ACHIEVING SUSTAINABLE GROWTH THROUGH INNOVATION

ANNUAL REPORT 2019

Our Mission

We will satisfy all stakeholders

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.

SHOWA DENKO

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 such as graphite electrodes and other commodities, 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.

Profile

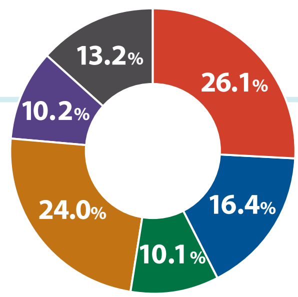
Showa Denko K.K. (SDK) was founded in 1939. Ranked as one of Japan's leading chemical companies, SDK operates in six major segments: petrochemicals, chemicals, electronics, inorganics, aluminum, and others.

The Showa Denko Group noticed high potential for abundant hydro power, a major resource in Japan. The Group began by focusing on the promising future of the electrochemical industry, which can make the most of hydroelectric power, and expanded business domains to cover inorganic chemicals, organic chemicals, and metallic materials. Today, the Group is a unique chemical manufacturer that supplies petrochemicals, chemicals, electronics, inorganics, and aluminum. In these fields, SDK produces a broad spectrum of materials and parts, and has wide-ranging technologies. By taking advantage of this uniqueness as well as by deepening and fusing our inorganic, metal, and organic technologies, we will produce excellent *Koseiha* products, aiming to become a "social contribution company" that helps to create a society where wealth and sustainability are harmonized.

The Group will strengthen earning power and reduce fluctuations in income by promoting The TOP 2021 medium-term business plan, which was launched in January 2019, by enhancing the value of the Group, and by establishing a stable foundation that will always support the Group's growth far into the future.

The Group 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 2019 **¥906.5 billion**

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

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

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), electronic chemicals (high-purity gases for electronics), and coating materials

Electronics
Hard disks (HDs), SiC epitaxial wafers for power devices, compound semiconductors (LED chips), and lithium-ion battery (LIB) materials

Inorganics
Graphite electrodes and ceramics (alumina, abrasives, and ultrafine titanium oxide)

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

Others
Building materials and general trading

See pages 8-9 for Business Segments.

About Annual Report 2019

This report mainly covers the Showa Denko Group's financial information such as business strategies, outline of businesses, and financial results.
PDF and online versions of this report are available on the Web.
https://www.sdk.co.jp/english/ir/library/annual.html

In addition, various materials which help you understand the Group are available on our website. The latest information is also available.

IR Information **https://www.sdk.co.jp/english/ir.html**
Financial statements (annual, quarterly), corporate performance (performance forecasts and performance trends), and stock price information are available at this site. Taking advantage of the latest technology, we offer interactive charts enabling you to see charts of indicators that you choose.

ESG Information **https://www.sdk.co.jp/english/csr.html**
At this site, you can see our measures and performance data for environment (E), social (S), and governance (G).

We issue the integrated report *SHOWA DENKO REPORT* covering the general outline of the Showa Denko Group and annual major topics. PDF and HTML versions of the above are available on the Web.

Our Strengths

Showa Denko has many products maintaining high world market shares.
Some of our high-priority products in our business segments are shown here.

Chemicals

High-purity gases for electronics

The world's largest manufacturer of specialty gases, such as C_4F_6, HBr, Cl_2, NH_3

High-purity gases for electronics are used as etching and cleaning gases as well as materials for making the membranes necessary for producing electronic devices, including semiconductors, LCD panels, and solar batteries.

In 2020, we decided to establish the second plant in Shanghai to make high-purity nitrous oxide (N_2O) with annual production capacity of 1,000 tons and high-purity octafluorocyclobutane (C_4F_8) with annual production capacity of 600 tons. The new plant will start operating in the second half of 2021. In addition, we will establish a new production line in Taiwan to produce high-purity C_4F_6 with annual production capacity of 150 tons. Startup of operations of the new line is scheduled for the spring of 2020.

Electronics

HD media

The world's largest independent manufacturer

HD media, one of the major parts of hard disk drives (HDDs), are used in notebook PCs and consumer electronics. Demand is expected to continue growing for use in largescale data centers. We are developing next-generation recording technologies for HDDs, including microwave-assisted magnetic recording (MAMR) technology and heat-assisted magnetic recording (HAMR) technology. We started shipments of our newly developed 3.5-inch MAMR HD media in 2019 and have developed technology to manufacture HAMR HD media in 2020. HD media have a significant effect on HDD storage capacity. We will continue contributing to the expansion of storage capacities of HDDs using our motto "Best in Class."

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. In 2019, we developed a second generation of high-grade SiC epitaxial wafers (HGE-2G) for power semiconductors.

Aluminum laminated film for LIB packaging

The second largest manufacturer in the world

We provide packaging materials for pouch lithium-ion batteries (LIBs) used in smartphones and tablet PCs. Demand for pouch LIBs is growing due to their advantages, such as high levels of heat dissipation and flexibility in molding.

Inorganics

Graphite electrodes

The world's largest manufacturer

Graphite electrodes are used in electric arc furnaces for steel production. In 2017, we acquired a German graphite electrode company. We now have graphite electrode production bases in Europe and Southeast Asia, in addition to our existing bases in Japan, the United States, and China, and became the leading supplier in the global graphite electrode industry. We are investing in plants and equipment to improve product quality and to realize the effect of business integration as soon as possible, in this way strengthening the competitiveness of our graphite electrodes.

Aluminum

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.

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.

We have been expanding our aluminum can business in Vietnam and Thailand, focusing on the rapidly growing Southeast Asian market. In 2019, we decided to establish our third plant in Vietnam (in the southern part of the country) and we expanded the capacity of can-end production lines in the existing factory in northern Vietnam. The Group will have three plants to cover all of Vietnam with the capacity to produce 3.3 billion sets of can bodies and can ends per year. The new facilities are scheduled to start production in July 2020.

Note: The worldwide or global market positions shown on this page are SDK's estimates.

Contents

Consolidated 11-Year Summary

Financial Highlights

Showa Denko K.K. and Consolidated Subsidiaries	Millions of yen					
December 31	2009	2010 (Note 2)	2011 (Note 2)	2012	2013	2014
For the year						
Net sales	¥678,204	¥797,189	¥854,158	¥739,675	¥847,803	¥ 872,785
Petrochemicals	235,999	199,590	250,396	190,939	286,732	281,400
Chemicals	91,887	133,578	130,203	127,252	130,402	138,695
Electronics	127,807	147,988	165,011	163,306	136,548	138,537
Inorganics	53,711	77,958	77,564	65,573	65,919	67,557
Aluminum	168,799	130,084	124,280	92,194	90,369	97,946
Others	—	154,084	150,583	135,280	176,516	191,610
Adjustments	—	(46,093)	(43,879)	(34,870)	(38,684)	(42,959)
Operating income	(4,983)	38,723	47,357	28,108	25,953	20,551
Petrochemicals	7,992	2,278	3,484	(977)	4,398	(4,930)
Chemicals	446	5,618	2,035	(875)	2,559	5,460
Electronics	(9,775)	14,909	30,242	32,311	21,940	25,770
Inorganics	3,603	10,085	9,640	2,954	(838)	(300)
Aluminum	(4,217)	8,543	6,212	1,581	5,845	2,999
Others	—	2,041	1,860	89	(626)	(1,041)
Adjustments	(3,032)	(4,752)	(6,116)	(6,975)	(7,324)	(7,406)
Net income attributable to owners of the parent	(37,981)	12,706	16,980	9,368	9,065	2,929
Net cash provided by operating activities	19,846	66,293	69,437	53,310	63,565	66,996
Net cash provided by (used in) investing activities	(26,595)	(49,074)	(38,671)	(41,741)	(55,203)	(46,876)
Free cash flow	(6,749)	17,218	30,766	11,569	8,362	20,120
R&D expenditures	20,743	20,670	21,597	20,633	20,435	20,362
Capital expenditures	38,666	58,035	38,794	42,503	44,370	47,318
Depreciation and amortization	54,178	50,678	49,413	46,232	39,779	40,673
At year-end						
Total assets	958,303	924,484	941,303	933,162	985,771	1,009,843
Total net assets	286,722	284,965	295,745	314,966	345,811	319,087
Interest-bearing debt	373,911	351,034	347,308	342,262	353,686	383,124
Debt/equity ratio (gross, times)	1.30	1.23	1.17	1.09	1.02	1.20
	Yen					
Per share (Note 4)						
Net income—primary (Note 5)	¥ (29.44)	¥ 8.49	¥ 11.35	¥ 6.26	¥ 6.06	¥ 1.99
Net income—fully diluted (Note 5)	—	—	11.20	—	—	—
Net assets	163.11	161.47	168.33	182.24	201.27	209.76
Cash dividends (applicable to the period) (Note 6)	3.00	3.00	3.00	3.00	3.00	3.00
Number of employees at year-end	11,564	11,597	11,542	9,890	10,234	10,577

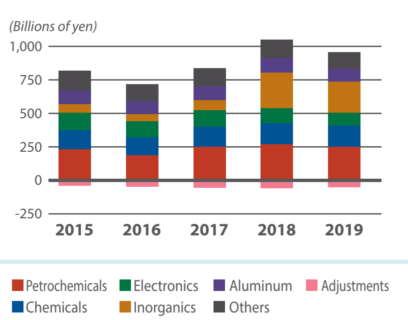
Notes: 1. Yen amounts have been translated into U.S. dollars, for convenience only, at the rate of ¥109.56 to US$1.00, the approximate rate of exchange at December 31, 2019.

2. Changing the segmentation

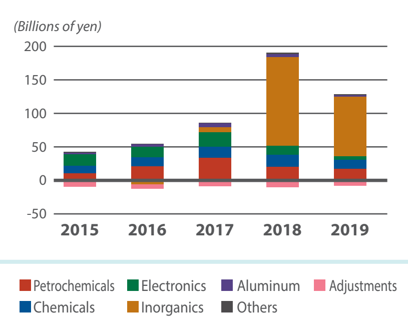
Effective from the year ended December 31, 2011, the Companies have applied "Accounting Standard for Disclosures about Segments of an Enterprise and Related Information" (Accounting Standards Board of Japan (ASBJ) Statement No.17, issued on June 30, 2010) and "Guidance on the Accounting Standard for Disclosures about Segments of an Enterprise and Related Information" (ASBJ Guidance No. 20, issued on March 21, 2008). The segment information for the year ended December 31, 2010, which is restated under the accounting standard, is disclosed for comparison purposes.

LIB materials was transferred from "Others" to "Electronics" from the year ended December 31, 2017. The segment information for the year ended December 2016 in the above table are based on the new segmentation. SiC epitaxial wafers for power devices was also transferred from "Others" to " "Electronics" from the year ended December 31, 2019. The segment information for the year ended December 2018 in the above table are based on the new segmentation.

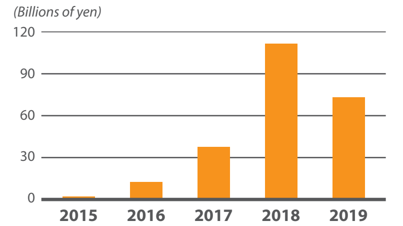
Net Sales by Segment



Operating Income by Segment



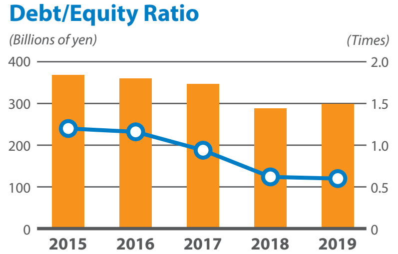
Net Income Attributable to Owners of the Parent



Showa Denko K.K. and Consolidated Subsidiaries			Millions of yen			Thousands of U.S. dollars (Note 1)
December 31	2015	2016 (Note 2)	2017 (Note 3)	2018 (Note 2)	**2019**	
For the year						
Net sales	¥775,732	¥671,159	¥ 780,387	¥ 992,136	**¥ 906,454**	**$8,273,583**
Petrochemicals	231,288	185,783	251,128	268,879	**250,678**	**2,288,046**
Chemicals	142,292	134,529	148,758	156,541	**157,480**	**1,437,386**
Electronics	131,492	120,461	123,064	111,912	**96,445**	**880,295**
Inorganics	63,476	50,870	73,442	266,149	**230,135**	**2,100,536**
Aluminum	100,756	98,575	105,439	108,254	**97,542**	**890,308**
Others	147,233	128,740	133,624	137,324	**126,163**	**1,151,542**
Adjustments	(40,805)	(47,800)	(55,067)	(56,922)	**(51,989)**	**(474,529)**
Operating income	33,508	42,053	77,708	180,003	**120,798**	**1,102,574**
Petrochemicals	10,543	20,690	33,357	20,333	**17,201**	**156,997**
Chemicals	10,707	13,824	16,474	17,393	**13,656**	**124,644**
Electronics	17,472	15,015	21,925	13,557	**4,880**	**44,540**
Inorganics	(1,249)	(5,758)	6,979	132,445	**89,256**	**814,673**
Aluminum	2,563	4,416	6,697	4,942	**1,746**	**15,939**
Others	1,329	623	633	1,734	**1,819**	**16,602**
Adjustments	(7,857)	(6,758)	(8,357)	(10,400)	**(7,759)**	**(70,821)**
Net income attributable to owners of the parent	921	12,305	37,404	111,503	**73,088**	**667,108**
Net cash provided by operating activities	61,170	68,949	67,235	149,785	**78,554**	**716,991**
Net cash provided by (used in) investing activities	(42,497)	(53,754)	(29,866)	(49,338)	**(48,156)**	**(439,542)**
Free cash flow	18,674	15,195	37,369	100,447	**30,397**	**277,449**
R&D expenditures	20,289	17,313	18,539	19,735	**20,605**	**188,069**
Capital expenditures	44,059	39,276	41,787	41,727	**50,216**	**458,343**
Depreciation and amortization	42,137	38,761	38,565	39,459	**37,704**	**344,141**
At year-end						
Total assets	940,494	932,698	1,026,999	1,074,983	**1,076,381**	**9,824,584**
Total net assets	308,142	311,231	368,994	465,340	**519,433**	**4,741,082**
Interest-bearing debt	368,835	359,929	346,726	287,968	**298,524**	**2,724,750**
Debt/equity ratio (gross, times)	1.20	1.16	0.94	0.62	**0.60**	
			Yen			U.S. dollars (Note 1)
Per share (Note 4)						
Net income—primary (Note 5)	¥ 6.45	¥ 86.27	¥ 262.44	¥ 758.15	**¥ 501.03**	**$ 4.57**
Net income—fully diluted (Note 5)	—	—	—	—	**—**	
Net assets	2,076.05	2,080.85	2,473.06	3,057.16	**3,423.25**	**31.25**
Cash dividends (applicable to the period) (Note 6)	3.00	—	80.00	120.00	**130.00**	**1.19**
Number of employees at year-end	10,561	10,146	10,864	10,476	**10,813**	

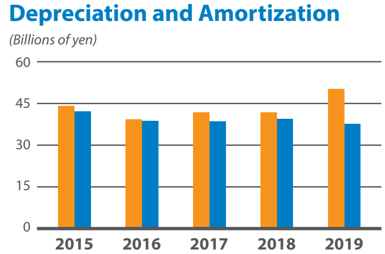
3. The tentative accounting policy applied to calculation of 2017 financial results due to consolidation of former SGL GE Holding GmbH was finalized when the Company settled accounts for the third quarter of 2018. Accordingly, the amounts of depreciation and amortization and some other costs for the year ending December 2017 were changed. The amount in the above table includes those retroactively changed numbers for the year ending December 2017.
4. SDK consolidated every ten shares of common stock into one share on July 1, 2016. "Per share" indicators for 2015 and 2016 (except for cash dividends) are calculated on the basis of the number of outstanding shares after this consolidation.
5. 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 was not disclosed because the Company had no securities with dilutive effects.
6. SDK resolved payment of dividends of Yen 30.00 per share based on the record date of May 11, 2017 at the extraordinary general meeting of shareholders held in June 2017. Cash dividends applicable to 2017 includes this amount.

Interest-Bearing Debt
Debt/Equity Ratio



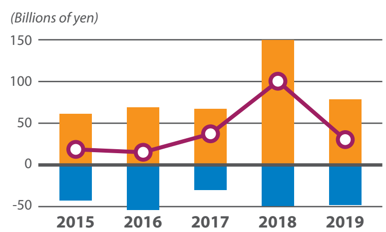
■ Interest-bearing debt *(left axis)*
○ Debt/Equity ratio *(right axis, gross)*

Capital Expenditures
Depreciation and Amortization



■ Capital expenditures
■ Depreciation and amortization

Cash Flows



■ Cash flows from operating activities ○ Free cash flow
■ Cash flows from investing activities

Message from the Management

Kohei Morikawa
Representative Director, President and CEO

The Showa Denko Group launched The TOP 2021, our medium-term business plan, in January 2019. For the Group to grow continuously, and to ensure that the Group is trusted and rated highly by society, it is important for us to raise the value by ourselves to satisfy all stakeholders, including shareholders, customers, suppliers, local communities and employees. We clearly state in the Showa Denko Group Vision that we will promote management that maximizes shareholders' value, customers' value, and social value.

The Showa Denko Group will steadily implement The TOP 2021 to strengthen earning power, control fluctuations in profits, increase corporate value, and establish a solid base for growth toward the future.

In 2019, under the tough business environment caused by US-China trade friction as well as the declining performance of the European automotive industry, the Group recorded operating income of ¥120,798 million, down ¥59,205 million from the previous year, while net income attributable to owners of the parent was ¥73,088 million, down ¥38,415 million from the previous year. At the same time, we continued to invest in plants and equipment, aiming to improve our performance in the future.

The sum of the dividends per share we paid for the year ending December 31, 2019 was ¥130, up ¥10 from the previous year.

On December 18, 2019, we announced that we would launch a tender offer for Hitachi Chemical Company, Ltd. In recent years, the structure of the chemical industry and the competitive environment have been changing dramatically. To cope with these changes in the business environment and to win the competition as a leading functional chemical company, we must evolve to become a "one-stop, advanced materials partner" for our customers, providing them not only with materials and parts but also with solutions.

In 2020, we will promote growth strategies for the second year of The TOP 2021, and accelerate our operations to realize substantial integration with Hitachi Chemical.

We have now defined our Mission as "to satisfy all stakeholders." We will contribute to the sound growth of society by maximizing shareholders' value, customers' value, and social value.

Note: For the details of our tender offer for Hitachi Chemical, please see Mergers and Acquisitions on page 10.

Structural businesses reforms implemented in 2019

In 2019, Showa Denko put a range of structural businesses reforms into practice.

For our graphite electrode business, we started investing more in plants and equipment, aiming to improve the quality of the graphite electrodes produced in our plants in Europe. Through this investment, we will expand our capacity to produce ultra-high-power (UHP) graphite electrodes in Europe and to propose UHP graphite electrodes to our customers. In this way, we will improve the productivity of our customers' electric arc furnaces and grow the market for UHP graphite electrodes in Europe. In February 2020, we started labor-management negotiations for the planned closure of the graphite electrode production site in Meitingen, Germany, where the operating rate had been declining due to a business slowdown in Europe.

For our functional chemicals business, in January 2020, we decided to end producing unsaturated polyester resin and vinyl ester resin at our Isesaki Plant, Gunma Prefecture and to concentrate production of these materials at our Tatsuno Plant, Hyogo Prefecture, to cope with lower domestic demand for these products.

For our aluminum can business, in May 2019, we streamlined production capacity by stopping some production lines in the Oyama Plant, Tochigi Prefecture, and the Hikone Plant, Shiga Prefecture, aiming to cope with a major reduction in domestic demand for aluminum cans caused by beverage manufacturers shifting from aluminum cans to PET bottles.

The Showa Denko Group has been aggressively promoting structural reforms in all business segments in view of the integration with Hitachi Chemical. Under these circumstances, we are making every effort to achieve the goals stated in the current medium-term business plan, The TOP 2021.

2019 Performance

The Showa Denko Group recorded consolidated net sales of ¥906,454 million in 2019, down ¥85,682 million or 8.6% from the previous year. Although sales increased slightly in the Chemicals segment, sales declined in the Inorganics segment due to lower sales volumes of graphite electrodes resulting from reduced production to respond to an adjustment in inventories of graphite electrodes conducted by our customers who operate electric arc furnaces. Our sales in the Petrochemicals segment also declined due to a sluggish market for petrochemical products.

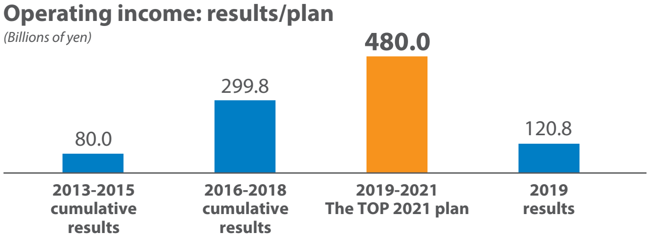
The Group's operating income substantially decreased by ¥59,205 million (down 32.9% year on year), to ¥120,798 million. Operating income fell in five segments including Inorganics, where income fell due to lower production of graphite electrodes, and the Electronics segment, where shipment volumes of HD media to be used in PCs were reduced.

The Group recorded net income attributable to owners of the parent of ¥73,088 million, a significant drop of ¥38,415 million or 34.5% from the previous year despite lower corporate taxes and an extraordinary loss caused by posting an impairment loss.

The debt-equity ratio, which is a financial indicator, improved from 0.62 times at the end of 2018 to 0.60 times at the end of 2019. Total dividends per share for fiscal 2019 increased to ¥130 from ¥120 for fiscal 2018.

Operating income: results/plan

(Billions of yen)



Medium-term business plan The TOP 2021

In January 2019, we started The TOP 2021, our medium-term business plan for 2019–2021.

Under The TOP 2021, we will establish a platform for growth, while building a promising future for the Showa Denko Group, and we will pursue progress and development toward becoming a *Koseiha* (individualized) Company, which is our vision toward the year 2025.

A *Koseiha* Company is an aggregate of *Koseiha* Businesses, or businesses that we have established in the industry's No. 1 position by earning operating income of around several billion yen, while posting an operating margin in the double digits in markets with a scale of tens of billions of yen to hundreds of billions of yen as the appropriate market scale for our businesses. Our medium- to long-term management objective is to make at least half of our existing businesses into *Koseiha* Businesses by 2025.

Corporate Social Responsibility (Contribution to SDGs)

In May 2019, we revised the Group's CSR Policy. As a business operator, we have set the Group's goal: to develop, manufacture, and sell products and services that contribute to the SDGs. We revised this slightly by adding, as our important themes, "deepening risk management to be safer and more compliant" and "attaching high importance to CSR communication." We will echo the valuable information that we receive from stakeholders when we communicate with them, in our CSR activities.

In May 2019, we also announced that we have endorsed the aim of the Financial Stability Board (FSB) to establish the Task Force on Climate-related Financial Disclosures (TCFD). We will disclose the effect of climate change on our business in a positive way, by promoting cooperation among Group companies, business segments, plants, and staff departments. In July 2019, we set the goal of an 11% reduction in GHG (greenhouse gas) emissions from the Group's domestic bases by FY 2030, compared with FY 2013, and to announce the amount of the Showa Denko Group's GHG emissions in conformity with a global standard, the GHG Protocol. In addition, we will introduce an internal carbon pricing (ICP) system to assess the suitability of our investment programs.

As a business group, we create stable returns over the long term by promoting businesses that contribute to the creation of a sustainable society, and we will continue to evolve.

Conclusion

The Showa Denko Group is committed to satisfying all stakeholders, including shareholders, our customers' industries, suppliers, and employees. Toward that end, we will conduct business operations from a medium- to long-term perspective, and we will create excellent *Koseiha* products by deepening and fusing together the Group's organic chemistry, aluminum, and inorganic chemistry technologies. In this way, we aim to be business group that makes a social contribution, helping to create a society where affluence and sustainability are harmonized.

Going forward, the Showa Denko Group will change significantly in pursuit of growth. Our management team and employees will make concerted efforts to realize revolutionary changes in ourselves. As we push ahead, we ask for your continuing support of the Showa Denko Group.

Finally, we sincerely appreciate and look forward to the continued understanding, support, and encouragement of all our shareholders.

March 26, 2020

The New Medium-Term Business Plan

The TOP 2021

Through The TOP 2021 medium-term business plan, we will focus on showing all our stakeholders a "promising future," while establishing a foundation for growth. With the aim of achieving our vision of becoming a *Koseiha* company by 2025, this is a medium-term business plan that turns the helm sharply in the direction of growth.

Vision: *Koseiha* Company

By 2025, make half or more *Koseiha* Businesses

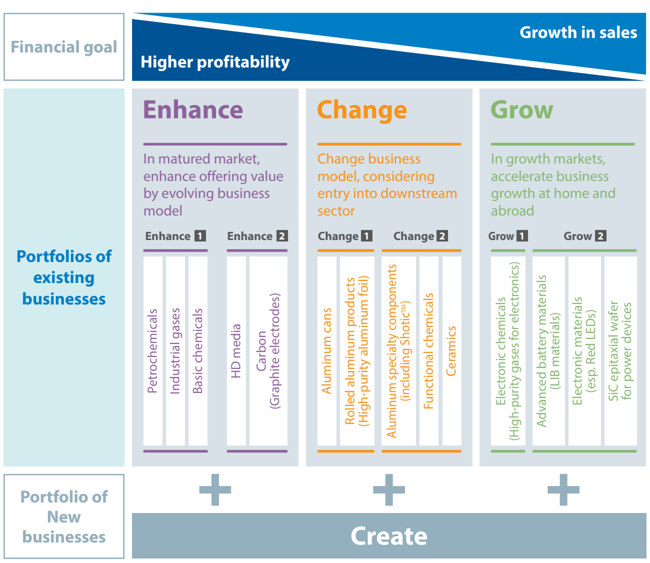
Our global No.1 businesses Market size (SDK's share)
HD media ¥400 billion (25%)
High-purity gases for electronics ¥150 billion (25%)
Graphite electrodes (UHP) ¥300 billion+ (over 30%)

(Reference) Features of *Koseiha* Businesses
Operating margin **10% or more**
Operating income **Billions of yen or more**
Stable profitability tolerant to environmental change

The Showa Denko Group's Vision of becoming a *Koseiha* company means becoming a federation of businesses that build No. 1 positions in markets of appropriate scale, ranging from tens of billions to hundreds of billions of yen. For each of the businesses of both Showa Denko and Hitachi Chemical, we will draw up and strengthen roadmaps to becoming *Koseiha* businesses, with a medium- to long-term management target of making at least half of existing businesses into *Koseiha* businesses by 2025.

Businesses Portfolio (Enhance, Grow, Change)

Pillars of Group strategy: Rapid progress in existing businesses

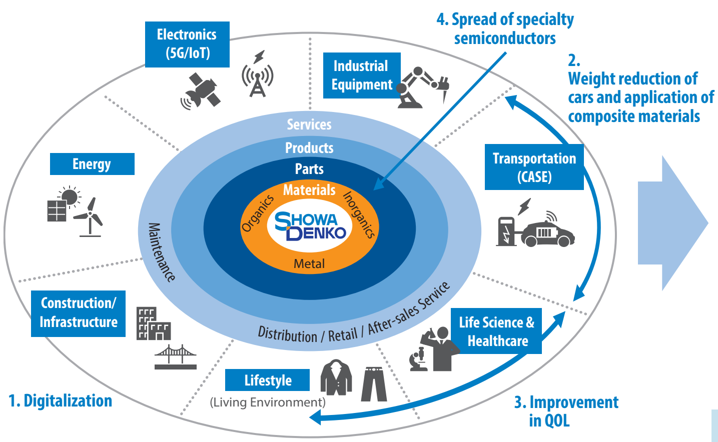


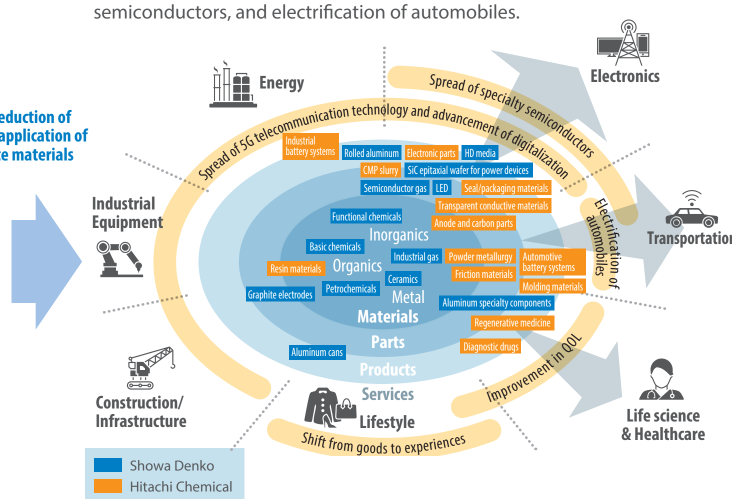
The medium-term business plan lays out a clear route to becoming *Koseiha* businesses by classifying each business into one of three categories: enhance, grow, or change. For enhance, the addition of the European graphite electrode business has resulted in a significant increase in net sales, but the theme in this group is to target higher operating margins by improving profitability. For grow businesses, the theme is growth in net sales. With the shift to electric vehicles and increased use of information, markets in this business domain will expand going forward. We will build solid best-in-class positions in environments such as these, actively investing in anticipated market growth. To ensure adequate profitability, we will aim for 1.5 times net sales of the previous years. For businesses in the change category, the theme will be growing business segments, for instance, by looking to expand into downstream sectors from the core business, with the objective of improving both growth and profitability.

Business Domains and Growth Drivers

We set 5 growth drivers in 7 business domains as presupposition of the new medium-term business plan.

By combining the core technologies of SDK and Hitachi Chemical, the two companies will together aim to grow in 7 business areas including 5G, semiconductors, and electrification of automobiles.





For Showa Denko to achieve further growth, it is important to extend our value chains to include the parts, products, and even services, rather than being confined to the core domain of materials. The medium-term business plan specifies seven business domains and five growth drivers. For business domains that we are particularly focused on, we are beginning initiatives in Transportation, typified by CASE, and in Electronics, which includes such technologies as 5G and IoT. We are concentrating on the five growth drivers: digitalization in all domains; advances in materials spurred on by the weight reduction of cars in the Transportation domain; on improvements in QOL in Lifestyle and in Life Science & Healthcare; on the spread of specialty semiconductors, which affects Materials; the evolution of business models that will shift from goods to experiences; and a focus on XaaS (delivering services).

Transportation Business Domain

Actions in the Transportation business domain

By looking at the future of the automobile industry, we anticipate changes in the needs for materials

Light weight/rigidity	Heat radiation/ heat storage	Electrical insulation	Adhesion between different materials

Composite-material solution utilizing our original materials/technologies

Wide-ranging portfolio of materials / progress in technologies to produce materials

Aluminum
- Designs for alloys
- Plastic working
- Surface/interface reforming

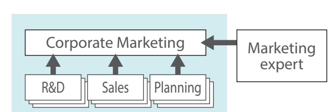
Organics
- Designs for high polymers
- Forecast of properties

Inorganics & Electronics
- Nano-carbon materials
- Crystallization/particles
- Analysis of properties SiC epitaxial wafer for power devices
- Optical semiconductors
- Materials for capacitors

Process design / Evaluation technologies
- Parts structure analysis / simulation
- Heat radiation analysis / simulation
- Development of technologies to bond materials

Strengthening marketing function

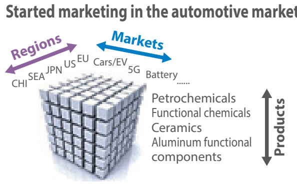
We set up Corporate Marketing Team within the Corporate Strategy Department, as a cross-functional multitasking team



Corporate Marketing Team's mission

Plan and implement cross-business marketing strategy at the early stage of the market				Establish company-wide marketing platform		
Macro-market analysis	Technical trend analysis	Cross-business promotion	Examine commerciali-zation	Digital marketing strategy	Introduce company-wide CRM	Rebuild website

Started marketing in the automotive market



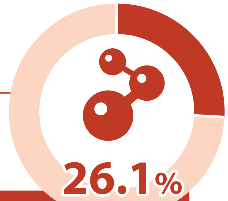
Booth at a cross-business exhibition The Battery Show 2019 in Stuttgart

Website to introduce new technologies https://www.sdk.co.jp/innovation/english/

In the Transportation business domain, we have begun a project for automotive composite materials. By leveraging, to the fullest extent, the uniqueness of our materials and technology, we will move forward with initiatives to resolve the issues faced by the automotive industry. Because the Showa Denko Group is spread across many product lines and business domains, we have set up a corporate marketing team within the Corporate Strategy Department to take action with an emphasis on the market, and have built a platform that can be shared by the company as a whole.

Business Segments

Petrochemicals



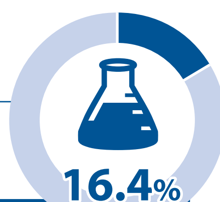
Consolidated Business Results *(Millions of yen)*

	2018	2019	Increase/ decrease	Rate of change
Sales	**268,879**	**250,678**	**-18,201**	**-6.8%**
Operating Income	**20,333**	**17,201**	**-3,132**	**-15.4%**

The Oita Complex is the main manufacturing base of the Petrochemicals Division and is equipped with a naphtha cracker. The Complex produces olefins, including ethylene and propylene. As its feature, the Complex has a well-balanced demand structure. The basic raw materials manufactured within the Complex are supplied not only to Showa Denko's plants producing organic chemicals, including vinyl acetate, ethyl acetate and other acetylic derivatives, but also to other companies' plants in and around the Oita Complex producing plastics, synthetic rubber, and styrene monomer, including a plant producing polypropylene that is operated by SunAllomer Ltd., a subsidiary of Showa Denko. In 2020, we will start commercial production at the Oita Complex and sale of 1,3-BG, which is an odorless ingredient for cosmetics to be used as a moisturizing component, by utilizing ethylene produced in the Oita Complex.

Showa Denko is expanding business to produce acetylic derivatives by taking advantage of the Company's advanced catalyst technology.

Chemicals



Consolidated Business Results *(Millions of yen)*

	2018	2019	Increase/ decrease	Rate of change
Sales	**156,541**	**157,480**	**939**	**0.6%**
Operating Income	**17,393**	**13,656**	**-3,737**	**-21.5%**

The Electronic Chemicals Division supplies semiconductor manufacturers in Japan and overseas with more than 20 kinds of high-purity gases, including fluorinated etching gases, ammonia and chlorine gases, chemicals, and equipment for use in the LCP, LED, and solar cell manufacturing processes.

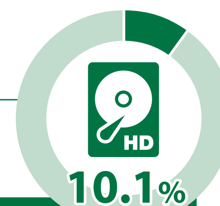
The Industrial Gases Division supplies oxygen, nitrogen, and argon separated from air as well as compressed hydrogen, carbonic acid, dry ice, and other industrial gases to wide-ranging industries. The Division especially contributes to a stable supply of food and food safety by providing carbonic acid gas, mainly used for carbonated drinks and dry ice to keep food cool.

The Basic Chemicals Division supplies ammonia, acrylonitrile, caustic soda, hydrochloric acid, and other industrial chemicals. The Division also supplies amino acids, as well as elastomer products, such as chloroprene rubber. *ECOANN*™ ammonia, which utilizes used plastics as one of raw materials, is a product that contributes to the creation of a recycling-oriented society and is mainly used as a denitration agent at thermal power plants.

The Functional Chemicals Division consists of the Functional Polymers Department and the Specialty Chemicals Department. The Functional Polymers Department provides various types of plastics, including unsaturated polyester resin, which is light, strong and corrosion-resisting, and molding compounds made by using the plastics. The Specialty Chemicals Department offers innovative and unique products, such as raw materials for cosmetics, resins for use as electronic materials, and columns for high performance liquid chromatography (HPLC). For unsaturated polyester resin and vinyl ester resin, we have decided to consolidate domestic production bases to streamline our capacity to produce these materials.

Coating Materials Department was organized in July 2019 following our acquisition of Industrielack AG (ILAG), a nonstick coating chemicals manufacturer in Switzerland. This department provides nonstick coating chemicals, which are materials for surfaces of cookware, home appliances, cars and industrial equipment that prevent sticking and staining.

Electronics



Consolidated Business Results *(Millions of yen)*

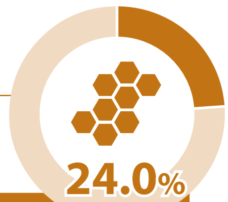
	2018	2019	Increase/ decrease	Rate of change
Sales	**111,912**	**96,445**	**-15,467**	**-13.8%**
Operating Income	**13,557**	**4,880**	**-8,677**	**-64.0%**

The Device Solutions Division provides data-recording media for hard disk drives and SiC epitaxial wafers for power devices. The Showa Denko Group is the largest independent HD media supplier in the world, and the Device Solutions Division conducts HD media business with production bases in Japan, Taiwan, Singapore, and Malaysia. This division provides world-class high-quality HD media for use in PCs and other consumer electronic products as well as for use in data centers and other enterprise fields, where demand is expected to grow due to the spread of cloud computing.

SiC epitaxial wafers are used as materials for next-generation power semiconductors, which are expected to contribute to energy conservation. The wafers are being increasingly used in quick chargers for EVs, photovoltaic generation, and servers. We are expanding our capacity to produce SiC epi-wafers and improving their quality in order to respond to fast growth of the market for power control units for EVs.

The Electronics Materials Division supplies compound semiconductor materials and rare earth magnetic alloys. For compound semiconductor materials, the Division has a wide lineup of high-output LEDs with industrial applications, including use in displays and sensors.

The Advanced Battery Materials Division is promoting production and sales of various materials for lithium-ion batteries, including *VGCF*™ unique anode and cathode additive which prolongs the life of batteries, and *SPALF*™ aluminum laminated film for LIBs installed in smartphones, tablets, and EVs.



Inorganics

Consolidated Business Results *(Millions of yen)*

	2018	2019	Increase/ decrease	Rate of change
Sales	266,149	230,135	-36,014	-13.5%
Operating Income	132,445	89,256	-43,189	-32.6%

The Carbon Division supplies graphite electrodes for electric steelmaking furnaces. These electrodes are indispensable for the recycling of iron and steel. Showa Denko's graphite electrodes are highly acclaimed by customers around the world. The Division integrated the graphite electrode business of German company SGL GE GmbH in 2017 to become the world's No.1 manufacturer in this field. The Division will optimize the Showa Denko Group's capacity to produce graphite electrodes, invest in production facilities in order to improve product quality, and realize the effect of business integration as soon as possible. Thus the Division will improve profitability of this segment. The Division will provide advanced markets with high-end products.

Capitalizing on long-accumulated high-temperature fusion technology, high-temperature sintering technology, and the pulverization/classification technology, the Ceramics Division manufactures and sells polishing materials, abrasives, and refractories where fused alumina, silicon carbide, and boron nitride are used. As for ultrafine titanium oxide, used as the main material to manufacture multilayer ceramic capacitors (MLCCs) that are mounted on a range of electronic devices, the Division is expanding sales for use in high-end products.

Aluminum

Consolidated Business Results *(Millions of yen)*

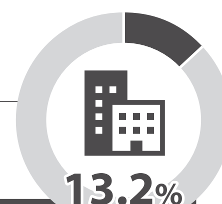
	2018	2019	Increase/ decrease	Rate of change
Sales	108,254	97,542	-10,712	-9.9%
Operating Income	4,942	1,746	-3,195	-64.7%

The Aluminum Rolled Products Division provides high-purity aluminum foils, which are carefully purified and manufactured for use in electrolytic capacitors. These capacitors are widely used in a range of products, including home electric appliances and automotive equipment.

The Aluminum Specialty Components Division provides aluminum materials and processed products. The Division supplies the following products not only in Japan but also in Europe, the United States, and Southeast Asia: aluminum cylinders (core component of laser beam printers), large/complexly shaped extruded products, continuously cast rods of aluminum alloys (*SHOTIC*™) made using Showa Denko's proprietary technologies, and forged products for automobile parts including compressors for car air conditioners.

The Division also supplies a range of heat exchangers for home electric appliances and industrial equipment worldwide and is developing and manufacturing power semiconductor cooling devices used in hybrid cars, electric vehicles, and solar power generation equipment.

The Showa Denko Group became the first company to manufacture aluminum beverage cans in Japan in 1971. Since then, the Aluminum Can Division has been supplying high-quality aluminum cans for beverages through integrated production, including pressing can bodies and can ends and printing labels. In 2019, we streamlined our capacity to produce aluminum cans in Japan, where the market for cans has matured. On the other hand, in July 2020, we will establish the third base in Vietnam to produce aluminum cans in the suburbs of Ho Chi Minh City, in order to respond rapid growth of the Vietnamese market. We will expand our aluminum can business in the ASEAN market by establishing new business bases.



Others

Consolidated Business Results *(Millions of yen)*

	2018	2019	Increase/ decrease	Rate of change
Sales	137,324	126,163	-11,161	-8.1%
Operating Income	1,734	1,819	85	4.9%

Included in this section are themes for future businesses as well as the manufacture and sale of various chemical products, light metals, and building and civil engineering materials.

For details of business results, please see the Management's Discussion and Analysis (p. 19).

Mergers and Acquisitions

Integration with Hitachi Chemical

On December 18, 2019, the Showa Denko Group announced the decision to acquire shares in Hitachi Chemical Company, Ltd. through a tender offer. Here we would like to give outlines of the two companies and the purpose of the tender offer.

About Showa Denko

The Showa Denko Group began with believing in the potential of the electrochemical industry using the rich hydropower resources of Japan. The Group's expertise with technologies originated with electrochemistry, then evolved into technologies related to inorganic chemistry, organic chemistry, and metallic materials. Today, making the most of these technologies, the Group produces a wide range of products, including materials and parts used in the information communication technology (ICT) industry, the automobile industry, and products necessary for daily life.

About Hitachi Chemical

Hitachi Chemical Company, Ltd., a consolidated listed subsidiary of Hitachi, Ltd., has a long history and provides leading-edge parts and systems. These include functional materials, such as electronic materials and materials for printed wiring boards (PWBs); parts for the mobility industry; materials for energy storage devices such as batteries; and products related to life science. Hitachi Chemical's basis for growth is the information and communication business, mainly providing materials and parts used by the semiconductor industry, including CMP slurries and Copper-Clad Laminates, with the leading market share in the world. At the same time, Hitachi Chemical considers certain products to be the medium- to long-term essential pillars of the company: the mobility business (centering on plastic backdoor modules and carbon anode material for lithium ion batteries) and the life science business, which has promising regenerative medicine and diagnostic agents.

The Meaning of the Business Integration

The Showa Denko Group considers the tender offer for Hitachi Chemical as the Group's most important turning point in the more than 100 year history. Showa Denko and Hitachi Chemical have taken the first step in carving out a new history together.

Significance as strategic partners

		SDK		Hitachi Chemical
High affinity	Aspiration	Value: "Maximizing customer experience" **Changing our business model to offer solutions beyond the limits of a manufacturer**	≈	As **one of the top global manufacturers of high-performance materials** it creates innovative functions by combining material technologies to **deliver solutions** that solve problems faced by customers
	Business strategy	***Koseiha* Company** An aggregate of *Koseiha* Businesses that can maintain high levels of profitability and stability ***Koseiha* Business** A business in which we have a global top market share in the market of appropriate scale (tens of billions of yen to hundreds of billions of yen)	≈	**Niche and cluster** strategy Niche: high value-added products to aim for high profitability Cluster: product and business groups aiming for the global top position in the market, which provides total solutions to customers and the market by grouping each product, business, technology and service
Strong complementary relation	Core technologies	**Surface and interface precise control technologies** in inorganic materials such as aluminum, ceramics, carbon and **innovative material design capability** in a variety of materials ranging from inorganic to organic (resin, etc.) materials		"**Material design technology utilizing characteristics of raw materials, ability to evaluate functions, ability to design functions leading to process technology, including module segmentation**" to link customer needs to solutions

World's leading solution company boasting an array of global top share businesses

Today, we cannot be very optimistic about the business environment surrounding Showa Denko because there have been so many changes. For example, there were changes in the structure of our industry, including: revamped value chains caused by the rise of technology-oriented companies such as GAFA; fiercer competition among global material manufacturers caused by restructuring and mergers; and changes in societal requirements, such as the need for reduced GHG (greenhouse gas) emissions.

To keep Showa Denko undefeated as a world-leading functional chemical manufacturer, we feel it is necessary for us to maintain high functionality by combining our wide-ranging materials and technologies and by offering solutions that exceed the simple supply of materials and components. Therefore, we decided to acquire Hitachi Chemical.

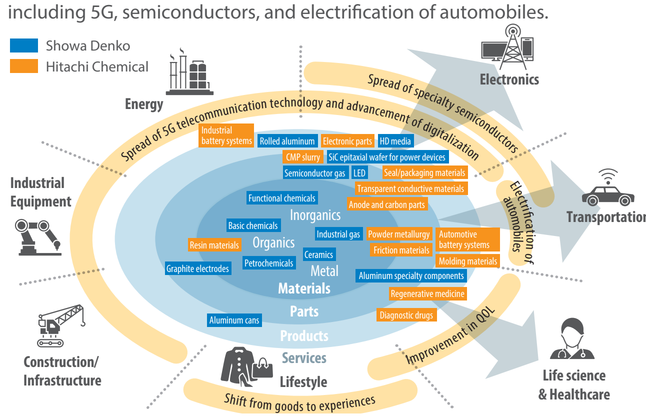
We believe Showa Denko and Hitachi Chemical are companies that can play complimentary roles. Showa Denko aims to become "a solution-providing company surpassing simple manufacturing." As well, Hitachi Chemical aims to become "a top global manufacturer of highly functional materials through the creation of new functions and the provision of solutions." These goals are parallel. Moreover, as strategies to realize each company's vision, Showa Denko's *Koseiha* Business Strategy and Hitachi Chemical's Niche and Cluster Strategy have many points of similarity.

Moreover, the advantages of each company are complementary: Showa Denko's advantage is "technologies to precisely control the surfaces and interfaces" of inorganics (including aluminum, ceramics and carbon) and Hitachi Chemical's advantage is "power to develop functions starting from the design of ingredients making the most of the characteristics of raw materials, going through the evaluation of functions, and ending in the development of process technologies to apply those materials to the formation of modules." Therefore, we believe that the integration of our two companies will give rise to one of the world's leading solution-providing companies, having many businesses with top global market shares.

Positioning of the New Business Portfolio

Business areas to pursue and notable growth drivers

By combining the core technologies of SDK and Hitachi Chemical, the two companies will together aim to grow in seven business areas including 5G, semiconductors, and electrification of automobiles.



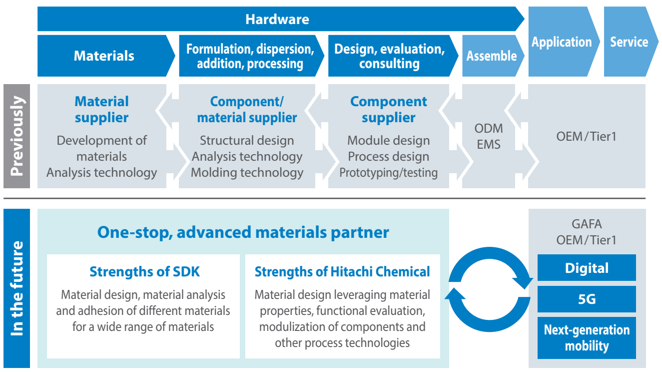
In the medium-term business plan The TOP 2021, we say that, to achieve more growth, it is important for the Showa Denko Group to focus on seven business domains, including electronics and transportation, and five growth drivers, including the spread of 5G telecommunication technology and advancements in digitalization. Further, to achieve this growth, it is important for us to expand our vision to not only cover materials—the essential pillar of each business domain—but also to cover the fields of parts, products, and services.

Our acquisition of Hitachi Chemical will enable us to grow our lineup of technologies and products to now include the many attractive technologies and products owned by Hitachi Chemical. These technologies and products are not only in the field of electronics (including those for 5G, semiconductors, and electrification of power sources for cars, where Hitachi Chemical has real strengths and where powerful growth is expected), but also in the fields of transportation, life science and healthcare. Our value chain will be extended to cover not only materials but also products, applications, and services. By combining the core technologies of Showa Denko and Hitachi Chemical, we will see stronger growth of our businesses.

Steps to Becoming a One-Stop, Advanced Materials Partner

One-stop advanced materials partner

Technology companies will become more directly involved in each level of the value chain in the future. SDK and Hitachi Chemical will fuse to acquire the ability to propose a consistent and total solution covering from the material level to design and evaluation.



In the conventional value chains of industries, information was conveyed upstream step by step from end-customers. However, today technology-oriented companies, including GAFA, are prevailing. They are strengthening their direct relationships with materials manufacturers, while skipping the conventional layers of value chains, and reinforcing their involvement not only in designing but also in the definition of technical requirements and production technologies at the level of parts and materials. Relationships are needed to achieve the optimal requirements for final products. From this point of view, materials manufacturers are now required to improve their business models to reduce bottlenecks in manufacturing leading-edge materials and key devices from the level of materials, and to ensure the quality and characteristics of materials by responding flexibly to the requirements of end-customers.

As mentioned, Hitachi Chemical's advantage is the power to develop functions starting from the design of ingredients, making the most of the characteristics of raw materials, going through the evaluation of functions, and ending up with the development of process technologies that apply those materials to the formation of modules. On the other hand, Showa Denko's advantage is that we have technologies to develop wide-ranging materials, analyze those materials, and bond different materials together. By combining the advantages of our two companies, we can vertically integrate our value chains, starting from the development of materials, going through to designing product modules, and ending up in the evaluation of those modules. It will be possible for us to propose solutions rapidly and flexibly in response to end-customers' high-level and varied requirements. We are certain that in this way we can establish ourselves as a "one-stop leading-edge materials providing partner" for end-customers.

Cash Creation

Cost synergy	Realignment of business portfolio	Cost structural reform
Ensure achievement of cost synergy	Accelerate realignment of the business portfolios of the two companies	Take action to reform the cost structure of SDK and Hitachi Chemical from the first year of integration

Due to the need to finance this acquisition, Showa Denko's financial leverage will temporarily become strained. However, we are aiming to have our D/E ratio around the level of 1.0 in our medium-range plan.

We think it is important for us to speedily create cash flow, and we will execute three measures. The first measure is to realize a synergistic effect to reduce costs. We expect that integration of the two companies will enable us to reduce indirect costs and the cost of materials, and we will aim to have cost reductions of more than 20 billion yen per year within three years of completing the acquisition. The second measure is to steadily review and revise our business portfolio. Through discussions in the Steering Committee (detailed below), we will promote the speedy review and revision of the business portfolio. The third measure is aggressive promotion of independent actions to improve the profitability of our businesses, in addition to taking steps to realize synergistic effects for cost cutting (mentioned above).

By implementing these measures to stimulate cash flow, we will not only accelerate improvements to our financial standing, but invest positively in measures to create growth over the long term.

Financial Figures

These are the major financial figures extracted from Hitachi Chemical's financial results for the year ending on March 31, 2019 and the financial results of Showa Denko for the year ending on December 31, 2019. Hitachi Chemical's revenues were 681.0 billion yen and total assets were 708.7 billion yen. Showa Denko's net sales were 906.5 billion yen and total assets were 1,076.4 billion yen. The integration of these two companies will give birth to one of the leading chemical companies in Japan.

Financial data

Hitachi Chemical Business year ending on March 2019 (consolidated, IFRS)	
Revenues	681.0 bil. yen
Adjusted operating income	48.6 bil. yen
Net income attributable to owners of the parent	28.7 bil. yen
Common stock	15.5 bil. yen
Total equity	429.6 bil. yen
Total assets	708.7 bil. yen
Number of employees	22,989

Showa Denko Business year ending on December 2019 (consolidated, Japanese GAAP)	
Net sales	906.5 bil. yen
Operating income	120.8 bil. yen
Net income attributable to owners of the parent	73.1 bil. yen
Capital stock	140.6 bil. yen
Total shareholder's equity	519.4 bil. yen
Total assets	1076.4 bil. yen
Number of employees	10,813

Operations after Acquisition

We established steering committees — staffed by the managements of both companies—to accelerate choosing which businesses will remain and to concentrate resources on them that recognize nothing is off limits, as well as to accelerate smooth business integration. To be specific, we have established two committees. The first committee will make decisions about managing the business portfolio, investments, budget, and financing. The second committee will be in charge of monitoring and controlling progress with the integration of the two companies. Through actions taken by these two committees, we intend to substantially integrate both companies within a year after the closing, in other words, the completion of Showa Denko's acquisition of shares in Hitachi Chemical.

The new Showa Denko Group, after integration with Hitachi Chemical Group, will change dramatically. The management and entire staff of the Group will work as one to put into practice all the measures needed for business integration.

We ask for your continued support to the Showa Denko Group.

Management Team as of March 26, 2020

Back row: Masaharu Oshima, Hideo Ichikawa, Hiroshi Sakai, Kiyoshi Nishioka
Front row: Kozo Isshiki, Motohiro Takeuchi, Kohei Morikawa, Hidehito Takahashi, Noriko Morikawa

Directors

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; Chief Technology Officer (CTO)
January 2017	President and Chief Executive Officer (CEO) (incumbent)

HIDEHITO TAKAHASHI *Representative Director*

April 1986	Joined The Mitsubishi Bank, Ltd. (currently MUFG Bank, Ltd.)
October 2004	Asia Pacific President, GE Sensing & Inspection Technologies, GE Japan Holding Corporation
October 2008	President & CEO, Silicones Business, Momentive Performance Materials Japan Inc.
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
July 2017	Director; Managing Corporate Officer, General Manager, Carbon Division
January 2020	Director; Managing Corporate Officer, in charge of Carbon and Ceramics divisions, Coating materials Department, Yokohama and Shiojiri plants, and Corporate Strategy Department; Chief Strategy Officer (CSO) (incumbent)

MOTOHIRO TAKEUCHI *Representative Director*

April 1983	Joined the Company
January 2015	Corporate Officer; General Manager, Ceramics Division
January 2017	Corporate Officer; General Manager, Corporate Strategy Department
January 2019	Corporate Officer; Chief Financial Officer (CFO)
March 2019	Director; Corporate Officer; General Manager, Finance & Accounting Department; Chief Financial Officer (CFO)
January 2020	Director; Managing Corporate Officer, in charge of Finance & Accounting and Information Systems departments; Chief Financial Officer (CFO) (incumbent)

HIDEO ICHIKAWA *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 (incumbent)

HIROSHI SAKAI

April 1986	Joined the Company
January 2015	Senior Corporate Fellow; General Manager, Technology Development Control Department, HD Division
January 2019	Corporate Fellow; General Manager, Technology Development Control Department, Device Solutions Division
January 2020	Corporate Officer; Chief Technology Officer (CTO)
March 2020	Director; Corporate Officer, in charge of Advanced Battery Materials Division, Institute for Integrated Product Development, Advanced Technology Laboratory, Corporate R&D, and Intellectual Property departments; Chief Technology Officer (CTO) (incumbent)

MASAHARU OSHIMA *Outside Director*

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
March 2015	Director of the Company (incumbent)
April 2015	Special Professor, Tokyo City University (incumbent)
July 2016	Project Researcher, School of Engineering, The University of Tokyo (incumbent)
December 2016	Project Researcher, Institute for Solid State Physics, The University of Tokyo (incumbent)

KIYOSHI NISHIOKA *Outside Director*

April 1977	Joined Nippon Steel Corporation
June 2005	Director; General Manager, Technology Development Planning Department, Technology Development Headquarters, Nippon Steel Corporation
June 2009	Counselor, Nippon Steel Corporation
November 2012	Special Professor, Research Center for Advanced Science and Technology, The University of Tokyo
April 2017	Adviser, Research Center for Advanced Science and Technology, The University of Tokyo (incumbent)
April 2017	Visiting Professor, Ehime University (incumbent)
March 2018	Director of the Company (incumbent)
July 2019	Director, VCRI Co., Ltd. (incumbent)

KOZO ISSHIKI *Outside Director*

July 1969	Joined Japan Development Bank (currently Development Bank of Japan Inc.)
June 2001	Executive Director, Development Bank of Japan Inc.
May 2005	Chairman of the Board, Technology Alliance Investment, Ltd.
June 2015	Director, Medical System Network Co., Ltd. (Outside Director) (incumbent)
March 2019	Director of the Company (incumbent)

NORIKO MORIKAWA *Outside Director*

April 1981	Joined CHORI CO., LTD.
August 1988	Joined Daiwa Securities America Inc.
September 1991	Joined Arthur Andersen
March 1995	Joined Motorola Inc.
March 2005	Director, in charge of accounting and finance; General Manager, Accounting and Finance Headquarters in Japan, Motorola Inc.
June 2009	Joined Bosch Corporation
August 2010	Director; Vice President, in charge of Administrative Headquarters, Bosch Corporation
June 2018	Outside Director, CHORI CO., LTD. (incumbent)
March 2020	Director of the Company (incumbent)

Audit & Supervisory Board Members

TOSHIHARU KATO

April 1981	Joined Showa Aluminum Corporation (currently Showa Denko K.K.)
January 2016	Corporate Officer; General Manager, Finance & Accounting Department
January 2017	Corporate Officer; General Manager, Finance & Accounting Department; Chief Financial Officer (CFO)
March 2017	Director; Corporate Officer, General Manager, Finance & Accounting Department; Chief Financial Officer (CFO)
January 2018	Director; Corporate Officer, in charge of Finance & Accounting and Information Systems departments; Chief Financial Officer (CFO)
January 2019	Director, Assistant to President
March 2019	Audit & Supervisory Board Member (incumbent)

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: Chief Technology Officer (CTO)
January 2019	Director; Managing Corporate Officer, in charge of Advanced Battery Materials Division, Institute for Integrated Product Development, Advanced Technology Laboratory, Corporate R&D and Intellectual Property departments; Chief Technology Officer (CTO) (incumbent)
January 2020	Director, Assistant to President
March 2020	Audit & Supervisory Board Member (incumbent)

SETSU ONISHI *Outside Member*

April 1978	Joined The Industrial Bank of Japan, Ltd. (currently Mizuho Bank, Ltd.)
April 2005	Corporate Officer; General Manager, 14th Marketing Department, Mizuho Corporate Bank, Ltd. (currently Mizuho Bank, Ltd.)
April 2007	Managing Corporate Officer, in charge of Global Syndication Unit and Global Products Unit
April 2010	Vice President; Corporate Officer; General Manager, Internal Audit Division, Mizuho Financial Group, Ltd.
June 2010	Director; Vice President; Corporate Officer; General Manager, Internal Audit Division, Mizuho Financial Group, Ltd.
April 2011	Director; Mizuho Financial Group, Ltd.
June 2011	Director; Vice President, IBJ Leasing Company, Limited
April 2013	Director; President, IBJ Leasing Company, Limited
June 2016	Councilor, Mizuho Financial Group, Ltd.
April 2017	Senior Counselor, Nippon Commercial Development Co., Ltd. (incumbent)
June 2017	Director, NS United Kaiun Kaisha, Ltd. (incumbent)
March 2018	Audit & Supervisory Board Member of the Company (incumbent)

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	Director; President, JBond Co., Ltd. (currently JBond Totan Securities Co., Ltd.) (incumbent)
April 2011	Director; President, The Totan Information Technology Co., Ltd.
March 2012	Audit & Supervisory Board Member of the Company (incumbent)
June 2015	Outside Director, Kajima Corporation (incumbent)

MASAKO YAJIMA *Outside Member*

April 1994	Registered at Dai-Ichi Tokyo Bar Association Joined Nishimura Law Office (currently Nishimura & Asahi)
March 2001	Registered as a lawyer in the State of New York
April 2004	Assistant Professor, Law School, Keio University
January 2006	Partner, Nishimura & Tokiwa (currently Nishimura & Asahi) (incumbent)
April 2007	Professor, Law School, Keio University (incumbent)
March 2020	Audit & Supervisory Board Member of the Company (incumbent)


Masako Yajima, Kiyomi Saito, Toshiharu Kato, Jun Tanaka, Setsu Onishi

Corporate Officers

Chief Executive Officer

KOHEI MORIKAWA

Senior Managing Corporate Officer

JIRO ISHIKAWA

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

Managing Corporate Officers

HIDEHITO TAKAHASHI

Chief Strategy Officer (CSO); Officer in charge of Carbon and Ceramics divisions, Coating materials Department, Yokohama and Shiojiri plants, and Corporate Strategy Department

MOTOHIRO TAKEUCHI

Chief Financial Officer (CFO); Officer in charge of Finance & Accounting and Information Systems departments

Corporate Officers

KEIICHI KAMIGUCHI

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

YOUICHI TAKEUCHI

Plant Manager, Kawasaki Plant

TAICHI NAGAI

Oita Complex Representative

KOICHI NISHIMURA

Assistant to President for promotion of chemicals safety and environmental protection; Officer in charge of Industrial Gases, Basic Chemicals, Electronic Chemicals, and Functional Chemicals divisions, and Kawasaki, Higashinagahara, Isesaki, and Tatsuno plants

MASUNORI KAIHO

Officer in charge of Production Technology, Energy & Electricity, SPS Innovation, and Responsible Care departments

AKIHIRO JIMBO

General Manager, Basic Chemicals Division

TESTUO WADA

General Manager, Institute for Integrated Product Development

HIROTSUGU FUKUDA

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

EISHI WAKUTSU

General Manager, Corporate Strategy Department

KENJIRO YAMAMASU

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

HIROSHI SAKAI

Chief Technical Officer (CTO); Officer in charge of Advanced Battery Materials Division, Institute for Integrated Product Development, Advanced Technology Laboratory, and Corporate R&D and Intellectual Property departments

KAZUO HIRAKURA

General Manager, Industrial Gases Division

HIROYUKI EDA

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

MAKOTO TAKEDA

General Manager, Carbon Division

Corporate Governance

Message from Hideo Ichikawa, Chairman of the Board

The Showa Denko Group views the further strengthening of corporate governance as a top management priority. In December 2015, the Company established Corporate Governance Basic Policies, aiming to promote constructive dialogues with stakeholders, in this way increasing corporate value and shareholders' common interests. Guided by the Basic Principles, we updated our *Corporate Governance Report*, and we are now promoting constructive dialogues with shareholders.

In 2019, as in the previous year, we maintained a system where outside directors accounted for three out of the nine members of the Board of Directors. For the Audit & Supervisory Board, three out of the five members were outside members. Those outside board members were experts from the financial and manufacturing industries, academia, and the legal profession. They gave us valuable advice and comments from diverse perspectives. Both boards had very high attendance rates.

In December 2019, the Company announced that it would start a tender offer for shares of Hitachi Chemical Company, which would be the largest-ever M&A for the Company. As the chairman of the board, I would like to give appropriate guidance to the Company, aiming for the new Showa Denko Group to have a promising future after integration of the two companies.

In 2020, as a new measure to strengthen corporate governance within the Company, we increased the number of outside directors from three to four, while maintaining the total number of directors at nine. On the other hand, in March 2020, I relinquished my appointment as Representative Director and decided to concentrate my attention on my work as the Chairman of the Board. I would like to stimulate discussions at the Board of Directors' meetings and take the leadership to have lively debates at our meetings on the medium- to long-term course of the management of the Company. At the Board of Directors' meeting, we will also discuss important management policies of the Showa Denko Group, including our management philosophy, the new business strategy to be pursued after acquiring shares in Hitachi Chemical, how the new business portfolio should be structured, as well as policies on capital investment, reform of our business organization, and shareholder return.

Today, global demand is increasing for companies to contribute to society in line with the concepts of CSR and ESG. For SDGs (Sustainable Development Goals), advocated by the United Nations as targets to be achieved by 2030, the whole Showa Denko Group will work on achieving SDGs based on our Code of Conduct, which includes our pledge to "maintain and improve the global environment." The Group will positively develop, produce, and sell products as well as services that contribute to the achievement of SDGs, in this way enhancing our value as a "company contributing to the sound growth of society."

We look forward to the continued support of investors and shareholders.

Hideo Ichikawa
Chairman of the Board

1. Basic Concept of 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: https://www.sdk.co.jp/english/about/governance.html) for our Corporate Governance Basic Policies.

2. 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 supervision from business execution, we have introduced a corporate officer system. The top management team, consisting of the President and corporate officers in charge of their respective operations, is working to increase the speed of decision-making and to vitalize operations. At the same time, the Company has substantially reduced the number of directors.

In addition, we have strengthened supervisory functions by appointing outside directors. To strengthen the independence and objectivity 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. 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 of Directors decides on 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 to 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, and the 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 26, 2020, nine directors, including four outside directors were appointed. One of outside directors is a female director.

3. 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 for the overall management of the Company. The decisions are made after deliberations on two occasions. 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 the performances of 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 direct supervision of the President. The Company also has Sustainability, Responsible Care, and IR promotion councils under the Management Committee chaired by the President. These committees and councils investigate, study, and deliberate on specific matters important for the execution of business.

4. Audit & Supervisory Functions

The Company's Audit & Supervisory Board has 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 field investigations, by hearing sessions, and by 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.

The Internal Audit Department reports directly to the President and investigates the overall execution of business, checking for accuracy, propriety, and efficiency. It also investigates management policies as well as 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 divisions in charge conduct Responsible Care audits. KPMG AZSA LLC audits 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 cooperation.

5. Sustainability Promotion Council

The Sustainability Promotion Council examines the Showa Denko Group's important CSR issues in general, with a focus on compliance and risk management. Specifically for compliance, the Council reviews medium- to long-term action plans and significant issues, then formulates measures based on the action plans and evaluates the status of their implementation. In addition, the Council regularly aggregates and evaluates risks, formulates plans to mitigate critical risks that could affect the Group, and confirms how risk mitigation procedures are being implemented.

For the details of our policies on compliance and risk management, please visit our website: https://www.sdk.co.jp/english/csr/risk_compliance.html

6. Other Items

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, 2019) is as follows:

Remuneration, etc., for Board Members

	Remuneration, etc. (Millions of yen)	Total Amount by Type of Remuneration, etc. (Millions of yen)			Number of applicable persons
		Basic Compensation	Short-term Performance-linked Compensation	Stock Compensation	
Directors	402	261	121	20	11
Outside members included in above	39	39	—	—	4
Audit & supervisory Board Members	93	93	—	—	6
Outside members included in above	33	33	—	—	3

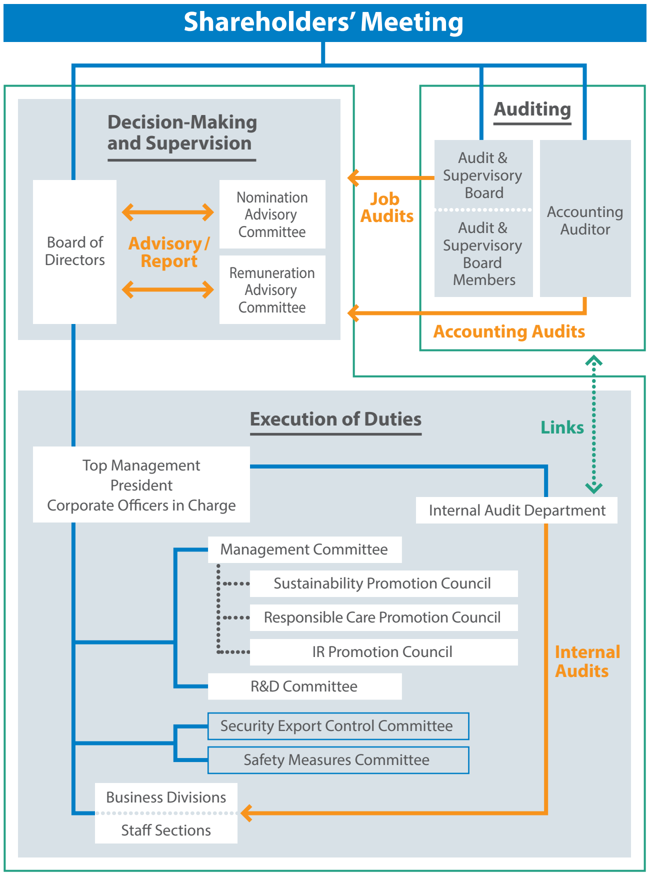
20 Million yen is filed as Stock Compensation for Directors, not including outside Directors, based on the performance-linked stock compensation plan resolved at the 107th ordinary general meeting of shareholders held on March 30, 2016.

Remuneration for Auditing Corporation

	Paid amount
Name of accounting auditor: KPMG AZSA LLC Remuneration for issuing an auditing certification based on the auditing contract	¥183 million

7. Personal/Financial Relations and Interests among the Company and Outside Board Members

The Company has four outside members in the Board of Directors and three outside members in 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

In the course of promoting The TOP 2021, the medium-term business plan, the Showa Denko Group aims to become a world-leading manufacturer of functional chemicals. Based on the key concepts of *deepening, fusion*, and *introduction*, the R&D strategy focuses on creating "pipelines" for products that will contribute to the next generation, while continuing to strengthen existing operations with the aim of creating *Koseiha* businesses. Our intent is to maximize customer experience (CX) by providing our customers with first-class engineering, products, and services.

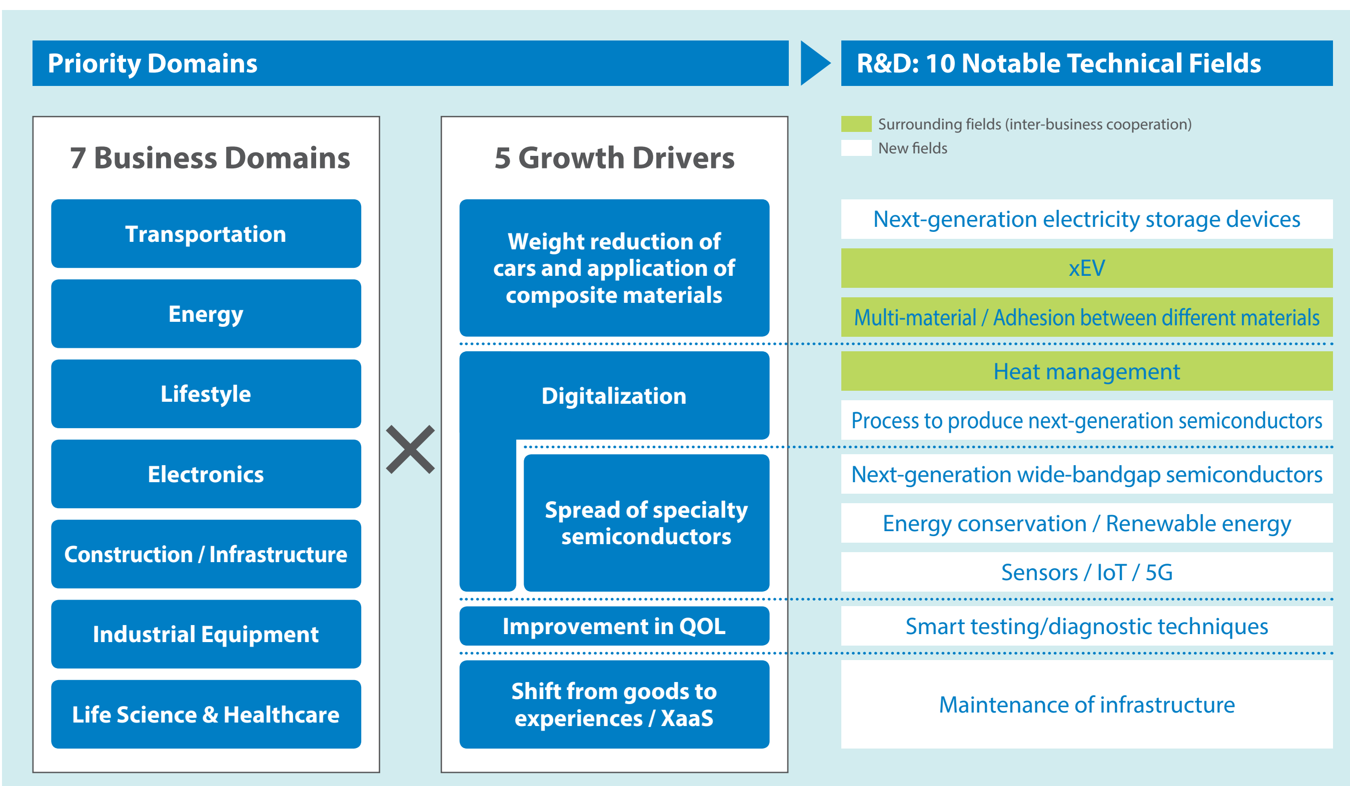
To strengthen the creation of these "pipelines," we will fundamentally reinforce our marketing programs to achieve a firmer grasp on market and technology trends when identifying targets for R&D, and to invest our R&D resources intensively in 10 technical fields, including those that are multi-material or that promote adhesion between different materials and for processes to produce next-generation semiconductors. These 10 targets correspond to our seven business domains: Transportation, Energy, Lifestyle, Electronics, Construction/Infrastructure, Industrial Equipment, and Life Science & Healthcare.

The Advanced Technology Lab, established in 2019, is exploring and drafting proposals for next-generation research themes, based on unrestricted thinking and perspectives that are not constrained by the trends and "tides" of the industries served by the Group and current business fields.

Our initiatives to strengthen existing operations—with the aim of creating *Koseiha* businesses—will be centered on the Institute for Integrated Product Development, which was reorganized in 2019. At the same time, measures to "deepen" and "fuse" a variety of human resources and technologies are being further accelerated and expanded, then rolled out to the Company as a whole. In addition, computational science, analytical technology, and evaluation technology will be positioned as basic research themes that facilitate the fusion of the various technologies of the Group, and these technologies will be further strengthened going forward. Moreover, we will actively introduce any necessary technologies from outside entities, through M&As and by adopting approaches such as open innovation.

As a base for embodying the concepts of The TOP 2021, we will build the new Stage for Fusion complex, providing a global center for accelerating *deepening, fusion*, and *introduction*, both inside and outside the Company. The Stage for Fusion is scheduled to begin operating in 2022 next to the Yokohama Plant.

Through R&D, the Group will create products and services that touch the hearts of customers, and that offer solutions that make society better.

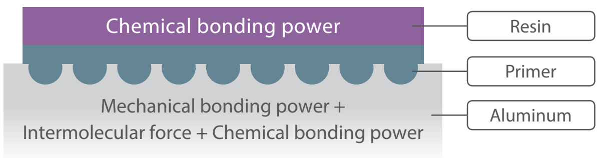


R&D Topics

1 Established technology for directly bonding aluminum alloys and polycarbonate resin

The Group has developed an innovative technology to directly join/bond aluminum alloys and polycarbonate resin (a general-purpose amorphous engineering plastic), *without using an adhesive*. Most current methods for joining or bonding aluminum alloys and polycarbonate resin use fasteners (bolts and screws) or adhesives. In recent years, much attention has been focused on new technologies that directly join/bond resin materials to metallic materials at the time of injection molding. These new technologies are expected to bring advantages, such as the simplification of processes, increased productivity, and enabling processing into complex shapes. In many cases, however, these joints depend on the power of mechanical bonding, such as the anchor effect resulting from applications of resin onto a roughened metal surface. For this reason, it had, up to now, been believed that joining/bonding metallic materials to polycarbonate resin and other amorphous engineering plastics was impractical using conventional methods.

The Group has leveraged our expertise in aluminum alloys and polymer chemistry—accumulated over many years—to directly join/bond aluminum alloys to polycarbonate resin, after the aluminum alloys have undergone both a special surface treatment and the application of a primer. The innovative joining/bonding technology that SDK has developed consists not only of the anchor effect but also of a chemical bond. Our experiments show that this technology can be used under ordinary polycarbonate molding conditions to provide bonding strength in excess of 25 MPa (megapascals), more than enough for practical use. Neither special conditions nor additional equipment are required to achieve a strong bond.



2 Developed repair materials for concrete structures that can be used in cold regions

The Group has developed the *SHO-REPAIR*™ CR-1000 series and the *RIPOXY*™ CR-1500 series of repair materials for repairing various types of concrete infrastructure in low-temperature conditions, such as cold regions.

The infrastructure built up during Japan's "high-speed growth" era continues to deteriorate, resulting in the increasing need for rebuilding or repair. Because rebuilding is expensive, demand for repair is strong. However, there is a problem: existing materials require heaters to cure them after they have been applied to repair concrete structures in low-temperature environments. This makes it impractical to do repair work during the winter months in cold regions. Both of our newly developed repair materials can be used in subzero temperatures without heat curing after application, and they harden to a level suitable for normal use within 24 hours—less than one-third the time required for existing products. Because of these advantages, the new materials are expected to be used on construction during the winter in cold regions, to reduce costs by shortening construction time, and to improve convenience (faster turnaround at construction sites).

3 Built an AI-based patent interpretation support system

In conjunction with IBM Japan, the Showa Denko Group has built a patent interpretation support system for effectively and efficiently screening patent information. Group-wide operation of this system began in July 2019. Using this system is intended to lead to a significant reduction in the time taken by engineers to read and understand patents.

This patent interpretation support system uses cognitive technology from IBM's Watson Explorer, enabling the comprehensive and cross-sectional collection of information, which is then subjected to sophisticated classification and analysis. By providing text analysis and search, as well as functionality for building associations between documents, and concept extraction specialized for patent use, this tool supports more efficient reading of patent information. Moreover, because this system is able to build associations between documents that has been optimized for the characteristics of chemical patents —the technology domain of the Group— it provides an interface specialized for improving the readability of these types of patents.

This system gives structure to claims information in long and difficult patent documents with complex dependencies, and enables this information to be visually displayed, allowing engineers to understand the content of patents more efficiently. In trials conducted within the company in 2019, the time taken to read and understand a single patent was reduced by approximately 45% compared with not using this system. To maximize the utility of intellectual property (IP) as a source of corporate competitiveness, not only should rights be asserted over intellectual property, but it is also important that an accurate understanding of intellectual property is maintained at each stage, from searching for themes to commercialization. Introducing this system throughout the Group will not only open the way to more efficient research and reduce the risk of infringing on the rights of other companies, but it will also promote a more strategic approach to intellectual property activities, allowing us to strengthen corporate competitiveness.

R&D Expenditures

(Millions of yen)

Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	**Total**
1,314	3,063	6,334	597	1,971	7,326	**20,605**

Corporate Social Responsibility

Showa Denko Group's CSR Policy (May 2019)

We at the Showa Denko Group will aim to make ourselves a social contribution company that satisfies all stakeholders by contributing to solving issues concerning SDGs through its business activities, and ensuring all employees' conduct conforming to "Our Code of Conduct."

Main Theme

Creation of economic and social value through deepening of risk management on the basis of safety and compliance, and through creation of business opportunities on the basis of CSR communication

Contribution to creation of society where affluence and sustainability are harmonized through effective use of technologies, products and services	Tackling environmental issues in order to realize sustainable society and as a mission of manufacturer	Development of human resources that contribute to sustainable growth of international society and the Showa Denko Group

Revision of the CSR Policy

The Showa Denko Group has been working to contribute to the creation of a society where wealth and sustainability are in harmony based on our long-standing belief that CSR is a fundamental to Group management. In line with this recognition, we deliver products and services that meet the needs of society. In May 2019, we revised the Showa Denko Group's CSR Policy to show to our stakeholders our long-term approach to contribute to the creation of a sustainable society and the priority issues we need to address in order to achieve this. In the new CSR Policy, we clearly state that we will contribute to the achievement of the Sustainable Development Goals (SDGs) through our business operations. We will sincerely face the issues that need to be overcome to ensure a sustainable future and proactively work to meet challenges by capitalizing on the Group's strengths.

Safety and Compliance – the Cornerstone of Business Activities

The Showa Denko Group regards safety and compliance as the foundation for our business activities and believes that these elements are indispensable to ensure that the Group can make a meaningful contribution to society, based on our CSR Policy.

Active Safety activities*, that we launched in 2007, have already taken root in the Group. We will further enhance the activities to prevent occupational accidents, equipment-related incidents and environmental problems. Also, to ensure compliance and sincerely develop business activities, we will further enhance our awareness-raising and educational activities regarding corporate ethics and update related in-house rules.

*Active Safety activities: The Showa Denko Group's unique program for analyzing past accidents and problems, and taking measures to prevent their reoccurrence.

CSR Promotion Framework

CSR activity-related policies, targets, and plans are deliberated on by the Management Committee comprising the president, corporate officers and Audit & Supervisory Board members. Such matters are then finalized by the Board of Directors, which also supervises risk management and compliance issues, the progress of contribution to the SDGs and measures for environmental problems, including climate change.

The Sustainability Promotion Council, the Responsible Care Promotion Council and the IR Promotion Council make plans and proposals about individual issues related to CSR. Priority issues are reflected in the CSR plan and discussed by the Management Committee. The results are then reported to the Board of Directors for their supervision.

Moreover, our divisions and plants make efforts regarding Responsible Care, risk management, human rights, corporate ethics and compliance activities with support from Responsible Care, CSR and General Affairs, Human Resources and other departments. We conduct cross-functional (CF) activities concerning contribution to the SDGs, disclosure of climate change related information in response to the activities of the TCFD and other issues to be tackled across the organization,.

Promoting Dialogue with Stakeholders

The Showa Denko Group conducts CSR activities to continue to be a sustainable company and make contribution to the sustainability of the international community. Specifically, we work on what needs to be done now from medium- to long-term viewpoints and share information about the activities both inside and outside the company. It is essential to foster dialogues with stakeholders to appropriately identify social needs and ensure that we do not take a dogmatic approach in our thinking. We will continue to give importance to communicating with stakeholders and increase opportunities to open dialogues with them. We will proactively conduct CSR activities, receiving input for improvements from stakeholders, thus boosting our corporate value.

CSR Topics

Endorsement of TCFD

Showa Denko has announced the endorsement of the Task Force on Climate-related Financial Disclosures (TCFD) established by the Financial Stability Board (FSB), and will take part in the TCFD Consortium, which was established at the initial meeting held on May 27, 2019. Going forward, we will actively disclose the effects of climate change on our business based on, the recommendation of the TCFD.

Set 2030 GHG Reduction Target Conforming to Global Standard

Showa Denko has set a medium-term target figure to reduce emissions of greenhouse gases (GHGs) by 2030. In addition, recognizing the importance of information disclosure to the global community, SDK announced the Group's GHG emissions in conformity with GHG Protocol, the global standard, starting from FY2018 (April 2018 - March 2019).

Under the business philosophy that "we will satisfy all stakeholders," the Showa Denko Group has been working on various social issues, including environmental problems caused by our business activities. The Group has set a goal of an 11% reduction in GHG emissions from domestic bases for FY2030 compared with FY2013. In FY2018, the Showa Denko Group began disclosing total GHG emissions from bases in Japan and abroad as well as direct GHG emissions from the Group's own facilities (Scope 1), indirect GHG emissions from purchased or acquired electricity, steam and heat (Scope 2), and indirect GHG emissions from the company's value chain (Scope 3), in accordance with GHG Protocol. The data were released in our integrated report *SHOWA DENKO REPORT*, on our website and through other media.

Moreover, the Group will introduce an Internal Carbon Pricing mechanism and incorporate the reduction of GHG emissions into the decision-making process for investment in order to promote measures to mitigate global warming as a part of business strategy.

The Showa Denko Group will continue introducing environmentally friendly production equipment and technologies, promoting environmental protection measures, and providing products that support a recycling-oriented society, thereby contributing to the creation of a society where wealth and sustainability are in harmony.

Please visit the following pages on our website for more information

CSR	https://www.sdk.co.jp/english/csr.html
Integrated reports	https://www.sdk.co.jp/english/csr/report/csr_report.html

Management's Discussion and Analysis

Results of Operations

The Group recorded consolidated net sales of ¥906,454 million (US$8,274 million) in 2019, down 8.6% from the previous year. Sales in the Chemicals segment increased slightly. However, sales in the other five segments decreased. Sales in the Inorganics segment fell due to a decrease in the sales volume of graphite electrodes resulting from reduced output. Sales in the Petrochemicals segment declined due to lower market prices for petrochemical products.

The cost of sales went down ¥33,846 million, or 4.8%, to ¥671,157 million (US$6,126 million), reflecting the decrease in net sales.

Selling, general and administrative expenses rose ¥7,369 million, or 6.4%, to ¥114,499 million (US$1,045 million), due partly to the cost of M&A of Industrielack (ILAG) Group.

R&D expenditures increased ¥2,115 million, or 10.3%, to ¥22,720 million (US$207 million).

Operating income of the Group in 2019 decreased by 32.9%, to ¥120,798 million. Operating income in the Others segment increased. However, operating income in the other five segments decreased. In the Inorganics segment, operating income decreased due to a decrease in production volumes of graphite electrodes. In the Electronics segment, operating income decreased due to a decline in shipment volumes of HD media for use in PCs.

Information by Business Segment

Petrochemicals Segment

In the Petrochemicals segment, net sales fell 6.8%, to ¥250,678 million (US$2,288 million). In our olefin business, sales volumes of ethylene and propylene increased from the previous year because once-in-four-year maintenance (resulting in the large-scale shutdown of ethylene production) did not take place, as it did in the first half of 2018. However, sales of olefin products fell due to lower market prices of petrochemical products in Asia, a result of easing supply-demand conditions. Sales of organic chemicals decreased due partly to a decline in market prices for vinyl acetate and ethyl acetate. Operating income for this segment decreased 15.4%, to ¥17,201 million (US$157 million).

Chemicals Segment

In the Chemicals segment, sales increased 0.6%, to ¥157,480 million (US$1,437 million). For basic chemicals, sales decreased slightly. Production of liquefied ammonia and chloroprene rubber maintained the same level as the previous year. However, sales of acrylonitrile slowed due to a fall in the market price. Shipment volumes and sales of electronic chemicals decreased due to adjustments in production in the semiconductor and display industries. Sales of industrial gases and functional chemicals were at the same levels as the previous year. In addition, the nonstick chemical coating companies that we have acquired in recent years were consolidated by us. As a result, sales in the Chemicals segment rose. However, operating income for this segment decreased 21.5%, to ¥13,656 million (US$125 million).

Electronics Segment

In the Electronics segment, sales decreased 13.8%, to ¥96,445 million (US$880 million). Sales of HD media fell, due partly to the bearish shipment volumes of media for PCs. In addition, in the first half of 2019, shipment volumes of HD media for data centers declined due to a global slowdown in investment in information technology (IT). Sales of rare earth magnetic alloys decreased due to structural reforms. Sales of compound semiconductors decreased due to lower shipment volumes. Sales of lithium-ion battery (LIB) materials decreased due to a lower shipment volumes, partly from a stagnant EV market in China. For SiC epitaxial wafers, sales declined due mainly to a falloff in exports, despite higher sales volumes of products for use in electric railcars. Operating income for this segment decreased 64.0%, to ¥4,880 million (US$45 million).

The SiC epitaxial wafer business was transferred from the Others segment to the Electronics segment at the beginning of 2019. Figures of 2018 are based on this new segmentation.

Inorganics Segment

In the Inorganics segment, sales decreased 13.5%, to ¥230,135 million (US$2,101 million). Sales of graphite electrodes fell due to a reduction in the Company's production and lower sales volumes of graphite electrodes starting from the middle of 2019. We are responding to the weakening supply-demand situation for graphite electrodes (mainly in the European market) that are the result of a slowdown in steel production and the partial clearance of our customers' graphite electrode inventory. Sales of ceramics decreased due to a fall in shipment volumes of fine ceramics for electronics resulting from adjusted production in the electronic parts/materials industry, in addition to lower shipment volumes for general-purpose alumina and abrasives. This segment recorded operating income of ¥89,256 million (US$815 million), down 32.6% from the previous year.

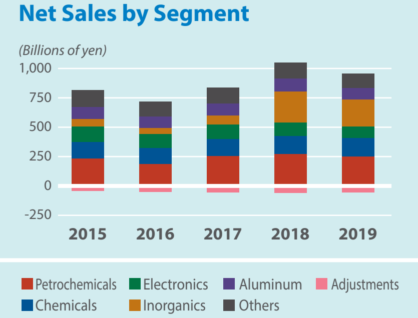
Aluminum Segment

In the Aluminum segment, sales fell 9.9%, to ¥97,542 million (US$890 million). Sales of rolled products decreased due to lower shipment volumes of high-purity aluminum foil for capacitors, the result of adjusting production in customer industries, including industrial equipment and automotive parts. Sales of aluminum specialty components decreased due mainly to a decline in shipment volumes of these components for use in automotive parts. Sales of aluminum cans remained at the same level as the previous year. Operating income for this segment decreased 64.7%, to ¥1,746 million (US$16 million).

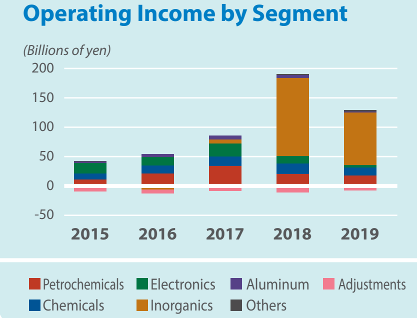
Others Segment

In the Others segment, sales decreased 8.1%, to ¥126,163 million (US$1,152 million). Shoko Co., Ltd.'s sales decreased due to falling markets for two divisions: Plastics and Metal Ceramics. However, operating income for this segment increased 4.9%, to ¥1,819 million (US$17 million).

Net Sales by Segment



Operating Income by Segment



Management's Discussion and Analysis *(cont.)*

Information by Geographic Area

Sales in Japan

Sales in the Petrochemicals segment decreased due to a decline in market prices of petrochemical products resulting from lower raw naphtha prices, despite an increase in shipment volumes of products due to recovery from the impact of once-in-four-year large-scale shutdown maintenance of ethylene production facilities, which took place in the first half of 2018. Sales in the Chemicals segment decreased. In the electronic chemicals business, sales decreased due to a decrease in shipment volumes of high-purity gases for electronics resulting from adjustment of production in the semiconductor and display industries. In the basic chemicals business, sales decreased due partly to a decline in market price of acrylonitrile. In the Electronics segment, sales of compound semiconductors and rare earth magnetic alloys decreased due to stagnant shipment volumes. In the Inorganics segment, sales of graphite electrodes increased due to a rise in market prices. However, in the ceramics business, sales of titanium oxide for electronics and heat radiant filler decreased due to adjustment of production by customers. In the Aluminum segment, sales of high-purity aluminum foil for capacitors decreased due partly to a reduction in shipment volumes resulting from production adjustment in the industrial equipment manufacturers. Sales of aluminum specialty components also decreased due to a reduction in shipment volumes of products for use as automotive parts. In the Others segment, sales decreased due to a decline in sales figures of Shoko Co., Ltd. Resulting from a decline in market prices of synthetic resins.

As a result, consolidated sales from operations in Japan decreased ¥42,661 million, or 7.7%, to ¥508,672 million (US$4,643 million).

Sales in Asia (excluding Japan)

Sales in the Petrochemicals segment in Asia increased because of an increase in export of olefins due to recovery from the impact of once-in-four-year large-scale shutdown maintenance of ethylene production facilities, which took place in the first half of 2018.

In the Chemicals segment, sales of electronic chemicals decreased due to a reduction in shipment volumes of high-purity gases for electronics resulting from production adjustment in the semiconductor and display industries in East Asia. Sales of functional chemicals decreased due to a reduction in shipment volumes to China. Consolidation of subsidiaries producing coating materials contributed to an increase in sales of chemicals in Asia.

In the Electronics segment, sales of HD media decreased due to a reduction in shipment volumes of media for PCs.

In the Inorganics segment, sales of graphite electrodes decreased due to a decline in shipment volumes caused by reduction of production aiming to cope with softening supply-demand situation.

As a result, consolidated sales from operations in Asia (excluding Japan) decreased ¥14,214 million, or 5.9% from the previous year, to ¥225,671 million (US$2,060 million).

Sales in the Rest of the World

Sales in the rest of the world decreased due mainly to a decrease in sales in the Inorganics segment. Though sales of graphite electrodes in the U.S. market increased, sales of graphite electrodes in Europe significantly decreased due to a reduction in the Group's production volumes of graphite electrodes, especially those of our European bases, starting from the middle of 2019 aiming to respond to the weakening supply-demand situation of graphite electrodes mainly in the European market resulting from a slowdown in steel production and partial-clearance of our customers' graphite-electrode inventory. In the Chemicals segment we newly consolidated coating materials manufacturing companies.

As a result, consolidated sales from operations in the rest of the world decreased ¥28,808 million, or 14.3% from the previous year, to ¥172,111 million (US$1,571 million).

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

The gap between interest expenses and interest and dividends income improved ¥941 million to the proceeds of ¥321 million (US$3 million), due mainly to a decrease in interest expense.

We recorded a gain on the equity in earnings of unconsolidated subsidiaries and affiliates to which the equity method is applied of ¥748 million (US$7 million), a deterioration of ¥505 million. This reduction was due mainly to a decrease in income of a synthetic-resin production company resulting from a sluggish market.

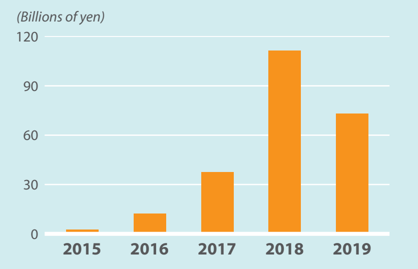
For foreign exchange gain (losses), the Group recorded foreign exchange losses of ¥728 million (US$6 million) in 2019, a deterioration of ¥381 million from the previous year due mainly to the recording of a foreign exchange loss from a subsidiary manufacturing HD media in Taiwan caused by the appreciation of the New Taiwan dollar against the U.S. dollar. In 2018, however, this HD media manufacturing subsidiary in Taiwan recorded foreign exchange gain due to the depreciation of the New Taiwan dollar against the U.S. dollar.

We recorded a loss of ¥4,455 million (US$41 million), net, on retirement and sales of non-current assets, a decrease of ¥538 million, due mainly to the recording of retirement losses resulting from removal of old facilities that belonged to the Inorganics and Chemicals segments.

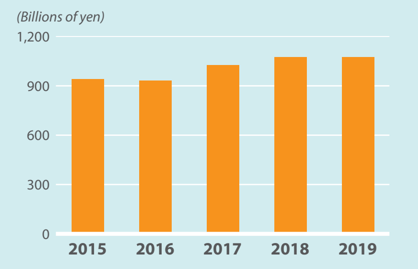
We also recorded a loss of ¥15,662 million (US$143 million) for the impairment loss on fixed assets, a decrease of ¥6,911 million, due partly to our recognition of an impairment loss amounting to ¥2,812 million from the integration of bases to manufacture unsaturated polyester resin and vinyl ester resin in our functional chemicals business, another impairment loss amounting to ¥10,418 million from the business to manufacture aluminum specialty components for the automotive parts industry, and another impairment loss amounting to ¥804 million from the business to manufacture aluminum cans for beverages in Oyama and Hikone plants where the Group streamlined their production capacities.

Gain on sales of investment securities increased ¥222 million from

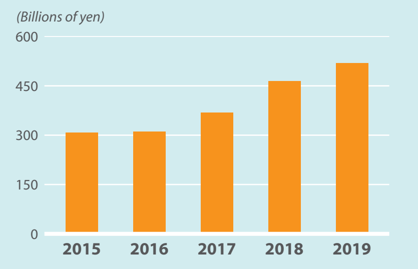
Net Income Attributable to Owners of the Parent



Total Assets



Total Net Assets



the previous year, to ¥1,743 million (US$16 million).

The sum of extraordinary losses, other than those mentioned above, decreased ¥4,104 million from the previous year, to ¥3,522 million (US$32 million), which was due mainly to a decrease in a 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 by ¥11,885 million, to a loss of ¥21,410 million (US$195 million).

As a result, the Company recorded income before income taxes and non-controlling interests of ¥97,883 million (US$893 million), down ¥47,626 million from the previous year.

Income taxes decreased ¥6,174 million to ¥22,582 million (US$206 million) due to a decrease in the Company's income before income taxes and non-controlling interests. Consequently, the Company recorded net income attributable to owners of the parent of ¥73,088 million (US$667 million), down ¥38,415 million from the previous year.

Financial Position

Total Assets

Total assets at the end of 2019 increased ¥1,398 million from the end of the previous year, to ¥1,076,381 million (US$9,825 million), due mainly to the increase in inventories resulting from a rise in prices of raw materials for graphite electrodes, despite a decrease in accounts receivable-trade. Cash and deposits increased ¥8,900 million from the end of the previous year, to ¥122,086 million (US$1,114 million).

Net property, plant and equipment decreased ¥5,238 million, to ¥473,168 million (US$4,319 million), due mainly to the recording of impairment loss. Total investments and other assets increased ¥6,112 million, to ¥106,156 million (US$969 million), due mainly to an increase in goodwill.

Liabilities

Interest-bearing debt increased ¥10,556 million from the end of the previous year, to ¥298,524 million (US$2,725 million), However, accounts payable-trade decreased due to a fall in price of naphtha as raw material. As a result, total liabilities fell ¥52,695 million from the end of the previous year, to ¥556,949 million (US$5,084 million).

Net Assets

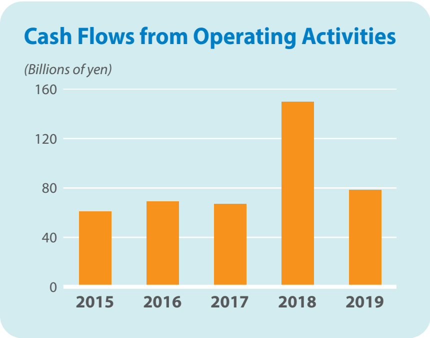
Net assets at the end of 2019 amounted to ¥519,433 million (US$4,741 million), up ¥54,093 million over the previous year, due partly to the recording of net income attributable to owners of the parent.

Capital Expenditures

Capital expenditures increased ¥8,489 million from the previous year, to ¥50,216 million (US$458 million). Capital expenditures for the Chemicals segment increased due to investments to increase production capacity of electronic chemicals, capital expenditures for the Inorganics segment increased due to investment to improve facilities to produce graphite electrodes in Europe. In addition, in the Aluminum segment, capital expenditures rose due to investments to construct the third factory of Hanacans in Vietnam. However, in the Petrochemicals segment, the amount of capital investment fell due to the completion of large-scale periodic shutdown maintenance in the first half of the previous year. In the Electronics segment, capital expenditures for facilities to produce HD media also decreased.

Cash Flows

Net cash provided by operating activities decreased ¥71,231 million from the previous year, to ¥78,554 million (US$717 million), due partly to lower income before income taxes and minority interests. Net cash used in investing activities fell ¥1,182 million, to ¥48,156 million (US$440 million), due partly to an increase in proceeds from sales of investment securities. Therefore, free cash flow was ¥30,397 million (US$277 million), a decrease in proceeds of ¥70,050 million. Net cash used in financing activities decreased ¥42,516 million due partly to a lower level of repayments of interest bearing debt, ending up at ¥18,546 million (US$169 million). As a result, and due partly to the influence of exchange rate fluctuations, cash and cash equivalents at December 31, 2019 increased ¥8,899 million from the end of the previous year, to ¥121,734 million (US$1,111 million).



Risk Factors

We consider we face the risks, as explained below, that could adversely affect our future performance, financial conditions, and cash flows. The Showa Denko Group is taking steps to prevent the realization of these risks and to minimize the impact on operations.

The following covers important risk factors considered being present as of March 26, 2020. This list is not inclusive.

1 Substantial fluctuations in the performances of individual businesses

The Group is manufacturing and selling a wide variety of products, such as petrochemicals, chemicals, electronics, inorganics, and aluminum. The following risks are expected in major business fields, but those are not limited to the businesses mentioned below.

(1) Petrochemicals

The Group purchases and imports a large amount of feedstock, including naphtha. When the price of naphtha or other types of feedstock fluctuates due to a change in crude oil prices, a change in the supply-demand balance, or a currency fluctuation, and when we cannot secure sufficient spreads between the manufacturing cost and selling prices of products, the Group's performance and financial conditions can be affected. Furthermore, earnings from petrochemicals largely depend on the supply-demand balance. Construction of large plants by competitors and the resultant oversupply as well as a sharp decrease in demand due to unfavorable changes in the Japanese or world economies can affect the Group's performance and financial conditions.

(2) HD media

In the Group's HD media business, the sales volume is largely influenced by demand for IT devices and electric appliances. This business requires innovations at a rapid pace and involves fierce international competition. Fluctuations in demand and intensification of competition will cause fluctuations in selling prices. The Group is prepared to develop and provide products meeting the market requirements and has established a global production/marketing setup. However, when market requirements change more quickly than we expected, when supply-demand balance changes substantially, and when exchange rates sharply fluctuate, the Group's performance and financial conditions can be affected.

(3) Inorganics

The Group produces graphite electrodes in Asia, North America, and Europe, and sells those products globally. When the demand for graphite electrodes suddenly decreases due to unfavorable changes in the Japanese or world economies, deterioration in supply-demand balance may not allow us to secure sufficient spreads between the manufacturing cost and selling prices of products, and can affect the Group's performance and financial conditions.

(4) Aluminum

The Group imports a large amount of aluminum metal from overseas sources. When the aluminum ingot price rises due to a rise in LME prices, a rise in the premiums on aluminum, or a weaker yen, and when we cannot absorb the manufacturing cost increase in the form of higher product prices, the Group's performance and financial conditions can be affected. Furthermore, most of our products are sold as materials and components for the automobile, electric appliance, and electronics sectors. Trends in those industries, which are beyond our control, can substantially affect our businesses.

(5) Overseas operations

The Group is producing and selling in Asia, North America, and Europe. Operations overseas involve such special risks as unexpected changes in laws and regulations, deterioration in political/economic situations, and social disorder due to war and terrorism. Such risks can become real and affect our overseas operations, resulting in adverse impact on the Group's performance and financial conditions.

(6) Mergers, acquisitions, capital tie-ups, business reorganization and restructuring

The Group implements mergers, acquisitions, capital tie-ups, business reorganization and restructuring at home and overseas to expand the scope of businesses and improve profitability. If these measures do not allow the Group to achieve the desired results due to changes in the business environment surrounding the Group or other companies to which the Group invests, these measures may have bad influences upon the Group's performance and financial conditions. In addition, when the Group restructures businesses, including withdrawal from unprofitable businesses and restructuring of affiliated companies, the Group's performance and financial conditions can be affected.

2 Unexpected fluctuations in financial conditions and cash flows

(1) Substantial fluctuations in exchange rates

For foreign-currency-based transactions centering on exports/imports, the Group makes best efforts to minimize exchange rate fluctuation risks, mainly through exchange contracts. However, substantial fluctuations in exchange rates can affect the Group's performance and financial conditions. In particular, a sharp appreciation of the yen against other currencies can affect the Group's performance. Exchange rate fluctuations can also affect the Group's performance and financial conditions through the conversion of overseas subsidiaries' financial statements into Japanese yen.

(2) Trends in financial markets and changes in the fund-raising environment

The trends in the financial markets and deterioration in the Group's financial indexes can affect the Group's fund-raising and interest expenses: for example, in the form of prompt repayment of a loan owing to the terms of financial covenants. In that event, the Group's performance and financial conditions could be affected.

(3) Employees' severance indemnities

The Group's employees' severance indemnities and expenses are calculated based on various basic rates and the yield of pension assets used in pension calculations. Fluctuations in the current price of pension assets, trends in interest rates, and changes in the retirement benefit/pension systems can affect the Group's performance and financial conditions.

(4) Securities

As the Group owns securities with current prices, fluctuations in stock prices can result in valuation losses, affecting the Group's performance and financial conditions.

(5) Accounting for impairment of fixed assets

The Group may incur additional losses from the impairment of fixed assets including goodwill and land, due to deterioration in profitability resulting from aggravation in the business environment, due to a considerable reduction in the current prices of land and other fixed assets, or due to other factors. These losses can affect the Group's performance and financial conditions.

(6) Deferred tax assets

The Group's financial statements include deferred tax assets in relation to temporary differences (differences between the assets/liabilities on the consolidated financial statements and the assets/liabilities in calculation of taxable income). The calculation of deferred tax assets is based on various projections for future taxable income. Thus, when actual taxable income differs from the projections or in case of a revision of the taxation system (including tax rates), it becomes necessary to revise deferred tax assets. That situation could affect the Group's performance and financial conditions.

3 Specific regulations

The Group's businesses are subject to various restrictions as stipulated by laws and regulations. The restrictions relate to industrial safety (such as the Law for Prevention of Disasters at Petroleum Complexes, Etc.; the Fire Service Law; and the High Pressure Gas Safety Law) and the environment and chemical substances (such as the Basic Environment Law; the Air Pollution Control Law; and the Law concerning the Examination and Regulation of Manufacture, Etc. of Chemical Substances). The Group observes these laws and regulations when conducting business. In the event the Group fails to observe any of the laws and regulations, the Group's activities could be restricted. In case stricter regulations are introduced, resulting in higher costs, the Group's performance and financial conditions can be affected.

4 Important lawsuits

While the Group makes best efforts to observe laws and agreements, the Group may be sued when conducting a wide range of businesses.

5 Others

(1) R&D

Making "Focus R&D resources on 10 technical fields corresponding to 7 business domains, and accelerate creation of new businesses through our value-adding pipelines." as the basic strategy in R&D, the Group continues R&D that leads to strengthening of core businesses and expansion of businesses in surrounding fields. Concurrently, the Group lays emphasis on creation of next-generation businesses that make the most of open innovation and M&A. Through strengthening core technologies that covers such diverse fields as inorganics, organics and aluminum, and achievement of synergies among these technologies, the Group promotes R&D programs that aim to create *Koseiha* company. However, in case the actual results materially differ from original plans, the Group's performance and financial conditions could be affected.

(2) Intellectual property

The Group is making best efforts to obtain, use, and protect intellectual property, such as industrial property rights and know-how, in recognition of the ability to make the Group's businesses more competitive. The Group also respects other companies' rights. However, in the event of failure to duly obtain or use the rights, infringement by a third party, or if the Group is considered to have infringed a third party's intellectual property, the Group's operations can be hindered and the Group's performance and financial conditions could be affected.

(3) Quality assurance and product liability

The Group has established internal rules on quality assurance and quality control, as well as organizations for managing and promoting quality assurance. Furthermore, the Group has obtained certification under ISO 9001 standards to ensure strict quality control. However, in the event of a serious quality defect or being sued for product liability, the Group's reputation could be damaged and the Group may be forced to pay compensation to customers. This could affect the Group's performance and financial conditions.

(4) Accidents and disasters

The Group is committed to securing steady and safe operations. The Group conducts regular inspections of all manufacturing facilities in an effort to minimize any risk factors pertaining to the suspension of operations or accidents due to problems with manufacturing facilities. In the event of injury or damage to property due to an accident, a large-scale natural disaster, a cyberattack, etc., the Group's reputation could be damaged. The Group may incur substantial costs in dealing with the situation and may lose business opportunities due to the suspension of production. This could affect the Group's performance and financial conditions. Furthermore, even when the Group's manufacturing facilities are not directly influenced, the Group's production activities may be restricted by trouble with procurement or disruption of supply chains due to accidents at suppliers' sites, a natural disaster, or a pandemic of infectious disease, or by a shortage of power supply. These factors could affect the Group's performance and financial conditions.

(5) Impact on the environment

The Group is committed to the principles of Responsible Care, which means that we are working to ensure the health and safety of everyone and to protect the environment from harm caused by chemical substances throughout their life cycles, namely, the development, production, distribution, use, and disposal. In the event of causing impact on the environment, the Group's reputation can be damaged. The Group may incur costs, including compensation, lose business opportunities due to the suspension of production, and/or pay compensation to customers. These factors can affect the Group's performance and financial conditions.

Consolidated Balance Sheets

Showa Denko K.K. and Consolidated Subsidiaries
As at December 31, 2019 and 2018

	Millions of yen		Thousands of U.S. dollars (Note 5)
ASSETS	**2019**	2018	**2019**
Current assets			
Cash and deposits (Notes 6 and 7)	**¥ 122,086**	¥ 113,186	**$ 1,114,332**
Notes and accounts receivable (Notes 7 and 10)	**184,425**	217,200	**1,683,329**
Allowance for doubtful accounts	**(754)**	(1,386)	**(6,885)**
Inventories	**173,667**	152,800	**1,585,135**
Other current assets (Notes 7 and 9)	**17,632**	14,732	**160,934**
Total current assets	**497,057**	496,533	**4,536,845**
Property, plant and equipment (Notes 11 and 14)			
Land (Note 19)	**226,514**	234,987	**2,067,488**
Buildings and structures	**288,591**	283,303	**2,634,087**
Machinery, equipment and vehicles	**893,878**	900,921	**8,158,797**
Construction in progress	**18,794**	11,106	**171,543**
	1,427,777	1,430,317	**13,031,915**
Less : Accumulated depreciation	**(954,608)**	(951,911)	**(8,713,108)**
Net property, plant and equipment	**473,168**	478,406	**4,318,807**
Investments and other assets			
Investment securities (Notes 7, 8, and 11)	**71,786**	71,886	**655,220**
Long-term loans	**334**	71	**3,049**
Net defined benefit asset (Note 12)	**244**	249	**2,227**
Deferred tax assets (Note 13)	**3,381**	4,574	**30,857**
Other (Notes 7 and 9)	**38,537**	31,596	**351,744**
Allowance for doubtful accounts	**(8,125)**	(8,332)	**(74,164)**
Total investments and other assets	**106,156**	100,044	**968,932**
Total assets	**¥1,076,381**	¥1,074,983	**$ 9,824,584**

See notes to financial statements.

	Millions of yen		Thousands of U.S. dollars (Note 5)
LIABILITIES AND NET ASSETS	**2019**	2018	**2019**
Current liabilities			
Short-term debt (Notes 7 and 11)	**¥ 52,720**	¥ 81,747	**$ 481,194**
Current portion of long-term debt (Notes 7 and 11)	**31,943**	41,403	**291,560**
Notes and accounts payable (Notes 7, 10, and 11)	**133,730**	182,890	**1,220,611**
Income taxes payable	**6,864**	10,160	**62,652**
Provision for repairs	**644**	64	**5,874**
Provision for bonuses	**3,050**	3,516	**27,834**
Provision for stock payments (Note 3)	**—**	5	**—**
Provision for business structure improvement	**1,686**	129	**15,389**
Other current liabilities (Notes 7 and 9)	**32,238**	42,160	**294,254**
Total current liabilities	**262,875**	362,074	**2,399,368**
Non-current liabilities			
Long-term debt less current portion (Notes 7 and 11)	**213,861**	164,818	**1,951,996**
Deferred tax liabilities (Note 13)	**7,950**	6,027	**72,563**
Provision for repairs	**2,021**	1,102	**18,448**
Provision for stock payments (Note 3)	**200**	156	**1,823**
Provision for business structure improvement	**824**	2,876	**7,521**
Net defined benefit liability (Note 12)	**9,969**	22,018	**90,990**
Deferred tax liabilities for land revaluation (Note 19)	**32,150**	32,324	**293,449**
Other non-current liabilities (Notes 7 and 9)	**27,099**	18,248	**247,345**
Total non-current liabilities	**294,074**	247,569	**2,684,135**
Contingent liabilities (Note 17)			
Net assets (Note 18)			
Shareholders' equity			
Capital stock			
Authorized, 330,000,000 shares			
Issued (2019): 149,711,292 shares	**140,564**	—	**1,282,982**
Issued (2018): 149,711,292 shares	**—**	140,564	**—**
Capital surplus	**78,912**	78,911	**720,263**
Retained earnings	**249,246**	197,717	**2,274,973**
Less: Treasury stock at cost (2019): 3,836,329 shares	**(11,664)**	—	**(106,465)**
Less: Treasury stock at cost (2018): 3,836,364 shares	**—**	(11,659)	**—**
Total shareholders' equity	**457,057**	405,532	**4,171,753**
Accumulated other comprehensive income			
Valuation difference on available-for-sale securities	**9,789**	7,489	**89,352**
Deferred gains or losses on hedges	**433**	836	**3,951**
Revaluation reserve for land (Note 19)	**33,060**	33,281	**301,756**
Foreign currency translation adjustments	**4,140**	7,069	**37,786**
Remeasurements of defined benefit plans (Note 12)	**(5,114)**	(8,244)	**(46,673)**
Total accumulated other comprehensive income	**42,309**	40,431	**386,172**
Non-controlling interests	**20,067**	19,377	**183,157**
Total net assets	**519,433**	465,340	**4,741,082**
Total liabilities and net assets	**¥1,076,381**	¥1,074,983	**$ 9,824,584**

Consolidated Statements of Income

Showa Denko K.K. and Consolidated Subsidiaries
For the years ended December 31, 2019 and 2018

	Millions of yen		Thousands of U.S. dollars (Note 5)
	2019	2018	**2019**
Net sales	**¥ 906,454**	¥ 992,136	**$ 8,273,583**
Cost of sales (Note 21)	**671,157**	705,003	**6,125,928**
Gross profit	**235,297**	287,133	**2,147,655**
Selling, general and administrative expenses (Notes 20 and 21)	**114,499**	107,130	**1,045,081**
Operating income	**120,798**	180,003	**1,102,574**
Other income (expenses)			
Interest and dividends income	**2,568**	2,354	**23,437**
Equity in earnings (losses) of unconsolidated subsidiaries and affiliates	**748**	1,253	**6,826**
Gain on sales of investment securities, net (Note 8)	**1,743**	1,521	**15,911**
Loss on valuation of investment securities (Note 8)	**(9)**	(2,583)	**(78)**
Foreign exchange gains (losses)	**(728)**	(347)	**(6,644)**
Rent income on non-current assets	**1,351**	1,366	**12,327**
Gain (loss) on sales of noncurrent assets, net	**615**	(141)	**5,614**
Interest expenses	**(2,255)**	(2,983)	**(20,587)**
Loss on retirement of noncurrent assets	**(5,070)**	(4,851)	**(46,279)**
Impairment loss (Note 14)	**(15,662)**	(22,573)	**(142,956)**
Environmental expenses	**(1,231)**	(462)	**(11,234)**
Loss on mothballing of operation	**(1,444)**	(1,479)	**(13,176)**
Gain on liquidation of subsidiaries	**—**	361	**—**
Gain on sale of businesses	**312**	—	**2,850**
Other, net	**(3,853)**	(5,931)	**(35,168)**
Total	**(22,915)**	(34,494)	**(209,159)**
Income before income taxes and non-controlling interests	**97,883**	145,509	**893,415**
Income taxes (Note 13)			
Current	**22,196**	25,669	**202,589**
Deferred	**386**	3,087	**3,527**
Net income	**75,300**	116,752	**687,299**
Net income attributable to non-controlling interests	**2,212**	5,249	**20,190**
Net income attributable to owners of the parent	**¥ 73,088**	¥ 111,503	**$ 667,108**

	Yen		U.S. dollars (Note 5)
Per share amounts			
Net income – primary	**¥ 501.03**	¥ 758.15	**$ 4.57**
Cash dividends (applicable to the period)	**130.00**	120.00	**1.19**

Note: 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 2019 and 2018 were not disclosed because there were no dilutive shares.

See notes to financial statements.

Consolidated Statements of Comprehensive Income

Showa Denko K.K. and Consolidated Subsidiaries
For the years ended December 31, 2019 and 2018

	Millions of yen		Thousands of U.S. dollars (Note 5)
	2019	2018	**2019**
Net income	**¥75,300**	¥116,752	**$ 687,299**
Other comprehensive income:			
Valuation difference on available-for-sale securities	**2,333**	(9,127)	**21,295**
Deferred gains or losses on hedges	**(406)**	(2,942)	**(3,703)**
Foreign currency translation adjustments	**(2,992)**	(7,667)	**(27,309)**
Remeasurements of defined benefit plans, net of tax	**3,131**	(3,556)	**28,582**
Share of other comprehensive income of unconsolidated subsidiaries and affiliates accounted for using equity method	**(59)**	(1,405)	**(542)**
Total other comprehensive income (loss) (Note 15)	**¥ 2,007**	¥ (24,697)	**$ 18,323**
Comprehensive income	**¥77,308**	¥ 92,055	**$ 705,622**
Comprehensive income attributable to:			
Owners of parent	**75,187**	87,463	**686,267**
Non-controlling interests	**2,121**	4,593	**19,355**

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, 2019 and 2018

	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	Remeasure-ments of defined benefit plans	Non-controlling interests	Total net assets
Balance as at December 31, 2017	149,711	¥ 140,564	¥ 61,663	¥ 100,076	¥ (10,503)	¥ 16,547	¥ 3,781	¥ 29,541	¥ 15,516	¥ (4,716)	¥ 16,524	¥ 368,994
Dividends from surplus	—	—	—	(10,117)	—	—	—	—	—	—	—	(10,117)
Net income (loss) attributable to owners of the parent	—	—	—	111,503	—	—	—	—	—	—	—	111,503
Purchase of treasury stock	—	—	—	—	(10,015)	—	—	—	—	—	—	(10,015)
Disposal of treasury stock	—	—	17,248	—	8,859	—	—	—	—	—	—	26,107
Increase by increase of consolidated subsidiaries	—	—	—	—	—	—	—	—	—	—	—	—
Decrease by increase of consolidated subsidiaries	—	—	—	—	—	—	—	—	—	—	—	—
Change of scope of equity method	—	—	—	(6)	—	—	—	—	—	—	—	(6)
Change in treasury shares of the parent arising from transactions with non-controlling shareholders	—	—	0	—	—	—	—	—	—	—	—	0
Reversal of revaluation reserve for land	—	—	—	(3,740)	—	—	—	—	—	—	—	(3,740)
Net changes of items other than shareholders' equity	—	—	—	—	—	(9,058)	(2,945)	3,740	(8,447)	(3,528)	2,853	(17,387)
Balance as at December 31, 2018	149,711	¥ 140,564	¥ 78,911	¥ 197,717	¥ (11,659)	¥ 7,489	¥ 836	¥ 33,281	¥ 7,069	¥ (8,244)	¥ 19,377	¥ 465,340
Dividends from surplus	—	—	—	**(21,924)**	—	—	—	—	—	—	—	**(21,924)**
Net income (loss) attributable to owners of the parent	—	—	—	**73,088**	—	—	—	—	—	—	—	**73,088**
Purchase of treasury stock	—	—	—	—	**(8)**	—	—	—	—	—	—	**(8)**
Disposal of treasury stock	—	—	**0**	—	**3**	—	—	—	—	—	—	**3**
Increase by increase of consolidated subsidiaries	—	—	—	**448**	—	—	—	—	—	—	—	**448**
Decrease by increase of consolidated subsidiaries	—	—	—	**(367)**	—	—	—	—	—	—	—	**(367)**
Change of scope of the equity method	—	—	—	—	—	—	—	—	—	—	—	—
Change in treasury shares of the parent arising from transactions with non-controlling shareholders	—	—	**1**	—	—	—	—	—	—	—	—	**1**
Reversal of revaluation reserve for land	—	—	—	**285**	—	—	—	—	—	—	—	**285**
Net changes of items other than shareholders' equity	—	—	—	—	—	**2,301**	**(404)**	**(221)**	**(2,929)**	**3,130**	**690**	**2,568**
Balance as at December 31, 2019	**149,711**	**¥ 140,564**	**¥ 78,912**	**¥ 249,246**	**¥ (11,664)**	**¥ 9,789**	**¥ 433**	**¥ 33,060**	**¥ 4,140**	**¥ (5,114)**	**¥ 20,067**	**¥ 519,433**

	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	Remeasure-ments of defined benefit plans	Non-controlling interests	Total net assets
Balance as at December 31, 2018	149,711	$ 1,282,982	$ 720,255	$ 1,804,642	$ (106,419)	$ 68,352	$ 7,634	$ 303,772	$ 64,518	$ (75,246)	$ 176,863	$ 4,247,352
Dividends from surplus	—	—	—	**(200,114)**	—	—	—	—	—	—	—	**(200,114)**
Net income (loss) attributable to owners of the parent	—	—	—	**667,108**	—	—	—	—	—	—	—	**667,108**
Purchase of treasury stock	—	—	—	—	**(72)**	—	—	—	—	—	—	**(72)**
Disposal of treasury stock	—	—	**0**	—	**25**	—	—	—	—	—	—	**25**
Increase by increase of consolidated subsidiaries	—	—	—	**4,089**	—	—	—	—	—	—	—	**4,089**
Decrease by increase of consolidated subsidiaries	—	—	—	**(3,353)**	—	—	—	—	—	—	—	**(3,353)**
Change of scope of the equity method	—	—	—	—	—	—	—	—	—	—	—	—
Change in treasury shares of the parent arising from transactions with non-controlling shareholders	—	—	**8**	—	—	—	—	—	—	—	—	**8**
Reversal of revaluation reserve for land	—	—	—	**2,600**	—	—	—	—	—	—	—	**2,600**
Net changes of items other than shareholders' equity	—	—	—	—	—	**21,001**	**(3,683)**	**(2,015)**	**(26,732)**	**28,573**	**6,294**	**23,437**
Balance as at December 31, 2019	**149,711**	**$ 1,282,982**	**$ 720,263**	**$ 2,274,973**	**$ (106,465)**	**$ 89,352**	**$ 3,951**	**$ 301,756**	**$ 37,786**	**$ (46,673)**	**$ 183,157**	**$ 4,741,082**

See notes to financial statements.

Consolidated Statements of Cash Flows

Showa Denko K.K. and Consolidated Subsidiaries

For the years ended December 31, 2019 and 2018

	Millions of yen		Thousands of U.S. dollars (Note 5)
	2019	2018	**2019**
Cash flows from operating activities			
Income before income taxes and non-controlling interests	**¥ 97,883**	¥ 145,509	**$ 893,415**
Adjustments for:			
Depreciation and amortization	**37,704**	39,459	**344,141**
Impairment loss	**15,662**	22,573	**142,956**
Amortization of goodwill	**98**	—	**894**
Amortization of negative goodwill	**—**	(19)	**—**
Increase (decrease) in allowance for doubtful accounts	**(700)**	(2,134)	**(6,390)**
Increase (decrease) in provision for business restructuring	**(494)**	(704)	**(4,511)**
Increase (decrease) in provision for loss on guarantees	**—**	(2,640)	**—**
Increase (decrease) in net defined benefit liability	**(11,757)**	3,522	**(107,308)**
Interest and dividends income	**(2,568)**	(2,354)	**(23,437)**
Interest expenses	**2,255**	2,983	**20,587**
Equity in (earnings) losses of unconsolidated subsidiaries and affiliates	**(748)**	(1,253)	**(6,826)**
Loss (gain) on sales and valuation of investment securities	**(1,735)**	1,062	**(15,833)**
Loss on retirement of non-current assets	**5,070**	4,851	**46,279**
Loss (gain) on sales of non-current assets	**(615)**	141	**(5,614)**
Decrease (increase) in notes and accounts receivable-trade	**33,489**	(29,583)	**305,671**
Decrease (increase) in inventories	**(21,585)**	(40,469)	**(197,020)**
Increase (decrease) in notes and accounts payable-trade	**(21,898)**	20,397	**(199,870)**
Other, net	**(25,591)**	6,162	**(233,577)**
Subtotal	**104,472**	167,506	**953,558**
Interest and dividends income received	**3,431**	4,005	**31,312**
Interest expenses paid	**(2,326)**	(4,269)	**(21,233)**
Income taxes (paid) refund	**(27,022)**	(17,457)	**(246,646)**
Net cash provided by (used in) operating activities	**78,554**	149,785	**716,991**
Cash flows from investing activities			
Payments into time deposits	**(53)**	(172)	**(484)**
Proceeds from withdrawal of time deposits	**53**	210	**479**
Purchase of property, plant and equipment	**(40,708)**	(41,269)	**(371,559)**
Proceeds from sales of property, plant and equipment	**1,251**	392	**11,414**
Purchase of investment securities	**(864)**	(703)	**(7,888)**
Proceeds from sales of investment securities	**5,677**	3,975	**51,814**
Purchase of investments in subsidiaries resulting in change in the scope of consolidation	**(4,851)**	—	**(44,278)**
Proceeds from sales of investments in subsidiaries resulting in change in scope of consolidation	**529**	—	**4,826**
Net decrease (increase) in short-term loans receivable	**450**	197	**4,108**
Payments of long-term loans receivable	**(558)**	(2,950)	**(5,097)**
Collection of long-term loans receivable	**289**	672	**2,636**
Other, net	**(9,369)**	(9,690)	**(85,513)**
Net cash provided by (used in) investing activities	**(48,156)**	(49,338)	**(439,542)**
Cash flows from financing activities			
Net increase (decrease) in short-term debt	**(29,545)**	(9,507)	**(269,669)**
Proceeds from long-term loans payable	**64,396**	33,206	**587,768**
Repayments of long-term loans payable	**(47,206)**	(81,559)	**(430,873)**
Proceeds from share issuance of bonds	**20,000**	—	**182,548**
Purchase of treasury stock	**(9)**	(10,016)	**(81)**
Proceeds from sales of treasury stock	**0**	26,104	**1**
Cash dividends paid	**(21,861)**	(10,084)	**(199,531)**
Cash dividends paid to non-controlling shareholders	**(1,329)**	(2,365)	**(12,133)**
Other, net	**(2,992)**	(6,840)	**(27,306)**
Net cash provided by (used in) financing activities	**(18,546)**	(61,061)	**(169,276)**
Effect of exchange rate changes on cash and cash equivalents	**(2,388)**	(3,231)	**(21,792)**
Net increase (decrease) in cash and cash equivalents	**9,464**	36,154	**86,381**
Cash and cash equivalents at the beginning of the year	**112,835**	76,833	**1,029,893**
Increase in cash and cash equivalents resulting from newly consolidated subsidiaries	**310**	—	**2,826**
Decrease in cash and cash equivalents resulting from change in scope of consolidation	**(875)**	(153)	**(7,982)**
Cash and cash equivalents at the end of the year (Note 6)	**¥ 121,734**	¥ 112,835	**$ 1,111,118**

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 the 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, 2019 and 2018 include the accounts of Showa Denko K.K. ("the Company") and its 61 and 58, 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 subsidiaries in 2019 and 2 that of in 2018, as well as 9 affiliates in 2019 and 9 that of in 2018.

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 foreign subsidiaries 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 the 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 the 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.

(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 (excluding Outside Directors), Corporate Officers, and Councilors, the provision is provided based on the Director Share Payment Regulations.

(o) 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 the 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.

(p) Income Taxes
Income taxes consist of taxes on corporations, enterprises, and inhabitants. The provision for income taxes is computed based on the pretax income of the Company and each of 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.

(q) 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 the recognition of gains or losses resulting from changes in the 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 contract 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 the 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.

(r) Reclassifications
Certain reclassifications have been made in the 2018 financial statements to conform to the presentation of 2019.

3. ADDITIONAL INFORMATION

(a) Board Benefit Trust (BBT)
Based on the resolution at the 107th ordinary general meeting of shareholders held on March 30, 2016, the Company introduced a new stock compensation plan called the Board Benefit Trust (BBT) ("the Scheme") for Directors and Corporate Officers on May 11, 2016.

Following the resolution of the Board of Directors on March 5, 2019, the Company decided to include its Councilors into the targets of the Scheme and revises the maximum amount of funds the Company will contribute to the trust, which are to be used by the trust to acquire shares in the Company.

(1) Outline of the Transaction
In the Scheme, the shares of the Company are granted to its Directors (excluding Outside Directors), Corporate Officers, and Councilors pursuant to the Director Share Grant Regulations set forth by the Company.

Notes to Financial Statements

Showa Denko K.K. and Consolidated Subsidiaries

The Company grants performance-linked points to its Directors, Corporate Officers, and Councilors 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, Corporate Officer, or Councilor meeting the relevant requirements set forth in the Director Share Grant Regulations. The Company's shares that are granted to Directors, Corporate Officers, and Councilors including those to be granted in the future, shall be acquired by the trust using the entrusted funds and separately managed as trusted assets.

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 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).

(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 were ¥324 million and 288,000 shares at the end of the fiscal year ended December 31, 2018, and ¥321 million (US$2,934 thousand) and 286,000 shares at the end of the fiscal year ended December 31, 2019, respectively.

4. CHANGES IN ACCOUNTING POLICIES

(a) New Accounting Standards Not Yet Applied
"Accounting Standard for Revenue Recognition" (ASBJ Statement No. 29, March 30, 2018. Accounting Standards Board of Japan) and "Implementation Guidance on Accounting Standard for Revenue Recognition" (ASBJ Guidance No. 30, March 30, 2018. Accounting Standards Board of Japan)

(1) Overview

The International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB) jointly developed a comprehensive accounting standard for revenue recognition, and published "Revenue from Contracts with Customers" (IFRS 15 at IASB, Topic 606 at FASB) in May 2014. Given that IFRS 15 will be applied to fiscal years starting on or after January 1, 2018 and Topic 606 will be applied to fiscal years starting on or after December 15, 2017, the Accounting Standards Board of Japan developed a comprehensive accounting standard for revenue recognition and published them together with implementation guidance. The basic policy of the Accounting Standards Board of Japan in developing the accounting standard for revenue recognition is to establish an accounting standard with the incorporation of the basic principles of IFRS 15 as a starting point from the perspective of comparability between financial statements, which is one of the benefits of seeking consistency with IFRS 15, and to add alternative treatments if there are any matters in Japanese practices as far as the comparability is not hindered.

(2) Scheduled Date of Application

The standard will be applied from the beginning of the fiscal year 2022.

(3) Impact of Application

The impact of the application of the accounting standard and implementation guidance for revenue recognition on the consolidated financial statements is currently under review.

(b) Changes in Presentation
Adoption of "Partial Amendments to Accounting Standard for Tax Effect Accounting"

"Partial Amendments to Accounting Standard for Tax Effect Accounting"(ASBJ Statement No. 28, February 16, 2018) have been applied, effective from the beginning of the current fiscal year. Accordingly, deferred tax assets are presented under investments and other assets, and deferred tax liabilities are presented under non-current liabilities, and related income tax disclosures have been expanded.

As a result, in the consolidated balance sheet for the previous fiscal year, deferred tax assets under current assets have decreased by ¥3,747 million, while deferred tax assets under investments and other assets have increased by ¥2,984 million. In addition, other current liabilities under current liabilities have decreased by ¥106 million, while deferred tax liabilities under non-current liabilities have decreased by ¥657 million. Deferred tax assets and deferred tax liabilities for the same taxable entity are shown to offset each other, therefore total assets have declined by ¥763 million when compared before the accounting changes.

Matters provided in explanatory Note 8 "Accounting Standard for Tax Effect Accounting" (excluding the total amount of valuation allowances) prescribed in paragraphs 3-5 of the "Partial Amendments to Accounting Standard for Tax Effect Accounting" have been described in Note 13. INCOME TAXES. However, in accordance with the transitional measures in paragraph 7, the Company omitted including comparative information for the previous fiscal year.

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 ¥109.56 to US$1.00, the approximate rate of exchange as at December 31, 2019. 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

(a) Cash and Cash Equivalents

Cash and deposits as of December 31, 2019 and 2018 on the consolidated balance sheets and cash equivalents as at December 31, 2019 and 2018 on the consolidated statements of cash flows were reconciled as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	**2019**
Cash and deposits	**¥ 122,086**	¥ 113,186	**$ 1,114,332**
Original maturities more than three months	**(352)**	(351)	**(3,214)**
Cash and cash equivalents	**¥ 121,734**	¥ 112,835	**$ 1,111,118**

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.

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 contracts 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 debts 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, 2019 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

Along with the values being based on market prices, the fair value of financial instruments includes values that 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

As at December 31, 2019 and 2018, 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, 2019	Millions of yen		
	Book value	Fair value	Difference
(1) Cash and deposits	**¥ 122,086**	**¥ 122,086**	**¥ —**
(2) Notes and accounts receivable-trade	**170,293**	**170,293**	**—**
(3) Investment securities	**46,813**	**46,813**	**—**
Total assets	**¥ 339,192**	**¥ 339,192**	**¥ —**
(1) Notes and accounts payable-trade	**¥ 117,510**	**¥ 117,510**	**¥ —**
(2) Short-term debt	**52,720**	**52,720**	**—**
(3) Current portion of long-term debt	**31,943**	**31,952**	**8**
(4) Accounts payable-other	**30,597**	**30,597**	**—**
(5) Long-term debt less current portion	**213,861**	**213,424**	**(436)**
Total liabilities	**¥ 446,631**	**¥ 446,203**	**¥ (428)**
Derivative transactions*	**¥ 608**	**¥ 608**	**¥ —**

Year ended December 31, 2018	Millions of yen		
	Book value	Fair value	Difference
(1) Cash and deposits	¥ 113,186	¥ 113,186	¥ —
(2) Notes and accounts receivable-trade	203,730	203,730	—
(3) Investment securities	46,613	46,613	—
Total assets	¥ 363,529	¥ 363,529	¥ —
(1) Notes and accounts payable-trade	¥ 139,420	¥ 139,420	¥ —
(2) Short-term debt	81,747	81,747	—
(3) Current portion of long-term debt	41,403	41,411	8
(4) Accounts payable-other	56,471	56,471	—
(5) Long-term debt less current portion	164,818	165,040	222
Total liabilities	¥ 483,859	¥ 484,089	¥ 230
Derivative transactions*	¥ 1,231	¥ 1,231	¥ —

Year ended December 31, 2019	Thousands of U.S. dollars		
	Book value	Fair value	Difference
(1) Cash and deposits	**$ 1,114,332**	**$ 1,114,332**	**$ —**
(2) Notes and accounts receivable-trade	**1,554,334**	**1,554,334**	**—**
(3) Investment securities	**427,285**	**427,285**	**—**
Total assets	**$ 3,095,951**	**$ 3,095,951**	**$ —**
(1) Notes and accounts payable-trade	**$ 1,072,563**	**$ 1,072,563**	**$ —**
(2) Short-term debt	**481,194**	**481,194**	**—**
(3) Current portion of long-term debt	**291,560**	**291,636**	**77**
(4) Accounts payable-other	**279,274**	**279,274**	**—**
(5) Long-term debt less current portion	**1,951,996**	**1,948,012**	**(3,984)**
Total liabilities	**$ 4,076,587**	**$ 4,072,679**	**$ (3,907)**
Derivative transactions*	**$ 5,549**	**$ 5,549**	**$ —**

*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

The 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 the estimated cash flows by discounting the principal and interest value using the interest rate applied to the new loans. Parts 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 the 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.

Bonds (included in the above Long-term debt less current portion)

The fair value is based on the market prices.

Derivative transactions

Refer to Note 9. DERIVATIVE FINANCIAL INSTRUMENTS.

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

	Millions of yen		Thousands of U.S. dollars
	2019	2018	**2019**
Non-listed equity securities	**¥ 24,973**	¥ 25,273	**$ 227,935**

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

Notes: 3. Redemption schedule for financial assets and securities with maturities

Year ended December 31, 2019	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	**¥122,086**	**¥—**	**¥—**	**¥—**
Notes and accounts receivable-trade	**170,293**	**—**	**—**	**—**
Total	**¥292,379**	**¥—**	**¥—**	**¥—**

Year ended December 31, 2018	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	¥ 113,186	¥—	¥—	¥—
Notes and accounts receivable-trade	203,730	—	—	—
Total	¥ 316,916	¥—	¥—	¥—

Year ended December 31, 2019	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	**$1,114,332**	**$—**	**$—**	**$—**
Notes and accounts receivable-trade	**1,554,334**	**—**	**—**	**—**
Total	**$2,668,666**	**$—**	**$—**	**$—**

Notes: 4. Scheduled maturities of bonds and long-term debt after December 31, 2019 and 2018

Year ended December 31, 2019	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	**¥52,720**	**¥ —**	**¥ —**	**¥ —**	**¥ —**	**¥ —**
(2) Long-term debt	**31,943**	**53,191**	**48,870**	**32,309**	**24,291**	**55,200**
Total	**¥84,663**	**¥53,191**	**¥48,870**	**¥32,309**	**¥24,291**	**¥55,200**

Year ended December 31, 2018	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	¥ 81,747	¥ —	¥ —	¥ —	¥ —	¥ —
(2) Long-term debt	41,403	31,975	51,893	45,937	18,713	16,300
Total	¥123,150	¥ 31,975	¥ 51,893	¥ 45,937	¥ 18,713	¥ 16,300

Year ended December 31, 2019	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	**$ 481,194**	**$ —**	**$ —**	**$ —**	**$ —**	**$ —**
(2) Long-term debt	**291,560**	**485,497**	**446,057**	**294,898**	**221,714**	**503,831**
Total	**$ 772,753**	**$ 485,497**	**$ 446,057**	**$ 294,898**	**$ 221,714**	**$ 503,831**

8. SECURITIES

(a) Available-for-sale Securities

Year ended December 31, 2019	Millions of yen		
	Book value	Acquisition cost	Difference
Available-for-sale securities whose book value exceeds their acquisition cost			
Equity securities	**¥39,905**	**¥23,089**	**¥16,817**
Other	**176**	**154**	**22**
Available-for-sale securities whose book value is less than their acquisition cost			
Equity securities	**6,732**	**8,542**	**(1,810)**
Total	**¥46,813**	**¥31,784**	**¥15,029**

Year ended December 31, 2018	Millions of yen		
	Book value	Acquisition cost	Difference
Available-for-sale securities whose book value exceeds their acquisition cost			
Equity securities	¥38,941	¥24,834	¥14,107
Other	181	159	21
Available-for-sale securities whose book value is less than their acquisition cost			
Equity securities	7,491	9,567	(2,076)
Total	¥46,613	¥34,561	¥12,052

Year ended December 31, 2019	Thousands of U.S. dollars		
	Book value	Acquisition cost	Difference
Available-for-sale securities whose book value exceeds their acquisition cost			
Equity securities	**$364,233**	**$210,739**	**$153,494**
Other	**1,605**	**1,401**	**204**
Available-for-sale securities whose book value is less than their acquisition cost			
Equity securities	**61,446**	**77,966**	**(16,519)**
Total	**$427,285**	**$290,106**	**$137,179**

(b) Available-for-sale Securities Sold in the Years Ended December 31, 2019 and 2018:

Year ended December 31, 2019	Millions of yen		
	Sales	Gross gain	Gross loss
Equity securities	**¥4,922**	**¥1,669**	**¥(5)**
Total	**¥4,922**	**¥1,669**	**¥(5)**

Year ended December 31, 2018	Millions of yen		
	Sales	Gross gain	Gross loss
Equity securities	¥1,552	¥292	¥(2)
Total	¥1,552	¥292	¥(2)

Year ended December 31, 2019	Thousands of U.S. dollars		
	Sales	Gross gain	Gross loss
Equity securities	**$44,925**	**$15,236**	**$(47)**
Total	**$44,925**	**$15,236**	**$(47)**

(c) Impairment of securities

For the years ended December 31, 2019 and 2018, the Companies recorded an impairment loss of ¥3 million (US$31 thousand) on available-for-sale securities and ¥2,581 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			
	2019				2018				**2019**			
	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)
Currency related:												
Forward exchange contracts:												
Buying												
U.S. Dollar	**¥ 184**	**¥ —**	**¥ 1**	**¥ 1**	¥ —	¥ —	¥ —	¥ —	**$1,676**	**$ —**	**$ 9**	**$ 9**
Euro	**2**	**—**	**0**	**0**	6,344	—	9	9	**14**	**—**	**0**	**0**
Selling												
U.S. Dollar	**¥ 198**	**¥ —**	**¥ (1)**	**¥ (1)**	¥ 20	¥ —	¥ 0	¥ 0	**$1,812**	**$ —**	**$ (5)**	**$ (5)**
Euro	**—**	**—**	**—**	**—**	401	—	13	13	**—**	**—**	**—**	**—**
Swiss Franc	**1,369**	**—**	**(16)**	**(16)**	—	—	—	—	**12,493**	**—**	**(142)**	**(142)**

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		
	2019			2018			2019		
	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
(1) Currency related:									
Principle method									
Forward exchange contracts:									
Buying									
U.S. Dollar	**¥ 8,682**	**¥ 3,109**	**¥ 240**	¥ 11,309	¥ 766	¥ 0	**$ 79,244**	**$ 28,374**	**$ 2,190**
Euro	**19**	**—**	**0**	37	—	(0)	**176**	**—**	**2**
Canadian Dollar	**3**	**—**	**0**	—	—	—	**26**	**—**	**0**
Australian Dollar	**1**	**—**	**(0)**	—	—	—	**11**	**—**	**(0)**
Selling									
U.S. Dollar	**5,594**	**—**	**(19)**	6,736	—	106	**51,058**	**—**	**(176)**
Euro	**201**	**—**	**(2)**	—	—	—	**1,837**	**—**	**(20)**
Allocation method									
Forward exchange contracts:									
Buying									
U.S. Dollar	**¥ 1,623**	**¥ —**	**¥ —**	¥ 1,971	¥ —	¥ —	**$ 14,812**	**$ —**	**$ —**
Euro	**47**	**—**	**—**	44	—	—	**431**	**—**	**—**
Selling									
U.S. Dollar	**6,073**	**—**	**—**	7,390	—	—	**55,432**	**—**	**—**
Euro	**332**	**—**	**—**	1,845	—	—	**3,026**	**—**	**—**
Yuan Renminbi	**701**	**—**	**—**	1,041	—	—	**6,396**	**—**	**—**
Currency swaps:									
Receipt U.S. Dollar									
Payment Yen	**¥ 2,900**	**¥ 2,000**	**¥ —**	¥ 7,900	¥ 2,900	¥ —	**$ 26,470**	**$ 18,255**	**$ —**
(2) Interest rate related:									
Special method									
Interest rate swaps:									
Receipt-variable rate/Payment-fixed rate	**¥ 5,433**	**¥ 2,600**	**¥ —**	¥ 7,168	¥ 2,836	¥ —	**$ 49,589**	**$ 23,731**	**$ —**
(3) Commodity related:									
Principle method									
Aluminum forward contracts:									
Buying	**¥ 15,649**	**¥ 5,993**	**¥ 428**	¥ 18,235	¥ 8,790	¥ 1,070	**$ 142,839**	**$ 54,698**	**$ 3,907**
Selling	**1,538**	**—**	**(22)**	1,025	—	34	**14,034**	**—**	**(204)**

Notes: 1. The main items hedged by forward exchange contracts are accounts payable for buying, accounts receivable for selling and long-term debt by interest rate swaps. The main items hedged by aluminum forward transactions are aluminum metal transactions.
2. Fair value calculation method:
The fair values of forward exchange contracts are stated by the forward exchange rates. The fair values of currency swaps are measured at the quoted price obtained from the financial institutions. The fair values of aluminum forward transactions are stated by forward quotations of the London Metal Exchange.
3. The fair values of forward exchange contracts and currency swaps that meet the allocation method criteria are reflected in the fair values of accounts receivable, accounts payable and debts of their hedged items.
4. The fair values of interest rate swaps that meet the 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 2019, namely, December 31, 2019, was a bank holiday. Although notes receivable and payable maturing on this date were accordingly settled on January 6, 2020, the Companies accounted for those notes in their financial statements as if they had been settled on the maturity date.

Notes outstanding as at December 31, 2019 and 2018 dealt with in the above-mentioned manner were as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	**2019**
Notes receivable	**¥ 1,524**	¥ 1,317	**$ 13,906**
Notes payable	**1,074**	901	**9,803**

Notes to Financial Statements

Showa Denko K.K. and Consolidated Subsidiaries

11. SHORT-TERM DEBT AND LONG-TERM DEBT

As at December 31, 2019 and 2018, the short-term debt of the Companies consisted of the following:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Bank loans at the average interest rate of 0.66%	¥ 52,720	¥ 61,747	$ 481,194
Commercial paper	—	20,000	—
Total	¥ 52,720	¥ 81,747	$ 481,194

As at December 31, 2019 and 2018, the long-term debt of the Companies consisted of the following:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
0.630% bonds due 2021	¥ 15,000	¥ 15,000	$ 136,911
0.200% bonds due 2021	10,000	10,000	91,274
0.734% bonds due 2022	10,000	10,000	91,274
0.190% bonds due 2024	10,000	—	91,274
0.500% bonds due 2026	7,000	7,000	63,892
0.430% bonds due 2029	10,000	—	91,274
Loans principally from banks and insurance companies due 2019 to 2029 at the average interest rate of 0.55%	183,804	164,221	1,677,656
	245,804	206,221	2,243,556
Less: current portion	(31,943)	(41,403)	(291,560)
Total	¥213,861	¥164,818	$ 1,951,996

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
2021	¥ 53,191	$ 485,497
2022	48,870	446,057
2023	32,309	294,898
2024	24,291	221,714
2025 and thereafter	55,200	503,831
Total	¥213,861	$ 1,951,996

As at December 31, 2019 and 2018, the assets pledged as collateral for long-term debt were as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Assets pledged as collateral			
Investment securities	¥ 408	¥ 361	$ 3,724
Property, plant and equipment, less accumulated depreciation	136,697	144,153	1,247,691
Total	¥137,105	¥ 144,514	$1,251,415
Secured short-term debt and long-term debt			
Short-term debt	¥ 92	¥ 170	$ 836
Long-term debt	160	240	1,460
Notes and accounts payable-trade	143	163	1,305
Total	¥ 395	¥ 573	$ 3,602

12. RETIREMENT BENEFITS

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

(1) Reconciliation of opening and closing balance of retirement benefit obligation for the years ended December 31, 2019 and 2018 was as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Balance of retirement benefit obligation at the beginning of year	¥100,324	¥ 101,154	$ 915,699
Service cost	2,677	2,606	24,433
Interest cost	487	519	4,449
Actuarial gain and loss	3,646	1,428	33,276
Retirement benefits paid	(5,035)	(4,758)	(45,954)
Past service cost	30	72	270
Increase from changes in scope of consolidation	1,630	—	14,868
Decrease from changes in scope of consolidation	(885)	—	(8,074)
Other	(321)	(696)	(2,932)
Balance of the retirement benefit obligation at the end of year	¥102,553	¥ 100,324	$ 936,035

(2) Reconciliation of opening and closing balance of plan assets for the years ended December 31, 2019 and 2018 was as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Balance of plan assets at the beginning of year	¥ 78,554	¥ 82,419	$ 716,999
Expected return on plan assets	1,523	1,577	13,900
Actuarial gain and loss	5,101	(5,463)	46,557
Contribution from employer	11,799	4,554	107,693
Retirement benefits paid	(4,507)	(4,294)	(41,138)
Increase from changes in scope of consolidation	1,338	—	12,212
Decrease from changes in scope of consolidation	(989)	—	(9,029)
Other	9	(239)	80
Balance of plan assets at the end of year	¥ 92,827	¥ 78,554	$ 847,273

(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, 2019 and 2018 was as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Funded retirement benefit obligations	¥ 99,208	¥ 97,178	$ 905,512
Plan assets	(92,827)	(78,554)	(847,273)
	6,381	18,624	58,240
Unfunded retirement benefit obligations	3,344	3,146	30,523
Net amount of relevant liabilities and assets on the consolidated balance sheets	9,725	21,770	88,762
Net defined benefit liability	9,969	22,018	90,990
Net defined benefit asset	(244)	(249)	(2,227)
Net amount of relevant liabilities and assets on the consolidated balance sheets	9,725	21,770	88,762

(4) Retirement benefit expenses and the components of the amounts thereof for the years ended December 31, 2019 and 2018 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	**2019**
Service cost	**¥ 2,677**	¥ 2,606	**$ 24,433**
Interest cost	**487**	519	**4,449**
Expected return on plan assets	**(1,523)**	(1,577)	**(13,900)**
Amortization of actuarial gain and loss	**2,234**	1,641	**20,393**
Amortization of past service cost	**30**	78	**272**
Retirement benefit expenses related to the defined benefit pension plan	**¥ 3,906**	¥ 3,267	**$ 35,648**

(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, 2019 and 2018 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	**2019**
Past service cost	**¥ (0)**	¥ (0)	**$ (2)**
Actuarial gain and loss	**(4,442)**	5,114	**(40,551)**
Total	**¥ (4,443)**	¥ 5,114	**$ (40,553)**

(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, 2019 and 2018 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	**2019**
Unrecognized past service cost	**¥ (20)**	¥ (20)	**$ (181)**
Unrecognized actuarial gain and loss	**7,568**	12,011	**69,076**
Total	**¥ 7,548**	¥ 11,991	**$ 68,895**

(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, 2019 and 2018 were as follows:

	Ratio	
	2019	2018
Bonds	**41 %**	42 %
Stocks	**37**	35
General accounts of life insurance company	**19**	22
Cash and deposits	**1**	1
Other	**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, 2019 and 2018 were as follows:

	Ratio	
	2019	2018
Discount rate	**Mainly 0.2%**	Mainly 0.3%
Long-term rate of expected return on plan assets	**Mainly 1.8%**	Mainly 1.8%

(b) Defined contribution pension plan

The amounts required to be contributed by consolidated subsidiaries for the years ended December 31, 2019 and 2018 were ¥738 million (US$6,733 thousand), and ¥657 million, respectively.

13. INCOME TAXES

(a) As at December 31, 2019 and 2018, significant components of deferred tax assets and liabilities were as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	**2019**
Deferred tax assets:			
Impairment loss	**¥ 21,335**	¥ 17,252	**$ 194,729**
Write-down of marketable and investment securities	**14,560**	16,657	**132,891**
Tax loss carryforwards	**3,898**	5,681	**35,578**
Net defined benefit liability	**3,717**	5,423	**33,931**
Allowance for doubtful accounts	**3,380**	3,924	**30,848**
Depreciation and amortization	**2,696**	4,869	**24,611**
Loss on valuation of inventories	**2,241**	2,200	**20,453**
Undetermined accrued liabilities	**1,227**	473	**11,199**
Provision for repairs	**814**	356	**7,430**
Provision for bonuses	**747**	791	**6,819**
Unrealized earnings from the sale of fixed assets	**487**	543	**4,442**
Write-down of golf club memberships	**211**	243	**1,924**
Deferred gains or losses on hedges	**191**	355	**1,740**
Other	**4,142**	5,359	**37,810**
Subtotal of deferred tax assets	**59,645**	64,125	**544,405**
Valuation allowance related to tax loss carryforwards	**(2,752)**	—	**(25,118)**
Valuation allowance related to the total of deductible temporary differences	**(39,423)**	—	**(359,830)**
Total valuation allowance	**(42,175)**	(45,374)	**(384,949)**
Total deferred tax assets	**17,470**	18,751	**159,460**
Deferred tax liabilities:			
Special depreciation reserve	**(4,990)**	(5,058)	**(45,549)**
Valuation difference on available-for-sale securities	**(4,675)**	(3,678)	**(42,675)**
Amount of revaluation from the book value	**(4,585)**	(4,233)	**(41,849)**
Foreign subsidiaries' undistributed retained earnings	**(4,054)**	(3,436)	**(37,003)**
Reserve for advanced depreciation of fixed assets	**(240)**	(231)	**(2,188)**
Deferred gains or losses on hedges	**(192)**	(371)	**(1,755)**
Other	**(3,303)**	(3,197)	**(30,148)**
Total deferred tax liabilities	**(22,040)**	(20,204)	**(201,166)**
Net deferred tax assets (liabilities)	**¥ (4,569)**	¥ (1,453)	**$ (41,706)**

(b) Significant items in the reconciliation of the statutory tax rate with the effective tax rate as at December 31, 2019 and 2018 were as follows:

	2019	2018
Statutory tax rate	30.6 %	30.9 %
Differences of statutory tax rate in subsidiaries	(5.5)	(5.7)
Effect on the reexamination of recoverability	(2.4)	(1.2)
Deferred taxes on undistributed earnings of foreign subsidiaries	0.6	0.7
Consolidated adjustment for loss on valuation of investments in capital of subsidiaries and associates, etc.	(0.1)	(1.6)
Unrealized earnings from the sale of fixed assets	0.0	(0.8)
Other	(0.2)	(2.5)
Effective tax rate	23.1 %	19.8 %

14. IMPAIRMENT LOSS

As at December 31, 2019, 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, etc.	Production facilities for aluminum processed products	Land, etc.	¥10,418	$ 95,089
Isesaki City, Gunma Prefecture	Production facilities for polymer	Land, etc.	2,812	25,666
Oyama City, Tochigi Prefecture, etc.	Production facilities for aluminum beverage cans	Machinery and equipment, etc.	804	7,338
Kawasaki City, Kanagawa Prefecture	Welfare facilities	Land, etc.	597	5,453
Other			1,031	9,409
Total			¥15,662	$142,956

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, 2019, were as follows:

	Millions of yen	Thousands of U.S. dollars
Valuation difference on available-for-sale securities		
Increase during the year	¥ 4,511	$ 41,173
Reclassification adjustments	(1,168)	(10,665)
Amount before income tax effect	3,342	30,508
Income tax effect	(1,009)	(9,213)
Total	¥ 2,333	$ 21,295
Deferred gains or losses on hedges		
Increase during the year	¥ (1,260)	$ (11,503)
Reclassification adjustments	13	115
Adjustments of acquisition cost of assets	663	6,050
Amount before income tax effect	(585)	(5,338)
Income tax effect	179	1,635
Total	¥ (406)	$ (3,703)
Foreign currency translation adjustments		
Increase during the year	¥ (3,350)	$ (30,578)
Reclassification adjustments	358	3,269
Amount before income tax effect	(2,992)	(27,309)
Income tax effect	—	—
Total	¥ (2,992)	$ (27,309)
Remeasurements of defined benefit plans, net of tax		
Increase during the year	¥ 2,178	$ 19,886
Reclassification adjustments	2,264	20,667
Amount before income tax effect	4,443	40,553
Income tax effect	(1,312)	(11,971)
Total	¥ 3,131	$ 28,582
Share of other comprehensive income of unconsolidated subsidiaries and affiliates accounted for using the equity method		
Increase during the year	¥ (59)	$ (542)
Reclassification adjustments	—	—
Total	¥ (59)	$ (542)
Total other comprehensive income	¥ 2,007	$ 18,323

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

a) Tangible fixed assets: Principally welfare facilities (buildings and structures)

b) 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

As at December 31, 2019 and 2018, assets leased under non-capitalized operating leases were as follows:

Future minimum lease payments for the remaining lease periods:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Due within 1 year	¥ 341	¥ 678	$ 3,109
Due over 1 year	1,271	3,288	11,604
Total	¥ 1,612	¥ 3,967	$ 14,713

(c) Operating Leases as a Lessor

As at December 31, 2019 and 2018, non-cancellable 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
	2019	2018	2019
Due within 1 year	¥ 80	¥ 80	$ 733
Due over 1 year	364	435	3,325
Total	¥ 445	¥ 514	$ 4,058

17. CONTINGENT LIABILITIES

As at December 31, 2019 and 2018, 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
	2019	2018	2019
Guarantees	¥ 867	¥ 2,137	$ 7,913

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.

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, 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 the 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 as at December 31, 2019 was ¥61,231 million (US$558,879 thousand).

20. SELLING, GENERAL AND ADMINISTRATIVE EXPENSES

Selling, general and administrative expenses for the years ended December 31, 2019 and 2018 were summarized as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Freight	¥ 27,446	¥ 27,986	$ 250,512
Employees' compensation	26,550	24,076	242,331
Other	60,503	55,068	552,239
Total	¥ 114,499	¥ 107,130	$ 1,045,081

Research and development expenses included in selling, general and administrative expenses for the years ended December 31, 2019 and 2018 were ¥20,591 million (US$187,943 thousand) and ¥19,623 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, 2019 and 2018 were ¥20,605 million (US$188,069 thousand) and ¥19,735 million, respectively.

22. SEGMENT INFORMATION

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

Year ended December 31, 2019	Millions of yen								
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Total	Adjustments	Consolidated
Sales									
Outside customers	¥240,923	¥140,158	¥ 95,702	¥221,453	¥ 90,500	¥117,717	¥ 906,454	¥ —	¥ 906,454
Inter-segment	9,755	17,322	743	8,682	7,042	8,446	51,989	(51,989)	—
Total	250,678	157,480	96,445	230,135	97,542	126,163	958,443	(51,989)	906,454
Operating income (loss)	¥ 17,201	¥ 13,656	¥ 4,880	¥ 89,256	¥ 1,746	¥ 1,819	¥ 128,557	¥ (7,759)	¥ 120,798
Assets	¥137,504	¥230,932	¥142,511	¥281,757	¥135,072	¥160,063	¥1,087,839	¥(11,458)	¥1,076,381
Depreciation and amortization	4,136	9,267	9,274	8,091	4,826	1,526	37,120	584	37,704
Amortization of goodwill	—	(163)	12	8	217	24	98	—	98
Investments in unconsolidated subsidiaries and affiliates	10,570	3,457	—	1,754	—	487	16,268	—	16,268
Increase in property, plant and equipment and intangible assets	4,404	11,412	10,474	11,685	8,464	2,889	49,328	888	50,216

Notes: 1. Adjustments are as follows:
(1) Elimination of intersegment transactions of ¥302 million (US$2,754 thousand) and total corporate expenses of ¥(8,061) million (US$(73,575) thousand) that were not allocated to any reportable segment were included in "Adjustments" for "Operating income" of ¥(7,759) million (US$(70,821) thousand). The total corporate expenses principally consist of the total corporate common research expenses that are not attributable to any reportable segment.
(2) Elimination of intersegment receivables and payables and assets of ¥(46,101) million (US$(420,787) thousand) and total corporate assets of ¥34,644 million (US$316,206 thousand) that were not allocated to any reportable segment were included in "Adjustments" for "Assets" of ¥(11,458) million (US$(104,580) thousand). The 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 the total corporate common research and development expenses.
2. Amortization of negative goodwill was included in "Amortization of goodwill."

Year ended December 31, 2018	Millions of yen								
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Total	Adjustments	Consolidated
Sales									
Outside customers	¥258,035	¥139,041	¥110,440	¥257,525	¥ 99,078	¥128,017	¥ 992,136	¥ —	¥ 992,136
Inter-segment	10,844	17,499	1,472	8,624	9,176	9,307	56,922	(56,922)	—
Total	268,879	156,541	111,912	266,149	108,254	137,324	1,049,058	(56,922)	992,136
Operating income (loss)	¥ 20,333	¥ 17,393	¥ 13,557	¥132,445	¥ 4,942	¥ 1,734	¥ 190,403	¥(10,400)	¥ 180,003
Assets	¥156,169	¥218,256	¥135,468	¥300,197	¥150,117	¥158,183	¥1,118,389	¥(43,406)	¥1,074,983
Depreciation and amortization	5,046	8,806	9,845	7,967	5,655	899	38,217	1,242	39,459
Amortization of goodwill	—	(260)	12	8	222	(1)	(19)	—	(19)
Investments in unconsolidated subsidiaries and affiliates	10,718	3,421	—	1,824	—	388	16,352	—	16,352
Increase in property, plant and equipment and intangible assets	5,051	8,048	10,083	8,127	5,521	2,406	39,237	2,491	41,727

Notes: 1. Adjustments are as follows:
(1) Elimination of intersegment transactions of ¥(83) million and total corporate expenses of ¥(10,317) million that were not allocated to any reportable segment were included in "Adjustments" for "Operating income" of ¥(10,400) million. The total corporate expenses principally consist of the total corporate common research expenses that are not attributable to any reportable segment.
(2) Elimination of intersegment receivables and payables and assets of ¥(67,798) million and total corporate assets of ¥24,392 million that were not allocated to any reportable segment were included in "Adjustments" for "Assets" of ¥(43,406) million. The 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 the total corporate common research and development expenses.
2. Amortization of negative goodwill was included in "Amortization of goodwill."

Year ended December 31, 2019	Thousands of U.S. dollars								
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Total	Adjustments	Consolidated
Sales									
Outside customers	$ 2,199,008	$ 1,279,278	$ 873,514	$ 2,021,295	$ 826,034	$ 1,074,455	$ 8,273,583	$ —	$ 8,273,583
Inter-segment	89,038	158,108	6,782	79,241	64,274	77,087	474,529	(474,529)	—
Total	2,288,046	1,437,386	880,295	2,100,536	890,308	1,151,542	8,748,112	(474,529)	8,273,583
Operating income (loss)	$ 156,997	$ 124,644	$ 44,540	$ 814,673	$ 15,939	$ 16,602	$ 1,173,395	$ (70,821)	$ 1,102,574
Assets	$ 1,255,059	$ 2,107,813	$ 1,300,759	$ 2,571,714	$ 1,232,857	$ 1,460,963	$ 9,929,165	$ (104,580)	$ 9,824,584
Depreciation and amortization	37,750	84,587	84,643	73,849	44,052	13,930	338,811	5,330	344,141
Amortization of goodwill	—	(1,484)	107	77	1,978	216	894	—	894
Investments in unconsolidated subsidiaries and affiliates	96,479	31,554	—	16,010	—	4,442	148,484	—	148,484
Increase in property, plant and equipment and intangible assets	40,195	104,167	95,600	106,653	77,253	26,372	450,240	8,103	458,343

(b) Information about geographical areas

Year ended December 31, 2019	Millions of yen			
	Japan	Asia	Others	Total
Sales	¥ 508,672	¥ 225,671	¥ 172,111	¥ 906,454

Year ended December 31, 2018	Millions of yen			
	Japan	Asia	Others	Total
Sales	¥ 551,333	¥ 239,885	¥ 200,919	¥ 992,136

Year ended December 31, 2019	Thousands of U.S. dollars			
	Japan	Asia	Others	Total
Sales	$ 4,642,861	$ 2,059,792	$ 1,570,930	$ 8,273,583

Year ended December 31, 2019	Millions of yen		
	Japan	Others	Total
Property, plant and equipment	¥ 366,375	¥ 106,793	¥ 473,168

Year ended December 31, 2018	Millions of yen		
	Japan	Others	Total
Property, plant and equipment	¥ 379,577	¥ 98,829	¥ 478,406

Year ended December 31, 2019	Thousands of U.S. dollars		
	Japan	Others	Total
Property, plant and equipment	$ 3,344,061	$ 974,746	$ 4,318,807

Notes to Financial Statements

Showa Denko K.K. and Consolidated Subsidiaries

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

Year ended December 31, 2019	Millions of yen							
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Elimination	Total
Impairment loss on assets	**¥ 2**	**¥ 2,871**	**¥ 272**	**¥ 179**	**¥ 11,447**	**¥ 892**	**¥ —**	**¥ 15,662**

Year ended December 31, 2018	Millions of yen							
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Elimination	Total
Impairment loss on assets	¥ 7	¥ —	¥ 4,964	¥ 79	¥ 9,642	¥ 6,016	¥ 1,864	¥ 22,573

Year ended December 31, 2019	Thousands of U.S. dollars							
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Elimination	Total
Impairment loss on assets	**$ 15**	**$ 26,203**	**$ 2,482**	**$ 1,637**	**$ 104,479**	**$ 8,139**	**$ —**	**$ 142,956**

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

Year ended December 31, 2019	Millions of yen							
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Elimination	Total
Amortization	**¥ —**	**¥ 145**	**¥ 44**	**¥ 8**	**¥ 270**	**¥ 27**	**¥ —**	**¥ 496**
Unamortized balance	**—**	**3,241**	**199**	**29**	**1,960**	**94**	**—**	**5,524**

Year ended December 31, 2018	Millions of yen							
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Elimination	Total
Amortization	¥ —	¥ 48	¥ 44	¥ 8	¥ 276	¥ 27	¥ —	¥ 404
Unamortized balance	—	134	244	38	2,278	122	—	2,815

Year ended December 31, 2019	Thousands of U.S. dollars							
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Elimination	Total
Amortization	**$ —**	**$ 1,327**	**$ 404**	**$ 77**	**$ 2,467**	**$ 249**	**$ —**	**$ 4,524**
Unamortized balance	**—**	**29,581**	**1,819**	**269**	**17,887**	**862**	**—**	**50,419**

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

Year ended December 31, 2019	Millions of yen							
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Elimination	Total
Amortization	**¥ —**	**¥ 308**	**¥ 33**	**¥ —**	**¥ 54**	**¥ 4**	**¥ —**	**¥ 398**
Unamortized balance	**—**	**1,472**	**260**	**—**	**432**	**13**	**—**	**2,178**

Year ended December 31, 2018	Millions of yen							
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Elimination	Total
Amortization	¥ —	¥ 308	¥ 33	¥ —	¥ 54	¥ 28	¥ —	¥ 422
Unamortized balance	—	1,780	293	—	486	17	—	2,575

Year ended December 31, 2019	Thousands of U.S. dollars							
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Elimination	Total
Amortization	**$ —**	**$ 2,811**	**$ 297**	**$ —**	**$ 489**	**$ 33**	**$ —**	**$ 3,630**
Unamortized balance	**—**	**13,437**	**2,374**	**—**	**3,945**	**120**	**—**	**19,876**

23. SIGNIFICANT SUBSEQUENT EVENTS

Tender Offer for Shares in Hitachi Chemical Company, Ltd.

On December 18, 2019, HC Holdings K.K. (a wholly owned subsidiary of the Company); the "Tender Offeror"), decided to acquire common shares of Hitachi Chemical Company, Ltd. (the "Target Company") through a tender offer under the Financial Instruments and Exchange Act (the "Tender Offer"). Consequently, on March 23, 2020, the Company's Board of Directors and the Tender Offeror's Representative Director decided to begin the Tender Offer on March 24, 2020.

(a) Name, Scope and Scale of Business of the Target Company

(1) Name

Hitachi Chemical Company, Ltd.

(2) Scope of Business

Functional materials (electronics materials, printed wiring board materials, electronics components),
advanced components and systems (mobility, energy storage devices and systems, life sciences)

(3) Common Stock

¥15.5 billion (US$141 million)

(b) Purpose of the Tender Offer

The Company believes that the Company can vertically integrate the value chain from material development to product module design and evaluation by combining the Company's strengths in a wide range of "material design technology" and "material analysis technology," covering aspects from organic materials such as resins, to inorganic materials, such as aluminum and carbon, and "adhesion technology between different materials" which connects multiple materials that the Company offers, with the Target Company's strengths in "material design technology utilizing characteristics of raw materials," "ability to evaluate functions" for customer marketing, and "ability to design functions leading to process technology, including module segmentation" that realizes functions demanded by customers. The Company believes that by making the Target Company a wholly owned subsidiary of the Tender Offeror, the Company will be able to quickly and flexibly propose solutions for the sophisticated and diverse demands of end-users, in this way solidifying our position as a "one-stop, advanced materials partner." Accordingly, the implementation of the Tender Offer was decided as part of the transactions for making the Target Company a wholly owned subsidiary of the Tender Offeror.

(c) Outline of the Tender Offer

(1) Period of Tender Offer

From March 24, 2020 (Tuesday) to April 20, 2020 (Monday) (20 business days)

(2) Settlement Commencement Date

April 28, 2020 (Tuesday)

(3) Tender Offer Price

¥4,630 (US$42.26) per share

(4) Number of Share Certificates to be Purchased, etc.

Number of Shares to be Purchased: 208,218,230 shares (no maximum number of shares to be purchased)
Minimum Number of Shares to be Purchased: 138,812,200 shares
Purchase Price: ¥964,050,404,900 (US$8,799,291,757)
Equity Interest Ratio After Purchase: 100%

Note: In the Tender Offer, if the total number of share certificates, etc. tendered to the Tender Offer (the "Tendered Share Certificates") is less than the minimum number of shares to be purchased, the Tender Offeror will not purchase any of the Tendered Share Certificates.

If the Tender Offer has been successfully completed, but the Tender Offeror is unable to acquire all of the shares of the Target Company (excluding treasury shares owned by the Target Company) as a result of the Tender Offer, the Tender Offeror intends to acquire all of the shares of the Target Company (excluding treasury shares owned by the Target Company) and make the Target Company a wholly owned subsidiary by demanding that all of the Target Company's shareholders sell all shares of the Target Company they hold, or by carrying out a reverse split of the shares of the Target Company.

(d) Fund Procurement

The Tender Offeror plans to procure the funds required for the settlement of the Tender Offer by borrowing up to ¥400 billion (US$3,651 million) from Mizuho Bank, Ltd. ("Mizuho Bank"), receiving an investment of up to ¥275 billion (US$2,510 million) from Mizuho Bank and the Development Bank of Japan Inc. by the subscription of Class A preferred shares of the Tender Offeror, and receiving an investment of up to ¥295 billion (US$2,693 million) from the Company through the subscription of common shares of the Tender Offeror.

The Company plans to borrow up to ¥295 billion (US$2,693 million) from Mizuho Bank for the purpose of executing the tender offer.

Report of Independent Certified Public Accountants

KPMG

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, 2019 and 2018, and the consolidated statements of income, statements of 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 judgment, 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, 2019 and 2018, and their financial performance and cash flows for the years then ended in accordance with accounting principles generally accepted in Japan.

Emphasis of Matter

We draw attention to Note 23 to financial statements. On March 23, 2020, HC Holdings K.K. (a wholly owned subsidiary of Showa Denko K.K.) decided to begin the Tender Offer for common shares of Hitachi Chemical Company, Ltd. from March 24, 2020. Our opinion is not modified in respect of this matter.

Convenience Translation

The U.S. dollar amounts in the accompanying consolidated financial statements with respect to the year ended December 31, 2019 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 financial statements.

KPMG AZSA LLC

April 7, 2020
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.

Corporate Data

Investor Information

Head Office

Showa Denko K.K.
13-9, Shiba Daimon 1-chome, Minato-ku, Tokyo 105-8518, Japan
URL: https://www.sdk.co.jp/english
Phone: +81-3-5470-3235
Fax: +81-3-3431-6215
E-mail: sdk_prir@showadenko.com

Ordinary General Meeting

The Ordinary General Meeting of Shareholders was held on March 26, 2020.

Shareholders (Top 10) *(As of December 31, 2019)*

Shareholder	Number of Shares Held (in thousands)	Rate of Shareholding (%)
The Master Trust Bank of Japan Ltd. (Trust Account)	7,078	4.84
Fukoku Mutual Life Insurance Company	4,517	3.09
Japan Trustee Services Bank, Ltd. (Trust Account)	3,751	2.57
The Dai-ichi Life Insurance Company, Limited	3,600	2.46
Japan Trustee Services Bank, Ltd. (Trust Account 5)	2,827	1.93
Meiji Yasuda Life Insurance Company	2,645	1.81
GOLDMAN SACHS INTERNATIONAL	2,451	1.68
Japan Trustee Services Bank, Ltd. (Trust Account 7)	2,425	1.66
JP MORGAN CHASE BANK 385151	2,283	1.56
Sompo Japan Nipponkoa Insurance Inc.	2,105	1.44

Note: Each rate of shareholding was calculated after deducting the number of treasury shares (3,550 thousand) from the number of shares outstanding.

Number of Shares Outstanding

149,711,292 as of December 31, 2019

Number of Shareholders

89,728 as of December 31, 2019

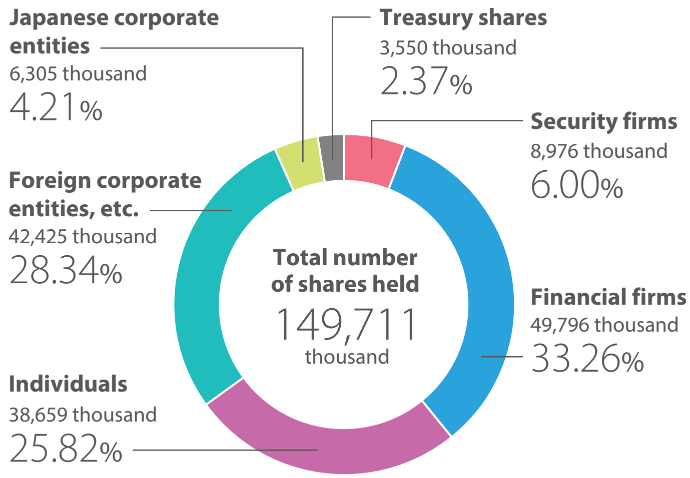
Classification of Stock

All stock issued by Showa Denko is common stock.

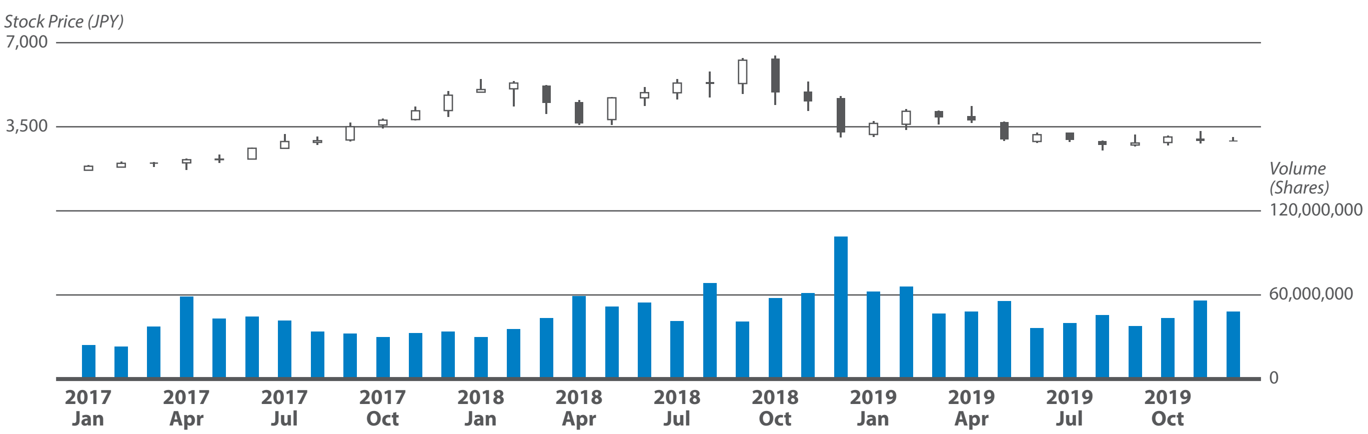
Stock Transfer Agent

Mizuho Trust & Banking Co., Ltd.
2-1, Yaesu 1-chome, Chuo-ku, Tokyo 103-8670, Japan

Shareholders by Sector *(As of December 31, 2019)*



Stock Price and Trading Volume



SHOWA DENKO K.K.
13-9, Shiba Daimon 1-chome,
Minato-ku, Tokyo 105-8518, Japan
https://www.sdk.co.jp/english

Printed in Japan