media especially in the first half of the year, which could not be compensated by the increase in shipment volumes in the second half of the year. Nevertheless, operating income from HD media business in the second half of 2016 increased from that in the same period of the previous year due to the realization of effects of our efforts during the first half of 2016 to streamline production capacity and reinforce cost competitiveness of the HD media business.

### Inorganics

Production volume of graphite electrodes slightly increased from the previous year. However, sales of graphite electrodes decreased due to a decline in market prices resulting from the adjustment of production in the steel industry in Asia and the United States under the influence of

### Net Sales by Segment

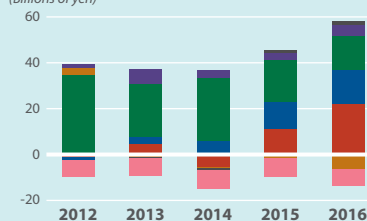
(Billions of yen)



■ Petrochemicals ■ Inorganics ■ Adjustments  
■ Chemicals ■ Aluminum  
■ Electronics ■ Others

### Operating Income by Segment

(Billions of yen)



■ Petrochemicals ■ Inorganics ■ Adjustments  
■ Chemicals ■ Aluminum  
■ Electronics ■ Others

# Management's Discussion and Analysis (cont.)

overproduction in China. Sales of ceramics decreased due to a decline in shipment volumes.

As a result, the Inorganics segment's sales decreased ¥12,607 million, or 19.9%, to ¥50,870 million (US\$437 million). The segment recorded an operating loss of ¥5,758 million (US\$49 million), a deterioration of ¥4,510 million from the previous year. However, aiming to revitalize profitability of the graphite electrode business, the Showa Denko Group took measures to improve cost competitiveness of this business at production bases in Japan and the United States.

## Aluminum

Domestic sales of high-purity foil for aluminum electrolytic capacitors increased from the previous year due to an increase in production of air conditioners and electronic parts for automobiles. Overall sales of rolled products increased due partly to the increase in shipment volumes of high-purity foil for aluminum electrolytic capacitors in China recorded by Showa Denko Aluminum (Nantong) Co., Ltd. in addition to the abovementioned sales increase in the domestic market. Sales of aluminum specialty components decreased due to a fall in aluminum metal price and lower shipment volumes for some automotive applications. Sales of aluminum cans increased due to higher shipment volumes recorded by Hanacans Joint Stock Company of Vietnam.

As a result, the Aluminum segment's sales decreased ¥2,181 million, or 2.2%, to ¥98,575 million (US\$846 million). Operating income of the segment increased ¥1,854 million, or 72.3%, to ¥4,416 million (US\$38 million) due to an increase in shipment volumes of rolled products and higher shipment volumes of aluminum cans recorded by Hanacans.

## Others

Sales of lithium ion battery (LIB) materials increased slightly due to an increase in shipment volumes for automotive applications in addition to higher shipment volumes for use in smartphones. However, Shoko Co., Ltd.'s sales decreased.

As a result, the Others segment's sales decreased ¥4,870 million, or 3.3%, to ¥142,364 million (US\$1,222 million). However, the segment recorded an operating income of ¥1,775 million (US\$15 million), up ¥446 million, or 33.6% from the previous year due to the increase in shipment volumes of LIB materials.

## Information by Geographic Area

### Sales in Japan

The Petrochemicals segment's sales decreased due to a fall in market prices of products reflecting a drop in raw naphtha price. The Chemicals segment's sales decreased due to a decline in the market price of acrylonitrile and the transfer of our phenolic resin business to another

company. Sales figures of the Electronics segment decreased due to lower shipment volumes of compound semiconductors, rare earth magnetic alloys, and HD media. In the Inorganics segment, sales of ceramics decreased due to lower sales volumes, and sales of graphite electrodes decreased due to a decline in market prices, despite an increase in shipment volumes. The Aluminum segment's sales decreased due to a decline in sales prices of aluminum specialty components resulting from a fall in aluminum metal price, and due also to a decrease in sales volumes of aluminum specialty components, despite an increase in sales volumes of high-purity foil for aluminum electrolytic capacitors. Sales figures of the Others segment decreased due to a decrease in Shoko Co., Ltd.'s sales.

As a result, consolidated sales from operations in Japan decreased ¥43,763 million, or 9.2%, to ¥430,639 million (US\$3,697 million).

### Sales in Asia (excluding Japan)

The Chemicals segment's sales decreased due partly to a decline in sales of high-purity gases for electronics, which are products of our electronic chemicals business, resulting from a strong yen. For the functional chemicals business, a decline in Shanghai Showa Highpolymer Co., Ltd.'s sales also contributed to the decrease in sales figures of the Chemicals segment. The Electronics segment's sales decreased due to a decrease in the demand for HD media for PCs and the strong yen. The Inorganics segment's sales decreased due partly to a decline in market prices of graphite electrodes. The Aluminum segment's sales increased due partly to the installation of a line to produce can ends at Hanacans Joint Stock Company. The Others segment's sales decreased due partly to significant decreases in Shoko Co. Ltd.'s sales and Shoko (Shanghai) Co., Ltd.'s sales.

As a result, consolidated sales from operations in Asia (excluding Japan) decreased ¥50,306 million, or 19.4%, to ¥208,626 million (US\$1,791 million).

### Sales in the Rest of the World

The Inorganics segment's sales decreased due to a fall in market prices of graphite electrodes manufactured by Showa Denko Carbon, Inc. of the United States.

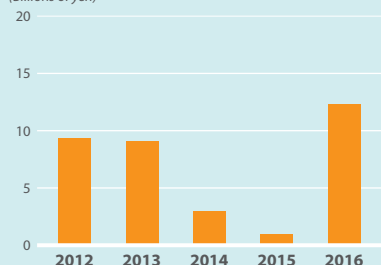
As a result, consolidated sales from operations in the rest of the world decreased ¥10,505 million, or 24.8%, to ¥31,893 million (US\$274 million).

## Other Income (Expenses) and Net Income Attributable to Owners of the Parent

The gap between interest expenses and interest and dividends income improved ¥565 million to expenses of ¥1,590 million (US\$14 million), due mainly to the decrease in interest expenses. We recorded a gain in the equity in earnings of unconsolidated subsidiaries and affiliates to which the equity method is applied in the amount of ¥4,328 million (US\$37 million), an improvement of ¥2,412 million, due partly to an improvement

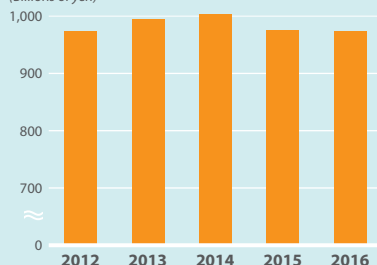
### Net Income Attributable to Owners of the Parent

(Billions of yen)



### Total Assets

(Billions of yen)



in business results of affiliates in synthetic resin-related operations in consequence of market recovery and higher operating rates.

With regard to foreign exchange gain (losses), the Group recorded foreign exchange losses of ¥1,658 million (US\$14 million), a deterioration of ¥1,217 million due mainly to the appreciation of the yen.

We recorded a loss of ¥3,222 million (US\$28 million), net, on retirement and sales of noncurrent assets, an improvement of ¥647 million, due partly to retirement losses resulting from replacements of facilities in the Inorganics and Chemicals segments. We also recorded a loss of ¥15,644 million (US\$134 million) for the impairment loss, an increase of ¥4,966 million, due partly to our recognition of an impairment loss amounting to ¥7,743 million as a result of the write-down of the book value of fixed assets used in the aluminum specialty components business operated in Oyama City, Tochigi Prefecture, a part of which became excessive assets after the divestiture of the automotive heat exchanger business in 2012 and the following decrease in shipment volumes. We also posted an impairment loss amounting to ¥4,530 million concerning the Electronics segment's electronics materials business.

Gain on sales of investment securities decreased ¥7,984 million, to ¥72 million (US\$1 million), because we did not record a gain on sales of listed stocks, which we had recorded in 2015. We did not post a loss on provision of allowance for doubtful accounts, which we had posted ¥13,404 million in 2015. The sum of extraordinary losses other than those mentioned above improved ¥3,090 million, to ¥3,125 million (US\$27 million), due mainly to decrease in loss on valuation of investment securities.

Overall, the total of other income (expenses), net, i.e., the total of non-operating income (expenses) and extraordinary income (expenses), net, improved ¥2,920 million, to a loss of ¥24,524 million (US\$211 million).

As a result, the Company posted income before taxes and non-controlling interests of ¥17,529 million (US\$150 million), up ¥11,465 million from the previous year.

Corporate tax decreased ¥19,271 million, to ¥3,691 million (US\$32 million), due to the rebound from the previous year's increase in corporate tax caused by a revision of the taxation system and a partial liquidation of deferred tax assets resulting from a revision of the Company's income forecast accompanied by the formulation of the new medium-term consolidated business plan. Thus, the Company recorded net income attributable to owners of the parent of ¥12,305 million (US\$106 million), up ¥11,384 million from the previous year.

## Financial Position

### Total Assets

Total assets decreased ¥7,797 million from the end of the previous year, to ¥932,698 million (US\$8,007 million), due partly to the decrease in inventory reflecting falls in material and fuel prices, notwithstanding the

increase in accounts receivable. Cash and deposits increased ¥5,860 million, to ¥69,914 million (US\$600 million).

Net property, plant and equipment decreased ¥15,158 million, to ¥487,135 million (US\$4,182 million), due partly to the posting of impairment losses, despite the new consolidation of SunAllomer Ltd.

Total investments and other assets increased ¥3,810 million, to ¥110,486 million (US\$948 million), due partly to the decrease in allowance for doubtful accounts.

### Liabilities

Interest bearing debt decreased ¥8,906 million, to ¥359,929 million (US\$3,090 million). Total liabilities decreased ¥10,885 million, to ¥621,467 million (US\$5,335 million), due partly to the decreases in interest bearing debt and notes and accounts payable-trade.

### Net Assets

Net assets increased ¥3,089 million from the end of the previous year, to ¥311,231 million (US\$2,672 million), due partly to the posting of net income attributable to owners of the parent.

### Capital Expenditures

Capital expenditures decreased ¥4,784 million from the previous year, to ¥39,276 million (US\$337 million). We replaced hydropower plants and expanded facilities to produce electronic chemicals. We also implemented construction works for various purposes, including reinforcement of production facilities, efficiency improvement, maintenance of production facilities, and environmental preservation.

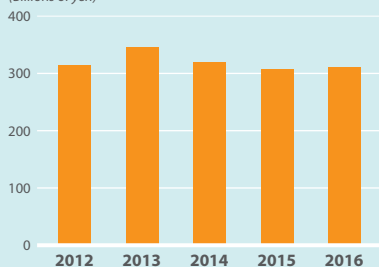
### Cash Flows

Net cash provided by operating activities increased ¥7,779 million from the previous year, to ¥68,949 million (US\$592 million), due partly to the increase in operating income. Net cash used in investing activities increased ¥11,257 million, to ¥53,754 million (US\$461 million), due partly to an expenditure to acquire additional shares in a subsidiary accompanying a change in the scope of consolidation, and an increase in term deposits. Thus, free cash flow ended up in the proceeds of ¥15,195 million (US\$130 million), a deterioration of ¥3,478 million. Net cash used in financing activities decreased ¥8,116 million due to less reduction in interest bearing debt than the previous year, and ended up in the payment of ¥13,220 million (US\$113 million).

As a result, taking the effects of exchange rate fluctuations into account, cash and cash equivalents at the end of 2016 increased ¥1,589 million, to ¥56,186 million (US\$482 million).

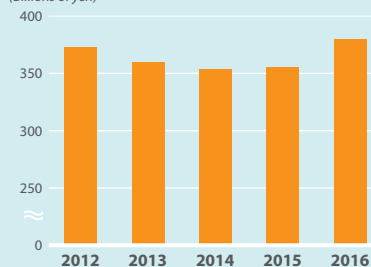
#### Total Net Assets

(Billions of yen)



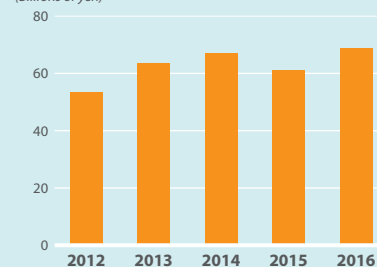
#### Interest Bearing Debt

(Billions of yen)



#### Cash Flows from Operating Activities

(Billions of yen)



# Consolidated Balance Sheets

## Showa Denko K.K. and Consolidated Subsidiaries

At December 31, 2016 and 2015

ASSETS	Millions of yen		Thousands of U.S. dollars (Note 5)
	2016	2015	2016
<b>Current assets</b>			
Cash and deposits (Notes 6 and 7)	¥ 69,914	¥ 64,054	\$ 600,170
Notes and accounts receivable (Notes 7 and 10)	157,846	146,810	1,355,022
Allowance for doubtful accounts	(699)	(880)	(5,997)
Inventories	91,347	105,926	784,162
Deferred tax assets (Note 13)	4,092	3,029	35,129
Other current assets (Notes 7 and 9)	12,576	12,586	107,957
Total current assets	335,077	331,525	2,876,442
<b>Property, plant and equipment</b> (Note 11)			
Land (Note 19)	242,816	251,851	2,084,440
Buildings and structures	267,889	265,136	2,299,670
Machinery, equipment and vehicles	791,398	773,229	6,793,701
Construction in progress	49,575	48,660	425,574
	1,351,678	1,338,877	11,603,385
Less : Accumulated depreciation	(864,544)	(836,583)	(7,421,612)
Net property, plant and equipment	487,135	502,293	4,181,773
<b>Investments and other assets</b>			
Investment securities (Notes 7, 8 and 11)	74,951	76,568	643,415
Long-term loans	6,922	3,300	59,418
Net defined benefit asset (Note 12)	365	19	3,131
Deferred tax assets (Note 13)	9,115	8,877	78,249
Other (Notes 7 and 9)	27,940	33,777	239,851
Allowance for doubtful accounts	(8,807)	(15,864)	(75,602)
Total investments and other assets	110,486	106,676	948,462
<b>Total assets</b>	¥ 932,698	¥ 940,494	\$ 8,006,676

See notes to financial statements.



LIABILITIES AND NET ASSETS	Millions of yen		Thousands of U.S. dollars (Note 5)
	2016	2015	2016
<b>Current liabilities</b>			
Short-term debt (Notes 7 and 11)	¥ 71,895	¥ 81,000	\$ 617,176
Current portion of long-term debt (Notes 7 and 11)	58,234	59,386	499,908
Notes and accounts payable (Notes 7, 10 and 11)	143,556	153,451	1,232,343
Income taxes payable	3,890	2,429	33,397
Provision for repairs	38	62	326
Provision for bonuses	2,253	1,904	19,339
Provision for stock payments (Note 4)	25	—	216
Provision for business structure improvement	382	83	3,276
Provision for Niigata Minamata Disease	118	126	1,010
Other current liabilities (Notes 7, 9 and 13)	30,402	32,651	260,980
Total current liabilities	310,792	331,093	2,667,971
<b>Noncurrent liabilities</b>			
Long-term debt less current portion (Notes 7 and 11)	229,800	228,449	1,972,703
Deferred tax liabilities (Note 13)	4,041	3,873	34,693
Provision for repairs	2,759	1,377	23,685
Provision for business structure improvement	1,121	475	9,623
Provision for director retirement	73	—	627
Provision for stock payments (Note 4)	59	—	508
Net defined benefit liability (Note 12)	21,923	15,185	188,194
Deferred tax liabilities for land revaluation (Note 19)	33,144	35,893	284,522
Other noncurrent liabilities (Notes 7 and 9)	17,754	16,006	152,411
Total noncurrent liabilities	310,675	301,259	2,666,966
<b>Contingent liabilities</b> (Note 17)			
<b>Net assets</b> (Note 18)			
<b>Shareholders' equity</b>			
Capital stock			
Authorized, 330,000,000 shares			
<i>Issued, 2016– 149,711,292 shares</i>	140,564	—	1,206,657
<i>Issued, 2015– 1,497,112,926 shares</i>	—	140,564	—
Capital surplus (Note 3)	62,033	62,221	532,521
Retained earnings	65,358	55,202	561,061
Less: Treasury stock at cost, 2016– 7,192,815 shares	(10,502)	—	(90,153)
Less: Treasury stock at cost, 2015– 68,858,573 shares	—	(10,157)	—
Total shareholders' equity	257,453	247,829	2,210,086
<b>Accumulated other comprehensive income</b>			
Valuation difference on available-for-sale securities	4,519	3,927	38,789
Deferred gains or losses on hedges	320	(326)	2,750
Revaluation reserve for land (Note 19)	31,026	31,307	266,339
Foreign currency translation adjustments	14,239	18,611	122,231
Remeasurements of defined benefit plans (Note 12)	(10,996)	(4,835)	(94,397)
Total accumulated other comprehensive income	39,107	48,683	335,712
<b>Non-controlling interests</b>	14,671	11,629	125,941
Total net assets	311,231	308,142	2,671,739
Total liabilities and net assets	¥932,698	¥940,494	\$8,006,676

# Consolidated Statements of Income

## Showa Denko K.K. and Consolidated Subsidiaries

For the years ended December 31, 2016 and 2015

	Millions of yen		Thousands of U.S. dollars (Note 5)
	2016	2015	2016
<b>Net sales</b>	<b>¥671,159</b>	¥775,732	<b>\$5,761,512</b>
<b>Cost of sales</b> (Note 21)	<b>544,994</b>	653,924	<b>4,678,464</b>
Gross profit	<b>126,164</b>	121,808	<b>1,083,048</b>
<b>Selling, general and administrative expenses</b> (Notes 20 and 21)	<b>84,111</b>	88,299	<b>722,043</b>
Operating income	<b>42,053</b>	33,508	<b>361,005</b>
<b>Other income (expenses)</b>			
Interest and dividends income	<b>1,641</b>	1,922	<b>14,085</b>
Equity in earnings of unconsolidated subsidiaries and affiliates	<b>4,328</b>	1,917	<b>37,157</b>
Gain on sales of investment securities, net (Note 8)	<b>72</b>	8,056	<b>620</b>
Loss on valuation of investment securities (Note 8)	<b>(66)</b>	(1,813)	<b>(567)</b>
Foreign exchange gains (losses)	<b>(1,658)</b>	(441)	<b>(14,234)</b>
Rent income on noncurrent assets	<b>1,506</b>	1,613	<b>12,928</b>
Gain (loss) on sales of noncurrent assets, net	<b>808</b>	(415)	<b>6,935</b>
Interest expenses	<b>(3,231)</b>	(4,077)	<b>(27,738)</b>
Loss on retirement of noncurrent assets	<b>(4,030)</b>	(3,454)	<b>(34,596)</b>
Impairment loss (Note 14)	<b>(15,644)</b>	(10,678)	<b>(134,291)</b>
Gain on bargain purchase	<b>686</b>	—	<b>5,889</b>
Loss on mothballing of operation	<b>(3,122)</b>	(1,710)	<b>(26,797)</b>
Provision of allowance for doubtful accounts (Note 22)	<b>—</b>	(13,404)	<b>—</b>
Other, net	<b>(5,815)</b>	(4,960)	<b>(49,920)</b>
Total	<b>(24,524)</b>	(27,444)	<b>(210,528)</b>
<b>Income before income taxes and Non-controlling interests</b>	<b>17,529</b>	6,064	<b>150,477</b>
<b>Income taxes</b> (Note 13)			
Current	<b>3,168</b>	3,437	<b>27,194</b>
Deferred	<b>523</b>	10,525	<b>4,492</b>
<b>Net income (loss)</b>	<b>13,838</b>	(7,898)	<b>118,791</b>
<b>Net income (loss) attributable to non-controlling interests</b>	<b>1,533</b>	(8,819)	<b>13,162</b>
Net income (loss) attribute to owners of the parent	<b>¥ 12,305</b>	¥ 921	<b>\$ 105,629</b>

	Yen	U.S. dollars (Note 5)
<b>Per share amounts</b>		
Net income – primary	<b>¥86.27</b>	¥6.45
Net income – fully diluted	—	—
Cash dividends (applicable to the period)	—	3.00

Note: 1. Net income per share has been computed based on the average number of shares of common stock outstanding during the respective fiscal year.

Diluted net income per share for 2016 and 2015 were not disclosed because there were no dilutive shares.

2. The Company plans to resolve payment of a dividend of ¥30 per share based on the record date of May 11, 2017 at the extraordinary general meeting of shareholders to be held in June 2017.

See notes to financial statements.

# Consolidated Statements of Comprehensive Income

## Showa Denko K.K. and Consolidated Subsidiaries

For the years ended December 31, 2016 and 2015

	Millions of yen		Thousands of U.S. dollars (Note 5)
	2016	2015	2016
<b>Net income (loss)</b>	<b>¥13,838</b>	¥ (7,898)	<b>\$118,791</b>
<b>Other comprehensive income:</b>			
Valuation difference on available-for-sale securities	516	(3,212)	4,429
Deferred gains or losses on hedges	629	(1,421)	5,399
Revaluation reserve for land	1,824	3,779	15,661
Foreign currency translation adjustments	(4,520)	(2,320)	(38,803)
Remeasurements of defined benefit plans, net of tax	(6,167)	9	(52,943)
Share of other comprehensive income of unconsolidated subsidiaries and affiliates accounted for using equity method	41	119	350
Total other comprehensive income (Note 15)	¥ (7,678)	¥ (3,046)	\$ (65,907)
<b>Comprehensive income</b>	<b>¥ 6,160</b>	¥(10,945)	<b>\$ 52,883</b>
Comprehensive income attributable to:			
Owners of parent	4,807	(1,661)	41,266
Non-controlling interests	1,353	(9,284)	11,618

See notes to financial statements.

# Consolidated Statements of Changes in Net Assets

## Showa Denko K.K. and Consolidated Subsidiaries

For the years ended December 31, 2016 and 2015

	Thousands			Millions of yen								
	Number of shares of capital stock	Capital stock	Capital surplus	Retained earnings	Treasury stock	Valuation difference on available-for-sale securities	Deferred gains or losses on hedges	Revaluation reserve for land	Foreign currency translation adjustments	Remeasurements of defined benefit plans	Non-controlling interests	Total net assets
<b>Balance at December 31, 2014</b>	1,497,113	¥ 140,564	¥ 62,221	¥ 56,896	¥ (10,153)	¥ 6,783	¥ 1,262	¥ 27,908	¥ 19,018	¥ (4,899)	¥ 19,488	¥ 319,087
Cumulative effects of changes in accounting policies	—	—	—	29	—	—	—	—	—	2,668	—	2,697
Restated balance	1,497,113	140,564	62,221	56,925	(10,153)	6,783	1,262	27,908	19,018	(2,231)	19,488	321,784
Dividends from surplus	—	—	—	(4,285)	—	—	—	—	—	—	—	(4,285)
Net income (loss) attributable to owners of the parent	—	—	—	921	—	—	—	—	—	—	—	921
Purchase of treasury stock	—	—	—	—	(5)	—	—	—	—	—	—	(5)
Disposal of treasury stock	—	—	0	—	0	—	—	—	—	—	—	0
Increase by increase of consolidated subsidiaries	—	—	—	1,084	—	—	—	—	—	—	—	1,084
Decrease by increase of consolidated subsidiaries	—	—	—	(304)	—	—	—	—	—	—	—	(304)
Decrease by decrease of consolidated subsidiaries	—	—	—	(225)	—	—	—	—	—	—	—	(225)
Increase by increase of associates accounted for using equity method	—	—	—	637	—	—	—	—	—	—	—	637
Change in treasury shares of parent arising from transactions with non-controlling shareholders	—	—	—	—	—	—	—	—	—	—	—	—
Reversal of revaluation reserve for land	—	—	—	355	—	—	—	—	—	—	—	355
Other	—	—	—	93	—	—	—	—	—	—	—	93
Net changes of items other than shareholders' equity	—	—	—	—	—	(2,856)	(1,588)	3,398	(407)	(2,604)	(7,858)	(11,915)
<b>Balance at December 31, 2015</b>	1,497,113	¥ 140,564	¥ 62,221	¥ 55,202	¥ (10,157)	¥ 3,927	¥ (326)	¥ 31,307	¥ 18,611	¥ (4,835)	¥ 11,629	¥ 308,142
Cumulative effects of changes in accounting policies	—	—	—	—	—	—	—	—	—	—	—	—
Restated balance	1,497,113	140,564	62,221	55,202	(10,157)	3,927	(326)	31,307	18,611	(4,835)	11,629	308,142
Dividends from surplus	—	—	—	(4,285)	—	—	—	—	—	—	—	(4,285)
Net income (loss) attributable to owners of the parent	—	—	—	12,305	—	—	—	—	—	—	—	12,305
Purchase of treasury stock	—	—	—	—	(345)	—	—	—	—	—	—	(345)
Disposal of treasury stock	—	—	(0)	—	0	—	—	—	—	—	—	0
Increase by increase of consolidated subsidiaries	—	—	—	70	—	—	—	—	—	—	—	70
Decrease by increase of consolidated subsidiaries	—	—	—	—	—	—	—	—	—	—	—	—
Decrease by decrease of consolidated subsidiaries	—	—	—	—	—	—	—	—	—	—	—	—
Increase by increase of associates accounted for using equity method	—	—	—	—	—	—	—	—	—	—	—	—
Change in treasury shares of parent arising from transactions with non-controlling shareholders	—	—	(188)	—	—	—	—	—	—	—	—	(188)
Reversal of revaluation reserve for land	—	—	—	2,093	—	—	—	—	—	—	—	2,093
Other	(1,347,402)	—	—	(27)	—	—	—	—	—	—	—	(27)
Net changes of items other than shareholders' equity	—	—	—	—	—	592	646	(281)	(4,372)	(6,161)	3,042	(6,535)
<b>Balance at December 31, 2016</b>	149,711	¥140,564	¥62,033	¥65,358	¥(10,502)	¥4,519	¥ 320	¥31,026	¥14,239	¥(10,996)	¥14,671	¥311,231

	Thousands			Thousands of U.S. dollars (Note 5)								
	Number of shares of capital stock	Capital stock	Capital surplus	Retained earnings	Treasury stock	Valuation difference on available-for-sale securities	Deferred gains or losses on hedges	Revaluation reserve for land	Foreign currency translation adjustments	Remeasurements of defined benefit plans	Non-controlling interests	Total net assets
<b>Balance at December 31, 2015</b>	1,497,113	\$ 1,206,657	\$ 534,132	\$ 473,878	\$ (87,193)	\$ 33,711	\$ (2,797)	\$ 268,751	\$ 159,765	\$ (41,510)	\$ 99,831	\$ 2,645,225
Cumulative effects of changes in accounting policies	—	—	—	—	—	—	—	—	—	—	—	—
Restated balance	1,497,113	1,206,657	534,132	473,878	(87,193)	33,711	(2,797)	268,751	159,765	(41,510)	99,831	2,645,225
Dividends from surplus	—	—	—	(36,782)	—	—	—	—	—	—	—	(36,782)
Net income (loss) attributable to owners of the parent	—	—	—	105,629	—	—	—	—	—	—	—	105,629
Purchase of treasury stock	—	—	—	—	(2,962)	—	—	—	—	—	—	(2,962)
Disposal of treasury stock	—	—	(1)	—	2	—	—	—	—	—	—	2
Increase by increase of consolidated subsidiaries	—	—	—	599	—	—	—	—	—	—	—	599
Decrease by increase of consolidated subsidiaries	—	—	—	—	—	—	—	—	—	—	—	—
Decrease by decrease of consolidated subsidiaries	—	—	—	—	—	—	—	—	—	—	—	—
Increase by increase of associates accounted for using equity method	—	—	—	—	—	—	—	—	—	—	—	—
Change in treasury shares of parent arising from transactions with non-controlling shareholders	—	—	(1,610)	—	—	—	—	—	—	—	—	(1,610)
Reversal of revaluation reserve for land	—	—	—	17,971	—	—	—	—	—	—	—	17,971
Other	(1,347,402)	—	—	(234)	—	—	—	—	—	—	—	(234)
Net changes of items other than shareholders' equity	—	—	—	—	—	5,078	5,547	(2,412)	(37,534)	(52,887)	26,110	(56,098)
<b>Balance at December 31, 2016</b>	149,711	\$1,206,657	\$532,521	\$561,061	\$(90,153)	\$38,789	\$ 2,750	\$266,339	\$122,231	\$(94,397)	\$125,941	\$2,671,739

See notes to financial statements.

# Consolidated Statements of Cash Flows

## Showa Denko K.K. and Consolidated Subsidiaries

For the years ended December 31, 2016 and 2015

	Millions of yen		Thousands of U.S. dollars (Note 5)
	2016	2015	2016
<b>Cash flows from operating activities</b>			
Income before income taxes and Non-controlling interests	¥ 17,529	¥ 6,064	\$ 150,477
Adjustments for:			
Depreciation and amortization	38,761	42,137	332,741
Impairment loss	15,644	10,678	134,291
Amortization of goodwill	—	1,354	—
Amorization of negative goodwill	(11)	—	(97)
Increase (decrease) in allowance for doubtful accounts	(6,441)	14,220	(55,291)
Increase (decrease) in net defined benefit liability	6,744	(6,903)	57,895
Interest and dividends income	(1,641)	(1,922)	(14,085)
Interest expenses	3,231	4,077	27,738
Equity in (earnings) losses of unconsolidated subsidiaries and affiliates	(4,328)	(1,917)	(37,157)
Loss (gain) on sales and valuation of investment securities	(6)	(6,243)	(53)
Loss on retirement of noncurrent assets	4,030	3,454	34,596
Loss (gain) on sales of noncurrent assets	(808)	415	(6,935)
Decrease (increase) in notes and accounts receivable-trade	(2,380)	22,134	(20,432)
Decrease (increase) in inventories	20,112	18,119	172,647
Increase (decrease) in notes and accounts payable-trade	(10,315)	(24,502)	(88,548)
Other, net	(10,044)	(16,733)	(86,219)
Subtotal	70,076	64,430	601,566
Interest and dividends income received	5,565	4,193	47,773
Interest expenses paid	(3,227)	(4,115)	(27,698)
Income taxes paid (refund)	(3,466)	(3,337)	(29,750)
Net cash provided by (used in) operating activities	68,949	61,170	591,891
<b>Cash flows from investing activities</b>			
Payments into time deposits	(29,438)	(28,962)	(252,709)
Proceeds from withdrawal of time deposits	25,287	31,006	217,078
Purchase of property, plant and equipment	(38,317)	(41,263)	(328,930)
Proceeds from sales of property, plant and equipment	1,724	697	14,799
Purchase of investment securities	(3,163)	(23,446)	(27,155)
Proceeds from sales of investment securities	173	23,725	1,487
Purchase of investments in subsidiaries	—	(862)	—
Purchase of investments in subsidiaries resulting in change in scope of consolidation	(2,132)	—	(18,302)
Net decrease (increase) in short-term loans receivable	(1,231)	(386)	(10,567)
Payments of long-term loans receivable	(4,077)	(2,810)	(34,996)
Collection of long-term loans receivable	322	520	2,766
Other, net	(2,903)	(715)	(24,921)
Net cash provided by (used in) investing activities	(53,754)	(42,497)	(461,449)
<b>Cash flows from financing activities</b>			
Net increase (decrease) in short-term debt	(7,242)	5,713	(62,170)
Proceeds from long-term loans payable	42,288	50,240	363,018
Repayments of long-term loans payable	(49,273)	(71,006)	(422,976)
Proceeds from issuance of bonds	17,000	10,000	145,935
Redemption of bonds	(10,000)	(10,000)	(85,844)
Proceeds from share issuance to non-controlling shareholders	—	129	—
Cash dividends paid	(4,267)	(4,272)	(36,627)
Cash dividends paid to non-controlling shareholders	(376)	(435)	(3,229)
Other, net	(1,350)	(1,705)	(11,589)
Net cash provided by (used in) financing activities	(13,220)	(21,336)	(113,482)
<b>Effect of exchange rate changes on cash and cash equivalents</b>	(523)	(1,058)	(4,488)
<b>Net increase (decrease) in cash and cash equivalents</b>	1,453	(3,721)	12,472
<b>Cash and cash equivalents at beginning of the year</b>	54,597	55,162	468,682
<b>Increase in cash and cash equivalents resulting from newly consolidated subsidiaries</b>	136	3,002	1,167
<b>Decrease in cash and cash equivalents resulting from exclusion of subsidiaries from consolidation</b>	—	(7)	—
<b>Increase in cash and cash equivalents resulting from merger</b>	—	161	—
<b>Cash and cash equivalents at end of the year</b> (Note 6)	¥ 56,186	¥ 54,597	\$ 482,321

See notes to financial statements.

# Notes to Financial Statements

## Showa Denko K.K. and Consolidated Subsidiaries

### 1. BASIS OF REPORTING AND FINANCIAL STATEMENTS

The accompanying consolidated financial statements have been prepared in accordance with accounting principles and practices generally accepted in Japan, which are different in certain respects as to application and disclosure requirements from International Financial Reporting Standards, and restructured and translated into English from the consolidated financial statements which have been filed with the Kanto Local Finance Bureau as required by the Financial Instruments and Exchange Law of Japan.

### 2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

#### (a) Principles of Consolidation

The consolidated financial statements for the years ended December 31, 2016 and 2015 include the accounts of the Company and its 48 and 48, respectively, significant subsidiaries (collectively “the Companies”).

For the purposes of the consolidated financial statements, all significant intercompany transactions, account balances and unrealized profits among the Companies are entirely eliminated and the portions thereof attributable to minority interests are credited or charged to minority interests.

Accounts of subsidiaries whose business year-ends differ by more than three months from December 31 have been included using appropriate interim financial information.

In the initial consolidation, assets and liabilities of subsidiaries including those attributable to minority stockholders are recorded based on fair value in the accompanying consolidated financial statements.

Goodwill is amortized on a straight-line basis over a period during which the effect of such goodwill lasts but does not exceed 20 years from booking. In addition, negative goodwill arising from business combinations prior to April 1, 2010 is amortized on a straight-line basis over a period during which the effect of such negative goodwill lasts but does not exceed 20 years from booking.

#### (b) Investments in Unconsolidated Subsidiaries and Affiliates

The Company applied the equity method of accounting for investments in 2 unconsolidated subsidiary in 2016 and 1 that of in 2015, and 10 affiliates in 2016 and 12 affiliates in 2015.

All underlying intercompany profits obtained from transactions among the Companies and unconsolidated subsidiaries and affiliates to which the equity method is applied are eliminated in the consolidated financial statements.

#### (c) Translation of Foreign Currency Accounts

All receivables and payables denominated in foreign currencies at the balance sheet date are translated into Japanese yen at the current exchange rates.

The resulting exchange gains or losses are credited or charged to income.

The financial statements of certain consolidated subsidiaries of foreign nationality are translated into Japanese yen at the year-end rate for assets and liabilities, at historical rates for the other balance sheet accounts exclusive of the current year’s net income, and at the average annual rate for revenue and expense accounts and net income.

Translation adjustments resulting from the process of translating the financial statements of foreign subsidiaries into Japanese yen are accumulated and reported as a component of net assets on the consolidated balance sheets.

#### (d) Cash and Cash Equivalents

Cash and cash equivalents in the consolidated statements of cash flows are composed of cash on hand, bank deposits available for withdrawal on demand and short-term investments with original maturities of three months or less and minor risk of value fluctuation.

#### (e) Securities

Debt securities that are intended to be held to maturity (“held-to-maturity debt securities”) are stated at amortized cost on the balance sheets. Available-for-sale securities with available fair market values are stated at fair market values. Unrealized gains and unrealized losses on these available-for-sale securities are reported, net of applicable income taxes, as a separate component of the net assets.

Realized gains or losses on sale of the available-for-sale securities are computed using primarily the moving-average cost.

Available-for-sale securities with no available fair market values are stated primarily at moving-average cost.

#### (f) Allowance for Doubtful Accounts

To provide for losses from bad debts, the allowance is provided according to the actual rate of default for ordinary receivables and in view of the probability of recovery for specific doubtful receivables.

#### (g) Inventories

Inventories are stated at the lower of cost or market, using principally the gross-average cost method. The carrying value on the consolidated balance sheets is stated by the devaluation method based on declines in profitability.

#### (h) Property, Plant and Equipment

Property, plant and equipment is stated at cost, in principle. Depreciation of property, plant and equipment is computed by the straight-line method.

#### (i) Intangible Assets

The Company and some of the consolidated subsidiaries principally apply the straight-line method over 5 years to amortize intangible assets.

**(j) Leased Assets**

Leased assets in finance lease transactions that do not transfer ownership to the lessee are depreciated using the straight-line method on the assumption that the useful life is equal to the lease term and the residual value is equal to zero. For leases with a residual value guarantee, the contracted residual value is considered to be the residual value for financial accounting purposes.

Please note that finance lease transactions, other than those involving the transfer of ownership and which commenced on or before December 31, 2008, are accounted for by the same methods as for operating lease transactions.

**(k) Provision for Business Structure Improvement**

The Company and some of the consolidated subsidiaries record the provision for business structure improvement on an accrual basis to provide for expenses and losses resulting from their restructuring programs.

**(l) Provision for Bonuses**

A provision for bonuses is provided at an amount estimated based on the bonus to be paid subsequent to the balance sheet date.

**(m) Provision for Repairs**

The Company and some of the consolidated subsidiaries provide a provision for repairs in an amount estimated to be necessary for the scheduled maintenance for certain production equipment.

**(n) Provision for Stock Payments**

To provide for the Company's share payment to its directors and corporate officers, the provision is provided based on the Director Share Payment Regulations.

**(o) Provision for Niigata Minamata Disease**

To provide for lump-sum payments pursuant to the Special Measures Law Regarding Relief to Persons Suffering from Minamata Disease and Regarding Solutions to the Minamata Disease Problem, the Company makes a provision in the expected amount of such payments.

**(p) Accounting Policy for Retirement Benefits****(1) Method of attributing expected benefits to periods**

The attribution of expected benefits to periods up to the current consolidated fiscal year, upon calculating retirement benefit obligations, is done on the benefit formula basis.

**(2) Method of amortization of actuarial gain or loss and past service costs**

The actuarial gain or loss is amortized starting from the year after such an actuarial loss is determined on a straight-line basis over certain periods (mainly 12 years) within the average remaining service periods.

Past service costs are amortized on a straight-line basis over certain periods (mainly 12 years) within the average remaining service periods.

**(3) Application of a simplified method to small businesses**

For the calculation of liabilities concerning retirement benefits and retirement benefit expenses, some consolidated subsidiaries have adopted a simplified method, which deems term-end amounts payable for voluntary retirement related to retirement benefits as retirement benefit obligations.

**(q) Income Taxes**

Income taxes consist of corporation, enterprise and inhabitants taxes. The provision for income taxes is computed based on the pretax income of each of the Company and its consolidated subsidiaries with certain adjustments required for consolidation and tax purposes. The asset and liability approach is used to recognize deferred tax assets and liabilities for the expected future tax consequences of temporary differences between the carrying amounts and the tax bases of assets and liabilities. (Valuation allowances are recorded to reduce deferred tax assets based on the assessment of the realizability of the tax benefits.)

**Application of the Consolidated Taxation System**

The Company and certain domestic subsidiaries adopt the consolidated taxation system.

**(r) Derivative Financial Instruments and Hedge Accounting**

The Company and certain subsidiaries state all derivative financial instruments at fair value and recognize changes in fair value as gains or losses unless the derivative financial instruments are used for hedging purposes.

If the derivative financial instruments meet certain hedging criteria, the Company and certain subsidiaries defer recognition of gains or losses resulting from changes in fair value of derivative financial instruments until the related gains or losses on hedged items are recognized.

However, when forward exchange contracts meet certain hedging criteria, the hedged items are stated by the forward exchange contracts rate. If interest rate swap contracts meet certain hedging criteria, the net amount to be paid or received under the interest rate swap contracts is added to or deducted from interest on the assets or liabilities for which the interest rate swap contracts were executed.

Hedge accounting is not applied at some of the foreign subsidiaries.

**(s) Reclassifications**

Certain reclassifications have been made in the 2015 financial statements to conform to the presentation of 2016.

# Notes to Financial Statements

## Showa Denko K.K. and Consolidated Subsidiaries

### 3. CHANGES IN ACCOUNTING POLICIES

#### Application of Accounting Standard for Business Combinations

The Accounting Standard for Business Combinations (Accounting Standards Board of Japan [ASBJ] Statement No. 21, revised on September 13, 2013, "Accounting Standard for Business Combinations"), the Accounting Standard for Consolidated Financial Statements (ASBJ Statement No. 22, revised on September 13, 2013, "Accounting Standard for Consolidated Financial Statements"), and the Accounting Standard for Business Divestitures (ASBJ Statement No. 7, revised on September 13, 2013, "Accounting Standard for Business Divestitures") have been applied effective from the fiscal year ended December 31, 2016. Under these adopted accounting standards, the Company records differences arising from changes in its ownership interests in subsidiaries over which it retains control as capital surplus. In addition, the Company records acquisition-related costs as expenses in the consolidated fiscal year in which the costs are incurred. Regarding business combinations taking place on and after the beginning of the year ended December 31, 2016, the Company changed the method to reflect changes in the allocation of acquisition costs arising from the finalization of provisional accounting treatment in the consolidated financial statements for the consolidated fiscal year in which the acquisition occurs. Furthermore, a change in presentation has been made to net income, and the presentation of minority interests has been changed to non-controlling interests. To reflect these changes in presentation, the consolidated financial statements for the previous year have been restated.

In the consolidated statement of cash flows for the fiscal year ended December 31, 2016, cash flows related to purchase or sales of shares of subsidiaries not resulting in change in scope of consolidation are included in the section of cash flows from financing activities, while expenses related to purchase of shares in subsidiaries resulting in a change in the scope of consolidation, and cash flows related to expenses arising from purchase or sales of shares in subsidiaries not resulting in a change in the scope of consolidation, are included under the operating activities section on the statements of cash flows.

As a result, operating income, ordinary income and income before income taxes for the fiscal year ended December 31, 2016, decreased by ¥1,137 million, respectively, and the effect of capital surplus at the end of December 2016 was immaterial.

In the consolidated statement of cash flows for the fiscal year ended December 31, 2016, cash flows related to purchase or sales of shares of subsidiaries not resulting in change in scope of consolidation are included in the section of cash flows from financing activities, while expenses related to purchase of shares in subsidiaries resulting in a change in the scope of consolidation, and cash flows related to expenses arising from purchase or sales of shares in subsidiaries not resulting in a change in the scope of consolidation, are included under the operating activities section on the statements of cash flows.

The effect on per-share information is described in Per share amounts, Consolidated Statement of Income.

### 4. ADDITIONAL INFORMATION

#### (a) Board Benefit Trust (BBT)

The Company reviewed its director compensation scheme and has introduced a new stock compensation scheme called Board Benefit Trust (BBT) ("the Scheme") for directors and corporate officers from the fiscal year ended December 31, 2016, with the aim of enhancing their awareness of the importance of contributing to improvement in enterprise value and business performance over the medium to long term.

For accounting treatment concerning this trust agreement, the Company applied the gross method in which the assets and liabilities of the trust are recorded as assets and liabilities in the balance sheet by referring to the Practical referring to the Practical Solution on Transactions of Delivering the Company's Own Stock to Employees etc. through Trusts (ASBJ Practical Issues Task Force [PITF] No. 30, issued on March 26, 2015).

#### (1) Outline of the transaction

In this Scheme, the shares of the Company are granted to its directors (excluding outside directors) and corporate officers pursuant to the Director Share Grant Regulations set forth by the Company.

The Company grants performance-linked points to its directors and corporate officers every year, and grants shares of the Company to them based on the number of points granted when they resign from the Company. Provided that, however, with regard to a certain portion of the points, an amount of money corresponding to the prevailing market price of the Company's shares will be paid to any director or corporate officer meeting the relevant requirements set forth in the Director Share Grant Regulations. The Company's shares that are granted to directors and corporate officers, including those to be granted in the future, shall be acquired by the trust using the entrusted funds and separately managed as trusted assets.

#### (2) Residual shares of the Company in the trust

Residual shares of the Company in the trust have been recorded as treasury stock under net assets at the book value in the trust (excluding the amount of ancillary expenses). The book value and the number of such treasury stock at the end of the fiscal year ended December 31, 2016 were ¥337 million and 300,000 shares, respectively.

#### (b) Acquisition of Shares in the Graphite Electrode Business of SGL Carbon SE

The Company reached an agreement with SGL Carbon SE ("SGL Carbon") that the Company will acquire all shares of SGL GE Holding GmbH ("SGL GE"), which engages in the graphite electrode business, from SGL CARBON GmbH, a wholly owned subsidiary of SGL Carbon, for an enterprise value of 350 million euros, and that SGL GE will become a subsidiary of the Company. A sale and purchase agreement was concluded on October 20, 2016, upon the approval obtained at the Company's Board of Directors' meeting held on the same day.



### (1) Background of the acquisition

The global steel demand is predicted to be low at around 1% per year and the business environment in the graphite electrode industry remains challenging due to the weak demand and the severe competition. In these circumstances, the Company has decided to increase the competitiveness of its graphite electrode business through the effect of integration with SGL GE, which has highly cost-competitive business in three key regions: Europe, the United States, and Southeast Asia.

### (2) Name of the target of share acquisition

SGL CARBON GmbH

### (3) Company name, business description and size of the acquisition target

- ( i ) Name: SGL GE Holding GmbH
- ( ii ) Description of major businesses: Manufacture, research, development and sales of graphite electrodes
- ( iii ) Size
  - Capital: 25,002 euros
  - Sales: 375 million euros (for the fiscal year ended December 2015, for reference only)

### (4) Timing for share acquisition

Mid-2017 (provisional)

The share acquisition is subject to the approval of the relevant authorities under applicable competition laws in Germany, the United States and other countries. Depending on the progress with obtaining the approval, the timing of the share acquisition may be changed.

### (5) Number of shares to be acquired, acquisition price and shareholding ratio after acquisition

- ( i ) Number of shares to be acquired: 25,002 shares
- ( ii ) Acquisition price: ¥15.6 billion (estimated price)

The acquisition price mentioned above has been calculated by adding the estimated advisory and other fees to the acquisition price of SGL GE at the conversion rate of ¥115 to 1 euro. The acquisition price will be finalized to reflect price adjustments at the time of execution of the share purchase set under the share purchase agreement. Although the acquisition price listed above reflects current estimates, the final acquisition price is subject to price adjustments.
- ( iii ) Shareholding ratio after acquisition: 100%

### (6) Funding method for acquisition

The Company's cash on hand and borrowings.

## 5. JAPANESE YEN AND TRANSLATION INTO U.S. DOLLARS

The Companies' accounting records are maintained in yen. Yen amounts included in the financial statements are rounded to the nearest one million unit. Therefore, the total and subtotal amounts presented in the financial statements may not equal the exact sum of the individual balances. The U.S. dollar amounts appearing in the accompanying financial statements and notes thereto represent the arithmetical results of translating yen into U.S. dollars at the rate of ¥116.49 to US\$1.00, the approximate rate of exchange at December 31, 2016. The inclusion of such U.S. dollar amounts is solely for the convenience of readers; it does not carry with it any implication that yen amounts have been or could be converted into U.S. dollars at that rate.

## 6. CASH FLOW STATEMENTS

Cash and deposits as of December 31, 2016 and 2015 on the consolidated balance sheets and cash equivalents at December 31, 2016 and 2015 on the consolidated statements of cash flows were reconciled as follows:

	Millions of yen		Thousands of U.S. dollars
	2016	2015	2016
Cash and deposits	¥ 69,914	¥ 64,054	\$ 600,170
Original maturities more than three months	(13,728)	(9,457)	(117,849)
Cash and cash equivalents	¥ 56,186	¥ 54,597	\$ 482,321

## 7. FINANCIAL INSTRUMENTS

### (a) Overview

#### (1) Management policy relating to financial instruments

The Companies finance necessary long-term funds by bank loans and bond issues following the capital investment plans and finance short-term operating funds by bank loans and commercial paper. Temporary excess funds are invested exclusively in financial instruments which have fixed returns and low risk of falling below par values. The Companies use derivative transactions to hedge the following risks and do not enter into derivative transactions for speculative purposes.

#### (2) Types of financial instruments and related risks

Operating receivables, such as notes and accounts receivable, are exposed to credit risk. Foreign-currency-denominated accounts receivable incurred through exports are exposed to foreign currency fluctuation risk. However, the Companies hedge the risk by utilizing forward exchange contracts, currency options, and currency swaps based on internal rules that set out foreign currency risk management principles.

Marketable securities and investment securities mainly consist of the stocks of partner companies to maintain and strengthen their business relationships and are exposed to market fluctuation risk.

# Notes to Financial Statements

## Showa Denko K.K. and Consolidated Subsidiaries

Operating payables, such as notes and accounts payable—trade and other, are due within one year. Foreign-currency-denominated accounts payable incurred through imports of raw materials are exposed to foreign currency fluctuation risk. The Companies hedge the risk by utilizing forward exchange contracts following internal rules that set out the foreign currency risk management principles. Short-term debt and commercial paper are mainly used to finance short-term operating funds, and long-term debts and bonds are mainly used to finance equipment funds. Since some of long-term debt is made up of variable interest rate loans, it is exposed to interest rate fluctuation risk. However, interest rate swaps are used for most loans to hedge the risk.

The Companies utilize derivative transactions, such as forward exchange contracts, currency options, and currency swaps, to hedge the foreign currency fluctuation risk of operating receivables and payables denominated in foreign currencies and financing transactions denominated in foreign currencies. Interest rate swaps are utilized to hedge the interest rate fluctuation risk, and aluminum forward transactions are utilized to hedge the market fluctuation risk.

### **(3) Risk management relating to financial instruments**

#### **(i) Credit risk management (risk of default by the counterparties)**

The Company follows internal rules that set out accounts receivable management principles. The compliance department works with the sales division in each sector and monitors the customers' credit conditions periodically and reviews the sales policy checking the sales volume and balances. The Company takes measures to obtain information on and minimize the credit risk that may arise due to the deterioration in the financial condition of their customers. Consolidated subsidiaries monitor their customers' financial and credit conditions based on their internal rules.

The held-to-maturity debt are limited to only highly rated securities.

The Companies utilize derivative transactions only with creditworthy financial institutions and trading companies to minimize credit risk.

The maximum credit risk as of December 31, 2016 is disclosed as the balance sheet amount of financial instruments exposed to credit risk.

#### **(ii) Market risk management (risk of fluctuations in foreign currency and interest rates)**

For operating receivables and payables and loans denominated in foreign currencies, the Company and certain consolidated subsidiaries utilize forward exchange contracts, currency options, and currency swaps to hedge some of the foreign currency fluctuation risk, which is categorized by currency and maturity date. The Company and certain consolidated subsidiaries utilize currency swaps to hedge the interest rate fluctuation risk of loans.

For marketable securities and investment securities, the Companies regularly review the fair value and issuers' financial

conditions and review the Companies' portfolio on an ongoing basis, except for held-to-maturity debt securities, according to market conditions and the business relationships with counterparties.

The Company has internal management rules that set out the approval authorities and procedures of the derivative transactions.

The derivative transactions are carried out based on the appropriate approver set out in the internal rules. For currency-related derivative transactions, each division and the treasury department perform and manage transactions and report to the director in charge periodically. For interest-related derivative transactions, the treasury department performs and manages the transactions and reports to the director in charge periodically. For commodity-related derivative transactions, each division performs and manages the transactions and reports to the director in charge periodically. Consolidated subsidiaries perform and manage derivative transactions based on their internal management standards.

#### **(iii) Liquidity risk management (risk of default on payment due dates)**

The Company manages liquidity risk by requiring the treasury department to prepare and update cash plans, based on the schedule for cash inflows and disbursements in each division. In addition, the Company signs commitment line contracts and makes other arrangements with financial institutions to secure the necessary liquidity. Consolidated subsidiaries manage their liquidity risk through similar procedures.

#### **(4) Supplemental explanation on fair value of financial instruments**

As well as the values being based on market prices, fair value of financial instruments includes values which are reasonably calculated in case market prices do not exist. As the calculation of those values uses certain assumptions, those values may vary in the case of different assumptions being applied. Also, for the contract amount and others regarding derivative transactions described in Note 9. DERIVATIVE FINANCIAL INSTRUMENTS, the contract amount itself does not indicate market risk related to derivative transactions.

## (b) Fair Value of Financial Instruments

At December 31, 2016 and 2015 book value, fair value and difference were as follows.

The financial instruments whose fair value is extremely difficult to determine are not included below.

Year ended December 31, 2016	Millions of yen		
	Book value	Fair value	Difference
(1) Cash and deposits	¥ 69,914	¥ 69,914	¥ —
(2) Notes and accounts receivable-trade	143,816	143,816	—
(3) Investment securities	44,184	44,184	—
Total assets	¥257,914	¥257,914	¥ —
(1) Notes and accounts payable-trade	¥104,005	¥104,005	¥ —
(2) Short-term debt	71,895	71,895	—
(3) Current portion of long-term debt	58,234	58,352	118
(4) Accounts payable-other	53,790	53,790	—
(5) Long-term debt less current portion	229,800	230,003	203
Total liabilities	¥517,724	¥518,045	¥320
Derivative transactions*	¥ 381	¥ 381	¥ —

Year ended December 31, 2015	Millions of yen		
	Book value	Fair value	Difference
(1) Cash and deposits	¥ 64,054	¥ 64,054	¥ —
(2) Notes and accounts receivable-trade	135,077	135,077	—
(3) Investment securities	43,439	43,439	—
Total assets	¥242,570	¥242,570	¥ —
(1) Notes and accounts payable-trade	¥103,737	¥103,737	¥ —
(2) Short-term debt	81,000	81,000	—
(3) Current portion of long-term debt	59,386	59,546	159
(4) Accounts payable-other	62,063	62,063	—
(5) Long-term debt less current portion	228,449	228,779	330
Total liabilities	¥534,636	¥535,125	¥490
Derivative transactions*	¥ (542)	¥ (542)	¥ —

Year ended December 31, 2016	Thousands of U.S. dollars		
	Book value	Fair value	Difference
(1) Cash and deposits	\$ 600,170	\$ 600,170	\$ —
(2) Notes and accounts receivable-trade	1,234,580	1,234,580	—
(3) Investment securities	379,296	379,296	—
Total assets	\$2,214,046	\$2,214,046	\$ —
(1) Notes and accounts payable-trade	\$ 892,820	\$ 892,820	\$ —
(2) Short-term debt	617,176	617,176	—
(3) Current portion of long-term debt	499,908	500,917	1,009
(4) Accounts payable-other	461,761	461,761	—
(5) Long-term debt less current portion	1,972,703	1,974,444	1,741
Total liabilities	\$4,444,368	\$4,447,118	\$2,750
Derivative transactions*	\$ 3,271	\$ 3,271	\$ —

\*Derivative assets and liabilities are on a net basis.

Notes 1. Valuation method for financial instruments and information on marketable securities and derivative transactions

### Assets

Cash and deposits and Notes and accounts receivable-trade

The book value is deemed to approximate the fair value since these are scheduled to be settled in a short period of time.

Investment securities

Fair value of these securities is based on the price on stock exchanges. Refer to Note 8. SECURITIES regarding the securities categorized by holding purposes.

### Liabilities

Notes and accounts payable-trade, Short-term debt, Commercial paper (included in the above Short-term debt), and Accounts payable-other

The book value is deemed to approximate the fair value since these are scheduled to be settled in a short period of time.

Current portion of long-term debt and Long-term debt (included in the above Long-term debt less current portion)

The fair value is measured as the net present value of estimated cash flows by discounting the principal and interest value using the interest rate applied to the new loans. Part of the long-term loans are variable rate loans, and they are subject to special treatment of interest rate swaps (refer to Note 9. DERIVATIVE FINANCIAL INSTRUMENTS); the fair value is measured as the net present value of estimated cash flows by discounting the total amount of principal and interest processed as interest rate swaps using the interest rate applied to the new loans.

Current portion of bonds (included in the above Current portion of long-term debt) and Bonds (included in the above Long-term debt less current portion)

As for bonds with short maturities, the book value is deemed to approximate the fair value since these are scheduled to be settled in a short period of time. For others, fair value is based on the market prices.

### Derivative transactions

Refer to Note 9. DERIVATIVE FINANCIAL INSTRUMENTS.

2. Financial instruments for which fair value is extremely difficult to determine

	Millions of yen		Thousands of U.S. dollars
	2016	2015	2016
Non-listed equity securities	¥30,767	¥33,129	\$264,119

These securities are not included in the above Investment securities, as there was no quoted market value, estimating the future cash flows is deemed to be practically impossible and it is extremely difficult to determine the fair value.

3. The redemption schedule for financial assets and securities with maturities

Year ended December 31, 2016	Millions of yen			
	Due in 1 year or less	Due after 1 year through 5 years	Due after 5 years through 10 years	Due after 10 years
Cash and deposits	¥ 69,914	¥—	¥—	¥—
Notes and accounts receivable-trade	143,802	14	—	—
Total	¥213,716	¥14	¥—	¥—

Year ended December 31, 2015	Millions of yen			
	Due in 1 year or less	Due after 1 year through 5 years	Due after 5 years through 10 years	Due after 10 years
Cash and deposits	¥ 64,054	¥ —	¥ —	¥ —
Notes and accounts receivable-trade	134,655	422	—	—
Total	¥198,709	¥422	¥—	¥—

Year ended December 31, 2016	Thousands of U.S. dollars			
	Due in 1 year or less	Due after 1 year through 5 years	Due after 5 years through 10 years	Due after 10 years
Cash and deposits	\$ 600,170	\$ —	\$ —	\$ —
Notes and accounts receivable-trade	1,234,458	122	—	—
Total	\$1,834,628	\$122	\$—	\$—

# Notes to Financial Statements

## Showa Denko K.K. and Consolidated Subsidiaries

### 4. The scheduled maturities of bonds and long-term debt after December 31, 2016 and 2015

Year ended December 31, 2016	Millions of yen					
	Due in 1 year or less	Due after 1 year through 2 years	Due after 2 years through 3 years	Due after 3 years through 4 years	Due after 4 years through 5 years	Due after 5 years
(1) Short-term debt	¥ 71,895	¥ —	¥ —	¥ —	¥ —	¥ —
(2) Long-term debt	58,234	57,808	41,293	29,227	41,676	59,796
Total	¥130,129	¥57,808	¥41,293	¥29,227	¥41,676	¥59,796

Year ended December 31, 2015	Millions of yen					
	Due in 1 year or less	Due after 1 year through 2 years	Due after 2 years through 3 years	Due after 3 years through 4 years	Due after 4 years through 5 years	Due after 5 years
(1) Short-term debt	¥ 81,000	¥ —	¥ —	¥ —	¥ —	¥ —
(2) Long-term debt	59,386	53,068	51,228	48,454	16,599	59,100
Total	¥140,387	¥53,068	¥51,228	¥48,454	¥16,599	¥59,100

Year ended December 31, 2016	Thousands of U.S. dollars					
	Due in 1 year or less	Due after 1 year through 2 years	Due after 2 years through 3 years	Due after 3 years through 4 years	Due after 4 years through 5 years	Due after 5 years
(1) Short-term debt	\$ 617,176	\$ —	\$ —	\$ —	\$ —	\$ —
(2) Long-term debt	499,908	496,251	354,481	250,899	357,761	513,312
Total	\$1,117,085	\$496,251	\$354,481	\$250,899	\$357,761	\$513,312

## 8. SECURITIES

### (a) Available-for-sale securities

Year ended December 31, 2016	Millions of yen		
	Book value	Acquisition cost	Difference
Available-for-sale securities whose book value exceeds their acquisition cost			
Equity securities	¥24,315	¥14,341	¥ 9,974
Available-for-sale securities whose book value is less than their acquisition cost			
Equity securities	19,869	22,027	(2,158)
Total	¥44,184	¥36,368	¥ 7,816

Year ended December 31, 2015	Millions of yen		
	Book value	Acquisition cost	Difference
Available-for-sale securities whose book value exceeds their acquisition cost			
Equity securities	¥22,817	¥14,569	¥ 8,247
Available-for-sale securities whose book value is less than their acquisition cost			
Equity securities	20,622	21,755	(1,133)
Total	¥43,439	¥36,324	¥ 7,115

Year ended December 31, 2016	Thousands of U.S. dollars		
	Book value	Acquisition cost	Difference
Available-for-sale securities whose book value exceeds their acquisition cost			
Equity securities	\$208,733	\$123,110	\$ 85,623
Available-for-sale securities whose book value is less than their acquisition cost			
Equity securities	170,563	189,086	(18,523)
Total	\$379,296	\$312,197	\$ 67,100

### (b) Available-for-sale securities sold in the years ended December 31, 2016 and 2015:

Year ended December 31, 2016	Millions of yen		
	Sales	Gross gain	Gross loss
Equity securities	¥30	¥26	¥—
Total	¥30	¥26	¥—

Year ended December 31, 2015	Millions of yen		
	Sales	Gross gain	Gross loss
Equity securities	¥23,725	¥8,053	¥(1)
Total	¥23,725	¥8,053	¥(1)

Year ended December 31, 2016	Thousands of U.S. dollars		
	Sales	Gross gain	Gross loss
Equity securities	\$259	\$224	\$—
Total	\$259	\$224	\$—

### (c) Impairment of securities

For the years ended December 31, 2016 and 2015, the Companies recorded an impairment loss of ¥55 million (US\$473 thousand) on available-for-sale securities and ¥1,812 million on available-for-sale securities with fair market values, respectively.

Securities are deemed to be "substantially declined" when their fair values have declined 30% or more. When their fair values have declined 50% or more, the impairment losses are recorded on those securities. When their fair values have declined between 30% and 50%, the impairment losses are recorded on those securities unless such values are considered to be recoverable on an individual basis.

## 9. DERIVATIVE FINANCIAL INSTRUMENTS

### (a) Derivative Transactions to Which Hedge Accounting is Not Applied

	Millions of yen								Thousands of U.S. dollars			
	2016				2015				2016			
	Contract amount	Contract amount over 1 year	Fair value	Valuation gain (loss)	Contract amount	Contract amount over 1 year	Fair value	Valuation gain (loss)	Contract amount	Contract amount over 1 year	Fair value	Valuation gain (loss)
<b>(1) Currency related:</b>												
Forward exchange contracts:												
Buying												
U.S.Dollar	¥ 4	¥—	¥ (0)	¥ (0)	¥ —	¥—	¥ —	¥ —	\$ 36	\$ —	\$ (0)	\$ (0)
Selling												
U.S.Dollar	¥616	¥—	¥(39)	¥(39)	¥678	¥—	¥(14)	¥(14)	\$5,285	\$ —	\$ (335)	\$ (335)
Euro	42	—	(2)	(2)	31	—	1	1	357	—	(20)	(20)
<b>(2) Interest rate related:</b>												
Interest rate swaps:												
Receipt-variable rate/ Payment-fixed rate	¥442	¥—	¥ (1)	¥ (1)	¥5,291	¥529	¥(44)	¥(44)	\$3,796	\$ —	\$ (12)	\$ (12)

Note: Fair value calculation method:

Fair values of forward exchange contracts are stated by the forward exchange rates. Fair values of currency and interest rate swaps are measured at the quoted price obtained from the financial institutions.

### (b) Derivative Transactions to Which Hedge Accounting is Applied

	Millions of yen						Thousands of U.S. dollars		
	2016			2015			2016		
	Contract amount	Contract amount over 1 year	Fair value	Contract amount	Contract amount over 1 year	Fair value	Contract amount	Contract amount over 1 year	Fair value
<b>(1) Currency related:</b>									
<b>Principle method</b>									
Forward exchange contracts:									
Buying									
U.S.Dollar	¥ 8,680	¥ 1,250	¥ 154	¥ 6,748	¥ 1,034	¥ (10)	\$ 74,516	\$ 10,734	\$ 1,325
Euro	5	—	0	6	—	(0)	42	—	1
Selling									
U.S.Dollar	11,880	—	(842)	11,556	—	131	101,980	—	(7,229)
Euro	211	—	(5)	685	—	8	1,807	—	(44)
<b>Allocation method</b>									
Forward exchange contracts:									
Buying									
U.S.Dollar	¥16,157	¥ —	¥ —	¥ 6,533	¥ —	¥ —	\$138,696	\$ —	\$ —
Euro	3	—	—	6	—	—	29	—	—
Selling									
U.S.Dollar	13,307	—	—	9,745	—	—	114,237	—	—
Euro	1,567	—	—	2,906	—	—	13,450	—	—
Yuan Renminbi	1,296	—	—	103	—	—	11,122	—	—
Currency swaps:									
Receipt Yen									
Payment U.S.Dollar	¥10,400	¥10,400	¥ —	¥10,400	¥10,400	¥ —	\$ 89,278	\$ 89,278	\$ —
<b>(2) Interest rate related:</b>									
<b>Special method</b>									
Interest rate swaps:									
Receipt-variable rate/Payment-fixed rate	¥39,175	¥29,990	¥ —	¥65,606	¥52,356	¥ —	\$336,294	\$257,446	\$ —
<b>(3) Commodity related:</b>									
<b>Principle method</b>									
Aluminum forward contracts:									
Buying	¥23,470	¥16,392	¥1,118	¥13,923	¥ 6,131	¥(575)	\$201,473	\$140,719	\$9,599
Selling	1,792	—	(4)	1,556	—	(40)	15,385	—	(31)

# Notes to Financial Statements

## Showa Denko K.K. and Consolidated Subsidiaries

Notes: 1. Main items hedged by forward exchange contracts are accounts payable for buying, accounts receivable for selling and long-term debt by interest rate swaps. Main items hedged by aluminum forward transactions are aluminum metal transactions.

Notes: 2. Fair value calculation method:

Fair values of forward exchange contracts are stated by the forward exchange rates. Fair values of currency swaps are measured at the quoted price obtained from the financial institutions. Fair values of aluminum forward transactions are stated by forward quotations of the London Metal Exchange.

Notes: 3. Fair values of forward exchange contracts and currency swaps that meet allocation method criteria are reflected in the fair values of accounts receivable, accounts payable and debts of their hedged items.

Notes: 4. Fair values of interest rate swaps that meet special treatment criteria are reflected in the fair values of long-term debt of their hedged item.

## 10. EFFECT OF YEAR-END DATE ON FINANCIAL STATEMENTS

The year-end date of 2016, namely, December 31, 2016, was a bank holiday. Although notes receivable and payable maturing on this date were accordingly settled on January 4, 2017, the Companies accounted for those notes in their financial statements as if they had been settled on the maturity date.

Notes outstanding at December 31, 2016 and 2015 dealt with in the above-mentioned manner were as follows:

	Millions of yen		Thousands of U.S. dollars
	2016	2015	2016
Notes receivable	¥726	¥ 684	\$6,234
Notes payable	816	1,066	7,009

## 11. SHORT-TERM DEBT AND LONG-TERM DEBT

At December 31, 2016 and 2015, the short-term debt of the Companies consisted of the following:

	Millions of yen		Thousands of U.S. dollars
	2016	2015	2016
Bank loans at the average interest rate of 0.59%	¥66,895	¥69,000	\$574,254
Commercial paper	5,000	12,000	42,922
Total	¥71,895	¥81,000	\$617,176

At December 31, 2016 and 2015, the long-term debt of the Companies consisted of the following:

	Millions of yen		Thousands of U.S. dollars
	2016	2015	2016
0.67% bonds due 2016	¥ —	¥ 10,000	\$ —
0.63% bonds due 2017	10,000	10,000	85,844
0.63% bonds due 2021	15,000	15,000	128,766
0.20% bonds due 2021	10,000	—	85,844
0.734% bonds due 2022	10,000	10,000	85,844
0.50% bonds due 2026	7,000	—	60,091
Loans principally from banks and insurance companies due 2017 to 2074 at the average interest rate of 0.84%	236,035	242,835	2,026,222
	288,035	287,835	2,472,612
Less: current portion	(58,234)	(59,386)	(499,908)
Total	¥229,800	¥228,449	\$1,972,703

The aggregate annual maturities of the noncurrent portion of long-term debt were as follows:

Years ending December 31	Millions of yen	Thousands of U.S. dollars
2018	¥ 57,808	\$ 496,251
2019	41,293	354,481
2020	29,227	250,899
2021	41,676	357,761
2022 and thereafter	59,796	513,312
Total	¥229,800	\$1,972,703

At December 31, 2016 and 2015, the assets pledged as collateral for long-term debt were as follows:

	Millions of yen		Thousands of U.S. dollars
	2016	2015	2016
Assets pledged as collateral			
Investment securities	¥ 3,786	¥ 3,790	\$ 32,504
Property, plant and equipment, less accumulated depreciation	144,501	150,890	1,240,462
Total	¥148,288	¥154,681	\$1,272,967
Secured short-term debt and long-term debt			
Long-term debt (includes due within 1 year)	¥ 400	¥ 4	\$ 3,434
Notes and accounts payable-trade	121	137	1,039
Total	¥ 521	¥ 141	\$ 4,472

## 12. RETIREMENT BENEFITS

(a) Defined-benefit pension plan, includes the plans using the simplified method

(1) Reconciliation of opening and closing balance of retirement benefit obligation for the years ended December 31, 2016 and 2015 was as follows:

	Millions of yen		Thousands of U.S. dollars
	2016	2015	2016
Balance of retirement benefit obligation at the beginning of year	¥92,752	¥96,351	\$796,224
Cumulative effects of changes in accounting policies	—	(4,249)	—
Restated balance at the beginning of year	92,752	92,102	796,224
Service cost	2,346	2,335	20,143
Interest cost	657	757	5,637
Actuarial gain and loss	9,513	3,573	81,664
Retirement benefits paid	(6,824)	(6,037)	(58,580)
Past service cost	(686)	159	(5,889)
Increase from changes in scope of consolidation	1,378	—	11,829
Other	33	(136)	280
Balance of the retirement benefit obligation at the end of year	¥99,169	¥92,752	\$851,308

**(2) Reconciliation of opening and closing balance of plan assets for the years ended December 31, 2016 and 2015 was as follows:**

	Millions of yen		Thousands of U.S. dollars
	2016	2015	2016
Balance of plan assets at the beginning of year	¥77,587	¥74,256	\$666,041
Expected return on plan assets	1,634	1,477	14,024
Actuarial gain and loss	(1,021)	(629)	(8,763)
Contribution from employer	4,613	8,149	39,598
Retirement benefits paid	(6,695)	(5,632)	(57,473)
Increase from changes in scope of consolidation	1,458	—	12,516
Other	38	(34)	323
Balance of plan assets at the end of year	¥77,613	¥77,587	\$666,265

**(3) Reconciliation of the ending balance of retirement benefit obligations and plan assets, and the net defined benefit liability and the net defined benefit asset for the years ended December 31, 2016 and 2015 was as follows:**

	Millions of yen		Thousands of U.S. dollars
	2016	2015	2016
Funded retirement benefit obligations	¥95,994	¥89,877	\$824,058
Plan assets	(77,613)	(77,587)	(666,265)
	18,381	12,289	157,792
Unfunded retirement benefit obligations	3,176	2,877	27,264
Net amount of relevant liabilities and assets on the consolidated balance sheets	21,557	15,166	185,056
Net defined benefit liability	21,923	15,185	188,187
Net defined benefit asset	(365)	(19)	(3,131)
Net amount of relevant liabilities and assets on the consolidated balance sheets	21,557	15,166	185,056

**(4) Retirement benefit expenses and the components of the amounts thereof for the years ended December 31, 2016 and 2015 were as follows:**

	Millions of yen		Thousands of U.S. dollars
	2016	2015	2016
Service cost	¥2,346	¥2,335	\$20,143
Interest cost	657	757	5,637
Expected return on plan assets	(1,634)	(1,477)	(14,024)
Amortization of actuarial gain and loss	990	1,299	8,501
Amortization of past service cost	0	(695)	2
Retirement benefit expenses related to the defined-benefit pension plan	¥2,360	¥2,219	\$20,259

**(5) Remeasurements of defined benefit plans**

The components of items (before tax) reported under remeasurements of defined benefit plans for the years ended December 31, 2016 and 2015 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2016	2015	2016
Past service cost	¥ (102)	¥ 852	\$ (872)
Actuarial gain and loss	8,983	(1,224)	77,118
Total	¥8,882	¥ (372)	\$76,246

**(6) Accumulated remeasurements of defined benefit plans**

The components of items (before tax) reported under accumulated remeasurements of defined benefit plans for the years ended December 31, 2016 and 2015 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2016	2015	2016
Unrecognized past service cost	¥ (18)	¥ 83	\$ (157)
Unrecognized actuarial gain and loss	15,966	6,983	137,063
Total	¥15,948	¥7,066	\$136,907

**(7) Matters regarding plan assets**

**(i) Major content of the plan assets**

The percentages of major asset types that account for the total plan assets as of December 31, 2016 and 2015 were as follows:

	Ratio	
	2016	2015
Bonds	29 %	27 %
Stocks	44	44
General accounts of life insurance company	24	27
Cash and deposits	3	2
Total	100 %	100 %

**(ii) Method for setting the long-term rate of expected return on plan assets**

To determine the long-term rate of expected return on plan assets, the current and anticipated long-term yield rates of various assets that constitute the plan assets as well as the current and projected distribution of plan assets, have been taken into account.

**(8) Matters regarding the assumptions for actuarial calculations**

Key assumptions for actuarial calculations as of December 31, 2016 and 2015 were as follows:

	Ratio	
	2016	2015
Discount rate	Mainly 0.2%	Mainly 0.7%
Long-term rate of expected return on plan assets	Mainly 2.0%	Mainly 2.0%

**(b) Defined contribution pension plan**

The amounts required to be contributed by consolidated subsidiaries for the years ended December 31, 2016 and 2015 were ¥314 million (US\$2,696 thousand), and ¥362 million, respectively.

# Notes to Financial Statements

## Showa Denko K.K. and Consolidated Subsidiaries

### 13. INCOME TAXES

#### (a) At December 31, 2016 and 2015, significant components of deferred tax assets and liabilities were as follows:

	Millions of yen		Thousands of U.S. dollars
	2016	2015	2016
Deferred tax assets:			
Tax loss carryforwards	¥18,815	¥21,164	\$161,516
Write-down of marketable and investment securities	13,915	14,605	119,449
Allowance for doubtful accounts	5,079	7,221	43,596
Impairment loss	7,894	6,081	67,767
Net defined benefit liability	6,655	4,930	57,127
Depreciation and amortization	884	1,348	7,590
Loss on valuation of inventories	529	849	4,543
Unrealized earnings from the sale of fixed assets	693	765	5,947
Provision for bonuses	703	614	6,036
Deduction of foreign corporation tax carried forward	407	557	3,493
Undetermined accrued liabilities	753	462	6,464
Provision for repairs	869	461	7,463
Write-down of golf club memberships	352	363	3,020
Deferred gains or losses on hedges	131	171	1,125
Other	3,256	2,817	27,952
Subtotal of deferred tax assets	60,935	62,407	523,089
Valuation allowance	(41,653)	(44,240)	(357,567)
Total deferred tax assets	19,282	18,169	165,523
Deferred tax liabilities:			
Amount of revaluation from the book value	(3,524)	(3,649)	(30,252)
Valuation difference on available-for-sale securities	(2,498)	(2,322)	(21,446)
Foreign subsidiaries' undistributed retained earnings	(1,699)	(1,710)	(14,585)
Special depreciation reserve	(1,558)	(1,677)	(13,372)
Reserve for advanced depreciation of fixed assets	(158)	(183)	(1,359)
Other	(774)	(691)	(6,643)
Total deferred tax liabilities	(10,211)	(10,232)	(87,657)
Net deferred tax assets	¥ 9,071	¥ 7,937	\$ 77,865

#### (b) The net deferred tax assets at December 31, 2016 and 2015 were included in the consolidated balance sheets as follows:

	Millions of yen		Thousands of U.S. dollars
	2016	2015	2016
Deferred tax assets — current	¥4,092	¥3,029	\$35,129
Deferred tax assets — noncurrent	9,115	8,877	78,249
Other current liabilities	(95)	(95)	(819)
Deferred tax liabilities — noncurrent	(4,041)	(3,873)	(34,693)

#### (c) Significant items in the reconciliation of the normal income tax rate to the effective at December 31, 2016 and 2015 were as follows:

	2016	2015
Statutory tax rate	33.1 %	35.6 %
Consolidated adjustment for loss on valuation of investments in capital of subsidiaries and associates, etc.	(4.0)	(111.0)
Differences of statutory tax rate in subsidiaries	(5.8)	(2.5)
Effect on the reexamination of recoverability	(0.9)	256.3
Deferred taxes on undistributed earnings of foreign subsidiaries	(0.1)	4.5
Amortization of goodwill	(0.0)	7.5
Effects of changes in the effective statutory tax rate, etc.	1.2	57.4
Unrealized earnings from the sale of fixed assets	—	(7.8)
Other	(2.4)	(9.8)
Effective tax rate	21.1 %	230.2 %

Note: Amendments to the amount of deferred tax assets and deferred tax liabilities due to a change in the income tax rate.

The Law for Partial Revision of the Income Tax Law (Law No. 15 of 2016) and the Law for Partial Revision of the Local Tax Law (Law No. 13 of 2016) were enacted by the Japanese Diet on March 29, 2016, resulting in a reduction in the rates of corporate income taxes from consolidated fiscal years beginning on or after April 1, 2016. Accordingly, the effective statutory tax rate used to calculate deferred tax assets and deferred tax liabilities has changed from the previously applicable rate of 32.3% to 30.9% for temporary differences expected to be reversed in the consolidated fiscal years beginning on January 1, 2017 and January 1, 2018, and to 30.6% for temporary differences expected to be reversed in the consolidated fiscal years beginning on or after January 1, 2019.

Further, with respect to the deduction of tax loss carryforwards, the limits are applied to the amount corresponding to 60% of income before the deduction of said carryforwards for the fiscal year beginning on or after January 1, 2017, the amount corresponding to 55% of income before the deduction of said carryforwards for the fiscal year beginning on or after January 1, 2018, and the amount corresponding to 50% of income before the deduction of said carryforwards for the year beginning on or after January 1, 2019.

As a result of these changes, compared with the previous methods, deferred tax assets (net of deferred tax liabilities) decreased by ¥599 million (US\$5,139 thousand), remeasurements of defined benefit plans decreased by ¥262 million (US\$2,248 thousand), deferred gains or losses on hedges increased by ¥2 million (US\$19 thousand), valuation difference on available-for-sale securities increased by ¥25 million (US\$215 thousand), and income taxes—deferred increased by ¥314 million (US\$2,697 thousand) for the fiscal year ended December 31, 2016.

In addition, deferred tax liabilities for land revaluation decreased by ¥1,764 million (US\$15,141 thousand) and revaluation reserve for land increased by the same amount.

### 14. IMPAIRMENT LOSS

At December 31, 2016, major impairment losses on fixed assets were as follows:

Location	Major use	Asset category	Millions of yen	Thousands of U.S. dollars
Oyama City, Tochigi Prefecture	Production facilities	Land, etc.	¥ 7,743	\$ 66,468
Chichibu City Saitama Prefecture	Production facilities	Land, etc.	4,530	38,891
Hanam, Vietnam	Production facilities	Machinery and equipment, etc.	932	8,003
Hsinchu, Taiwan	Production facilities	Machinery and equipment, etc.	926	7,948
Johor, Malaysia	Production facilities	Construction in progress, etc.	594	5,096
Other			919	7,886
Total			¥15,644	\$134,291



## 15. CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)

Reclassification adjustments and tax effects for components of other comprehensive income (loss) for the year ended December 31, 2016, were as follows:

	Millions of yen	Thousands of U.S. dollars
Valuation difference on available-for-sale securities		
Increase during the year	¥ 686	\$ 5,893
Reclassification adjustments	—	—
Amount before income tax effect	686	5,893
Income tax effect	(171)	(1,464)
Total	516	4,429
Deferred gains or losses on hedges		
Increase during the year	¥ (95)	\$ (814)
Reclassification adjustments	10	83
Adjustments of acquisition cost of assets	994	8,533
Amount before income tax effect	909	7,802
Income tax effect	(280)	(2,403)
Total	629	5,399
Revaluation reserve for land		
Income tax effect	¥ 1,824	\$ 15,661
Foreign currency translation adjustments		
Increase during the year	¥(4,520)	\$ (38,803)
Reclassification adjustments	—	—
Amount before income tax effect	(4,520)	(38,803)
Income tax effect	—	—
Total	(4,520)	(38,803)
Remeasurements of defined benefit plans, net of tax		
Increase during the year	¥(9,872)	\$ (84,745)
Reclassification adjustments	990	8,499
Amount before income tax effect	(8,882)	(76,246)
Income tax effect	2,715	23,303
Total	(6,167)	(52,943)
Share of other comprehensive income of unconsolidated subsidiaries and affiliates accounted for using equity method		
Increase during the year	¥ 21	\$ 181
Reclassification adjustments	20	170
Total	41	350
Total other comprehensive income	¥(7,678)	\$ (65,907)

## 16. LEASES

### (a) Finance Leases as a Lessee

Finance lease transactions other than those involving transfer of ownership to the lessee

#### (1) Type of leased assets

- Tangible fixed assets: Principally equipment for manufacturing hard discs and steam-powered electric generation equipment (machinery and equipment)
- Intangible fixed assets: Software

#### (2) Method of depreciation

The depreciation method of leased assets is described in Note 2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (j) Leased Assets.

### (b) Operating Leases as a Lessee

At December 31, 2016 and 2015, assets leased under noncapitalized operating leases were as follows:

Future minimum lease payments for the remaining lease periods:

	Millions of yen		Thousands of U.S. dollars
	2016	2015	2016
Due within 1 year	¥ 301	¥ 332	\$ 2,584
Due over 1 year	2,460	1,560	21,118
Total	¥2,761	¥1,893	\$23,702

### (c) Operating Leases as a Lessor

At December 31, 2016 and 2015, noncancellable operating lease receivables for the remaining lease periods were as follows:

Future minimum lease receivables for the remaining lease periods:

	Millions of yen		Thousands of U.S. dollars
	2016	2015	2016
Due within 1 year	¥ 80	¥ 83	\$ 683
Due over 1 year	594	707	5,099
Total	¥674	¥790	\$5,782

## 17. CONTINGENT LIABILITIES

At December 31, 2016 and 2015, the Companies were guarantors for the borrowings below. The guarantees were principally for unconsolidated subsidiaries, affiliates and others.

	Millions of yen		Thousands of U.S. dollars
	2016	2015	2016
Guarantees	¥5,032	¥5,550	\$43,198

As the amounts include joint and several guarantors' portions as well as the Companies', the actual amounts that the Companies were contingently liable to pay were smaller than the above.

The amount for 2016 in the above table includes ¥3,963 million (US\$34,019 thousand) of guarantee liabilities for PT Indonesia Chemical Alumina (ICA; an equity method affiliate owned 20% by the Company). In addition to the guarantee liabilities, the Company has invested in and provided long-term loans to ICA as described below. ICA did not pay back a loan due on December 15, 2016 to a syndicate of banks, and ICA is negotiating with them about its request for rescheduling of debt. The above-mentioned amount of guarantee liabilities (¥3,963 million, or US\$34,019 thousand) is based on the Company's investment ratio of 20% in ICA, as agreed with the syndicate of banks.

	Millions of yen		Thousands of U.S. dollars
	2016	2015	2016
Investment securities	¥4,109		\$35,273
Long-term loans	¥6,889		\$59,138
Other	1,134		9,732
Total	¥8,023		\$68,870

## 18. NET ASSETS

The Corporation Law of Japan (the "Law") provides that the entire amount paid for new shares may be credited to the stated capital, with the provision that, by resolution of the Board of Directors,

# Notes to Financial Statements

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up to one-half of such amount paid for new shares may be credited to additional paid-in capital, which is included in capital surplus.

The Law provides that an amount equal to 10% of cash appropriations of retained earnings shall be set aside as additional paid-in capital or a legal earnings reserve until the total of such reserve and additional paid-in capital equals 25% of the stated capital. Additional paid-in capital and the legal earnings reserve may be used to eliminate or reduce a deficit, if any, or be capitalized by resolution at the Ordinary General Meeting of Shareholders. All additional paid-in capital and the legal earnings reserve may be transferred to other capital surplus and retained earnings, respectively, which are potentially available for dividends. Additional paid-in capital and the legal earnings reserve are included in capital surplus and retained earnings, respectively.

The Law does not have a definition about the classification of paid-in capital between common stock and preferred stock. Accordingly, the Company states its capital in the total amount paid by issuing common stock and preferred stock.

The maximum amount that the Company can distribute as dividends is calculated based on the unconsolidated financial statements of the Company in accordance with Japanese laws and regulations.

### 19. REVALUATION RESERVE FOR LAND

The Company and some of its consolidated subsidiaries revalued the land they own for business in accordance with the Law concerning Revaluation of Land. The difference between the revalued amount and the book value, after the deduction of applicable tax, is stated as a land revaluation reserve. The revaluation was conducted using methods stipulated in the ordinance for enforcement of the law, specifically, the method in Item 4 of Article 2 (Reasonable Adjustment of the Appraised Value Relating to Land Price Tax), and the method

in Item 5 of Article 2 (Estimation by Experts). The excess of the carrying amount of the revalued land over the market value at December 31, 2016 was ¥69,623 million (US\$597,676 thousand).

### 20. SELLING, GENERAL AND ADMINISTRATIVE EXPENSES

Selling, general and administrative expenses for the years ended December 31, 2016 and 2015 were summarized as follows:

	Millions of yen		Thousands of U.S. dollars
	2016	2015	2016
Freight	¥20,379	¥19,865	\$174,944
Employees' compensation	19,997	20,124	171,663
Other	43,735	48,287	375,437
Total	¥84,111	¥88,276	\$722,043

Research and development expenses included in selling, general and administrative expenses for the years ended December 31, 2016 and 2015 were ¥17,304 million (US\$148,545 thousand) and ¥20,270 million, respectively.

### 21. RESEARCH AND DEVELOPMENT

Research and development costs included in manufacturing costs, selling, general and administrative expenses for the years ended December 31, 2016 and 2015 were ¥17,313 million (US\$148,625 thousand) and ¥20,289 million, respectively.

### 22. PROVISION OF ALLOWANCE FOR DOUBTFUL ACCOUNTS

The provision of allowance for doubtful accounts by consolidated subsidiary Shoko Co., Ltd. and its subsidiary Shoko (Shanghai) Co., Ltd. was against receivables from Chinese steel-related manufacturing groups, etc.

### 23. SEGMENT INFORMATION

#### (a) Information about sales, operating income, assets, and other items by reportable segment

Year ended December 31, 2016	Millions of yen								Adjustments	Consolidated
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Total			
Sales										
Outside customers	¥180,178	¥118,433	¥102,053	¥ 43,776	¥ 90,715	¥136,004	¥671,159	¥ —	¥671,159	
Inter-segment	5,605	16,096	1,286	7,094	7,860	6,359	44,301	(44,301)	—	
Total	185,783	134,529	103,339	50,870	98,575	142,364	715,459	(44,301)	671,159	
Operating income (loss)	¥ 20,690	¥ 13,824	¥ 13,907	¥ (5,758)	¥ 4,416	¥ 1,775	¥ 48,855	¥ (6,802)	¥ 42,053	
Assets	¥135,411	¥205,555	¥133,094	¥152,976	¥148,415	¥174,146	¥949,598	¥(16,900)	¥932,698	
Depreciation and amortization	5,715	7,350	11,711	4,087	5,678	2,835	37,377	1,384	38,761	
Amortization of goodwill	—	(261)	12	8	228	1	(11)	—	(11)	
Investments in unconsolidated subsidiaries and affiliates	10,793	2,167	—	5,820	—	288	19,067	—	19,067	
Increase in property, plant and equipment and intangible assets	3,397	12,937	6,390	8,221	5,193	2,292	38,430	846	39,276	

Notes: 1. Adjustments are as follows:

- (1) Elimination of intersegment transactions of ¥145 million (US\$1,245 thousand) and total corporate expenses of ¥6,657 million (US\$57,147 thousand) which were not allocated to any reportable segment were included in "Adjustments" for "Operating income" of ¥(6,802) million (US\$(58,390) thousand). Total corporate expenses principally consist of total corporate common research expenses which are not attributable to any reportable segment.

(2) Elimination of intersegment receivables and payables and assets of ¥(58,323) million (US\$500,670 thousand) and total corporate assets of ¥41,422 million (US\$355,584 thousand) which were not allocated to any reportable segment were included in "Adjustments" for "Assets" of ¥(16,900) million (US\$(145,081) thousand). Total corporate assets principally consist of surplus funds of the Companies under management (in the form of cash and deposits), deferred tax assets and assets related to total corporate common research and development expenses.

Notes: 2. Amortization of negative goodwill was included in "Amortization of goodwill."

Year ended December 31, 2015	Millions of yen								
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Total	Adjustments	Consolidated
<b>Sales</b>									
Outside customers	¥226,442	¥130,150	¥129,759	¥ 55,223	¥ 93,377	¥140,781	¥775,732	¥ —	¥775,732
Inter-segment	4,846	12,142	1,733	8,253	7,380	6,452	40,805	(40,805)	—
<b>Total</b>	<b>231,288</b>	<b>142,292</b>	<b>131,492</b>	<b>63,476</b>	<b>100,756</b>	<b>147,233</b>	<b>816,537</b>	<b>(40,805)</b>	<b>775,732</b>
Operating income (loss)	¥ 10,543	¥ 10,707	¥ 17,472	¥ (1,249)	¥ 2,563	¥ 1,329	¥ 41,365	¥ (7,857)	¥ 33,508
<b>Assets</b>									
Assets	¥120,242	¥198,359	¥146,590	¥152,814	¥155,180	¥178,711	¥951,896	¥(11,402)	¥940,494
Depreciation and amortization	5,752	7,569	13,964	4,132	6,042	2,863	40,322	1,815	42,137
Amortization of goodwill	—	(273)	12	1,354	256	4	1,354	—	1,354
Investments in unconsolidated subsidiaries and affiliates	14,230	2,538	—	6,486	—	232	23,486	—	23,486
Increase in property, plant and equipment and intangible assets	1,969	10,345	11,130	10,218	6,135	2,369	42,166	1,893	44,059

Notes: 1. Adjustments are as follows:

(1) Elimination of intersegment transactions of ¥220 million (US\$1,827 thousand) and total corporate expenses of ¥8,077 million (US\$66,971 thousand) which were not allocated to any reportable segment were included in "Adjustments" for "Operating income" of ¥(7,857) million (US\$(65,143) thousand). Total corporate expenses principally consist of total corporate common research expenses which are not attributable to any reportable segment.

(2) Elimination of intersegment receivables and payables and assets of ¥(46,544) million (US\$385,905 thousand) and total corporate assets of ¥35,142 million (US\$291,369 thousand) which were not allocated to any reportable segment were included in "Adjustments" for "Assets" of ¥(11,402) million (US\$(94,537) thousand). Total corporate assets principally consist of surplus funds of the Companies under management (in the form of cash and deposits), deferred tax assets and assets related to total corporate common research and development expenses.

Notes: 2. Amortization of negative goodwill was included in "Amortization of goodwill."

Year ended December 31, 2016	Thousands of U.S. dollars								
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Total	Adjustments	Consolidated
<b>Sales</b>									
Outside customers	\$1,546,726	\$1,016,676	\$ 876,065	\$ 375,790	\$ 778,738	\$1,167,517	\$5,761,512	\$ —	\$5,761,512
Inter-segment	48,115	138,178	11,040	60,898	67,474	54,592	380,296	(380,296)	—
<b>Total</b>	<b>1,594,841</b>	<b>1,154,854</b>	<b>887,105</b>	<b>436,688</b>	<b>846,211</b>	<b>1,222,110</b>	<b>6,141,808</b>	<b>(380,296)</b>	<b>5,761,512</b>
Operating income (loss)	\$ 177,613	\$ 118,674	\$ 119,387	\$ (49,432)	\$ 37,910	\$ 15,241	\$ 419,394	\$ (58,389)	\$ 361,005
<b>Assets</b>									
Assets	\$1,162,426	\$1,764,572	\$1,142,540	\$1,313,215	\$1,274,058	\$1,494,947	\$8,151,756	\$(145,081)	\$8,006,676
Depreciation and amortization	49,063	63,100	100,536	35,086	48,741	24,335	320,861	11,880	332,741
Amortization of goodwill	—	(2,238)	101	72	1,959	9	(97)	—	(97)
Investments in unconsolidated subsidiaries and affiliates	92,648	18,602	—	49,959	—	2,468	163,677	—	163,677
Increase in property, plant and equipment and intangible assets	29,161	111,057	54,854	70,570	44,581	19,675	329,898	7,260	337,158

## (b) Information about geographical areas

Year ended December 31, 2016	Millions of yen			
	Japan	Asia	Others	Total
Sales	¥430,639	¥208,626	¥31,893	¥671,159

Year ended December 31, 2015	Millions of yen			
	Japan	Asia	Others	Total
Sales	¥474,402	¥258,932	¥42,398	¥775,732

Year ended December 31, 2016	Thousands of U.S. dollars			
	Japan	Asia	Others	Total
Sales	\$3,696,793	\$1,790,936	\$273,783	\$5,761,512

Year ended December 31, 2016	Millions of yen		
	Japan	Others	Total
Property, plant and equipment	¥410,099	¥77,035	¥487,135

Year ended December 31, 2015	Millions of yen		
	Japan	Others	Total
Property, plant and equipment	¥414,540	¥87,753	¥502,293

Year ended December 31, 2016	Thousands of U.S. dollars		
	Japan	Others	Total
Property, plant and equipment	\$3,520,469	\$661,304	\$4,181,773

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## Showa Denko K.K. and Consolidated Subsidiaries

### (c) Information about impairment loss on property, plant and equipment by reportable segment

Year ended December 31, 2016	Millions of yen							Total
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Elimination	
Impairment loss on assets	¥31	¥210	¥6,401	¥ 133	¥8,569	¥299	¥—	¥15,644

Year ended December 31, 2015	Millions of yen							Total
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Elimination	
Impairment loss on assets	¥12	¥ 60	¥1,955	¥6,180	¥2,092	¥380	¥—	¥10,678

Year ended December 31, 2016	Thousands of U.S. dollars							Total
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Elimination	
Impairment loss on assets	\$266	\$1,802	\$54,949	\$1,142	\$73,562	\$2,571	\$—	\$134,291

### (d) Information about amortization of goodwill and unamortized balance by reportable segment

Year ended December 31, 2016	Millions of yen							Total
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Elimination	
Amortization	¥—	¥ 47	¥ 44	¥ 8	¥ 282	¥ 29	¥—	¥ 411
Unamortized balance	—	232	332	55	3,006	175	—	3,801

Year ended December 31, 2015	Millions of yen							Total
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Elimination	
Amortization	¥—	¥ 35	¥ 44	¥1,354	¥ 316	¥ 32	¥—	¥1,782
Unamortized balance	—	294	376	63	3,494	202	—	4,429

Year ended December 31, 2016	Thousands of U.S. dollars							Total
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Elimination	
Amortization	\$—	\$ 405	\$ 380	\$ 72	\$ 2,419	\$ 251	\$—	\$ 3,528
Unamortized balance	—	1,993	2,852	470	25,809	1,504	—	32,628

Amortization of negative goodwill arose from business combinations prior to April 1, 2010 and its unamortized balance are as follows:

Year ended December 31, 2016	Millions of yen							Total
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Elimination	
Amortization	¥—	¥ 308	¥ 33	¥—	¥ 54	¥ 28	¥—	¥ 422
Unamortized balance	—	2,396	358	—	593	259	—	3,606

Year ended December 31, 2015	Millions of yen							Total
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Elimination	
Amortization	¥—	¥ 308	¥ 33	¥—	¥ 60	¥ 28	¥—	¥ 429
Unamortized balance	—	2,704	390	—	647	288	—	4,028

Year ended December 31, 2016	Thousands of U.S. dollars							Total
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Elimination	
Amortization	\$—	\$ 2,643	\$ 279	\$—	\$ 460	\$ 243	\$—	\$ 3,626
Unamortized balance	—	20,568	3,071	—	5,092	2,226	—	30,956

## 24. RELATED PARTY INFORMATION

### (a) Related party transactions

The information for the fiscal years ended December 31, 2016 and 2015 was not disclosed because there were no significant transactions with related parties.

### (b) Summary financial statements of significant affiliates

A significant affiliate as of December 31, 2016 was Japan Polyethylen corporation., and summary of its financial statements was as follows;

	Millions of yen	Thousands of U.S. dollars
Balance Sheet		
Total current assets	¥ 41,536	\$ 356,563
Total noncurrent assets	14,161	121,564
Total current liabilities	32,348	277,689
Total noncurrent liabilities	262	2,249
Total net assets	23,087	198,189
Statement of Income		
Net sales	122,702	1,053,326
Income before income taxes	12,027	103,245
Net income	8,503	72,993

A significant affiliate as of December 31, 2015 was Union Showa K.K., and summary of its financial statements was as follows;

	Millions of yen	Thousands of U.S. dollars
Balance Sheet		
Total current assets	¥ 4,187	\$ 34,715
Total noncurrent assets	1,275	10,570
Total current liabilities	1,482	12,284
Total noncurrent liabilities	11	93
Total net assets	3,969	32,908
Statement of Income		
Net sales	16,910	140,206
Income before income taxes	3,723	30,866
Net income	2,518	20,877



## Independent Auditor's Report

To the Board of Directors of Showa Denko K.K.:

We have audited the accompanying consolidated financial statements of Showa Denko K.K. and its consolidated subsidiaries, which comprise the consolidated balance sheets as at December 31, 2016 and 2015, and the consolidated statements of income and comprehensive income, statements of changes in net assets and statements of cash flows for the years then ended, and a summary of significant accounting policies and other explanatory information.

### **Management's Responsibility for the Consolidated Financial Statements**

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with accounting principles generally accepted in Japan, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

### **Auditor's Responsibility**

Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in Japan. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on our judgement, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the entity's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, while the objective of the financial statement audit is not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

### **Opinion**

In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of Showa Denko K.K. and its consolidated subsidiaries as at December 31, 2016 and 2015, and their financial performance and cash flows for the years then ended in accordance with accounting principles generally accepted in Japan.

### **Convenience Translation**

The U.S. dollar amounts in the accompanying consolidated financial statements with respect to the year ended December 31, 2016 are presented solely for convenience. Our audit also included the translation of yen amounts into U.S. dollar amounts and, in our opinion, such translation has been made on the basis described in Note 5 to the consolidated financial statements.

KPMG AZSA LLC

KPMG AZSA LLC  
June 7, 2017  
Tokyo, Japan

KPMG AZSA LLC, a limited liability audit corporation incorporated under the Japanese Certified Public Accountants Law and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity.

## Major Subsidiaries and Affiliates *(As of December 31, 2016)*

### Subsidiaries

Name	Ownership (%)*	Main Product(s) or Business(es)
SunAllomer Ltd.	65.0	Polypropylene and advanced polypropylene-based materials
Showa Denko Gas Products Co., Ltd.	100.0	Liquefied carbon dioxide, dry ice, industrial gases, etc.
Shanghai Showa Highpolymer Co., Ltd.	98.4	Plastics and molding compounds
Showa Denko HD Singapore Pte. Ltd.	100.0	Hard disks
Showa Denko HD Trace Corporation	99.4	Hard disks, aluminum substrates for hard disks
Showa Denko HD Yamagata K.K.	100.0	Hard disks
Showa Denko Carbon, Inc.	100.0	Graphite electrodes
Showa Denko Sichuan Carbon Inc.	67.0	Graphite electrodes
Showa Aluminum Can Corporation	100.0	Beer and soft drink cans
Hanacans Joint Stock Company	91.8	Beer and soft drink cans
SHOTIC MALAYSIA SDN. BHD.	100.0	Aluminum casting products
Shoko Co., Ltd.** (T8090)	44.0	General trading
Showa Denko Packaging Co., Ltd.	100.0	Aluminum laminated film for LIB packaging, packaging/containers for food and medicine
Showa Denko Kenzai K.K.	100.0	Plaster materials, fireproofing pipe etc.

\* Proportion of ownership interest (direct or indirect) by Showa Denko K.K. and its subsidiaries in terms of the number of shares with exercisable voting rights

\*\* Tokyo Stock Exchange listed company

As of December 31, 2016, Showa Denko K.K. had 48 consolidated subsidiaries, including the above.

### Affiliates

Name	Equity Participation (%)	Main Product(s) or Business(es)
Japan Polyethylene Corporation	42.0	High- and low-density polyethylene
Union Showa K.K.	50.0	Molecular sieves

As of December 31, 2016, Showa Denko K.K. had 12 subsidiaries or affiliates to which the equity method was applied, including the above.

## Investor Information

### Head Office

#### Showa Denko K.K.

13-9, Shiba Daimon 1-chome, Minato-ku, Tokyo 105-8518, Japan  
 URL: <http://www.sdk.co.jp/english>  
 Phone: +81-3-5470-3235  
 Fax: +81-3-3431-6215  
 E-mail: [sd\\_k\\_prir@showadenko.com](mailto:sd_k_prir@showadenko.com)

### Ordinary General Meeting

The Ordinary General Meeting of Shareholders was held on March 30, 2017.

### Shareholders (Top 10) (At December 31, 2016)

Shareholder	Number of Shares Held (in thousands)	Rate of Shareholding (%)
The Master Trust Bank of Japan Ltd. (T)	6,516	4.56
Japan Trustee Services Bank Ltd. (T)	5,554	3.89
Fukoku Mutual Life Insurance Company	5,517	3.86
Japan Trustee Services Bank Ltd. (T9)	4,512	3.16
The Dai-ichi Life Insurance Company Limited	3,600	2.52
STATE STREET BANK AND TRUST COMPANY	3,110	2.18
Sompo Japan Nipponkoa Insurance Inc.	3,007	2.11
Meiji Yasuda Life Insurance Company	2,645	1.85
Showa Denko Employee Shareholding Association	2,544	1.78
Nippon Life Insurance Company	2,006	1.40

Note: Each rate of shareholding was calculated after deducting the number of treasury shares (6,893 thousand) from the number of shares outstanding.

### Number of Shares Outstanding

149,711,292 at December 31, 2016

SDK consolidated every ten shares of its common stock into one share on July 1, 2016.

### Number of Shareholders

79,064 at December 31, 2016

### Classification of Stock

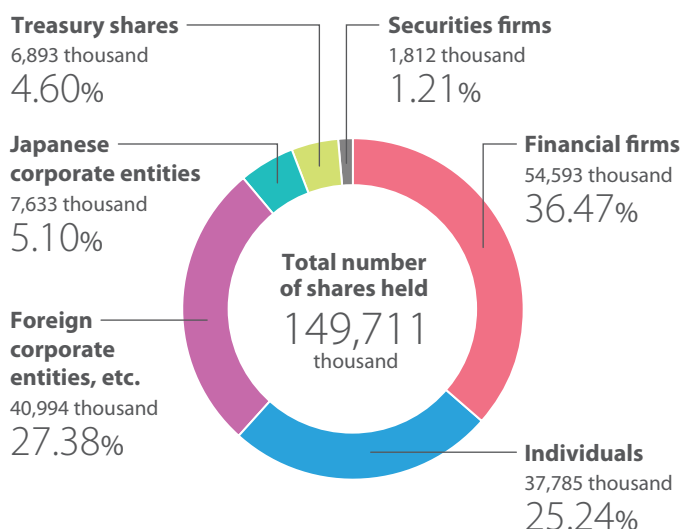
All stock issued by Showa Denko is common stock.

### Stock Transfer Agent

Mizuho Trust & Banking Co., Ltd.

2-1, Yaesu 1-chome, Chuo-ku, Tokyo 103-8670, Japan

### Shareholders by Sector (At December 31, 2016)



## Commercial Subsidiaries Abroad (As of December 31, 2016)

### Showa Denko America, Inc.

420 Lexington Avenue, Suite #2335A,  
 New York, NY 10170, U.S.A.  
 Phone: +1-212-370-0033  
 Fax: +1-212-370-4566

### Showa Denko Europe GmbH

Konrad-Zuse-Platz 3,  
 81829 Munich, Germany  
 Phone: +49-89-939-9620  
 Fax: +49-89-939-96250

### Showa Denko Singapore (Pte.) Ltd.

2 Shenton Way #15-03/04, SGX Centre 1,  
 Singapore 068804  
 Phone: +65-6223-1889  
 Fax: +65-6223-6007

### Showa Denko (Shanghai) Co., Ltd.

18F, Wang-Wang Building No. 211, Shimen Yi Road,  
 Shanghai, 200041, People's Republic of China  
 Phone: +86-21-6217-5000  
 Fax: +86-21-6217-9840

## Delay in Announcement of 2016 Financial Results and Other Related Documents

SDK released the consolidated financial results for the year ended December 2016 on April 25, 2017, originally scheduled to be released on February 14, 2017. This delay was caused by the need to investigate details of transactions between BE International Corporation (BE, a subsidiary of Shoko Co., Ltd.) and a specific customer. Shoko Co., Ltd. (Shoko) is a consolidated subsidiary of SDK.

Shoko established the Special Examination Committee, including outside experts, to review the issue from a professional, objective viewpoint, and they made an enormous effort to find the facts. Later, the Special Examination Committee reported the results of their examination to the management of Shoko, and Shoko disclosed the report on April 17, 2017. In their report, the committee concluded that the subject of the transactions had no substance, that none of the officers or employees of Shoko or BE knew about the nonexistence of the subject of the transactions, that the transactions were only the circulation of funds, and that there were no similar transactions at Shoko or its subsidiaries.

SDK amended the accounting for those transactions as normal commercial transactions, which had been posted as sales, then submitted an annual securities report for the 108th business term with amended prior-year annual securities reports to the Kanto Local Finance Bureau on April 25, 2017. On the same day, SDK also disclosed the 2016 financial statements and the amended prior-year financial statements. Earlier, SDK had applied to the Kanto Local Finance Bureau for an extension of the deadline for releasing its annual securities report for the 108th business term and gained approval for the extension with a new deadline: May 1, 2017.

Under these circumstances, SDK could not report business results and consolidated financial statements for the fiscal year ended December 2016 at the 108th ordinary general meeting of shareholders held on March 30, 2017. This meeting was based on the record date of December 31, 2016. Accordingly, the Company's executives chose not to issue a year-end dividend. SDK will have an extraordinary general meeting of shareholders on June 27, 2017, based on the record date of May 11, 2017. The Company will submit a business report, consolidated financial statements, and other related documents for the fiscal year ended December 2016, and is proposing to pay a dividend of ¥30 per share.

We sincerely apologize for any inconvenience caused to our shareholders, investors, and other stakeholders.

SDK will give its full support to formulating and implementing specific measures to prevent a recurrence of this and similar problems, which will be done by Shoko as early as possible. As well, the Company recognizes reinforcing group-wide risk management as an urgent task and will further strengthen internal controls within the Showa Denko Group.





**SHOWA DENKO K.K.**  
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