

Integrated Report

SHOWA DENKO Report 2020

SHOWA DENKO GROUP

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Editorial policies

The Showa Denko Group restructured its CSR report and annual report in 2017 to publish the Showa Denko Report as an integrated report. In this integrated report, we disclose the Group's financial as well as nonfinancial information, including descriptions of our consideration for the environment and society, governance, and medium- to long-term management strategies.

As for disclosure items, we analyzed our stakeholders' opinions and requests and covered priority topics, focusing on action policies and performance in 2019 and giving specific examples.

On our website, the online version of the report is also available with more details about the Showa Denko Group's CSR activities, including updated information and environmental and social activity reports from each plant.

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Report scope

Period covered by this report

This report covers information for the period from January 1 to December 31, 2019, with some information also provided for 2020. This report does not include data for Hitachi Chemical Co., Ltd., which Showa Denko has announced it will integrate. Hitachi Chemical will change its corporate name to Showa Denko Materials Co., Ltd. in October 2020, but in this report the company is referred to as "Hitachi Chemical."

Organizations covered by this report

"Showa Denko" as used in the text of this report refers to Showa Denko K.K., while "Showa Denko Group" or "the Group" refers to Showa Denko and its consolidated subsidiaries in Japan and abroad. "Group companies in Japan" refer to Showa Denko and its consolidated subsidiaries in Japan.

* For details of organizations (Group companies) covered for each data item, please refer to Showa Denko's website.

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Publication date
August 2020

Guidelines/guidance referenced

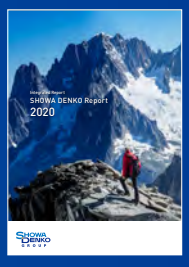
ISO26000 2010
GRI Sustainability Reporting Standards 2016
Environmental Reporting Guidelines 2018
from the Ministry of the Environment of Japan
The International Integrated Reporting Framework
from the International Integrated Reporting Council (IIRC)
Guidance for Collaborative Value Creation
from Ministry of Economy, Trade and Industry of Japan
Final Report Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) from Task Force on Climate-related Financial Disclosures
SASB Standards from Sustainability Accounting Standards Board
Industries Chemicals

Third-party verification

For part of CSR performance-related quantitative data included in this report, we received the third-party verification from SGS Japan Inc.

About the media to reporting our information

Showa Denko Report 2020 [this report]



The report shows the Showa Denko Group's strategies and major financial and nonfinancial information to help stakeholders deepen their understanding of its value creation story.

Showa Denko's website [HTML]

We disclose information about the Showa Denko Group's financial and nonfinancial activities of all kinds on the website. We also use the website to provide more timely reports on current-term activities.





Top Message

We will pursue sustainable growth as a "*KOSEIHA* Company," without being afraid of facing changes

SHOWA DENKO K.K.
President and CEO

Kohei Morikawa

Introduction

I would like to express my sincere sympathy to all those who became infected with the novel coronavirus and those whose daily lives are badly affected by the coronavirus crisis. I would also pay my deepest respects to medical practitioners who are on the frontlines working to protect people's health.

The market will change, customers will change, but the importance of technologies will never change

I like the words "change," "make a change" and "evolution" and want to put these words into action in the management of our business.

Chemical companies belong to the manufacturing industry, and what we manufacture as a chemical company changes according to the times. Our customers and market are also changing constantly. We provide corporate customers with the materials that are necessary for them to produce what they want to deliver at any given time, and for us to survive as a chemical company we absolutely must have technological capabilities.

The market is changing at a higher speed, market needs are becoming more complex, and the entire industry sometimes faces a decline while also witnessing the creation of a new market. Amid these changes, what chemical companies manufacture will change, but the roles to be played by these companies will never change. In this sustainable industry, if we have enough technological capabilities, we can surely change ourselves in response to changes in the market.

Then how should the Showa Denko Group change itself with a view to the future? An easy-to-understand answer to this question is this: It should transform itself into a chemical group that is not only good at "making" but also good at "mixing," thereby enhancing its ability to make proposals to help customers solve their problems.

"Making" here means to manufacture ammonia, ethylene and other chemical substances that can be clearly represented by chemical formulae. "Mixing" means to manufacture paints, cosmetics and others that cannot be clearly represented by chemical formulae because they are made by mixing multiple materials.

In recent years, it has been becoming more important to supply products that provide sufficient functions to meet the needs of individual customers, while there is still a market need for chemicals with clear chemical formulae.

The Showa Denko Group has a strength in that it can supply materials in a range of fields, including organic chemistry, aluminum and inorganic chemistry, and is good at "making." However, in order to further evolve going forward, we need to keep a good balance between "making" and "mixing."

To this end, we made a decision to integrate Hitachi Chemical Co., Ltd. ("Hitachi Chemical"), as it conducts operations in a business area that is downstream to our business area and is good at "mixing." At the end of April 2020, we thus made Hitachi Chemical a consolidated subsidiary of Showa Denko K.K. through a tender offer. (Accordingly, Hitachi Chemical will change its corporate name to "Showa Denko Materials Co., Ltd." in October 2020.)

Through this business integration between the two companies, we will become able to do what we cannot do by "making" or "mixing" alone, that is, we will be able to make the substances to be mixed and then mix them to deliver functions and solutions that are useful for society.

Future corporate vision built on the integration of Hitachi Chemical: "Global top-level functional chemical manufacturer"

In order to fulfill our corporate mission, which is to satisfy all stakeholders, we uphold the vision "*KOSEIHA* Company." This term refers to an aggregate of *KOSEIHA* Businesses*1 that can maintain high levels of profitability and stability.

*1 *KOSEIHA* Businesses specifically mean those that meet the following three conditions: operating margin ratio of 10% or more; operating income of billions of yen or more; and stable profitability tolerant to environmental change.

To achieve this vision, we are making and implementing plans to develop *KOSEIHA* Businesses in each of our business segments. Moreover, through the integration of Hitachi Chemical, we have clarified our next corporate vision, which is to become a global top-level functional chemical manufacturer by expanding our operational scale based on *KOSEIHA* Businesses.

We decided to integrate Hitachi Chemical for the following two main reasons.

First, intensified competition triggered by the restructuring and integration of global manufacturers of materials. In Western countries, the Middle East and China, chemical giants are emerging and growing their presence in the world market and there is a risk that they might push Japanese companies, which are relatively small in size, into a corner. By integrating Hitachi Chemical, Showa Denko will have net sales exceeding ¥1 trillion and will be able to respond to environmental changes in an even more straightforward fashion.

As for the second reason, we are facing changes in the industrial structure. Although manufacturers used to supply their products to end users in the supply chains for the automobile and electronic device markets, these products are now increasingly supplied to the markets through the Internet as "XaaS."*2 Tech giants such as GAFA*3 are essentially service providers, although they also sell automobiles, smartphones and other hardware products. For these companies to further increase their service quality, they need semiconductors with higher performance. Accordingly, the semiconductor industry will continue to undergo great changes and make great progress. For tech companies, semiconductors are not "materials" but a "means" to improve their services, and they will unquestionably prefer more convenient semiconductors.

By integrating Hitachi Chemical, Showa Denko will gain a wide range of semiconductor-related product technologies and be able to combine the technologies in various ways to provide GAFA and other tech companies with highly functional products and solutions as a single entity. We will also be able to generate synergies with Hitachi Chemical in other markets besides the semiconductor market.

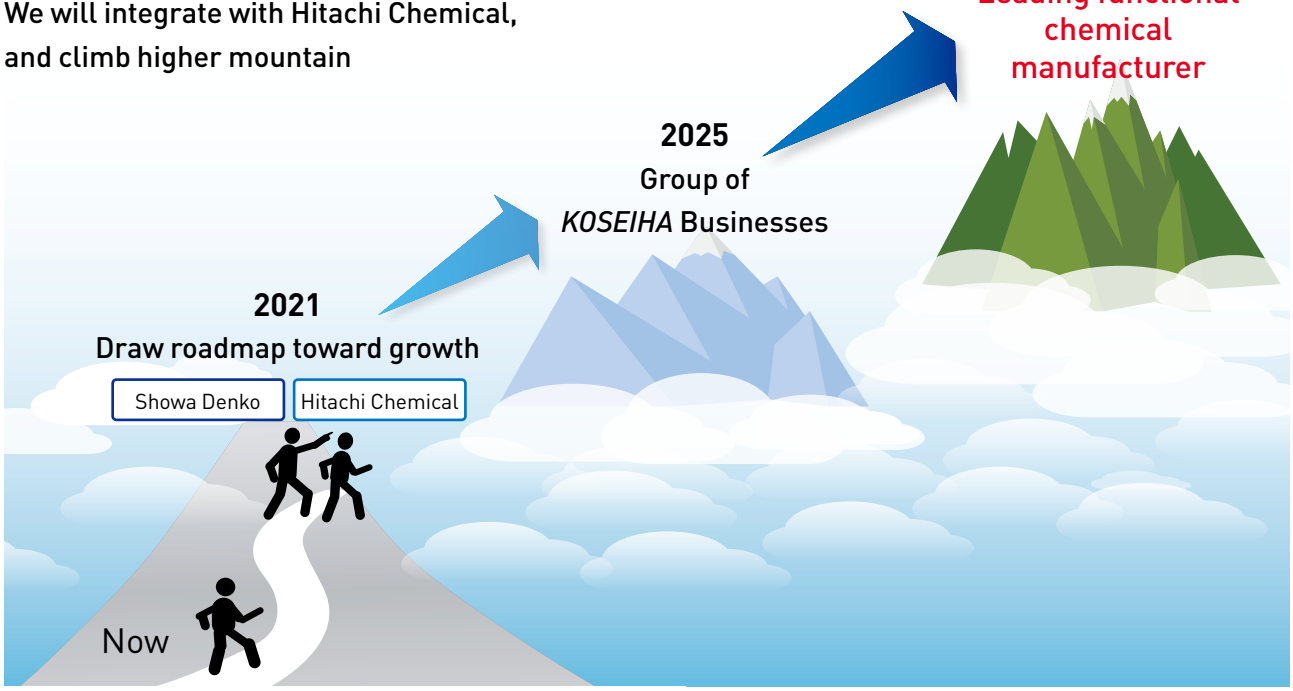
For successful integration, it is of utmost importance that the two companies are heading in the same direction. Showa Denko and Hitachi Chemical target the semiconductor, mobility, energy and other similar markets but have different product lineups. We can therefore increase our "immunity" through the integration and also extend our supply chain to deal with both materials and a range of functional products. The integration will help us expand our business size in terms of both breadth and depth.

I believe that the integration of the two companies will enhance our ability to propose total solutions, covering from the material level to design and evaluation, and help us to become a "one-stop advanced materials partner."

*2 XaaS stands for "X as a Service" and means to provide a range of resources through the Internet.
*3 GAFA stands for Google, Apple, Facebook and Amazon, which are U.S. companies that have dominated the IT industry.

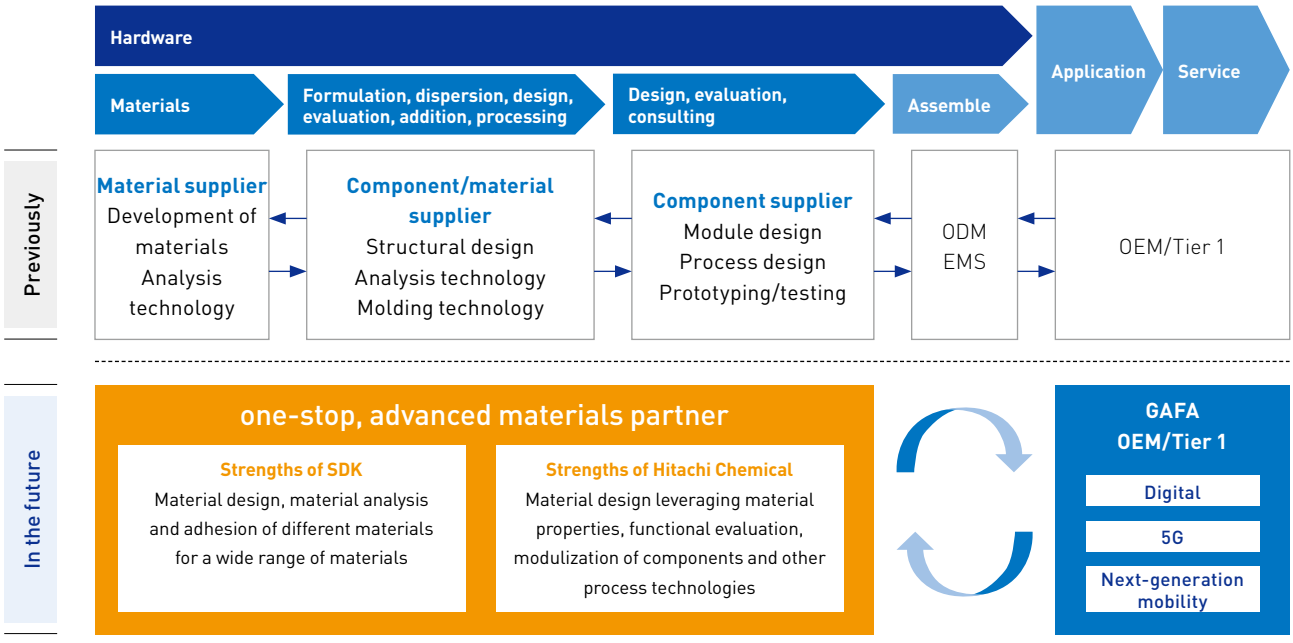
Target for 2025 and beyond

We will integrate with Hitachi Chemical,
and climb higher mountain



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**



Securing a "sound present" while looking ahead for a "hopeful future"

A simple indicator of the value of a company is its stock price. By dividing a company's stock price by its earnings per share (EPS), you can calculate the price-to-earnings ratio (PER). EPS represents the present status of the company and PER its future.

We are supported by all our stakeholders, including shareholders, employees, customers, partner companies and society at large, and we need to pay them back, although satisfying all of them might be difficult. When you are asked to make an investment in someone, you will check what the person is doing now and what is his or her future vision. Then you might decide to invest in the person, expecting that he or she will make a certain achievement, judging from that person's present status. This applies also to companies: Investors decide whether to invest in them in view of their present and future statuses.

We can build relations of trust with our stakeholders when they think that Showa Denko has both a "sound present" and a "hopeful future." We have so many things to consider but all we really have to do is secure our "sound present" and also look ahead for the future. By repeating a cycle of making investments for the future based on our "sound present" and then further enhancing our present status, we will continue to increase our corporate value.

We are required to outline our future, show our roadmap for the future and explain how we will secure our "sound present." We need to implement measures for both our present and future.

In our new strategic plan (to be announced in December 2020), we will show the direction in which we will head as a company making a fresh start and describe our ideas about the related measures.

Medium-term business plan, "The TOP 2021"

In 2019, we launched our new medium-term business plan, "The TOP 2021," to show the path that we will follow to create a "hopeful future" based on a "sound present." However, the world economy was shaken harder than expected by the U.S.-China trade frictions and geographical risks and we found ourselves facing some very challenging business conditions. Meanwhile, in 2020, due to the impact of the novel coronavirus, we cannot expect the world economy to make a rapid recovery and we will thus continue to face difficulties. In such a situation, it is truly important for us to secure our "sound present."

First, we need to attain our current target of making Showa Denko an aggregate of *KOSEIHA* Businesses. To this end, we will assuredly implement the measures set under "The TOP 2021" in each of our business segments. We of course still have issues to solve but are heading in a desirable direction toward growth.

Contributing to a sustainable society

The Showa Denko Group commits to contributing to the achievement of the Sustainable Development Goals (SDGs) through its business operations in its CSR Policy, and we regard contribution to the SDGs as part of our corporate social responsibility and the basis for our corporate activities in "The Top 2021." As a chemical company that manufactures materials that do not exist in nature, the Group will take responsibility for safety and the environment in each life cycle stage of its products, from manufacture and use through to disposal.

We will foster management that focuses on the environment, society and governance (ESG) and take advantage of the Showa Denko Group's strength to offer products, technologies and services that contribute to a sustainable society, such as plastic chemical recycling and the supply of graphite electrodes to be used for the recycling of iron scrap.

Making progress without being afraid of changes

I very much want to make the Showa Denko Group a sustainable enterprise. Chemistry plays an indispensable role in helping people lead their daily lives, which makes the chemical industry a sustainable industry and enables us to flexibly make changes in response to changes in the market.

We aim to become a *KOSEIHA* Company and then become a global top-level functional chemical manufacturer through the integration of Hitachi Chemical. We can be a first-class company by changing ourselves in the integration process to become a company that is always needed by society. Our market will change with the times and our customers will also change. We will unrelentingly respond to these changes.



MISSION

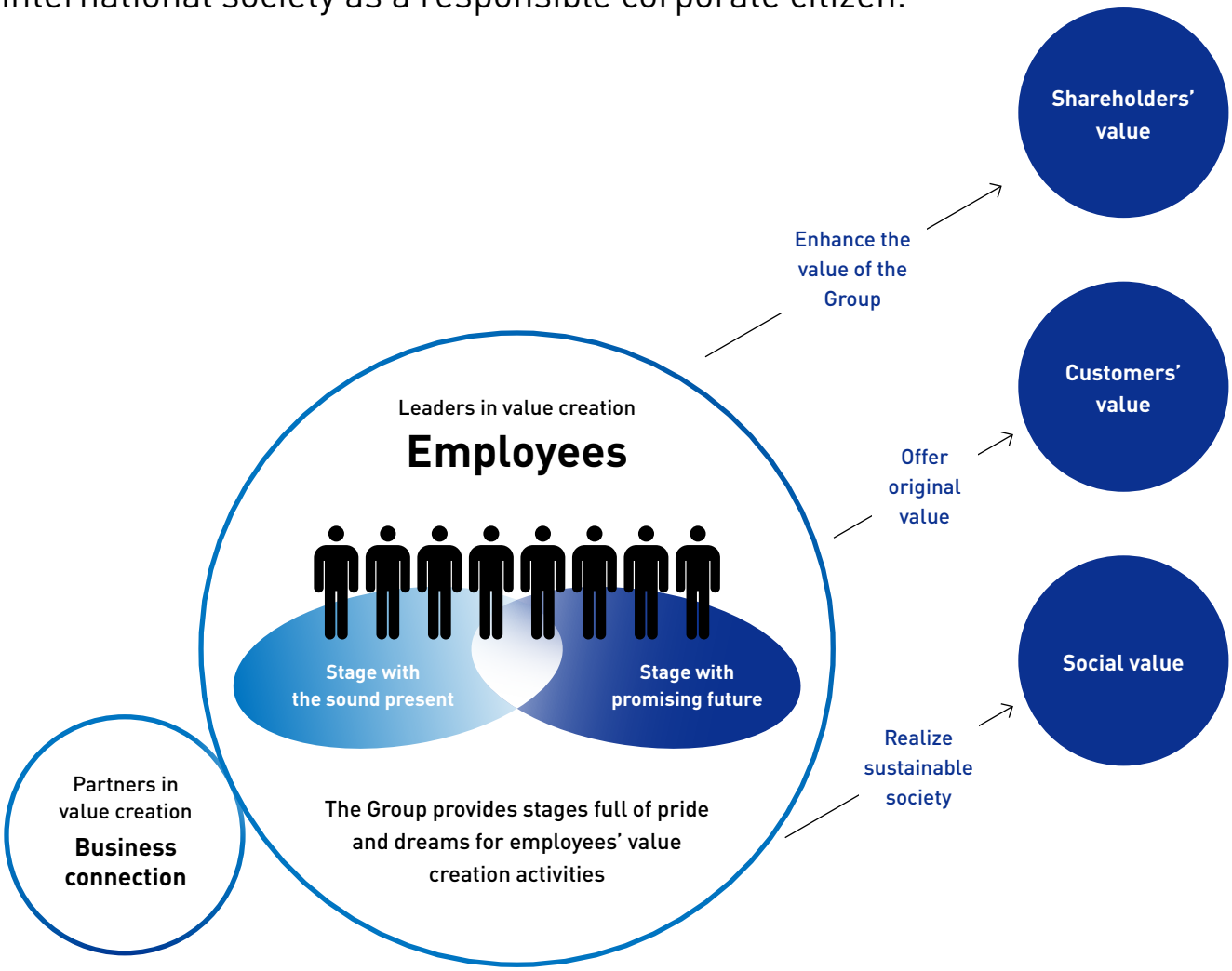
We will satisfy all stakeholders



The Showa Denko Group's mission (business philosophy) is to satisfy all stakeholders, including shareholders, customers, suppliers, local communities and employees, as stated in Our Vision. We will maximize our shareholder value, customer value and social value by providing products and services that are unique to our Group.

The Showa Denko Group's business philosophy

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.



Corporate Message

We shall listen more to customers and further hone our technologies, and shall thereby



Act to create products and services that touch "the heart"

and

Act to offer solutions that make "society" better

VISION

KOSEIHA Company

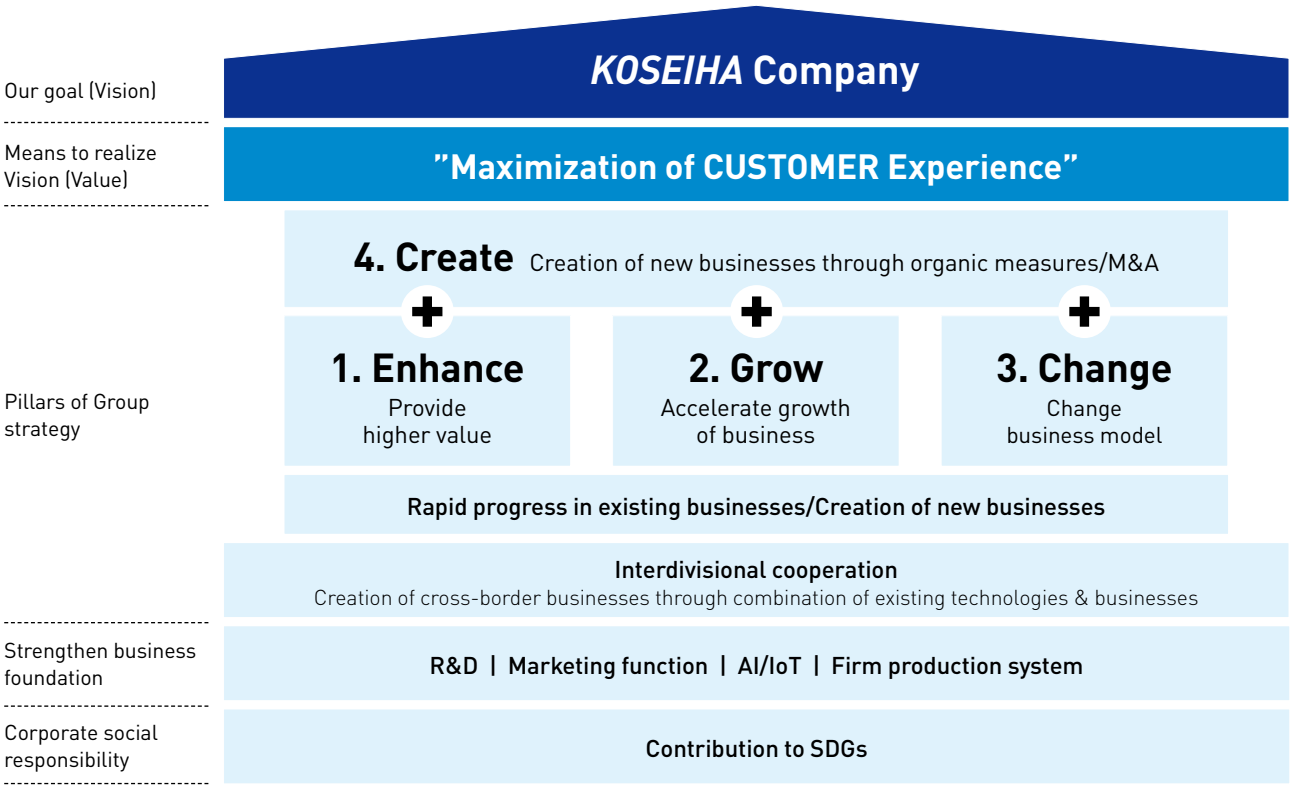


The Showa Denko Group's vision (goal) is to become an aggregate of *KOSEIHA* Businesses that can maintain high levels of profitability and stability.

In order to achieve this vision, we will maximize CUSTOMER Experience by transforming our business into one that provides customers with solutions for their issues.

"*KOSEIHA* Company" is

"an aggregate of ***KOSEIHA* Businesses** that can maintain high levels of profitability and stability."



***KOSEIHA* Businesses**

"*KOSEIHA* Business" is a business in which SDK has a top market share in the market of appropriate scale (tens of billions of yen〜hundreds of billions of yen)

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%)

* UHP: Ultra-High Power graphite electrodes with large diameters

(Reference) Features of *KOSEIHA* Businesses

❶ Operating margin

10% or more

❷ Operating income

Billions of yen or more

❸ **Stable profitability tolerant to environmental change**

Originating from electrochemistry, the Showa Denko Group's technology further evolved to cover the fields of inorganic chemistry, organic chemistry and metal materials. Today, the gene of our original technology is inherited to a wide variety of products, including materials and components used in the information/telecommunication industry and the automotive industry and products that are essential for everyday life.

1908 Established the foundation of the business under the spirit of "tenacity and indomitability"

1931 Started manufacture of ammonium sulfate using domestic technology (Showa Fertilizers K.K.)

1934 Industrialized domestically produced aluminum (Nihon Iodine K.K.)

1939 Established Showa Denko K.K. through the merger of Showa Fertilizers and Nihon Electrical Industries



Succeeded in the domestic production of ammonium sulfate and aluminum, under the slogans, "Use electricity as a material" and "Develop domestic technologies"

1945 Deepened and further developed business, taking advantage of postwar reconstruction

1969 Produced the first aluminum can in Japan (Showa Aluminum Can Corporation)

1969 Oita Petrochemical Complex started commercial operation



Built the Oita Complex for the integrated production of polyethylene, polypropylene, acetic acid and other petrochemicals

HISTORY / STRENGTH

Timeless Commitment to Manufacturing

1986 Switched to energy-saving products

1986 Started manufacture and sales of aluminum cylinders

1988 Expanded into the hard disk business



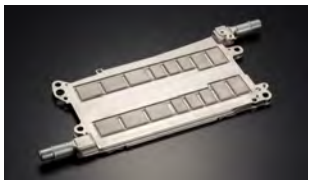
Embraced the challenge of producing HD media by using the sputtering (thin film forming) technology, anticipating the need for larger storage capacity

2001 Pursued fusion of inorganic/organic and aluminum technologies

2001 Merged Showa Aluminum Corporation

2003 Expanded into the super bright LED market

2009 Started production of cooling devices for power semiconductor



Developed a power semiconductor cooling device by using Showa Denko's own developed thermal design and aluminum processing technologies

2012 Shaping Ideas in pursuit of evolving *KOSEIHA* chemical company

2015 Established an integrated system for the manufacture of cans in Vietnam

2016 Established a joint venture in Korea for semiconductor processing high-purity gas production

2017 Acquired the graphite electrode business of SGL Carbon



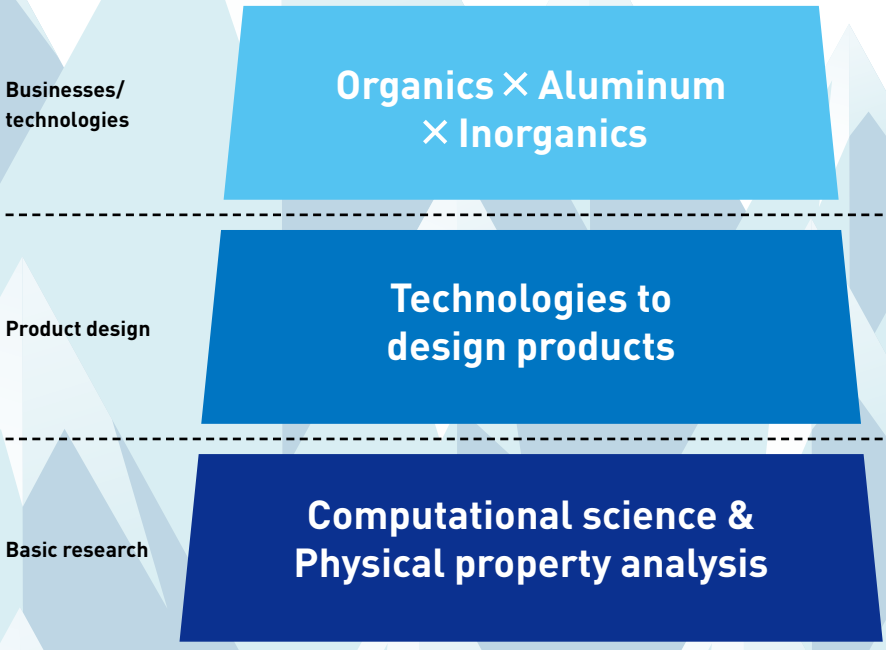
Fostered globalization through M&A in the graphite electrode business

Integration of Hitachi Chemical

To become a global top-level functional chemical manufacturer

Our Strength

The Showa Denko Group has accumulated technologies for a wide spectrum of businesses and materials over its long history and has also developed element technologies for process design and analysis. Capitalizing on these technologies advanced for our existing businesses, we will work to provide new added value and solutions targeting the automobile industry, which is undergoing a so-called CASE revolution, and the growth markets that are expanding based on the fifth generation (5G) communication standards.



We will offer CUSTOMER Experience beyond the expectations of customers in each of our businesses, thereby transforming Showa Denko into an aggregate of *KOSEIHA* Businesses.

Petrochemicals

Raw materials for plastic, synthetic rubber, etc.

Ethylene

No. 1 material diversification rate in Japan



We are making effective use of resources and achieving high cost competitiveness by using materials other than naphtha to produce ethylene, which is used as a material for various petrochemical products.

¥250.7 billion
26.1%



Chemicals

Raw materials for cosmetics; semiconductor-processing specialty gases; raw materials for fibers; industrial gases, etc.

High-purity gases

for semiconductor processing

No. 1 sales share in the world



We produce more than 20 types of high-purity gases, such as ammonia-, chlorine- and fluorine-based gases for use in the semiconductor, LCD, LED and solar cell production processes.

¥157.5 billion
16.4%



Electronics

Hard disk media; Lithium-ion battery materials, SiC epitaxial wafers etc.

Hard disk

No. 1 sales share in the world as a manufacturer/seller



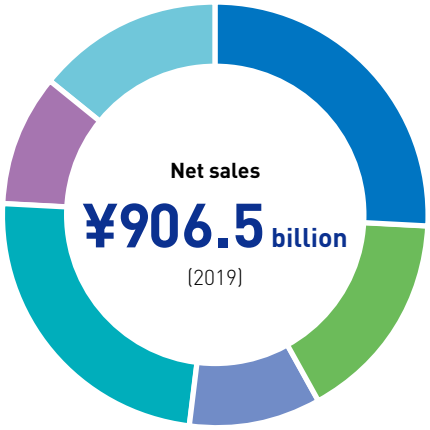
Hard disks are used as recording media for hard disk drives (HDDs). We possess advanced technology to increase the storage capacity of HD media in response to increased information load and the spread of cloud computing.

¥96.4 billion
10.1%



STAGE / VALUE

Showa Denko Poised for Further Growth



Businesses and products

We provide materials and components used in information, automobile and other industries as well as a range of products essential for everyday life.

Inorganics

Graphite electrodes (for electric steelmaking); abrasives, etc.

Graphite electrodes

No. 1 sales share in the world for high-quality large-diameter electrodes



Graphite electrodes are used in electric furnaces in which iron scrap is melted down and recycled into steel. Showa Denko offers the world's highest-level graphite electrodes in terms of the electrode consumption rate and fracture resistance.

¥230.1 billion
24.0%



Aluminum

High-purity foil for electrolytic capacitors; beverage cans; cylinders for laser beam printers, etc.

High-purity aluminum foils aluminum electrolytic capacitors

No. 1 sales share in the world



We provide high-purity aluminum foils as material for electrolytic capacitors, which are used in home electric appliances, automobiles, solar power generation equipment and others. Purity and the manufacturing process need to be strictly controlled for these foils.

¥97.5 billion
10.2%



Others

Sells chemicals, resins, metals, and electronic materials, and provides building materials

¥126.2 billion
13.2%



Value

Maximization of CUSTOMER Experience

Change our business model and offer solutions beyond manufacturer's limits

[Examples of solutions that maximize CUSTOMER Experience]

Front-loading type service

Offer services that promote sales, in addition to simple sales of goods

Maintenance type service

Contribute to reduction of down time through monitoring of post-sales use

Pay-for-use type service

Variable fee system depending on the amount of product used, assuming linear utility function

Ecosystem type service

In addition to sale of goods, offer platform to improve convenience

Draw roadmap to make each business *KOSEIHA* Business

Establish overwhelming competitiveness through maximization of CUSTOMER Experience, acquire high position in the market and stabilize profit at high level

(Provide solution with high cost performance, and establish customer-friendly supply system)

[Specific examples of "Maximization of CUSTOMER Experience"]

Graphite electrodes	Customizes GEs for each user's furnace and way to use
High-purity gases for electronics	Rich lineup of gases corresponding to the variety of customers' use We deliver right gases in a timely manner
Aluminum specialty components	On the basis of advanced simulation of heat radiation, we offer optimum solution for aluminum composite material for application to automotive heat radiation component

Contributing to Society as a *KOSEIHA* Company

The Showa Denko Group aims to become a social contribution company that satisfies all stakeholders. We will contribute to the solution of social issues as listed in the SDGs, thereby turning Showa Denko into a *KOSEIHA* Company and then into a global top-level functional chemical manufacturer to achieve sustainable growth.

Mission

We will satisfy all stakeholders

Social issues

- Multi-polarity of world economy
- Changes in the composition of population
- Progress of urbanization
- Dramatic development of technologies
- Changes in the environment surrounding raw materials and fuels
- Climate change and depletion of resources

Financial capital
Consolidated total assets
¥1,076.4 billion
(As of December 31, 2019)

Instrumental capital
Worldwide production bases

Intellectual capital
Intellectual property based on broad and deep expertise in organics, inorganics and aluminum

Human capital
Diversity as a driving force for innovation

Social & relationship capital
Cooperation with various stakeholders

Natural capital
Effective use of energy and resources
Technologies that contribute to the solution of environmental issues

Value

Maximization of CUSTOM

Change our business model and offer

5 growth drivers

- Weight reduction of cars and application of composite materials
- Digitization

7 business domains

- Industrial Equipment
- Transportation
- Construction / Infrastructure
- Petrochemicals
- Chemicals
- Electronics

Our Strength

Basis

CSR

Vision

KOSEIHA Company

Aiming to make social contributions by creating a hopeful future for all stakeholders based on a "sound present"

IER Experience

solutions beyond manufacturer's limits

- Spread of specialty semiconductors
- Improvement in QOL
- Shift from goods to experiences / XaaS

Energy

Life Science & Healthcare

Lifestyle

Electronics

Related businesses

Aluminum

Inorganics

Organics / Aluminum / Inorganics

Corporate Governance

Safety & Compliance

Management

Economic value

3-year accumulated operating income
(Total for 2019 to 2021)

¥480 billion

Investment
(Total for 2019 to 2021)

¥400 billion

Debt/equity ratio
(2021)

About 0.5 times

Total return ratio
(2019 to 2021)

About 30%

Creation of social value

GHG emissions
11% reduction relative to 2013
(In 2030, for Group companies in Japan)

Effective use of plastic waste
Effective utilization rate of 75% or more
(In 2030, for Group companies in Japan)

Products that contribute to the SDGs
Innovation for social contribution

Ratio of female managers
Achievement and maintenance of 10%
Note: For sectional managers and those in higher positions (on an unconsolidated basis in 2030)

Achievement of zero occupational accidents
Note: Including non-lost-time incidents
(In 2030, for Group companies in Japan)

Contribute to SDGs



Contribution to achievement of SDGs through business activities

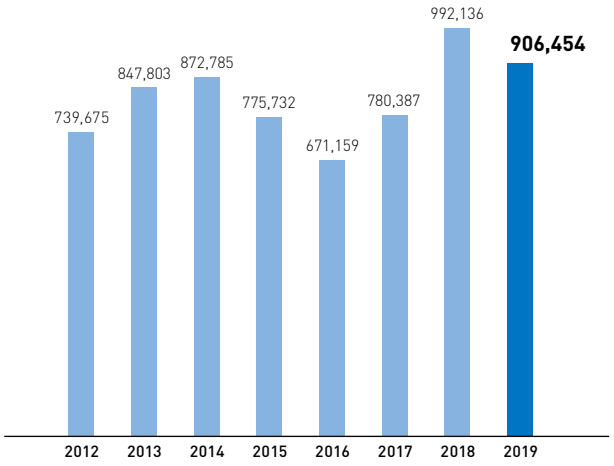
Tackling environmental issues

Establishment of sustainable methods for human resource development and improvement in working environment

Financial and Nonfinancial Highlights

Net sales

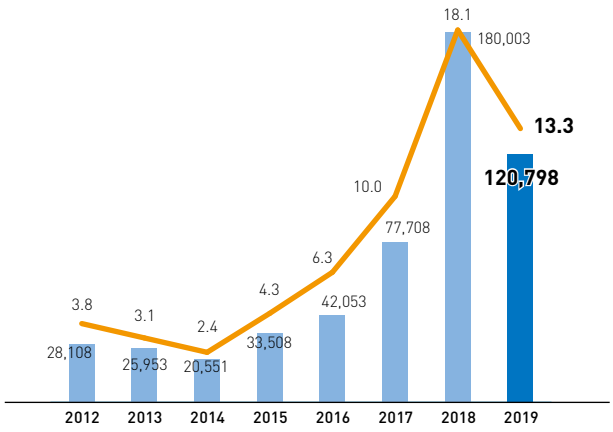
(Millions of yen)



In 2019, sales slightly increased in the Chemicals segment but decreased in the other five segments. In the Inorganics segment, the sales volume dropped due to a decrease in graphite electrode production while in the Petrochemicals segment the market was stagnant as a whole. As a result, net sales totaled ¥906,454 million.

Operating income / Ratio of Operating income to sales

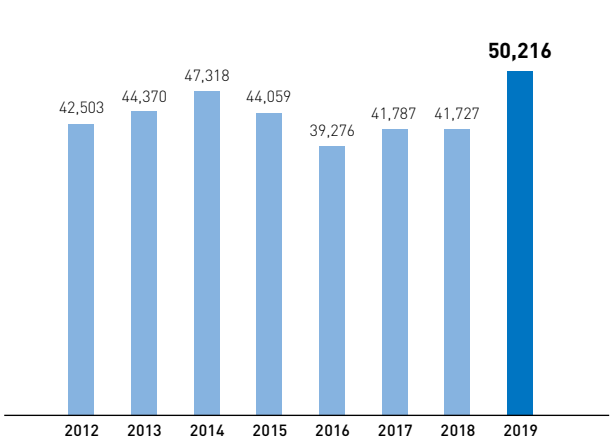
■ Operating income (Millions of yen) ■ Ratio of Operating income to sales (%)



In 2019, operating income slightly increased in the Others segment, but decreased in the other five segments. In the Inorganics segment, the production of graphite electrodes was reduced while in the Electronics segment shipments of hard disks to be used in PCs decreased. As a result, operating income came to ¥120,798 million.

Capital expenditures

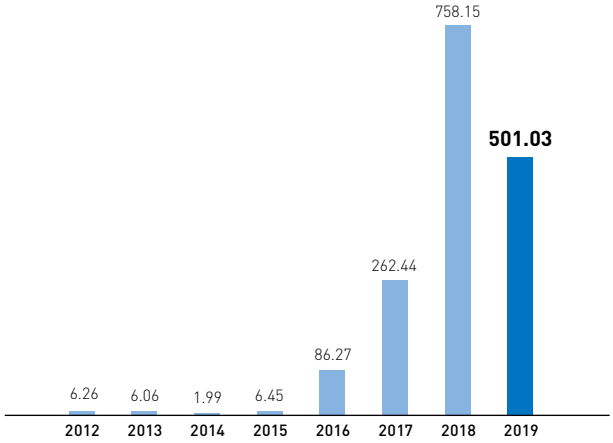
(Millions of yen)



In 2019, capital investment increased due to the investments made to enhance the electronic chemicals business and to the inclusion of the coating materials business in the consolidated accounting target in the Chemicals segment. In the graphite electrode business in the Inorganics segment, investments were made to improve the equipment of the European bases, and in the aluminum can business in the Aluminum segment the third plant is under construction in Vietnam. As a result, the investment amount increased as a whole to ¥50,216 million.

Net income—primary

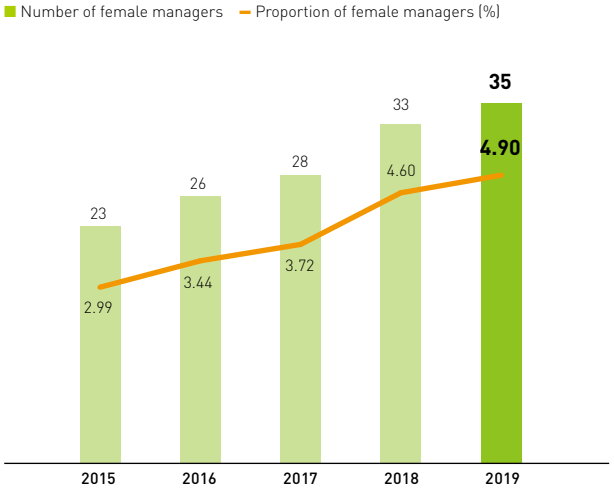
(Yen)



In 2019, net income per share came to ¥501.03 due to a decrease in the net income attributable to owners of the parent.

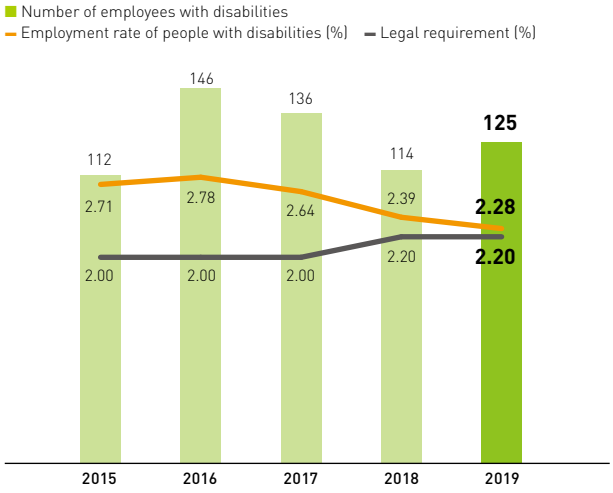
Note: Showa Denko consolidated every 10 shares of its common stock into one share on July 1, 2016.

Number of female managers and its ratio (Showa Denko)



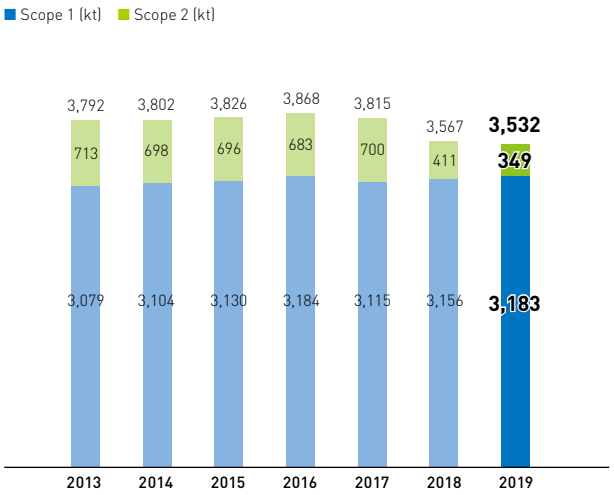
Aiming to increase the ratio of female managers (sectional managers and those in higher positions) to 10% on an unconsolidated basis by 2030, we have built and improved the systems to help female employees maintain their work-life balance and continued to hold career support seminars for female employees. In 2019, the ratio of female managers came to 4.90%, up 0.3 percentage point year on year.

Number of employees with desabilities and its ratio (Showa Denko)



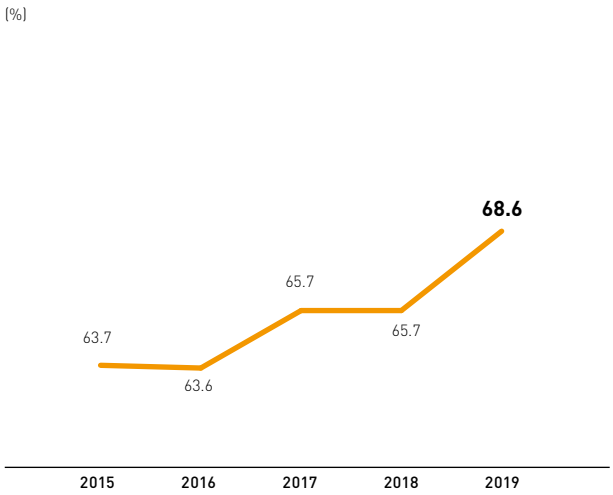
We are expanding the systems to support employees with disabilities while giving due consideration to their individual disabilities so that we can provide all employees regardless of disability status with workplaces where they can work with vigor. In 2019, the employment rate of people with disabilities decreased year on year on an unconsolidated basis due to the retirement of some employees with disabilities and an increase in the number of total employees. However, we are still maintaining a rate that is higher than the legally stipulated rate.

GHG emissions (Group companies in Japan)



Regarding the issue of climate change as a serious issue, we are working to reduce GHG emissions for the Group companies in Japan by 11% relative to 2013 in 2030. In 2019, the total amount of our GHG emissions was 3,532 kt-CO_2, down 6.9% relative to 2013.

Plastic waste utilization rate



In order to contribute to the solution of the issue of ocean plastic waste and to the creation of a low-carbon society, we are fostering the effective use of plastic waste and aim to increase its effective utilization rate to 75% by 2030. In 2019, the rate increased by 2.9 percentage points year on year to 68.6%.

Consolidated 11-Year Summary

Showa Denko K.K. and Consolidated Subsidiaries
Each of the fiscal years ended on December 31 of the year.

	2009	2010	2011
Financial Highlights			
For the year			
Net sales	678,204	797,189	854,158
Operating income	(4,983)	38,723	47,357
Ratio of Operating income to sales (%)	(0.7)	4.9	5.5
Net income attributable to owners of the parent	(37,981)	12,706	16,980
Net cash provided by operating activities	19,846	66,293	69,437
Net cash provided by (used in) investing activities	(26,595)	(49,074)	(38,671)
Free cash flow	(6,749)	17,218	30,766
Net cash provided by (used in) financing activities	28,402	(34,494)	(17,295)
R&D expenditures	20,743	20,670	21,597
Capital expenditures	38,666	58,035	38,794
Depreciation and amortization	54,178	50,678	49,413
At year-end			
Total assets	958,303	924,484	941,303
Total net assets	286,722	284,965	295,745
Shareholders' equity ratio	25.5	26.1	26.8
Return on equity (ROE)	(15.7)	5.2	6.9
Interest-bearing debt	373,911	351,034	347,308
Return on assets (ROA)	(0.5)	4.1	5.1
Debt/equity ratio (gross, times)	1.30	1.23	1.17
Per share*1 (yen)			
Net income—primary*2	(29.44)	8.49	11.35
Net assets	163.11	161.47	168.33
Cash dividends (applicable to the period)	3.00	3.00	3.00

M The items shown with the materiality mark are materiality KPIs set by the Showa Denko Group. For details, please refer to pages 48 to 49.

Nonfinancial data	Boundaries			
Number of employees (persons)	Consolidated	11,564	11,597	11,542
Ratio of employees working outside Japan (%)	Consolidated	44.2	47.4	47.7
Number of female managers (persons)	Showa Denko K.K	11	13	11
M Ratio of female managers (%)	Showa Denko K.K	1.53	1.56	1.30
Ratio of handicapped employees (%)	Showa Denko K.K	1.87	1.81	2.01
M Discharged amounts of greenhouse gases*4,5,6 (kt-CO_2)	Group companies in Japan	2,825	2,741	2,695
The amount of water used*4 (million m^3)	Group companies in Japan	7,586	7,125	6,883
M Final landfill rate of industrial waste*4,6 (%)	Group companies in Japan	2.02	2.01	1.71
M Plastic waste utilization rate*6 (%)	Group companies in Japan	—	—	—
M Release of PRTR-listed substances*4,6 (t)	Group companies in Japan	353	378	372
M Number of industrial accidents (including non-lost-time incidents) (cases)	Group companies in Japan	11	4	3
Environmental accounting*4	Showa Denko K.K	1,367	19,229	2,287
M Annual numbers of complaints about quality (calculated based on Showa Denko's criteria) (cases)	Group companies in Japan	—	—	—

Note:
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.

(About the boundary of reporting)
Unconsolidated: Showa Denko K.K.
Group companies in Japan: Showa Denko K.K. and its consolidated subsidiaries in Japan
Consolidated: Showa Denko, its consolidated subsidiaries in Japan, and overseas Group companies

(Millions of yen)

	2012	2013	2014	2015	2016	2017	2018	**2019**
	739,675	847,803	872,785	775,732	671,159	780,387	992,136	906,454
	28,108	25,953	20,551	33,508	42,053	77,708	180,003	120,798
	3.8	3.1	2.4	4.3	6.3	10.0	18.1	13.3
	9,368	9,065	2,929	921	12,305	37,404	111,503	73,088
	53,310	63,565	66,996	61,170	68,949	67,235	149,785	78,554
	(41,741)	(55,203)	(46,876)	(42,497)	(53,754)	(29,866)	(49,338)	(48,156)
	11,569	8,362	20,120	18,674	15,195	37,369	100,447	30,397
	(20,150)	(6,805)	(24,856)	(21,336)	(13,220)	(18,370)	(61,061)	(18,546)
	20,633	20,435	20,362	20,289	17,313	18,539	19,735	20,605
	42,503	44,370	47,318	44,059	39,276	41,787	41,727	50,216
	46,232	39,779	40,673	42,137	38,761	38,565	39,459	37,704
	933,162	985,771	1,009,843	940,494	932,698	1,026,999	1,074,983	1,076,381
	314,966	345,811	319,087	308,142	311,231	368,994	465,340	519,433
	29.2	30.6	29.7	31.5	31.8	34.3	41.5	46.4
	3.6	3.2	1.0	0.3	4.1	11.5	27.9	15.5
	342,262	353,686	383,124	368,835	359,929	346,726	287,968	298,524
	3.0	2.7	2.1	3.4	4.5	7.9	17.1	11.2
	1.09	1.02	1.20	1.20	1.16	0.94	0.62	0.60
	6.26	6.06	1.99	6.45	86.27	262.44	758.15	501.03
	182.24	201.27	209.76	2,076.05	2,080.85	2,473.06	3,057.16	3,423.25
	3.00	3.00	3.00	3.00	—	80.00*3	120.00	130.00
	9,890	10,234	10,577	10,561	10,146	10,864	10,476	10,813
	41.3	42.3	43.9	44.4	40.1	44.0	44.2	45.0
	14	14	18	23	26	28	33	35
	1.73	1.76	2.28	2.99	3.44	3.72	4.60	4.90
	2.28	2.34	2.48	2.71	2.78	2.64	2.39	2.28
	2,509	3,792	3,802	3,826	3,868	3,815	3,567	3,532
	6,512	6,172	6,261	6,004	5,872	5,947	5,775	5,884
	2.20	1.30	1.10	0.95	0.32	0.38	0.32	0.35
	54.2	54.6	53.7	63.7	63.6	65.7	65.7	68.6
	397	399	410	461	406	576	559	643
	9	7	11	9	8	8	9	19
	1,823	6,597	1,664	2,492	1,962	1,560	2,708	3,392
	—	—	—	243	172	117	80	51

*1 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.
*2 Net income per share has been computed based on the average number of shares of common stock outstanding during the respective fiscal year.
*3 SDK resolved payment of dividends of ¥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 include this amount.
*4 We received the third-party verification.
*5 The amount of GHG emissions has been calculated for "Scope 1 + Scope 2" emissions in line with the GHG Protocol for the results for 2013 and subsequent years.
*6 The annual data are shown for the period from April 1 of the year to March 31 of the next year.

Bilateral Talk

President & CEO
Kohei Morikawa

×

Outside Director
Noriko Morikawa

Theme of the talk:

Leadership for a *KOSEIHA* Company

Showa Denko aims to become a *KOSEIHA* Company and then to be a global top-level functional chemical manufacturer. Regarding this vision and related challenges, President & CEO Kohei Morikawa and Outside Director Noriko Morikawa, who newly assumed the position in March 2020, had a conversation.


SHOWA DENKO K.K.
President and CEO
Kohei Morikawa

Encounter with Showa Denko

Kohei Morikawa It is generally said that outside directors are appointed to provide oversight of business management, and I think it is particularly important for a company to incorporate the objective viewpoints of outside directors into its management. For any issue, if we deal with it solely from internal viewpoints, we tend to take shortsighted actions based on our own values. To avoid this, external opinions and viewpoints are indispensable.

Ms. Morikawa, you have experience in a wide range of fields, including the management of accounting and financial operations. You also have a global viewpoint and expertise in manufacturing other than chemistry. I therefore expect a lot from you as an outside director of our company.

Noriko Morikawa After being approached by the Company with the offer of the position of outside director, I was briefed on the details first by the chairman of the Board, and I had the impression that Showa Denko is a company with integrity. I also felt that I was expected to help the Company change for the better as an outside director.



SHOWA DENKO K.K.
Outside Director

Noriko Morikawa

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

My career background is completely different from those of other outside directors of Showa Denko, and I thought I was particularly selected to be an outside director of the Company to promote diversity. Hoping that my past experiences would be useful for the Company, I decided to accept the offer.

I have been attending the Board of Directors' meetings since April 2020. I was so surprised that participants discussed topics so proactively at each meeting that it was difficult for me to find the appropriate timing to raise my hand to speak. Inside directors are kindly helping me to energetically conduct activities for the Company, for which I feel very grateful.

Issues to be solved for the integration of Hitachi Chemical

Kohei Morikawa As I explained in my message for the report (on pages 2 to 5), we have decided to integrate Hitachi Chemical. Through this business integration between Showa Denko, which is good at "making" chemicals, and Hitachi Chemical, which is good at "mixing" chemicals, we will extend our supply chain.

At the new company to be eventually established through the integration process, employees do not need to keep anything secret from one another. For example, employees tasked with "making" chemicals can disclose the manufacturing method to employees tasked with "mixing" chemicals, who can also disclose their materials evaluation results to the "making" team. It means that information-related quality and speed will increase substantially, which will give us tremendous potential to nimbly change our portfolio.

Presently, the two companies have "electronics" and "mobility" in their portfolios, but we can and must have a portfolio that is different from our current portfolio in 10 to 20 years' time, as some of the existing markets might not exist 10 years from now. We also need to have various materials and components to respond to the birth of new markets. The integration will help Showa Denko broaden and deepen its technologies.

Noriko Morikawa I have two concerns regarding the integration. First, I am worried about PMI*1. I am closely monitoring how Showa Denko and Hitachi Chemical are fostering PMI.

Second, I am concerned about the identification of risks. I think you have already made an analysis about existing risks, but you cannot avoid facing unexpected risks in the integration process. It is important to acknowledge such risks and decide which risks you will take instead of just avoiding them. It is also essential to have an action plan for this, and I raised many questions at the report meetings on the progress of the integration process. As a result, I now feel more expectant than concerned about how the two companies will be integrated into one team.

Kohei Morikawa For integration, I share the idea that communication between employees is the most important with President Maruyama of Hitachi Chemical. Showa Denko and Hitachi Chemical have different histories and backgrounds but are heading in the same direction. All employees need to understand this in a profound manner.

Noriko Morikawa Yes, indeed. I engaged in global M&A projects in the past, and there were clear differences between successful integrations and unsuccessful ones. It is important to formulate a clear vision and guidelines for PMI and raise all employees' awareness of them.

I therefore think it is essential to raise employees' awareness of the mission and vision that you will set for the new company to be established through the integration process. I faced difficulties in readily making employees aware of the new mission and vision, which is not as easy as top management thinks.

It is also important for individual employees to engage in the integration process with ownership. All employees of Showa Denko and Hitachi Chemical need to work with ownership, and the companies need to provide them with the workplaces where they can do so.

Kohei Morikawa Indeed, our past M&A projects targeted specific businesses and some employees might therefore be thinking that the projects had nothing to do with them. As you said, it is very important for all employees to participate in the integration process with ownership. To this end, we have established a steering committee and subcommittees under it so that employees in charge of the integration process at each department can know what is happening and discuss things with each other for the integration.

For the new mission and vision, we are conducting examinations to make them easily understandable by and acceptable to all employees.

Noriko Morikawa President Morikawa, you often use some easy-to-understand keywords in your messages, such as *KOSEIHA* Businesses*2. When I first heard this term, I wondered what *KOSEIHA* meant, but soon found that it has a clear definition. As you repeat the term in your messages, it becomes unforgettable and more acceptable to recipients of the messages. I think you have established your own messaging style by using some keywords to permeate your ideas across the board.



Kohei Morikawa Thank you for your comment. In my opinion, things can be explained logically if they are right, and if a thing cannot be explained logically, it is not right. I therefore attribute importance to the logicality of things.

*1 PMI stands for post-merger integration, which is an integration process followed after the completion of an M&A.

*2 *KOSEIHA* Businesses are those that meet the following three conditions: operating margin ratio of 10% or more; operating income of billions of yen or more; and stable profitability tolerant to environmental change.

Integration of diverse businesses and culture

Noriko Morikawa Stakeholders are paying a great deal of attention to how Showa Denko integrates Hitachi Chemical, including its diverse businesses and culture.

Kohei Morikawa In order to achieve our vision and remain an entity needed by society while constantly undergoing changes in the business environment, we have to change ourselves somehow. We might need to enter a new market or change something to survive in the current market. In consideration of the need for such agility, we are conducting examinations about our post-integration business portfolio.

Noriko Morikawa In a sense it is important to have a sense of crisis. The integration will connect the value chains of the two companies and increase their R&D speed, and in fact these are essential for further corporate growth, which employees of the two companies need to understand. Top management of the companies made this bold decision because it is absolutely necessary.

I hope that employees of the two companies will collaborate, thinking that one plus one is not two but three, without grouping at heart into former Showa Denko employees or former Hitachi Chemical employees. To this end, we need to build an appropriate system. And for this extremely important issue, I would like to express my opinions proactively on behalf of shareholders and make contributions, listening to specific reports including those about the progress of the integration process.

"Organized chaos" is ideal for diversity. Diversity provides the basis for epoch-making innovations.

What is important for the integration process is to make employees widely aware of the guidelines and vision and provide them with an environment in which individual employees can work with ownership.



Kohei Morikawa Yes, indeed.

To hit upon new ideas, diversity is important. I often speak of "organized chaos" as my motto, which was cited from the words of Dr. Reona Esaki*3 and this also refers to diversity. Organized chaos means that individuals are taking actions as they see fit, but they are all going in the same direction as an organization. The Showa Denko Group has been promoting diversity as a management strategy and by integrating Hitachi Chemical, the Group's size will further increase, and the importance of diversity will also increase accordingly.

Noriko Morikawa People tend to feel relaxed when they are with those who are similar to themselves. However, we can get inspired when we are with someone who is different from ourselves. Individual employees need to think that it is natural for people to have various differences and to accept differences in gender, age, nationality, religion and others. They need to accept those who are different from themselves. Even when they have similar backgrounds, ways of thinking differ between people. If employees accept each other's differences and create something based on diversity, they can make new findings.

Without diversity, you cannot generate epoch-making innovations.

*3 In 1973, Dr. Esaki became the fourth Japanese person to receive a Nobel Prize (in physics).

Governance as a *KOSEIHA* Company

Noriko Morikawa I have recently assumed the position of outside director but have already found that top management of Showa Denko is well aware of the importance of governance. Based on my past experiences, it is not easy for a company to raise internal awareness of governance and maintain it. Showa Denko has a range of affiliated companies and I want to check whether the affiliates ensure governance as the head office does for governance as the entire group.

In the current "With coronavirus" situation, companies have been forced to change their systems and work styles and I think they have found out what is unexpectedly easy to do and what is difficult to do in the circumstances. I want Showa Denko to make progress toward the next step by clarifying what it can do and what it cannot do.

Kohei Morikawa It is true that the novel coronavirus has caused various changes, which might help us make progress, although we have to wait for several years to see whether it truly helped us make progress. But believing that it will, I would like to make Showa Denko a company that can flexibly make changes according to changes in the environment.

Noriko Morikawa I worked for an accounting firm, Motorola, and Bosch, and now I attribute importance to "healthy skepticism." I make it a rule to ask to myself, "Is it really true?" and make investigations to check whether it is true or not. As one of its outside directors, I would like to study Showa Denko with curiosity and healthy skepticism. I think I was selected to be an outside director for the Company in recognition of my past achievements, and I would like to talk with its female employees about women's empowerment, making visits to their sites.

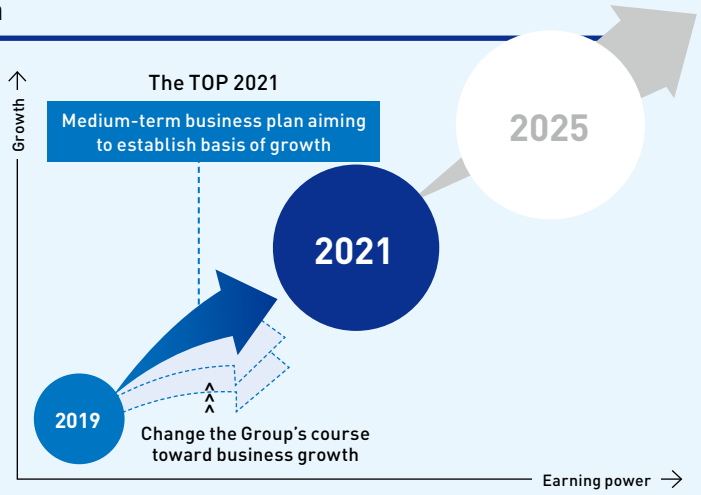
As an outside director, I would like to contribute to making the *KOSEIHA* Company a global top-level functional chemical manufacturer.

Medium-Term Business Plan for a *KOSEIHA* Company
"The TOP 2021"

Positioning of the medium-term business plan

We launched the medium-term business plan, "The TOP 2021," in 2019. It shows a growth roadmap for Showa Denko to become a *KOSEIHA* Company in 2025. To formulate this plan, we adopted the backcasting method, as backcasting helps us to clarify the gaps between our present businesses and the *KOSEIHA* Businesses that we should establish and to foster measures to narrow the gaps.

In 2020 we will further enhance the competitiveness of our businesses and foster structural reforms toward the full integration of Hitachi Chemical, which we regard as the best means to attain the aforementioned goal.



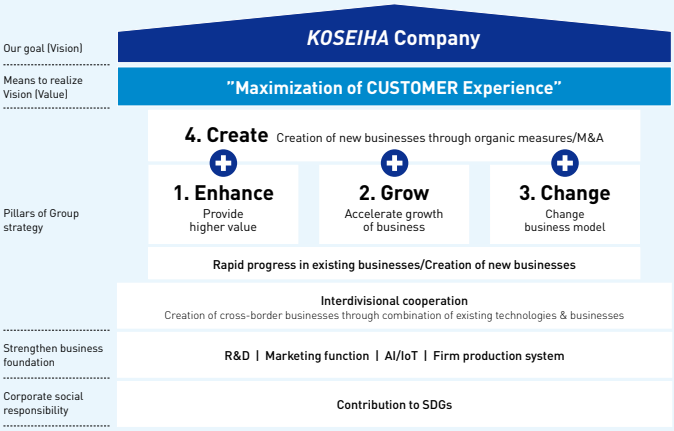
Basic concept and basic strategy

Promote strategy and measures toward growth
- Investment toward growth, M&A, enrich return to shareholders
- Establish and strictly apply capital investment evaluation criteria consistent with business plan and business portfolio
- Promote important policies

Maximization of CUSTOMER Experience

Marketing anticipating market growth driver and technical trend

Promote R&D and utilize AI/IoT
- Draw roadmap to make each business *KOSEIHA* Business
- Strengthen business foundation for global operation



Financial strategy

The Showa Denko Group aims to achieve annual net sales of about ¥1.1 trillion as well as net sales of ¥3.4 trillion as the total amount for the three-year period of the new medium-term business plan. We thereby take on the challenge of achieving a growth rate of 40% relative to the targets set in "Project 2020+."

We will also substantially increase our operating income by 1.7 times to achieve ¥330 billion in total net income for the three years and annual average net income of ¥110 billion.

In pursuing such growth, we will give due consideration to asset efficiency as indicated by ROA and ROE and will make efficient and proactive investments for the simultaneous achievement of a high growth rate and high profitability.

Targets (3 year total)

Net sales	Operating income	Net income	ROA*1	ROE*2
¥3,400.0 billion	¥480.0 billion (Operating margin 14.1%)	¥330.0 billion	12.6%	19.5%

*1 3-year simple average, operating income base *2 3-year simple average

Contribution to SDGs

We are implementing all these measures based on our commitment to contributing to the achievement of the Sustainable Development Goals (SDGs).

The Showa Denko Group is strongly committed to contributing to the SDGs through its business activities.

Environmental protection and effective use of resources are becoming more important in society. Based on this recognition, the Showa Denko Group will create both social and economic value to be a company that can satisfy all its stakeholders, including shareholders, customers and society at large.

SUSTAINABLE DEVELOPMENT GOALS

Strategy for each business summary of each business portfolio

Portfolio		Business	Strategy
Enhance	For the businesses included in the "Enhance" portfolio, we aim to increase profitability and stability in somewhat mature markets.	Petrochemicals	Stable operation, development of derivatives, etc.
		Industrial gases	Start-up of CO_2 plant in Oita. Strengthen existing CO_2 plants (Debottlenecking)
		Basic chemicals	Stable operation
		Carbon	Optimization of global sourcing, etc.
		HD media	Strengthen technical advantage in mass storage media
Grow	For the businesses categorized into the "Grow" portfolio, we will work to differentiate our products and services in growth markets based on our technologies as well as on our sales and logistics capabilities. We will also proactively make equipment investment to establish a supply system that can respond to the future growth of the market.	Electronic chemicals	Expand production capacity. Increase overseas sales, etc.
		Electronics materials (Optical semiconductors)	Increase sales for use in high-speed couplers, cars and industrial equipment
		Advanced battery materials	Enhance the performance and promote the sales of battery packaging materials, and develop new anode materials
		SiC epi-wafer for power devices	Develop highly reliable epi-wafer. Increase production capacity
Change	For businesses in the "Change" portfolio, we will work to expand each business segment. We will turn businesses in this portfolio into *KOSEIHA* Businesses by promoting the use of existing technologies across the segments, expanding the application of the technologies, and also fostering the regional expansion of the businesses, including regions outside Japan.	Aluminum rolled products	Increase sales of foil for high-voltage/large-capacitance devices
		Aluminum cans	Strengthen overseas bases. Improve profitability at home
		Functional chemicals	Increase sales of high polymers in China. Improve profitability at home
		Ceramics	Increase sales of products for electronics
		Aluminum specialty components	Respond to needs for xEVs and weight reduction

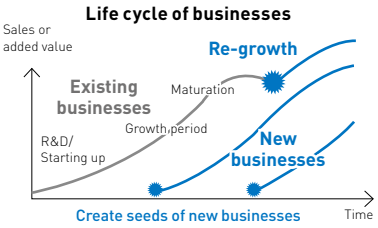
Creation of new businesses (Create)

To realize continuous growth of the Group, we must create new businesses. Therefore, we will take strategic discontinuous measures such as M&A, in addition to R&D to realize organic growth of the Group. We will invest ¥150 billion in these discontinuous measures in the three-year period of the new business plan, and positively promote M&As and formation of business alliances.

To realize continuous growth, we aim to strengthen and create *KOSEIHA* Businesses through R&D and M&A

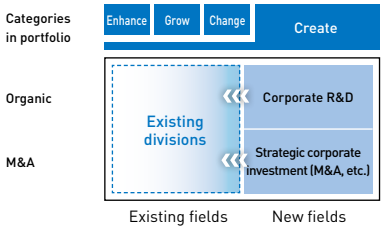
Meaning of "Create" in portfolios

Continuous corporate growth requires entry into new fields and creation of new businesses



Means to realize "Create"

In addition to R&D, prepare discontinuous measures including M&A



Inter-business cooperation

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

By looking at the future of the automobile industry, we anticipate changes in the industry's 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



CSO Message

To attain the vision, we will implement the plan with speed

Representative Director, Managing Corporate Officer
Chief Strategy Officer (CSO)

Hidehito Takahashi

To become a *KOSEIHA* Company

In its medium-term business plan, "The TOP 2021," launched in 2019, the Showa Denko Group upholds the vision of transforming at least half of its existing businesses into *KOSEIHA* Businesses by 2025.

At present, we already have three *KOSEIHA* Businesses, being the graphite electrode, hard disk media and high-purity gas businesses. In order to achieve the aforementioned vision, we need to transform at least three other businesses into *KOSEIHA* Businesses. We have already identified the candidates, and I think we are steadily doing what we should do now.

As the Chief Strategy Officer (CSO) in charge of planning and implementing strategies, I monitor the progress against the three-year rolling plans made for each business to manage the milestones in a strict manner and ensure their successful implementation, while seeing to it that the plans are implemented speedily.

Importance of marketing

When I joined Showa Denko in 2015, I thought, "The Company has wonderful technologies in a range of business fields but has no system to combine them to create something new and is not aware of the importance of marketing."

Under "The TOP 2021," I am therefore providing leadership to promote "industry marketing" as a new approach, which means to investigate the trends of industries to find and develop materials that are needed by them. As the first step, we launched a cross-functional team in 2019 to foster inter-business cooperation with a focus on automobiles, and the team has already started to make achievements steadily.

I think that product management and account management will also become important for the Company. The former means to manage the lineup and market value of its products and the latter means to enhance relationships with customers by making appropriate proposals to them through inter-business cooperation.

Toward the full integration of Hitachi Chemical

As a ground rule for merger & acquisition (M&A), I think it is most important for the two companies to exchange opinions in an open and fair manner and proactively adopt the best practices. When I led the integration of SGL GE of Germany into the graphite electrode business as the head of the Carbon Division in 2016, I attributed importance to respecting diversity and treating all employees fairly, regardless of their position, race, gender and others.

My past experiences have made me recognize how important it is for all employees to share the same vision and terms and to pursue reforms in a tireless manner. I will therefore foster measures to meet this requirement in the integration process for Hitachi Chemical.

In order to attain the aforementioned vision, we will implement the necessary measures with speed, and I would ask for your kind support to this end. I hope you will look forward to seeing how we will achieve the goal.

Path toward *KOSEIHA* Businesses

Synergy generated by the integration of Hitachi Chemical

Under "The TOP 2021," we have upheld "Enhance," "Grow," "Change" and "Create" as the core strategies of the Group.

First, we classified all our businesses into the three categories of "Enhance," "Grow" and "Change" and then clarified their goals and missions. Moreover, deeming it important to create new businesses for our sustainable growth, we have also added "Create" to these three. "Create" means to strategically implement discontinuous measures, such as M&A, in addition to pursuing organic growth through R&D. The integration of Hitachi Chemical, which we announced at the end of 2019, is classified into this "Create" category.

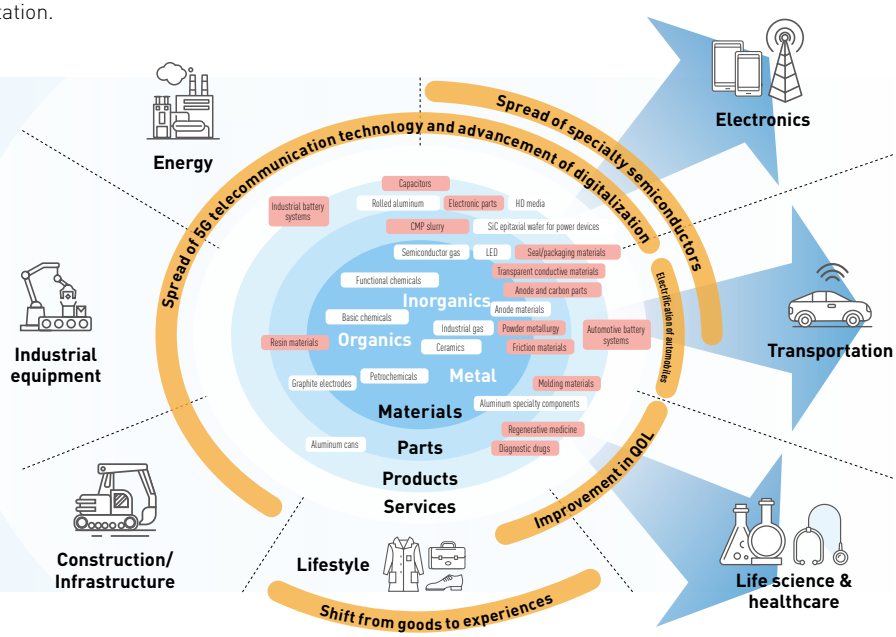
Within the chemical industry, the Showa Denko Group conducts business in the upstream area while Hitachi Chemical does so in the downstream area, but the two companies are moving in a similar direction and have an affinity with each other, in particular in the domains of electronics and transportation.

For example, in the transportation domain, both companies supply lithium-ion battery (LiB)-related materials for electric vehicles. By fusing Showa Denko's organic and inorganic materials technology with Hitachi Chemical's design technology for graphite anodes, we will become able to supply materials that add properties required of next-generation LiBs, such as large capacity, quick recharging, long life and high safety, with high cost competitiveness.

In the life science field, in which Hitachi Chemical is sowing seeds for future growth, the Showa Denko Group has not yet operated any businesses. By combining the Group's core technologies with those of Hitachi Chemical, we aim to achieve growth in the following seven business domains: electronics, transportation, life science & healthcare, lifestyle, construction/infrastructure, industrial equipment, and energy.

Business areas to pursue and notable growth drivers

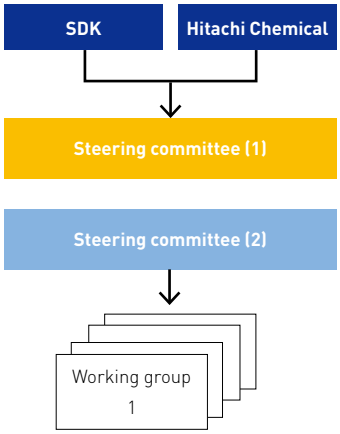
By combining the core technologies of SDK and Hitachi Chemical, the two companies will together aim to grow in 7 business areas including 5G, semiconductors, and electrification of automobiles



Path toward full integration

Q. How will you complete the integration process?
A. Showa Denko made Hitachi Chemical a consolidated subsidiary at the end of April 2020 (and Hitachi Chemical will change its name to Showa Denko Materials, Co., Ltd. in October 2020). From now on, we will press forward with the integration of the administrative departments of the companies to integrate the two into one company in around January 2023. To this end, we have established two steering committees on different levels of decision making, through which we will daily discuss what we should prioritize to complete the integration process on schedule.

As for the business portfolio of the new company, we are conducting examinations to combine the two companies' businesses in an optimal manner, without favoring the standpoint of either Showa Denko or Hitachi Chemical.



Steering committee (1)
Is composed of the presidents and directors of the two companies and makes decisions about issues related to portfolio management, investment, budgeting and financing.

Steering committee (2)
Engages in progress management and supervision concerning the tasks performed by the subcommittees on accounting and finance, systems, personnel strategies and others.



CFO Message

We will foster cash generation to improve our financial structure

Representative Director, Managing Corporate Officer
Chief Financial Officer (CFO)

Motohiro Takeuchi

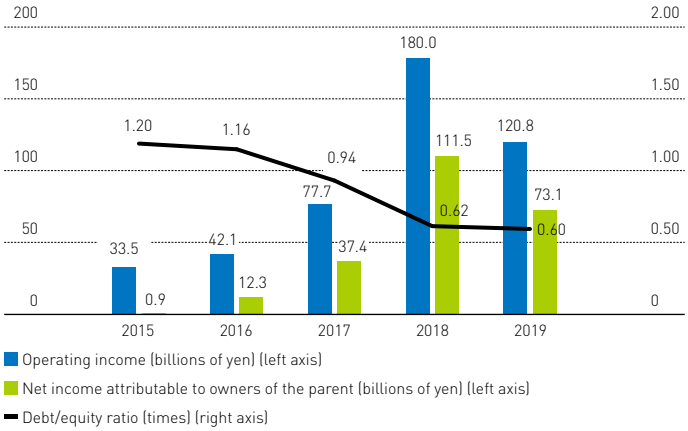
Speeding up the process to become a global top-level functional chemical manufacturer through the integration of Hitachi Chemical

Showa Denko aims to become a *KOSEIHA* Company in its medium-term business plan, "The TOP 2021." In order to further increase its corporate value in response to changes in the market environment, Showa Denko announced in December 2019 that it would acquire the shares of Hitachi Chemical through a tender offer. Subsequently, it completed the offer and made Hitachi Chemical a consolidated subsidiary in April 2020. The integration of the two companies means the birth of one of the largest functional chemical manufacturers in Japan. As such, we will pursue further growth and open a new chapter of history together.

We decided to acquire the shares for the following reason. Showa Denko has been faced with dramatic changes in the business environment, as represented by the collapse of the tiers of conventional value chains due to the emergence of GAFA and other tech companies, intensification of competition caused by the restructuring and integration of global materials manufacturers, and the need to meet social challenges such as the reduction of greenhouse gas emissions. For Showa Denko to survive in these conditions and win as a global top-level functional chemical manufacturer, we deem it necessary for the Company to become able to provide more advanced product functions and offer solutions beyond the provision of materials and components. To this end, we need to combine a wide range of materials and technologies and we therefore decided to acquire Hitachi Chemical.

Both companies have advantages in the electronics and transportation domains and they each have an affinity with the other, and we can extend our value chain by connecting the upstream and downstream areas through the integration. Moreover, we can add the life science domain, in which Hitachi Chemical has been proactively doing business, to our business domains to become a global top-level functional chemical manufacturer. We will continue to reform our business models to provide customers with solutions that go beyond their expectations, anticipating changes in the customer market and social structure.

In 2020, due to the novel coronavirus, economic activity has been stagnant across the world and we are in an extremely challenging business environment. However, driven by the rapid progress of telecommuting, online business activities and digitization, the electronics-related market, which the Showa Denko Group targets, is sure to expand.



Financial Strategy to Create an Aggregate of *KOSEIHA* Businesses

Financial policy regarding the integration of Hitachi Chemical

We raised the funding for the tender offer not by equity financing but through the subscription of preferred shares and lending by financial institutions, in consideration of the need to avoid the dilution of shares, which would cause a decrease in our capital efficiency, and to maintain our financial soundness.

We adopted this fundraising method aiming to have a net debt/equity ratio of approx. 1.0 on a medium-term basis, although our financial leverage would temporarily increase immediately after acquiring the shares of Hitachi Chemical. As for preferred shares, we received equity credit from a ratings agency for a certain portion of the capital raised, thereby maintaining an "A" credit rating even after acquiring the shares.

Under this financial policy, we deem it very important to generate cash by speedily implementing measures to improve our financial structure. On the other hand, we will also proactively make investments for sustainable corporate growth from a long-term viewpoint.

Measures to improve the financial structure

Prompt generation of cost synergy

We expect that indirect expenses, the cost of procuring materials and others will decrease by the integration of the two companies and aim to achieve a cost reduction of ¥20 billion or more on a yearly basis in about three years from now.

Steady restructuring and review of the business portfolio

We will conduct examinations for the speedy restructuring and review of our business portfolio through the steering committee composed of the top executives of the two companies.

Prompt implementation of measures other than those to generate cost synergy

In order to decrease the debt as early as possible, we will consider the bold and large-scale sale of our businesses and shares owned by the Company, and will promote further cost reduction, strict selection and reduction of equipment investment, and reduction of operating capital. We will proactively implement all possible measures to increase our profitability.

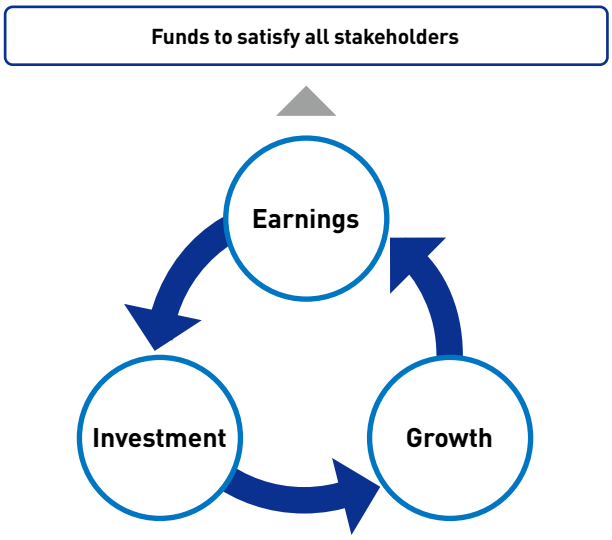
Toward the full integration of the two companies, we will steadily implement necessary measures by setting the milestones for management and for business and staff operations. Specifically, we are conducting examinations to decide on the vision, business portfolio, financial targets, equipment investment policy, return of profit to shareholders, and management KPIs of the new company to be established through the integration. We will explain these at the business briefing session to be held in December 2020.

By the middle of 2021, we plan to show to stakeholders how the two companies have been practically integrated toward their full integration.

We will work tirelessly to make Showa Denko a *KOSEIHA* Company that can achieve an operating margin ratio of 10% or more, as targeted in "The TOP 2021."

We regard the return of profit to shareholders as a management priority. As the impact of the novel coronavirus is expanding, we are facing more uncertainties in the business environment. However, we will continue to have constructive dialogues with investors and shareholders and increase our corporate value as a "social contribution company," so that we can satisfy all our stakeholders.

We would ask for your continued support of the Showa Denko Group.





CTO Message

We will create *KOSEIHA* Businesses with a focus on the "deepening," "fusion" and "introduction" of technologies

Director, Corporate Officer
Chief Technology Officer (CTO)

Hiroshi Sakai

Our R&D strategy in "The TOP 2021"

Our R&D strategy in "The TOP 2021" is to continue taking measures to turn existing businesses into *KOSEIHA* Businesses with a focus on the "deepening," "fusion" and "introduction" of technologies, while giving priority to establishing pipelines to create next-generation businesses.

As our basic strategy, we will invest our R&D resources intensively in 10 notable technical fields corresponding to seven business domains with a view to setting up pipelines to create new businesses. In 2019, we also newly established the Advanced Technology Laboratory to search for and set next-generation research themes without being trapped in the existing business domains or obsessed with current industry trends.

Moreover, through open innovation and other means, we will proactively introduce the technologies necessary for the creation of new businesses from outside the Company. Presently we are conducting surveys on market and technology trends and looking for companies with which we can collaborate for next-generation semiconductors, electronic materials, composite materials and others.

Also, in order to turn our existing businesses into *KOSEIHA* Businesses, we need to foster the fusion of technologies within the Company.

Overseen by Showa Denko's Institute for Integrated Product Development (IIPD), development activities are conducted at 16 locations. Furthermore, in 2019, we put the Analysis & Physical Properties Center and the Computational Science and Technology Information Center under the control of the IIPD. Through these organizations, which are in charge of Showa Denko's base technologies for computational science, analysis and evaluation, we will accelerate the deepening and fusion of our technologies while also promoting the use of artificial intelligence (AI) technologies.

In 2019, we also launched the inter-business cooperation activity and established a technology to directly bond aluminum and resin, which I regard as one of our great achievements.

Aiming at generating synergies over a long period through the integration

The Showa Denko Group conducts business in the upstream (materials) area in the chemical industry. For the Group, integrating Hitachi Chemical means having greater opportunities to know more about the specific functions that materials need to provide, as Hitachi Chemical has much in common with Showa Denko in terms of technologies but conducts business in the middle- to downstream (functional materials, modules and evaluation) area of the industry.

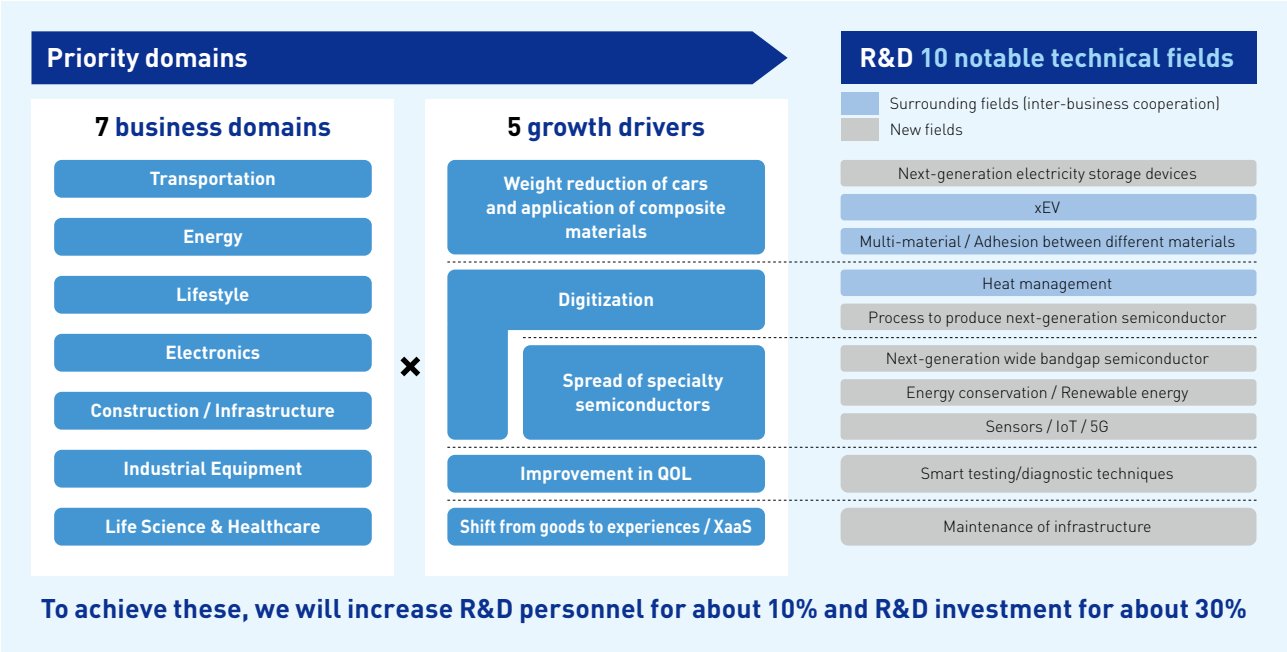
By enhancing and accelerating our R&D activities based on a clearer understanding of what we need to achieve and what is needed by society, we will be able to meet the needs of our customers for both raw materials and functional materials in a one-stop manner.

The Showa Denko Group has an R&D basis suitable for the fusion of technologies with Hitachi Chemical. By effectively sharing each other's technological bases, including those for computational science and analysis technologies, the two companies will generate synergies on a short- and long-term basis, aiming to be a global top-level functional chemical manufacturer through the integration. I hope you will look forward to observing the progress we make toward this goal.

R&D Strategy to Become a *KOSEIHA* Company

Creation of pipelines (10 notable technical fields corresponding to seven business domains)

Under "The TOP 2021," we will intensively input our R&D resources into the 10 technical fields corresponding to seven business domains through the company-wide marketing organization established to identify market and technological trends to guide the search for R&D themes.



To achieve these, we will increase R&D personnel for about 10% and R&D investment for about 30%

Initiatives for thermal management, sensors, IoT and 5G

Thermal management, sensors, IoT and 5G represent important technologies that will contribute to the progress of digitization.

The IIPD's Computational Science and Technology Information Center conducts research by using AI in order to increase the Company's productivity and product quality and to propose optimal materials to customers. To this end, using AI, the Center analyzes the voluminous data obtained from our production facilities by using sensing and IoT technologies.

System to forecast caulking of ethylene plant

AI continuously monitors condition of the plant in operation, and forecasts the best timing of de-caulking.

AI can forecast the best timing equivalently with skilled operator and contribute to productivity improvement

System to examine aluminum can production lines

The system conducts image diagnosis of aluminum can production lines to monitor cans remaining in the lines at the timing of product change. The system enabled us to change products within 1 minute, which 30 minutes before.

The system increased productivity by 3%

Introduction of IoT to casted aluminum-rod cutter

The system automatically analyzes data on electric current, load factors, etc., detected by sensors on the cutter, and predicts occurrence of poor cutting.

Drastically reduces occurrence of inferior products

System to examine image of spherical alumina

AI judges fineness/inferiority of products equivalently with skilled inspector, gives evaluation feedback to the production section, and realizes optimization of production conditions.

Improves ratio of fine products and productivity

A package to evaluate simulation of heat radiation

The evaluation package can forecast data on heat radiation. This enables customers to estimate capacity of the heat radiation component prior to production of specimen.

Customers and SDK cooperatively accelerate development of products

AI-assisted development of aluminum alloy

Utilize AI in development of materials for parts that contribute to weight reduction of cars and development of xEVs. This enables us to shorten development period of new products.

Used in development of new aluminum alloys, and shortened development period to 1/3.

The Center has also developed a search system by adopting AI-based materials informatics (MI) to develop materials more efficiently. Specifically, for aluminum alloys to be used in automobiles and for hard disk media, MI contributes to shortening the development period and increasing development efficiency. We aim to introduce MI to all our businesses by 2021, for which we will employ more IT professionals and enhance the education of in-house engineers.

R&D Strategy to Become a *KOSEIHA* Company

Composite automotive parts project

By looking at the future of the automobile industry, we anticipate changes in the industry's 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

We launched the project to create new automotive composite materials as the first inter-business cooperation activity. In the automobile industry, the development of so-called CASE technologies has been fostered, including those for electrification, and in the project, we aim to create new solutions to meet market needs by combining a range of our in-house technologies.

In 2019, paying attention to the "reduction of CO_2 emissions," which the automobile industry regards as a social challenge to be met, we clarified specifically what contributions we could make to the electrification and weight reduction of automobiles for the reduction of CO_2 emissions.

Approach to electrification

For the widespread use of fully electric vehicles, there remain multiple issues to be solved, such as concerns about cruising distance and the long recharge time. In order to solve these, various trade-offs need to be considered.

Showa Denko can contribute to the solution of the issues in the fields of battery modules and power modules, as we have a wide product lineup in the related fields and long accumulated expertise and technologies for heat dissipation design. Moreover, these fields provide the market size appropriate for the scale of Showa Denko.

Specific examples

As for the heat dissipation of batteries, it is necessary to consider trade-offs between higher cooling performance and smaller battery packs and to find a solution to achieve both. Also, for power modules, it is required to increase product reliability despite the tendency of operating temperature to increase.

In response, Showa Denko can provide a solution that contributes to achieving both without trade-offs by combining its low defect SiC epitaxial wafers, ceramics for heat dissipation, highly heat-conductive aluminum materials and other proprietary materials with the heat dissipation simulation system that the Company has developed based on computational science.

Approach to weight reduction

Recently in the materials development field, it has been becoming important to use multiple materials that have different properties, such as resins and metals, for weight reduction and higher strength. In particular, the direct bonding of heterogeneous materials has been attracting attention as a key technology to contribute to shortening the manufacturing process and downsizing products.

However, there are issues to be solved to bond heterogeneous materials together, including those related to the bonding method and how to deal with the internal stress caused by a difference in the linear expansion coefficients of materials.

In response, making use of its material design expertise for aluminum and resin, Showa Denko has developed an epoch-making technology to directly bond aluminum alloys and polycarbonate resin (amorphous engineering plastic) without using adhesives. This technology enables the direct bonding of aluminum with a range of resins that used to lack sufficient strength to be bonded with metals, such as polycarbonate.

We will utilize this technology to make proposals on the possible use of multiple materials in automotive components, thereby launching a new automobile-related business.

We will also develop new solutions and concepts in the field of 5G communication based on the success made in the project to create new composite materials for automobiles.

Topic: Stage for Fusion

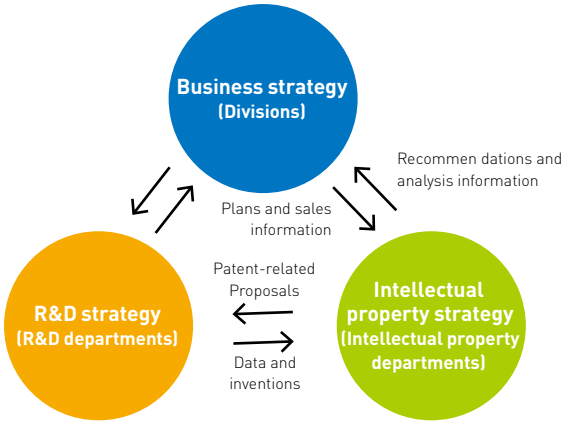
To realize the concept of "The TOP 2021," we will establish a complex "Stage for Fusion" as a global center which will accelerate deepening, fusion and introduction of technologies inside and outside the Company. "Stage for Fusion" will be built at an adjacent area of the Yokohama Plant, and will come into service in 2022.

Intellectual Property Strategies

Protection of intellectual property

Basic ideas and policies

The Showa Denko Group regards its intellectual property strategies as one of its important managerial strategies, and formulates and implements the business, R&D and intellectual property strategies in an integrated manner. We also constantly work to build a robust and broad network of patents for our major business segments and important products developed by the Group, thereby maintaining our competitive edge.



Business, R&D and intellectual property strategies are mutually inseparable, like the two sides of a coin. Showa Denko shares information about the three types of strategies it employs closely and seamlessly, and without a time lag, between the three parties to ensure that they are aligned with each other.

Materiality KPI

New applications: From 342 in 2018 to 405 in 2022, and to 460 in 2025

Note: Showa Denko regards the protection of intellectual property as one of its material issues.

Results of the KPI

In 2019, we achieved more than 350 new patent applications (342 in 2018).

We operate many of our businesses globally, and in order to support these businesses, we proactively file applications for intellectual property rights outside Japan as well. The global application rate (percentage of applications made outside Japan based on applications in Japan) has been at least 50% on average for the past seven years.

We also respect the intellectual property rights of other companies. We have built a patent monitoring system that also includes foreign patents in the target, to check the trends of other companies concerning their intellectual property rights. We also proactively protect our trade secrets and copyrights.

In 2020, amid the novel coronavirus crisis, the number of inventions the Group creates may decrease due to the slowdown of its R&D activities and the time lag may increase regarding applications. We will work to reduce such adverse impact in collaboration with the R&D departments and by diversifying the means of communication.

Toward the future

We will further expand our intellectual property portfolio to increase our competitiveness both quantitatively and qualitatively. In addition, we will make careful assessments regarding cost-effectiveness while fostering the acquisition of intellectual property rights outside Japan in the globalization of our businesses.

TOPICS

Use of AI

Increase the efficiency of investigations Search for similar patents and improve readability	Put into practical use in 2019
Automate investigations Promote the use for bird's-eye view analysis	Expand the use for IP landscaping
Create value Search for new applications of proprietary technologies	Toward the creation of R&D themes

Showa Denko has been proactively making use of artificial intelligence (AI) in the intellectual property field as part of its efforts to spread the use of AI across the Company.

By making effective use of AI, we will increase our research efficiency, reduce the risk of infringing upon the intellectual property rights of other companies, and more strategically conduct intellectual property-related operations to enhance the competitiveness of our company.

In 2019, we started to implement the following two measures to increase the efficiency of our intellectual property-related operations: (1) application of AI for the sorting of data in order of similarity for SDI* in Japan; and (2) operation of the patent interpretation support system in which the AI developed in partnership with IBM Japan, Ltd. is used. In 2020, we will further advance the system to one that can deal with patents in foreign languages, thereby making it possible to conduct surveys in a more efficient manner.

*Selective dissemination of information (SDI): System for the regular sharing of information about patent applications related to the Company

We are also conducting examinations to make more effective use of AI for the creation of new intellectual property. AI-based web-wide data search, compilation and analysis and the formulation of strategies are proving to be very useful to find new customers, search for new product applications and examine M&A. We expect that the technology will greatly help us conduct R&D and business operations in the near future.

Corporate Governance

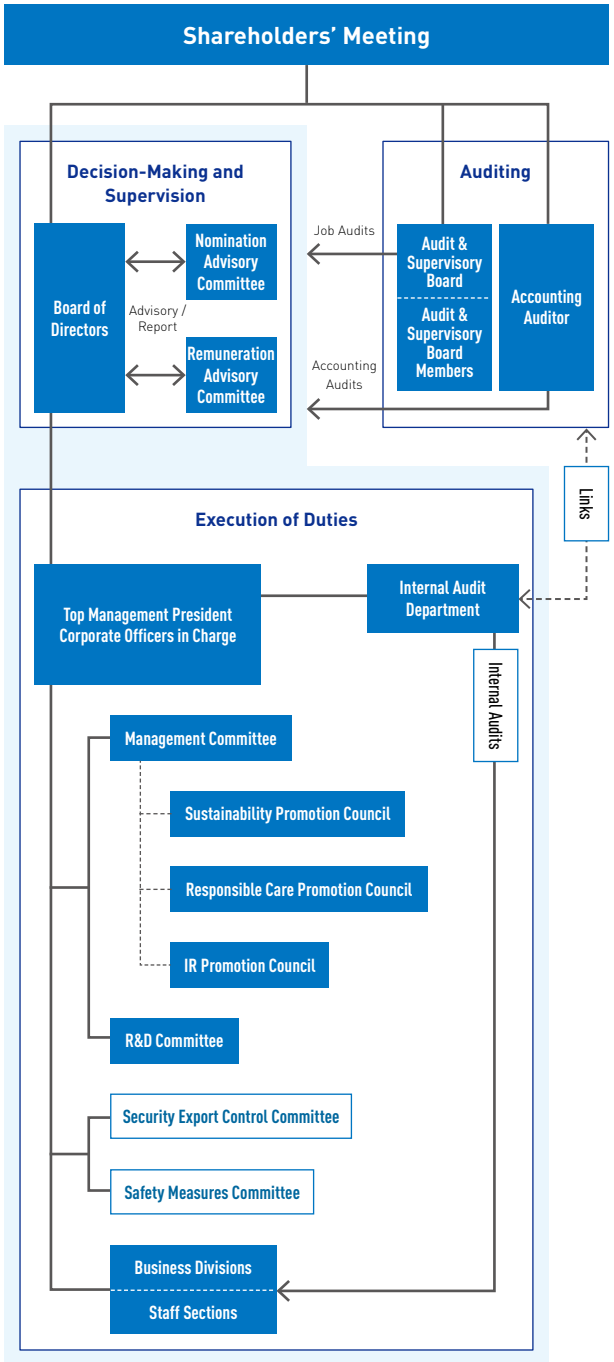
Basic policies

Showa Denko continuously promotes corporate governance to ensure the soundness, effectiveness and transparency of management, and to continue enhancing its corporate value, thereby contributing to the sound growth of society and earning its full trust and confidence.

To that end, it is essential for Showa Denko to maintain and strengthen relationships with its stakeholders, including shareholders, customers, suppliers, local communities and employees. Based on this recognition, we have clarified our corporate mission in the form of Our Vision and are promoting business management that leads to the achievement of the vision.

Showa Denko formulated the Corporate Governance Basic Policies in line with Japan's Corporate Governance Code and discloses the policies on its website.

Corporate governance structure (As of April 2020)



Governing body	Members	Chairperson	Meeting frequency
Board of Directors	**4** outside directors (One is female) **5** inside directors	Inside director not in charge of business execution	Once or twice a month
Audit & Supervisory Board	**3** outside auditors (Two are female) **2** inside (full-time) auditors	Inside full-time auditor	Once or twice a month
Nomination Advisory Committee	**4** outside directors (One is female) **2** inside directors	Outside director	3 or 4 times a year
Remuneration Advisory Committee	**2** outside directors (One is female) **1** outside auditor **2** inside directors	Outside director	3 or 4 times a year
Management Committee	President, corporate officers in charge, and other corporate officers and heads of the administrative departments whose presence on the committee is deemed necessary by the president	President	Once a week in principle

Selection and dismissal of senior management and nomination of candidates for director and auditor positions

Showa Denko selects candidates to be its directors based on the criteria for knowledge, insight, fair judgment, ability to take actions, practical experience and others required of directors. For the selection of senior management, individual performance as well as corporate performance are also taken into consideration. Candidate Audit & Supervisory Board members must possess sufficient knowledge, experience and capabilities to fulfill their obligations as auditors, including an appropriate level of expertise in the areas of finance and accounting.

The Nomination Advisory Committee deliberates the nomination of candidates for the aforementioned positions and submits recommendations to the Board of Directors. The Committee is an advisory board to the Board of Directors, and more than half of its members are independent outside directors.

Dismissal of the chief executive officer and others

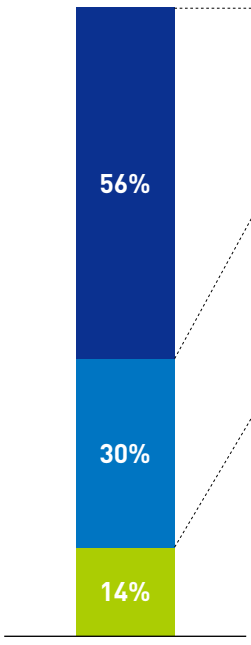
In the event it is revealed that any of the directors, including the chief executive officer, has substantially damaged the corporate value or does not meet the selection criteria for directors, the Nomination Advisory Committee shall discuss whether the person is still suitable for the position and report the results to the Board of Directors, which will make the final decision.

Remuneration of directors and corporate officers

Policies on and breakdown of the remuneration

The remuneration of directors (excluding outside directors) and corporate officers shall be composed of base remuneration, short-term performance-linked remuneration, and mid- to long-term performance-linked remuneration. The base remuneration shall be decided according to the job title and others, while the short-term performance-linked remuneration shall be determined in consideration of corporate and individual performance and others under the performance evaluation system. The mid- to long-term performance-linked remuneration shall be paid in line with the stock ownership rules set for directors. Outside directors and Audit & Supervisory Board members shall only be paid the base remuneration (fixed amount), which shall be paid on a monthly basis. The standard amount of remuneration shall be determined in reference to the standard amounts paid by other companies (in the same industry and same business size) as revealed through surveys conducted by external professional organizations.

Average breakdown of the remuneration of directors (excluding outside directors)



Average composition (%)	Remuneration type	Payment criteria	Payment method	Payment
56%	Base remuneration (Fixed)	Fixed remuneration decided according to job title and others	Cash	Monthly
30%	Short-term performance-linked remuneration	Performance indicators: Sales, ordinary income and ROA	Cash	Monthly
14%	Mid- to long-term performance-linked remuneration	Stock-based performance-linked rewards paid under the trust system	Total points given before resignation are multiplied by the adjustment index for changes in stock prices to calculate the amount of reward.	At the time of resignation

Corporate Governance

Procedures to decide the amount of remuneration

The upper limit of the total amount of remuneration to be paid to directors and Audit & Supervisory Board members shall be resolved at the general meeting of shareholders. In line with this policy, the Remuneration Advisory Committee, with a majority of members being independent outside directors and outside Audit & Supervisory Board members, shall conduct deliberations about the remuneration of directors and corporate officers, and the Board of Directors shall make the final decision. The amount of remuneration to be paid to Audit & Supervisory Board members shall be determined through discussions at the meetings of the Audit & Supervisory Board.

Amount of remuneration paid in FY2019

Category	Total amount paid (millions of yen)	Total amount paid by remuneration type (millions of yen)			Number of persons to whom payment was made
		Base remuneration	Short-term performance-linked remuneration	Stock-based rewards	
Director	¥402	¥261	¥121	¥20	11
Outside director	39	39	—	—	4
Audit & Supervisory Board member	93	93	—	—	6
Outside member	33	33	—	—	3

Note: For the stock-based rewards, the amount paid totaled ¥20 million under the stock-based performance-linked reward system for directors, which was approved by a resolution made at the 107th session of the general meeting of shareholders held on March 30, 2016.

Internal effectiveness evaluation

Policies

Showa Denko aims to achieve sustainable corporate growth and to increase its mid- to long- term corporate value. To this end, as its responsibility and role, the Board of Directors is expected to build a system to make decisions in a transparent, fair, prompt and fearless manner and to supervise the management of the system. Showa Denko conducts a questionnaire survey to check the effectiveness of the Board of Directors as a whole, in which directors and Audit & Supervisory Board members conduct a self-evaluation about whether they have fulfilled that responsibility and role. Based on the survey results, issues to be solved are discussed by the Board of Directors.

Showa Denko includes "Decision-making process, structure" in its material issues and regards continuing the evaluation of the Board of Directors' effectiveness and disclosing the results as a KPI for materiality.

Note: For details, please refer to "Sustainability as a *KOSEIHA* Company: Core Task 3 (Decision-making process, structure)" on page 56.

Evaluation method

Regarding the effectiveness of the Board of Directors in 2019, we conducted a survey in January 2020, in which the directors and Audit & Supervisory Board members answered questions and made free comments. Then, based on the results, the Board of Directors conducted discussions at its meeting held in March 2020. In order to ensure the objectivity of the survey and further increase the effectiveness of the Board of Directors, the survey is conducted and the results are tabulated by an external organization.

Evaluation results

Based on the survey results and discussions conducted at its meetings, the Board of Directors has confirmed as follows: members who have diverse experience and expertise make the Board highly effective by taking broad views and having diverse values, and proactive and constructive discussions have been conducted, with the Board taking sufficient time to deliberate the items, for which reference materials are distributed and explanations are made in advance of the meetings.

1. Evaluation of the FY2019 plan implementation results in consideration of the results for the previous year

- As for priority items, such as progress with the medium-term business plan and review of the management strategies, establishment and improvement of the CSR and compliance systems in response to business globalization, and others, Board members have been continuing the discussions in order to share ideas about the changes made to the business environment, etc.
- For even more efficient management of the Board meetings, use of IT systems, such as a paperless conference system, and the enhancement of the secretariat's functions have been promoted.
- Deeper discussions are needed on the management strategies, governance system and group management, toward the full integration of Hitachi Chemical.

(Free comments)
- Discussion opportunities have increased as more time is now spent on discussions at the biannual opinion exchange meetings.
- The rules on the Board of Directors are reviewed as needed.
- In 2019, for the implementation of the new medium-term business plan, "The TOP 2021," we discussed the issues proactively at the Board meetings and opinion exchange meetings.

2. Action plan for 2020

According to the action plan for FY2020, participants in the Board meetings and the opinion exchange meetings held with the participation of all directors will further deepen the discussions about the management strategies, governance system and group management, while continuing to implement measures to enhance the management of the meetings.

Our Code of Conduct

For the Showa Denko Group to fulfill its corporate social responsibility and contribute widely to society, it is necessary for the Group to have a clear vision based on which individual employees can take actions with ownership. To this end, the Group established the corporate code of conduct in 1998 and subsequently revised it in 2012 as "Our Code of Conduct," asking all directors and employees to abide by it. Since then the Group has been demonstrating its corporate approach through the code of conduct to all stakeholders, including shareholders, customers, employees, local communities and suppliers.

The environment surrounding our business has recently been changing day by day, and a range of changes have also occurred in relation to international initiatives related to corporate social responsibility, such as the adoption of the Sustainable Development Goals (SDGs). Amid this situation, the Showa Denko Group is expanding its overseas business, which makes corporate governance even more important for the Group.

In order for all directors and employees of the Group to recognize these changes in society and take actions with ownership toward the shared goal, we revised Our Code of Conduct in May 2020.

We revised it in consideration of the changes made to the external environment and with a view to making it more globally applicable to promote the rule of law and respect for human rights as the fundamental requirements for our business, without limiting the target to the laws, regulations, customs and others of specific countries. Our basic approach is to work to contribute to the creation of a sustainable society by providing both economic value and social value to society. To this end, individual directors and employees are expected to behave honestly, fairly and sincerely beyond simply complying with laws and regulations, to make efforts for further growth, progress and improvements in order to soar to new heights, and to deepen their bonds with each other and expand their human networks across the board.

We will deepen our individual understanding of the newly revised Our Code of Conduct in order to take actions in line with it at all times. The revision was made under the supervision of lawyers and then deliberated by the Management Committee and approved by the Board of Directors.

Basic ideas

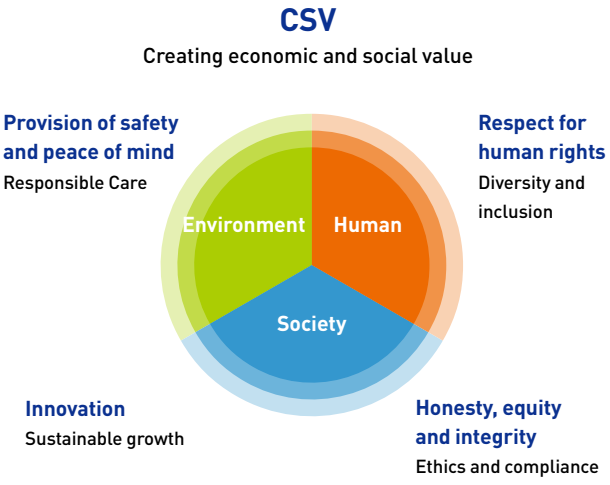
1.1 Ethics and compliance
We will act in strict compliance with laws and regulations and in accordance with standards of honesty, equity and integrity to build social credibility.

1.2 Responsible Care
We will provide, in a stable manner, products and services that ensure the environment, safety and health with high production technologies.

1.3 Diversity and inclusion
We will respect each other's individuality, acknowledge the virtue of diversity, and support each other through solid partnership.

1.4 Innovation
We will habitually update our awareness and actions to create innovation in line with our dynamically changing society.

1.5 Creating shared value
We will contribute to the creation of a society that is looking ahead to the future of the earth and our children and in which affluence and sustainability are harmonized.



Corporate Governance

Directors as of June 30, 2020



1 KOHEI MORIKAWA

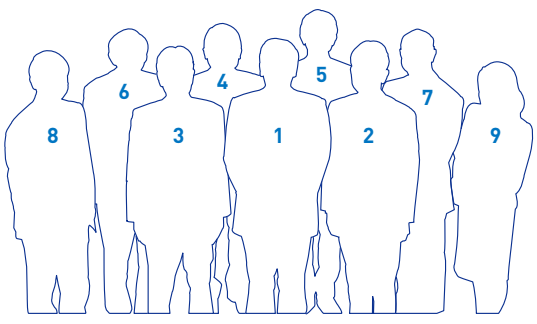
Frequency of participation in 2019
Board meetings: 15 times in 15 meetings

Apr. 1982	Joined the Company
Jan. 2013	Corporate Officer; General Manager, Electronic Chemicals Division
Jan. 2016	Managing Corporate Officer; Chief Technology Officer (CTO)
Mar. 2016	Director; Managing Corporate Officer; Chief Technology Officer (CTO)
Jan. 2017	President and Chief Executive Officer (CEO) (incumbent)

2 HIDEHITO TAKAHASHI

Frequency of participation in 2019
Board meetings: 15 times in 15 meetings

Apr. 1986	Joined The Mitsubishi Bank, Ltd. (currently MUFG Bank, Ltd.)
Oct. 2004	Asia Pacific President, GE Sensing & Inspection Technologies, GE Japan Holding Corporation
Oct. 2008	President & CEO, Silicones Business, Momentive Performance Materials Japan Inc.
Jan. 2013	President and CEO, GKN Driveline Japan plc
Oct. 2015	Joined the Company, Senior Corporate Fellow, Assistant to President
Jan. 2016	Corporate Officer; General Manager, Corporate Strategy Department
Jan. 2017	Managing Corporate Officer
Mar. 2017	Director; Managing Corporate Officer
Jul. 2017	Director; Managing Corporate Officer, General Manager, Carbon Division
Jan. 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)



3 MOTOHIRO TAKEUCHI

Frequency of participation in 2019
Board meetings: 12 times in 12 meetings
Note: Frequency after assuming the position

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

4 HIDEO ICHIKAWA

Frequency of participation in 2019
Board meetings: 15 times in 15 meetings

Apr. 1975	Joined the Company
Jan. 2006	Corporate Officer; General Manager, Corporate Strategy Office
Mar. 2008	Director; Corporate Officer; General Manager, Corporate Strategy Office
Sep. 2008	Director; Corporate Officer; Executive Officer, HD Sector
Jan. 2010	Director; Managing Corporate Officer; Executive Officer, HD Sector
Jan. 2011	President and Chief Executive Officer (CEO)
Jan. 2017	Chairman of the Board (incumbent)

5 HIROSHI SAKAI

Newly appointed

Apr. 1986	Joined the Company
Jan. 2015	Senior Corporate Fellow; General Manager, Technology Development Control Department, HD Division
Jan. 2019	Corporate Fellow; General Manager, Technology Development Control Department, Device Solutions Division
Jan. 2020	Corporate Officer; Chief Technology Officer (CTO)
Mar. 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)

6 MASAHARU OSHIMA

Outside Director

Frequency of participation in 2019
Board meetings: 15 times in 15 meetings

Based on his abundant expertise and experience as a researcher in the field of electronics, has provided useful management advice in the field of R&D since becoming an outside director of Showa Denko. Also, as outside director, supervises the management of the Company's business in anticipation of future technological trends.

Apr. 1974	Joined Nippon Telegraph and Telephone Public Corporation (currently Nippon Telegraph and Telephone Corporation)
Nov. 1995	Professor, Applied Chemistry Department, Graduate School of Engineering, The University of Tokyo
Apr. 2006	Director, Synchrotron Radiation Research Organization, The University of Tokyo
Oct. 2009	Chairman, The Japanese Society for Synchrotron Radiation Research
Apr. 2013	Project Professor, Synchrotron Radiation Research Organization, The University of Tokyo
May 2013	Chairman, The Surface Science Society of Japan
Jun. 2013	Emeritus Professor, The University of Tokyo (incumbent)
Apr. 2014	Project Researcher, Synchrotron Radiation Research Organization, The University of Tokyo
Mar. 2015	Director of the Company (incumbent)
Apr. 2015	Special Professor, Tokyo City University (incumbent)
Jul. 2016	Project Researcher, School of Engineering, The University of Tokyo (incumbent)
Dec. 2016	Project Researcher, Institute for Solid State Physics, The University of Tokyo (incumbent)

7 KIYOSHI NISHIOKA

Outside Director

Frequency of participation in 2019
Board meetings: 15 times in 15 meetings

Based on his experience at the research, production and sales departments of a steelmaker and in the firm-wide management of technology development, has broad expertise and knowledge. Also conducts activities for technology-oriented management and industry-academia collaboration as a university researcher. Since becoming an outside director of Showa Denko, has been providing objective and useful advice and appropriately supervising the management of the Company's business.

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

8 KOZO ISSHIKI

Outside Director

Frequency of participation in 2019
Board meetings: 12 times in 12 meetings
Note: Frequency after assuming the position

Engaged in the financial industry for many years and has abundant expertise across industries, in particular in the chemical industry. As outside director since 2019, has been supervising Showa Denko's business execution and contributing a deep understanding of and advice on its businesses.

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

9 NORIKO MORIKAWA

Outside Director
Newly appointed

After working for a securities company and an accounting firm, engaged in business management as an accounting/financial manager in the information & communication and automotive component industries. Presently also serves as an outside director for another company. Has a range of knowledge in electronics, automobiles and other key target markets for Showa Denko and is expected to supervise the operations of the Company's administrative departments as outside director in and after 2020.

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

Corporate Governance

Audit & Supervisory Board Members as of June 30, 2020



5 3 1 2 4

1 TOSHIHARU KATO

Frequency of participation in 2019 Board meetings: 12 times in 12 meetings
Audit & Supervisory Board meetings: 10 times in 10 meetings
Note: Frequency after assuming the position

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

2 JUN TANAKA

Newly appointed

Apr. 1982	Joined the Company
Jan. 2013	Corporate Officer; General Manager, Advanced Battery Materials Department
Jan. 2017	Managing Corporate Officer; Chief Technology Officer (CTO)
Mar. 2017	Director; Managing Corporate Officer: Chief Technology Officer (CTO)
Jan. 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)
Jan. 2020	Director, Assistant to President
Mar. 2020	Audit & Supervisory Board Member (incumbent)

3 KIYOMI SAITO

Outside Member

Frequency of participation in 2019 Board meetings: 15 times in 15 meetings
Audit & Supervisory Board meetings: 15 times in 15 meetings

Based on her experience of launching a business consulting company and a securities company specializing in the online trading of bonds and the knowledge gained through operating these companies, has been appropriately auditing Showa Denko's business execution since becoming outside auditor of the Company in 2012.

Apr. 1973	Joined Nikkei Inc.
Sep. 1975	Joined Sony Corporation
Aug. 1984	Joined Morgan Stanley Investment Bank
Jan. 1990	Executive Director, Morgan Stanley Investment Bank
Apr. 2000	Director; President, JBond Co., Ltd. (currently JBond Totan Securities Co., Ltd.) (incumbent)
Apr. 2011	Director; President, The Totan Information Technology Co., Ltd.
Mar. 2012	Audit & Supervisory Board Member of the Company (incumbent)
Jun. 2015	Outside Director, Kajima Corporation (incumbent)

4 SETSU ONISHI

Outside Member

Frequency of participation in 2019 Board meetings: 15 times in 15 meetings
Audit & Supervisory Board meetings: 13 times in 13 meetings

Based on his experience of engaging in the management of a bank as a director in charge of internal auditing and in the management of a leasing company, has the ability, knowledge and experience necessary to audit the operation of business in a fair and objective manner. Since becoming outside auditor of Showa Denko in 2018, has been appropriately auditing the Company's business execution.

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

5 MASAKO YAJIMA

Outside Member
Newly appointed

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

Corporate Officers as of June 30, 2020

Senior Managing Corporate Officer

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

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 plant
MAKOTO TAKEDA	General Manager, Carbon Division



CRO Message

We will build even stronger risk management and compliance systems

Corporate Officer
Chief Risk Management Officer (CRO)

Keiichi Kamiguchi

Importance of risk management

The social environment surrounding companies is rapidly and dramatically changing as they globalize their business activities, respond to climate change, face the innovation of information and communication technologies, and diversify their forms of employment. Amid these changes, it is becoming even more important for companies to manage risks in their business operations.

The Showa Denko Group is no exception and we must advance our risk management by taking a new point of view.

For the Group to create new value, we need to take risks and boldly embrace challenges. However, when doing this, we must identify what kind of risk exists in which area and on what level so that we can control the risks appropriately. To this end, it is important to continue building necessary systems and constantly improving them as an essential means to support the corporate activities.

In particular, among a wide range of risk management items, Showa Denko must strictly manage the risks related to safety and compliance.

We must give first priority to the safety of our employees, employees of our partner companies and all others related to the Group. In addition to ensuring their safety in our ordinary production activities, we are now also implementing adequate safety measures against the novel coronavirus, while continuing our business operations so that we can supply our products to society without delays.

Ensuring compliance is also essential to win trust from stakeholders, for which it is necessary to enhance collaboration between on-site employees and the administrative staff who support them. We will further enhance compliance across the Group by conducting risk assessment activities, fostering the provision of information and education by the administrative departments, and operating the internal reporting system in an appropriate manner.

Toward the future

For risk management including ensuring compliance, we must strengthen measures promptly and appropriately to identify the risks that could have a serious impact on our business management. To this end we will further increase the efficiency of our present management system and optimize it, while also adapting it to the further globalization of our businesses.

From now on, we will work toward the full integration of Hitachi Chemical and in the process, we need to consolidate the risk management and compliance systems of the two companies into one that is more robust, as one of the conditions that we must meet to generate synergies through the integration.

We will further enhance the value of Showa Denko as a reliable company that provides its stakeholders with a sense of security.

Risk Management & Compliance

Risk management

Basic ideas and policies

The Showa Denko Group upholds "Deepening of risk management on the basis of safety and compliance" as the main theme for its CSR Policy. Accordingly, we are striving to improve our risk control for both ordinary times and emergencies and to reduce the detected risks.

Promotion system

We have working groups specializing in important issues related to compliance and risk management, specifically, the working group on risk management and the working group on human rights and compliance. At the meetings of the Sustainability Promotion Council chaired by the director in charge of CSR, relevant issues are deliberated and examined, and the issues of importance in terms of business management are presented to the Management Committee and the Board of Directors as the agenda for their meetings. In ordinary times, each of the divisions, plants and subsidiaries implement their risk management systems and risk reduction measures under the leadership of their respective risk managers, thereby promoting the sectoral control of risks.

In the event that an existential risk to the Company is identified or an unexpected crisis occurs, we will establish headquarters to deal with the crisis headed by the President so that we can promptly respond to it. We have also set the rules to be followed by the administrative departments of the head office regarding risks related to personnel, PR and safety. Issues regarding the risk management situation are deliberated by the Management Committee twice a year and the results are reported to the Board of Directors for continuous improvement. We thereby ensure that our risk management process functions effectively.

"Risk inventory" activity

The Showa Denko Group conducts the "risk inventory" activity as its standard risk management scheme, and all 96 of the Group's sites, including non-consolidated subsidiaries, are targeted for the activity. In this activity, specific risks are identified at the sites by department and according to our risk classification criteria.

Through the ISO 31000-compliant risk assessment, response and review process, we are executing a PDCA cycle for risk management, thereby making all employees well aware of the importance of risk management and ensuring that the management team can constantly monitor and grasp information about the risks that could have serious impacts on the Group's management.

As for serious risks for which adjustments need to be made to implement company-wide measures, such as anti-earthquake measures for equipment and information security measures, the head office's administrative departments in charge provide needed advice. They also offer risk-related education and training, carry out on-site inspections and give instructions, as required, under the leadership of the management team.

Enhancement of business continuity plans (BCPs)

We at the Showa Denko Group are aware of the importance of fulfilling our responsibility as a supplier, recognizing the fact that the availability of our products has an impact on society at large. While expanding our business domain, we have been making BCPs based on the idea that we need to build a business system that is highly resistant to disasters and other crises both in Japan and overseas.

Risk classification

(1) Accidents and disasters
- Facility accidents
- Fires and explosions
- Injuries or deaths
- Environmental accidents
- Natural disasters and climate change
- Infrastructural accidents
- Traffic and distribution accidents
- Chemical handling accidents
- Accidents involving products

(2) Risks related to violation of laws, antisocial acts
- Violation of industrial property rights
- Violation of antitrust laws
- Insider trading
- Violation of Foreign Exchange Law
- Violation of Subcontract Law
- Violation of laws concerning environment, chemical substances, security and safety
- Defamation, violation of privacy
- Crimes committed by employees
- Bribery

(3) Risks related to human resources and labor
- Human rights
- Outflow and security of human resources
- Evaluation, rewards and assignment
- Infectious diseases
- Work hours
- Diversity of employment patterns
- Involvement as victim of crimes and terrorist acts

(4) Information management
- Information leaks
- System failures
- Problems involving media, rumors, whistle blowing
- Commercial software
- Management of login ID

(5) Risks related to management and business
- Stocks and corporate bonds
- Investments
- Finance and accounting

(6) Risks related to supply chains
- Inventory, assets
- Procurement
- Business

(7) Risks related to external environment
- Nation, region community
- Industry

Loss classification

Loss of social credibility　Loss of social credibility　Loss of financial assets

Note: Evaluated in terms of loss of social credibility, loss of human resources and, loss of financial assets

We make specific BCPs in consideration of the features of each of our businesses and products, implement natural disaster countermeasures for our equipment, stockpile masks and other goods in preparation against pandemics and clarify and work on problems through educational training. We are thereby managing our business in a manner that enables us to continue it while giving first priority to people's lives. Moreover, we regularly conduct drills to foster collaboration for BCPs between the divisions, plants and affiliated companies, through which participants can share the lessons learned, problems and best practices.

As one of the initiatives implemented in 2019, we revised the BCP made for the head office's administrative departments. In the event of an inland earthquake hitting the Tokyo metropolitan area, we might not be able to continue using the head office building in Tokyo. Based on this assumption, we revised the plan to include the relocation of the emergency response headquarters functions and the adoption of a teleworking system as the basic countermeasures.

As for the outbreak of the novel coronavirus disease (COVID-19), the secretariat of the emergency response headquarters collect related information from both within and outside Japan to provide regular cautionary advice to employees and instruct them on infection control measures. Moreover, the Group CEO shared a message promising employees that the Group will (1) give first priority to protecting the health of all Group employees and employees of partner companies; (2) continue to supply the products that are indispensable for society and daily life as its social responsibility; and (3) make preparations to achieve further growth for the Group after the pandemic ends. We are dealing with the coronavirus crisis also in line with the BCPs.

Information security measures

The Showa Denko Group has established rules on information security and the management of personal information in order to make appropriate responses to information-related risks. The Group is continuously working to increase employees' awareness of the rules through e-learning and training against targeted email attacks. We also make information security assessments at all our sites in Japan and abroad as part of our activity to increase our information security.

Risk Management & Compliance

Recently, in our effort to deal with cyberattacks, we have participated in the activities conducted by the Japan Chemical Industry Association and the Japan Petrochemical Industry Association to collect the latest information. Since 2018, we have also been engaging in the Computer Security Incident Response Team (CSIRT) activity to enhance the information security systems of our sites in Japan and across the world, cooperating with external organizations specializing in information security for information collection.

Compliance

Basic ideas and policies

The Showa Denko Group believes that compliance provides the basis of its business continuity and is essential for the achievement of its vision. Accordingly, we comply with social norms of each country and region, and corporate ethics as well as laws and regulations. In addition, we are implementing the system and conducting a range of activities to spread ethical values based on honesty, impartiality and integrity.

Note: For employee education on corporate ethics, please see page 56.

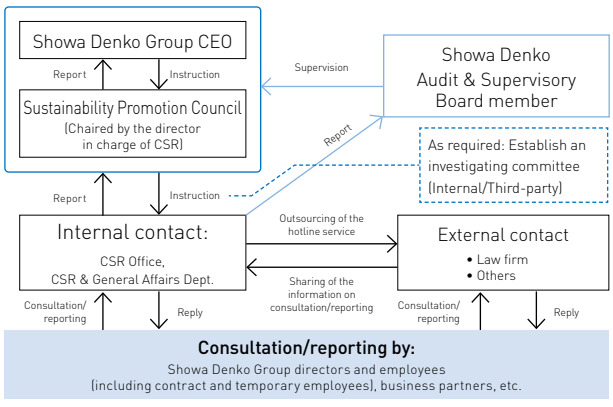
Corporate Ethics Hotline

We operate the Corporate Ethics Hotline so as to be able to detect from across the Showa Denko Group any incidents of noncompliance or unfair and other behaviors that contravene corporate ethical standards at an early stage in order to resolve them.

Employees can make a report via Showa Denko's website and intranet as well as through the external law firm designated by the Company. Not only Group employees but also all other stakeholders, including suppliers and local residents, can make reports to the Group through the hotline. For national staff of Group companies outside Japan, we have also been providing a multilingual hotline service (external service in 12 languages) since April 2018. The hotline service can be used anonymously both within and outside Japan, and we clearly state that we respect the privacy of service users and prohibit any disadvantageous treatment of users by their companies.

For each of the reports made to the hotline internally and via the external contact, we talk to the company/site in question, and the department in charge conducts a survey on the issue to confirm the facts. If noncompliance with laws, regulations and others is confirmed as a result of the survey, we promptly take corrective actions. For serious issues, reports are made to the Sustainability Promotion Council chaired by the director in charge of CSR and to the Board of Directors, including details of the internal report made to the hotline, the survey, corrective actions, and measures to be taken to prevent the reccurrence of similar problems.

The secretariat of the Corporate Ethics Hotline received 52 reports and requests for consultation in 2019. After prompt and careful investigation of the details, we took corrective measures as necessary.



Compliance with anti-bribery laws and regulations, and prevention of corruption

Bribery of public servants and the compulsion, offer and inducement to bribe are acts that cause corruption in the national economy and politics, and prevent the sustainable growth of the international community. The Showa Denko Group has formulated the Showa Denko Group's Global Anti-Bribery Policy, and we are implementing drastic measures to comply with anti-bribery laws and regulations enforced in each country. Specifically, we conducted an e-learning seminar to provide basic knowledge about bribery and a total of over 400 people participated.

Also, for the provision of benefits and exchange/entertainment opportunities that do not constitute bribery, we conduct sufficient examinations as to the reason why we need to provide them, recognizing that providing them for the purpose of making profit unfairly may lead to corruption. Moreover, we prohibit, in principle, individual employees and workplaces from accepting any money or gifts from suppliers and other related parties.

Specifically, we prohibit in our in-house rules the provision and receipt of benefits, exchange/entertainment opportunities, and gifts that could be suspected as being intended to produce unfair profit. We also set an upper limit on the amount of money that can be spent for the purpose of socializing, thereby preventing the provision of excessive benefits. We have also set an approval process for the provision of such benefits.

In addition to implementing the rules and the process internally, we have obtained support and cooperation from our suppliers by informing them of the rules through the CSR Procurement Guidelines.

Compliance with competition laws

For complying with competition laws, which are designed to ensure fair and open competition, in each country, we formulated our own anti-cartel rules in 2010 and have been implementing the rules to control cartel risks appropriately in our daily business operations. Also, since 1999, we have been carrying out internal audits every year to check for illegal sales activities to ensure compliance with competition laws and reported the results to top management. We also published a range of guidelines, including the handbook on antimonopoly laws for sales personnel, the Antitrust Compliance Guideline, and the Compliance Program of EU Competition Laws, with an eye to raising employees' compliance awareness regarding competition laws across the Group.

Furthermore, we have been holding an annual seminar on competition laws for the Group's sales personnel (including national staff of Group companies outside Japan), inviting external experts in competition law to serve as lecturers. In 2019, a total of 318 employees participated in the event, held at five of our sites in Japan and overseas.

Respect for human rights

Basic ideas and policies

The Showa Denko Group respects human rights based on the International Bill of Human Rights, the ILO Declaration on Fundamental Principles and Rights at Work and other principles on human rights as the basis of its business management, and works to ensure that individual employees behave in line with these principles. Specifically, we show our basic approach to human rights in Our Code of Conduct, ask all employees, including those working outside Japan, to abide by the rules and provide them with training on important issues related to human rights.

"Our Code of Conduct" Chapter 2: Management that respects human rights (excerpted)

2.1 Understanding the international covenants on human rights
Under the rule of law, we will endeavor to realize the "right to be happy," which everyone possesses from birth.

2.2 Prohibition of unfair discrimination
We will not tolerate unfair discrimination based on bias or prejudice that diminishes human dignity.

2.3 Elimination of forced labor and child labor
We will contribute to the creation of an inclusive society by supporting volunteer activities and promoting inclusive business.

2.4 Elimination of forced labor and child labor
We will conduct supply chain management in a responsible manner so that we will not be involved in any form of infringement of human rights.

2.5 Establishment of human rights due diligence
We will establish appropriate procedures and systems to deal with human rights risks related to our business activities.

We are conducting examinations to implement a series of due diligence processes for human rights across the Group, both within and outside Japan, based on the Guiding Principles on Business and Human Rights approved by the United Nations Human Rights Council in 2011.

Note: For details about this education, please see page 56.

Responsibility for the supply chain

Basic ideas and policies

The Showa Denko Group conducts business activities in consideration of society and the environment across its supply chain, from the procurement of materials and manufacture and sale of products to transportation, in line with its Basic Procurement Policy, which attributes importance to "optimized transactions," "partnership" and "promotion of CSR procurement."

CSR procurement

In order to contribute to the solution of global environmental and social problems that we are currently facing, the Showa Denko Group needs to gain the understanding and support of all stakeholders of the Group. We established the Showa Denko Group's CSR Procurement Guidelines, which we share with our business partners so that we can increase each other's corporate value through compliance with the guidelines.

Outline of the guidelines

- An introduction to promotion of corporate social responsibility (CSR)
- Responsible Care (RC) activities
- Quality and product safety
- Corporate ethics, compliance and fair trade
- Environmental protection
- Safety and hygiene in the workplace
- Human rights and labor
- Information security
- Social contribution
- Business continuity plan
- Sustainable procurement

We check the CSR and due diligence measures taken by our business partners by conducting the CSR self-assessment questionnaire. In principle, we ask all new business partners to fill in the questionnaire (checklist) when concluding agreements with them, and the survey is subsequently conducted every three years. We also make "CSR visits" to the partners. Specifically, employees in charge of procurement annually visit about 40 partner companies to have a direct dialogue with them. Since this initiative was launched in 2010, we have made CSR visits to a total of 463 partners as of the end of 2019.

We share the results of the CSR self-assessment questionnaire and CSR visits with the partners in the form of feedback reports and conduct follow-up activities, including making improvement proposals to them as appropriate.

Also, in May 2019, Showa Denko became one of the first companies in the chemical industry to make a declaration to take actions for sustainable logistics, in support of the "White Logistics" movement. Joint delivery, modal shift and other measures to increase the efficiency of transportation will directly contribute to reducing our environmental impact, in addition to helping improve the work environment in the logistics industry.

Measures for partners that have negative impacts on our business continuity

The Showa Denko Group will review our business relations with partners who we think do have a serious negative impact on our business continuity. According to the level of negative impact that might be caused by a partner, we will stop requesting quotes from and placing orders with the partner for a certain period, reduce the trade volume, or cancel the sales contracts concluded with the partner. We are responding rigorously to any instances of noncompliance with laws and regulations or with the Showa Denko Group's CSR Procurement Guidelines.

Conflict minerals

Purchasing minerals (tin, tantalum, tungsten and gold) from Congo and its neighboring countries is considered a large international problem because, by purchasing these minerals, local armed groups are funded and consequently play a part in local conflicts and cause human rights violations and environmental destruction.

The Showa Denko Group incorporates measures to deal with the issue of conflict minerals in the Showa Denko Group's CSR Procurement Guidelines. We ask our business partners to provide us with related supply chain information to avoid the purchase and use of these minerals. Also, in line with the recent social trends toward responsible minerals sourcing, we added cobalt to the target of measures in addition to the aforementioned four minerals.

Sustainability Management

We will promote management with a focus on the environment, society and governance (ESG), and contribute to the creation of a sustainable society by capitalizing on the Group's strengths.

Contributing to the creation of a sustainable society by capitalizing on the Group's strengths

For the Showa Denko Group, "sustainability" means to be a sustainable company that can give satisfaction to its stakeholders by providing them with products and services that are useful for society and unique to the Group with a focus on the environment, society and governance (ESG), thereby creating both economic and social value, and also to make contributions to the sustainability of international society.

In order to achieve this, we set the Showa Denko Group's CSR Policy, based on which we conduct our activities.

Showa Denko Group's CSR Policy

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

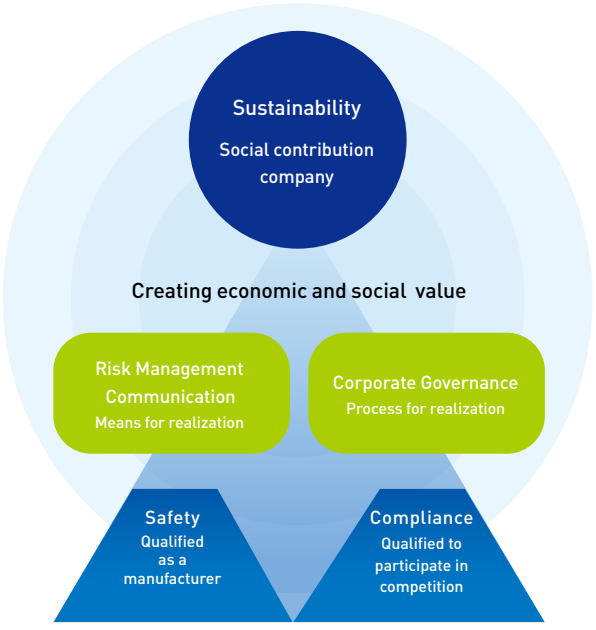
(Revised in May 2019)

Safety and compliance provide the basis for our business activities

For the Group, CSR means to make social contributions through business operations, with all employees taking actions sincerely in line with Our Vision and Our Code of Conduct. In Our Vision, we are committed to contributing to the sound growth of international society as the Group's basic approach, and we believe that working for the achievement of the SDGs through our business activities will help us give satisfaction to all stakeholders, which the Group upholds as its mission.

As the main theme for the Policy, we have upheld, "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." We need to ensure safety to be "qualified as a manufacturer," and ensure compliance to be "qualified to participate in competition."

The Showa Denko Group, having such "qualifications," will contribute to reducing risks for society and increasing associated value through risk management and communication with stakeholders. At the same time, we will enhance our corporate governance (corporate soundness) and conduct activities to create *KOSEIHA* Businesses, thereby creating economic and social value to become a sustainable "social contribution company."



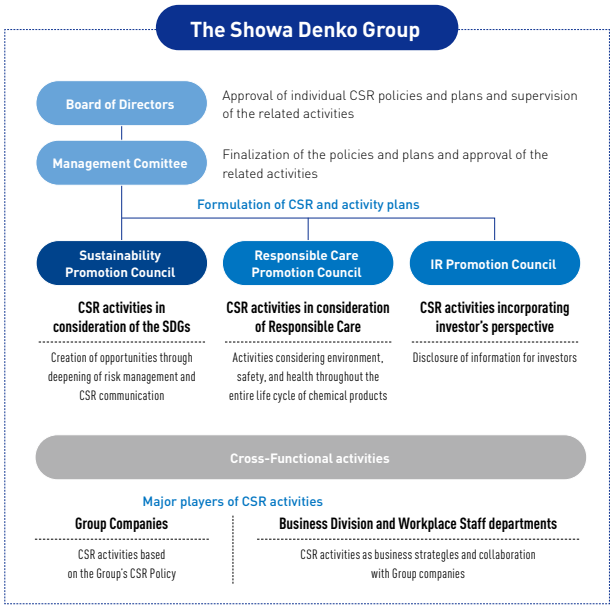
CSR promotion framework

CSR activity-related policies and plans are deliberated by the Management Committee composed of the president, corporate officers, and Audit & Supervisory Board members and are then finalized by the Board of Directors.

For CSR-related issues, we have the Sustainability Promotion Council, Responsible Care Promotion Council and IR Promotion Council as advisory bodies to the Management Committee. Through these organizations, we discuss individual issues related to CSR, such as risk management, compliance, progress in contributing to the achievement of the SDGs, and measures against climate change and other environmental issues. We then incorporate the results of the discussions in our CSR plans and activities.

Moreover, our divisions and plants conduct Responsible Care, risk management, human rights and compliance activities by receiving support from Responsible Care, CSR & General Affairs, Human Resources, and other staff departments. For contribution to SDGs, the disclosure of climate change-related information in response to the activities of the TCFD, and other issues to be tackled across the organization, we are conducting cross-functional activities.

CSR promotion framework



Responsible Care activity

Showa Denko established the "Responsible Care Action Guidelines" in March 1995. These guidelines stipulate management policies related to the environment, safety, and health. Our Group promotes activities based on these action guidelines.

In addition, we signed the Responsible Care Global Charter in 2005, pledging our support for and implementation of the charter. When the RC Charter was amended in 2014, we re-signed, making clear our willingness to promote RC activities through global collaboration.

The Showa Denko Group works to achieve continuous improvement in its Responsible Care activities through the plan-do-check-act (PDCA) cycle of formulating Responsible Care activity plans (plan), implementing these (do), auditing and evaluating the results (check), and reflecting these via management review in the next round of objectives and activity plans (act). In addition, we continue improving its management system through receiving and maintaining certification of conformity to management system standards including those for environment, quality, and industrial safety and hygiene.

Responsible Care Action Guidelines (Showa Denko Group Action Guidelines)

1. Throughout the entire life cycle of products, we shall make our best efforts to review and improve business activities continuously from the view points of ensuring safety & health and protecting the environment.
2. We shall make our best efforts towards sustainable development by harmonizing our production activities with the global environment, not only through conventional approaches to environmental preservation, but also through promotion of changing raw materials, energy conservation, waste reduction and recycling, reductions in the release of chemical substances, etc.
3. In the development of new products and businesses and in the establishment, enlargement, and renovation of facilities, we shall undertake our best efforts to ensure safety and health and to protect the environment.
4. We shall promote R&D and develop technologies that will contribute to the improvement of safety and health and to the protection of the environment. We shall also promote the marketing of alternative or new products.
5. We shall enrich risk assessments and risk management concerning the effects of the products and materials we handle on safety, health, and the environment, and we shall provide information on the safe use and handling of our products to our stakeholders as well.
6. In overseas business activities, technology transfer, and international trading of chemical products, we shall give full consideration to ensuring safety and health, and protecting the environment.
7. We shall comply with international rules, domestic laws and regulations, and make our best efforts to cooperate with the relevant international organizations, domestic and foreign administrative bodies, etc.
8. We shall participate proactively in various activities related to the ensuring of safety & health and environmental protection, and make our best efforts to communicate with society to achieve better understanding and trust.

Sustainability Management

Materiality

Aiming to contribute to realization of sustainable society, the Showa Denko Group analyzed materiality of impacts of its business activities on stakeholders, economy, society and environment, and selected 14 material issues in 2015.

In 2019, in order to clarify, both internally and externally, the social tasks to be prioritized by the Group, we classified the 14 material issues into three core task groups, and then set the medium- to long-term policy for each of the tasks. We will also set specific KPIs for each of the material issues and disclose the indicators when they are decided. By implementing initiatives based on the policies and KPIs, we aim to make achievements in a steady manner.

Core tasks and materiality

Core tasks	Medium- to long-term policy	Materiality
Contribution to achievement of SDGs through business activities	**By making effective use of the Group's products, technologies, and services, we will contribute to the creation of a society where affluence and sustainability are harmonized.** • Promote R&D in consideration of the SDGs • Monitor contribution to the SDGs made through business activities and announce the results	• Provision of products, technologies and services • Access to essential services • Consumer safety and health protection • Participation in community activities
Tackling environmental issues	**We will conduct Responsible Care activities with a strong focus on "responsibilities as a manufacturer and as a user," thereby contributing to the solution of global environmental problems.** • Reduce GHG emissions • Foster 3Rs to reduce waste generation • Reduce the discharge of chemical substances	• Prevention of pollution • Use of sustainable resources • Measures against climate change
Establishment of sustainable methods for human resource development and improvement in working environment	**We will develop diverse human resources made up of people who can achieve growth with their company and contribute to a sustainable society, while also providing individual employees with workplaces where they can work with peace of mind and in good health.** • Develop employees and support their growth • Promote diversity	• Development of human resources • Creating a comfortable workplace • Equipment safety • Occupational health and safety • Thorough corporate ethics • Protection of intellectual property • Decision-making process, structure

How to select material issues

Step 1
Conduct a survey and identify the issues to be examined.
- Identify the issues that stakeholders want the Group to deal with in reference to the core subjects of ISO 26000 and the GRI guidelines.
- List the important items and issues to be examined by Showa Denko as a manufacturer and a chemical company.

Step 2
Select particularly important items.
- Select particularly important items based on the Showa Denko Group's Vision, Medium-Term Business Plan, annual plans, business execution system, Our Code of Conduct and other guidelines.
- Check whether the themes of past activities align with the core subjects of ISO 26000.

Step 3
Prioritize the items and focus on the priorities.
- Analyze materiality from the viewpoints of stakeholders and the company to prioritize the items.
- Evaluate the materiality of impacts on stakeholders in reference to the results of surveys conducted for them.
- Evaluate the materiality of impacts of the Company's business activities in consideration of their influence on society and on financial information.

Step 4
Check appropriateness.
- Interview internal related departments, make decisions at meetings of the former CSR Committee chaired by the president, and report the results to the Board of Directors.

The Showa Denko Group's activities to achieve the SDGs

The Showa Denko Group's Our Code of Conduct and 14 material issues are aligned with the Sustainable Development Goals (SDGs), which aim to end poverty in all its forms, reduce inequality, combat climate change and ensure that no one will be left behind.

By linking Our Code of Conduct and materiality (material issues) with the SDGs, we will help Group employees understand how Showa Denko is related to the SDGs and will promote business with strong awareness of the need to make contributions to achieve them.

Linking the Code of Conduct with material issues / the SDGs



Core Task 1

Contribution to Achievement of SDGs through Business Activities

By making effective use of the Group's products, technologies, and services, we will contribute to the creation of a society where affluence and sustainability are harmonized.

Materiality

- **Provision of products, technologies and services**
- **Consumer safety and health protection**
- **Access to essential services**
- **Participation in community activities**

Provision of products, technologies and services

Basic ideas and policies

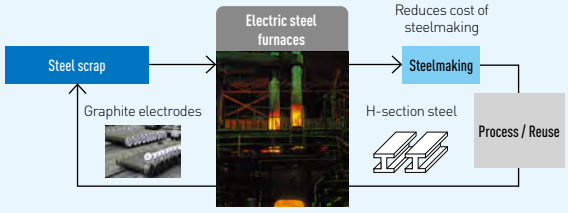
The Showa Denko Group deems it one of its social responsibilities to contribute to the achievement of the SDGs through its business. To this end, we have started selecting products that can contribute to solutions for the issues described in the SDGs. From among many of our products and services that are related to the SDGs, we select those that contribute to innovation and help us make social contributions (according to our own criteria) as "products and services contributing to the SDGs," and we will sequentially disclose information about our activities pertaining to these products and services.

We also manage a system to widely collect ideas from employees on new development themes that will contribute to the SDGs and are thus promoting R&D from an SDG viewpoint.

Graphite electrodes

The Showa Denko Group integrated the graphite electrode business of SGL GE of Germany in 2017, thereby becoming the world's top graphite electrode manufacturer. Graphite electrodes represent an indispensable component of electric furnaces in which iron scrap is recycled into steel. Compared to making steel from iron ore and coke using a blast furnace, melting iron scrap and recycling it into steel using an electric furnace is more energy efficient and also helps to reduce CO_2 emissions.

Carbon We produce graphite electrodes to melt steel in electric furnaces



Electric furnace emits less CO_2 and consumes less energy compared to conventional blast furnace

Graphite electrodes contribute to recycling of steel

Contributes to SDGs

Activities in 2019

In order to improve and stabilize the quality of the final product (steel) made using electric furnaces, we decided to improve the relevant equipment toward a stable global supply of products with uniform quality.

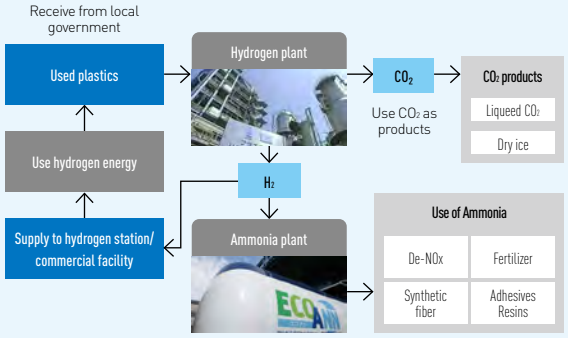
Chemical recycling of used plastics

Showa Denko has been chemically recycling plastic waste into hydrogen since 2003. By manufacturing ammonia by using this hydrogen as a material, we minimize the use of fossil fuels in the manufacturing process. We also recycle by-products such as CO_2, thereby substantially reducing the environmental impact compared to the conventional manufacturing method. For this initiative, we became the first recipient of EcoMark certification for a manufacturing process.

Moreover, for the creation of a low-carbon society, we supply low-carbon hydrogen to hydrogen stations and hotels.

In February 2020, in recognition of these achievements and contribution to the environment, we received an award from the Chairman of the Japan Business Federation at the 29th Global Environment Awards held by Fujisankei Communications Group.

Basic chemicals Chemical recycling of used plastics



Eco-friendly ammonia absorbs NOx emitted from thermal power plants

We achieve zero-emission through recycling of used plastics

Contributes to SDGs

Activities in 2019

Showa Denko, JGC Holdings Corporation, Ebara Environmental Plant Co., Ltd. and Ube Industries, Ltd. began to conduct examinations to foster collaboration on the Ebara Ube Process (EUP)* to increase the recycling rate substantially. The four companies will conclude a license agreement for the EUP and proactively conduct sales activities for plastic waste gasification equipment both in Japan and abroad.

* EUP (Ebara Ube Process): The EUP is a process developed jointly by Ebara Corporation (business transferred to Ebara Environmental Plant in 2009) and Ube Industries, Ltd. to gasify plastic waste through partial oxidation with oxygen and steam to turn it into synthesis gas usable for the synthesis of chemical products. The gasification facility (capable of processing approx. 70,000 tons of plastic waste a year) at Showa Denko's Kawasaki Plant has been operating since 2003, using the EUP. This is the only technology for gasification chemical recycling in the world with a long-term track record of commercial operation.

Consumer safety and health protection

Basic ideas and policies

The Showa Denko Group works to ensure the safety of chemicals and chemical products by using a risk-based method, not only by checking the safety of its products during the stages of design, development, marketing, manufacture, sales and after-sale service, but also by monitoring how customers use and dispose of the products. By this method we identify and reduce risks for various product-related items.

Materiality KPI

Reduce the number of complaints about quality (calculated based on Showa Denko's criteria) to 40 or below for Group companies in Japan by 2030

Results of the KPIs

Number of complaints about quality (calculated based on Showa Denko's criteria) (Group companies in Japan)

2018	2019
80	51

In 2019, the number decreased by 36% from that in 2018 as a result of implementing measures to prevent the recurrence of similar complaints based on the analysis of the fundamental causes of complaints and by learning and sharing lessons from the complaints made to the Showa Denko Group.

For the Showa Denko Group, "product stewardship" means to make safety-related risk assessments in the manufacturing, sale, use and consumption stages of its products and disclose the assessment results to stakeholders as part of its effort for safety, health and the environment.

We centrally manage information about the safety of chemicals and related legal regulations by establishing a comprehensive chemical substance management system and provide customers with the latest and appropriate information on product safety. We also have a risk-based screening system to decide whether or not to ship a sample new product to a customer or release a new product into the market, in addition to conducting risk assessments targeting all our products. Also, we carry out annual quality diagnoses at the Group's sites, including the Divisions, Plants, and Group companies.

Toward the future

We are now in the process of fully revising the Quality Assurance and Quality Control Rules based on the 2025 vision, which we have set for quality assurance and management and for product safety in consideration of the need to maximize CUSTOMER Experience (CX). We aim to provide our customers with even safer products and services as well as solutions that exceed the framework of manufacturing.

Access to essential services

Basic ideas and policies

Showa Denko manufactures sodium hypochlorite used for sterilizing tap water, and deems it important to supply this product on a continuous basis to customers.

Materiality KPI

Ensure stable supply in response to customers' needs

Sodium hypochlorite cannot be stored for very long, and it is therefore important to deliver the product in a timely manner to customers in response to their needs.

We have a system for such delivery. We also regularly conduct drills against earthquakes and other emergencies in line with our BCP and review the system based on the results of the drills.

Results of the KPI



Trailer

In response to requests from customers, we began delivering sodium hypochlorite by trailer truck. Compared with transportation by tanker truck, we can effectively reduce CO_2 emissions per unit of the weight of our products to be transported. In 2019, there was no suspension of water supply caused by factors related to our supply of sodium hypochlorite.

Toward the future

The amount of sodium hypochlorite used by customers changes depending upon the season, weather and others. Based on our recognition of this fact, we will maintain and enhance our system to supply the product in a stable manner to meet the needs of customers.

Participation in community activities

Basic ideas and policies

The Showa Denko Group will proactively participate in community activities with an eye to becoming a "social contribution company," as stated in the Group's CSR Policy. We will also deepen mutual understanding with local residents through sincere dialogue and will collaborate with them to solve local issues for the sustainable development of their communities.

Results of the KPI

Each of our sites and Group companies conduct activities, such as holding special classes at local schools and organizing plant tours for local people. For details of the activities conducted in 2019, please refer to our website.

Toward the future

We will collect information about social issues recognized by local stakeholders by communicating with them and implementing measures to solve these issues.

We plan to disclose the themes to be addressed by each of our sites and Group companies as well as related details from time to time.

Core Task 2

Tackling Environmental Issues

We will conduct Responsible Care activities with a strong focus on "responsibilities as a manufacturer and as a user," thereby contributing to the solution of global environmental problems.

Materiality • Measures against climate change • Use of sustainable resources • Prevention of pollution

Measures against climate change

Basic ideas and policies

The Showa Denko Group uses air, water and energy in its product manufacturing processes and regards dealing with climate change as both a management priority and a precondition to ensure its business continuity.

In May 2019, we took part in the Task Force on Climate-related Financial Disclosures (TCFD) Consortium to evaluate the risks and opportunities provided by climate change to the Group, enhance our resilience through climate change scenario analysis and promote sound dialogue with our stakeholders.

In January 2020, we also introduced the internal carbon pricing (ICP) system to add "greenhouse gas (GHG) emissions" reduction to our investment decision criteria and track anti-climate change measures.

Materiality KPI

For 2030, reduce GHG emissions from the Group's sites in Japan by 11% relative to the 2013 level

In order to achieve the KPI target, we are reviewing the production processes, fostering energy conservation activities and remodeling equipment to reduce our GHG emissions on a continuous basis. In addition, we are working to reduce our CO_2 emissions throughout the life cycles of our products, including at the stages of procurement of materials, use, disposal and reuse, as well as across our supply chain. We also own hydroelectric power stations, which generate about 29% of the electricity used by Showa Denko and thus contribute to reducing our GHG emissions.

Governance and risk management

For the Showa Denko Group, its Sustainability Promotion Council, which is under the direct control of the Management Committee, makes assumptions about climate change-related risks and opportunities, and the Management Committee makes final decisions on those risks and opportunities. Details of the decisions are regularly reported to the Board of Directors for its oversight and the Board gives relevant instructions as necessary.

Note: For risk management, please see page 43.

Climate change-related risks and opportunities and responses to them

For impacts (risks and opportunities) of climate change on the Showa Denko Group's businesses, we assumed the following risks for 2040 based on the framework set by the TCFD: (1) risks related to a shift to a low-carbon economy under the two-degree scenario and (2) risks related to the physical impact of climate change caused by the failure to achieve the world's CO_2 emission reduction targets under the four-degree scenario.

In the examination process, we referred to the Sustainable Development Scenario (SDS) and Stated Policies Scenario (STEPS) announced by the International Energy Agency (IEA) among others.

Risks and opportunities related to the shift to a low-carbon economy (Two-degree scenario)	**[Risks]** • Increase in tax and manufacturing cost due to the introduction of carbon pricing • Loss of sales opportunities due to delayed technological development for low-carbon products/services • Changes in investor and consumer evaluations of climate change initiatives **[Opportunity]** • Increase in sales due to expanded supply of low-carbon products/services	**Major measures for risks and opportunities** • Sales promotion and new development of products that meet the needs of a low-carbon economy, and enhancement of product competitiveness • Energy conservation and equipment renewal at manufacturing bases • Proactive information disclosure and communication in response to the concerns of investors and the market • Regular risk identification and reduction activities, and enhancement of business continuity plans (BCPs)
Physical risks and opportunities (Four-degree scenario)	**[Risks]** • Decrease in electricity generated by the hydroelectric power stations due to water shortage • Suspended operation of manufacturing bases due to serious flooding, and decrease in profit caused by an increase in the equipment repair cost	

Risks and opportunities, and measures for them in the transportation domain

In the Showa Denko Group's current medium-term business plan, "The TOP 2021," we assume that climate change will have a tremendous impact on the following business domains: transportation, energy and construction/infrastructure.

For this fiscal year, we made a particular analysis of the aforementioned two scenarios for the transportation domain. We will further examine the impact of climate change on our businesses, including the businesses of Hitachi Chemical, which has joined the Showa Denko Group.

In the transportation domain, operating costs will increase due to the introduction of ICP under the two-degree scenario. However, business opportunities will also expand, driven by the need for energy conservation and the spread of electric vehicles (EVs), which will boost demand for the related components. As a result, we have concluded that Showa Denko has sufficient resilience against the climate change-related risks.

Business environment in the transportation domain	
Two-degree scenario	• Expanded demand for EV batteries with larger capacity and for lighter vehicles, which will foster the development of aluminum-based composite materials for automobiles • Expansion of government support measures to promote the spread of EVs, and expansion of demand for EVs due to an increase in the number of customers who prefer low-carbon products • Demand for recyclable plastic/aluminum parts due to the enhancement of environmental regulations • Demand for more environmental measures from investors • Expanded introduction of carbon pricing due to the enhancement of environmental policies and regulations
Four-degree scenario	• Demand for lighter vehicles (and for the development of aluminum-based composite materials for automobiles) will mildly increase. • Gasoline-powered vehicles will retain dominance, with the fuel efficiency regulations and support measures for the spread of EVs remaining at the present level. • Damage caused by serious flooding to production bases and its impact on supply chains will become apparent.

Research and development to make use of the opportunities offered in the transportation domain

As the sales volume of automobiles increases across the world, demand for composite materials and batteries to be used in EVs will also increase.

According to the R&D policy set in the medium-term business plan, "The TOP 2021," for 2019 to 2021, Showa Denko plans to invest its R&D resources intensively in 10 technical fields corresponding to seven business domains with a view to setting up pipelines to create new businesses in an accelerated manner. The 10 technical fields include those related to xEVs as well as the use of multiple materials and the bonding of heterogeneous materials, and we are promoting the setting of specific research themes for these fields.

As for lithium-ion batteries used in EV batteries, they need to be installed at a high density to prolong the running distance and must also be kept at a low temperature to ensure their product life and output. Showa Denko is developing light and compact battery cooling devices that provide the efficiency and safety required of automotive battery cooling systems. For the development we are applying our aluminum laminate film, which has a proven record as a packaging material for automotive batteries, as well as our heat exchanger technology.

Indicators and targets

In order to attain the long-term targets set for Responsible Care, including climate change-related targets, the Showa Denko Group has been setting and implementing a medium-term Responsible Care action plan every two or three years as well as an annual action plan.

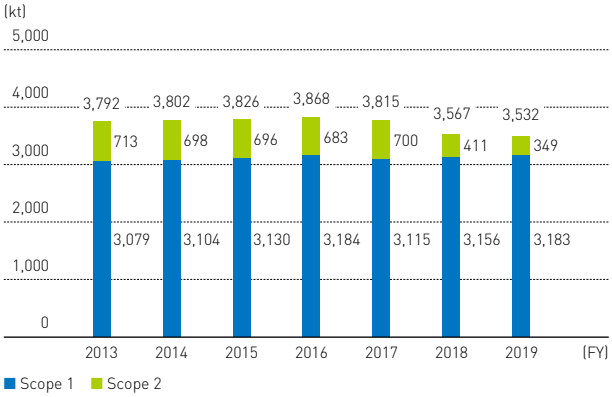
In line with the action plan for 2020, we will review the medium- to long-term plans made for each of our sites toward the creation of a low-carbon economy and set the medium-term targets for our overseas Group companies. In order to achieve our GHG emission reduction targets for 2030, we will further reduce our GHG emissions and promote energy conservation.

For logistics operations, we are working to reduce our per-unit energy consumption. We will review the reduction plan and analyze change factors to make further improvements.

For results of the KPI, GHG emissions in fiscal 2019 was down 6.9% relative to fiscal 2013.

GHG emissions (Group companies in Japan)

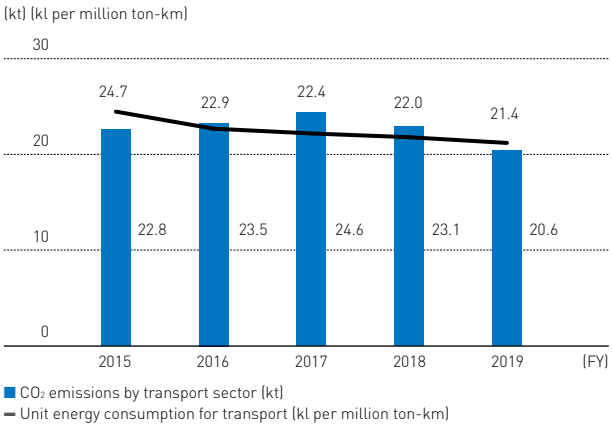
★Received the third-party verification



Note: Emission amounts were calculated in line with the GHG Protocol.

Transportation sector's CO_2 emissions and energy consumption rate

★Received the third-party verification



Core Task 2: Tackling Environmental Issues

Use of sustainable resources

Basic ideas and policies

The Showa Denko Group promotes the 3Rs (Reduce, Reuse and Recycle) through its aluminum can recycling activity and others, and enhances the businesses that contribute to a recycling-based sustainable society, such as turning plastic waste into a material for ammonia and manufacturing graphite electrodes that are necessary for the recycling of iron scrap. We also recognize water shortage as a global issue and are working to make effective use of water and reduce water use across the Group.

Aluminum can recycling activity

The Showa Denko Group's aluminum can collection activity started in 1972, when the former Showa Aluminum Corp. (SAK) asked employees to recycle aluminum cans. Subsequently, Showa Aluminum Can Recycling Center was established in 1995 to foster the recycling of aluminum cans as a business.

After melting, casting, and rolling processes, collected aluminum cans are recycled by Showa Aluminum Can Corporation into aluminum cans. Recycling of aluminum cans not only contributes to the promotion of efficient use of resources, but also reduces electricity consumed to produce aluminum by 97%, compared to the process in which aluminum is produced from bauxite ore.

The Group donates the money resulting from the recycling activity to regional councils of social welfare, welfare facilities, and volunteer groups that aid people with special needs. Thus, this activity has been firmly established as a social action of the Showa Denko Group.



The aluminum cans collected by Showa Denko Group employees, schools and welfare facilities are recovered and recycled by Showa Aluminum Can Recycling Center Co., Ltd.

Results

In fiscal 2019, 97.6% of Group employees in Japan participated in this activity, collecting a total of 4.5 million aluminum cans. Of the proceeds from the activity, about ¥1.6 million was donated to local facilities and councils. We will maintain and increase the number of cans collected through the activity by conducting PR and awareness-raising activities targeting employees while also asking for cooperation from partner companies and other external organizations.

Initiatives for water resources

The Showa Denko Group has made a plan for water resources as part of its Responsible Care Action Plan. We are fostering the effective use of water and reduction of its use at each of our sites in consideration of their individual business features. We are also working to maintain and increase the quality of water discharged from the sites. We plan to set medium- to long-term targets for water use and disclose the results against the numerical targets to the public.

The amount of water used ★Received the third-party verification

	2018	2019
Showa Denko K.K.	52.29 million m^3	53.66 million m^3
Consolidated subsidiaries in Japan	5.46 million m^3	5.18 million m^3
Overseas Group companies	5.25 million m^3	4.73 million m^3

Wastewater volume ★Received the third-party verification

	2018	2019
Showa Denko K.K.	28.68 million m^3	29.19 million m^3
Consolidated subsidiaries in Japan	4.29 million m^3	3.96 million m^3
Overseas Group companies	3.58 million m^3	3.11 million m^3

Prevention of pollution

Basic ideas and policies

The Showa Denko Group deals with a range of chemical substances that impact the global environment in its businesses. For various environmental risks posed by waste, water/air/soil pollution, and noise and vibrations, we should take responsibility by building and maintaining a strict monitoring system and an effective environmental risk management system across our supply chain. By minimizing and continuously reducing the release of hazardous substances, waste and pollutants to the environment, we will contribute to the creation of a society where affluence and sustainability are harmonized.

Materiality KPI

By 2030 achieve the following across Group companies in Japan:

- **Maintain the final landfill rate of industrial waste at 0.5% or lower**
- **Increase the plastic waste effective utilization rate to 75% or higher**
- **Reduce the discharge of chemical substances to 360 tons or below**

1. Zero emissions

The Showa Denko Group defines "zero emissions" as follows: the proportion of waste sent to final landfill is 1.0% or less of total waste generated. Aiming to achieve zero emissions as the entire Group, we made efforts and were able to achieve the target in 2015. Subsequently, the entire Group's final landfill rate was reduced to 0.3% by 2019. The Group then set a stricter target in 2020: maintain the final landfill rate at 0.5% or less.

By fostering the effective use and recycling of materials, we will achieve this new target.

Results of the KPI

Final landfill rate of industrial waste at Group companies in Japan (32 sites) ★Received the third-party verification

2018	2019
0.32%	0.35%

2. Effective use of plastic waste

In order to contribute to solving the problem of ocean plastic waste, which is emerging as a new global issue, and the creation of a low-carbon economy, we will foster the effective use of plastic waste (as an alternative to simple incineration or landfilling).

By promoting sorting as well as by fostering material/chemical/thermal recycling, we will increase our plastic waste effective utilization rate from the present 68.6% (result for Group companies in Japan in fiscal 2019) to 75% by fiscal 2030.

Results of the KPI

The plastic waste effective utilization rate at Group companies in Japan (32 sites)

2018	2019
65.7%	68.6%

3. Reduction of the release of chemical substances

As a chemical manufacturer, the Showa Denko Group is striving to reduce the release of chemical substances to the environment, including the substances regulated by the Japanese Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof ("PRTR law"), substances included in the target of voluntary surveys by the Japan Chemical Industry Association and volatile organic compounds (VOCs).

By improving the related processes and equipment and installing devices such as equipment to incinerate exhaust gas, we plan to reduce the release of these substances by about 280 tons from 643 tons in fiscal 2019 to 360 tons by fiscal 2030, excluding an increase in the release amount due to an increase in the number of chemical substances regulated under the PRTR law following its revision.

Results of KPI

The discharge of chemical substances at Group companies in Japan (32 sites) ★Received the third-party verification

Into air

2018	542t (Showa Denko K.K.: 137t Consolidated subsidiaries in Japan: 405t)
2019	628t (Showa Denko K.K.: 129t Consolidated subsidiaries in Japan: 499t)

Into water

2018	16t (Showa Denko K.K.: 15t Consolidated subsidiaries in Japan: 1t)
2019	15t (Showa Denko K.K.: 14t Consolidated subsidiaries in Japan: 1t)

Into soil

2018	0t (We discharged no such substances to soil)
2019	0t (We discharged no such substances to soil)

Toward the future

The entire Group will work to achieve the following targets set for 2020:

(1) Zero emissions

- Achieve and maintain the final landfill rate of 0.5% or less as the Group
  We will foster the effective use and recycling of industrial waste across the Group.

(2) Effective use of plastic waste:

- Increase the plastic waste effective utilization rate to 69.6% (up 1% point relative to 2019)
  We will further promote the 3Rs (Reduce, Reuse and Recycle) for plastic waste.

(3) Reduction of the discharge of chemical substances

- Reduce the discharge of chemical substances by 2% relative to 2018 as the Group

We plan to install exhaust gas incineration equipment in 2020.

For PRTR law-regulated substances and substances that are discharged in large annual amounts, we will continue to make reduction plans for each of our sites and implement intensive measures for the reduction.

Minamata disease in Niigata Prefecture

More than half a century has passed since the outbreak of Niigata Minamata disease was officially recognized.

Maintaining an awareness of the significant scale at which we have caused damage to the victims and residents of neighboring areas through contamination of the Agano River, Showa Denko is committed to collaborating with the Japanese government as well as local governments in order to cope with this issue with sincerity, and provide solutions in accordance with the Act on Compensation, etc. for Pollution-related Health Damage and other relevant laws and regulations.

Core Task 3

Establishment of Sustainable Methods for Human Resource Development and Improvement in Working Environment

We will develop diverse human resources made up of people who can achieve growth with their company and contribute to a sustainable society, while also providing individual employees with workplaces where they can work with peace of mind and in good health.

Materiality

• Thorough corporate ethics • Decision-making process, structure • Protection of intellectual property • Equipment safety • Occupational health and safety • Development of human resources • Creating a comfortable workplace

Thorough corporate ethics

Basic ideas and policies

In order to foster environment, society and governance (ESG)-oriented management, it is important for individual employees of the Showa Denko Group to take actions based on the recognition of their respective responsibilities. Accordingly, we regularly provide employees with an opportunity to learn more deeply about corporate ethics and human rights and measure the results to promote the dissemination of ethical values throughout the Group.

Materiality KPI

Provide Group employees in Japan and abroad with a total of 1.5 hours of training on corporate ethics and human rights per employee per year on an ongoing basis

Results for the KPI

In 2019, employees were again briefed on Our Code of Conduct and they discussed the related issues in the in-house education on corporate ethics. They also learned about human rights-related problems that might exist at their workplaces in the internal education on human rights. As a result, Group companies in Japan achieved the KPI target.

Toward the future

We will continue to identify issues related to corporate ethics and human rights within the Group, make prompt and appropriate responses to the identified issues and foster the adoption and practice of ethical values among employees. In particular, for training conducted by Group companies outside Japan, we will enhance it under the same system as that adopted inside Japan.

Decision-making process and structure

Basic ideas and policies

Showa Denko aims to achieve sustainable corporate growth and to increase its mid- to long-term corporate value. To this end, as its responsibility and role, the Board of Directors is expected to build a system to make decisions in a transparent, fair, prompt and fearless manner and to supervise the management of the system. At Showa Denko, directors evaluate the effectiveness of the Board of Directors as a whole, and the outline of the evaluation results is disclosed to the public.

Materiality KPI

Evaluation of the effectiveness of the Board of Directors and the continued disclosure of information about improvements made based on the results

Note: For details, please refer to "Corporate Governance" on page 36.

Protection of intellectual property

Basic ideas and policies

The Showa Denko Group regards its intellectual property strategies as one of its important managerial strategies, and formulates and implements the business, R&D and intellectual property strategies in an integrated manner. We also constantly work to build a robust and broad network of patents for our major business segments and important products developed by the Group, thereby maintaining our competitive edge.

Materiality KPI

New applications: From 342 in 2018 to 405 in 2022, and to 460 in 2025

Note: For details, please refer to "Intellectual property strategies" on page 33.

Equipment safety

Basic ideas and policies

The Showa Denko Group gives first priority to safety, and we think it essential to ensure safety as a precondition to remain "qualified as a manufacturer," regarding safety as the basis for our business continuity. If a serious equipment-related incident were to occur, it would have a severe impact on society as a whole. Based on this recognition, we are preventing equipment-related incidents by appropriately managing equipment-related risks and conducting Active Safety activities.*1

Materiality KPI

By 2030, achieve and maintain zero equipment-related accidents across Group companies in Japan

Results of the KPI

Equipment-related incidents that happened at Group companies in Japan

2018	11 cases (4 fires, 6 leakages, 1 deformation/breakage)
2019	10 cases (3 fires, 5 leakages, 1 deformation/breakage, 1 explosion)

All were minor incidents in which no people were harmed.

Toward the future

We are working to improve our current equipment management system to increase the effectiveness of risk-based management throughout the planning, implementation, evaluation and improvement stages, in reference to the results of risk assessments made when investing in new equipment and when operating, maintaining, altering and discontinuing the use of existing equipment.

In addition, we will analyze fundamental causes of accidents, implement measures to prevent similar accidents, share information about preventive measures based on lessons from past accidents, and strengthen training based on assumption of natural disasters, thereby making continuous improvements and increasing our ability to ensure equipment safety.

Occupational health and safety

Basic ideas and policies

In order to eliminate occupational accidents involving employees, we are promoting Active Safety activities*1 and executing a PDCA cycle to achieve zero incidents and disasters through a concerted effort of all those related, including employees of the Group and its partner companies. We have also acquired certification for occupational health and safety systems at each of our sites.

For employees to work vigorously with peace of mind, they need to attribute importance to their own and their families' health. Accordingly, we will build appropriate systems and implement various measures to raise their health awareness and help them maintain and promote their health.

Materiality KPI

- **Achieve and maintain zero lost-time incidents across Group companies in Japan**
- **Continue to be named among the 500 Certified Health & Productivity Outstanding Organizations under the Ministry of Economy, Trade and Industry's program to recognize companies with outstanding health and productivity management**

1. Elimination of industrial accidents

For the achievement of this target, we have set the following milestone: attain and maintain the frequency rate of lost-time incidents at 0.1 or below.

Results of the KPI

Lost-time and non-lost-time incidents involving employees of Group companies in Japan (including those of partner companies)

	2018	2019
Lost-time incidents	4	15
Non-lost-time incidents	5	4

In 2019, the number of industrial accidents increased year on year within the Group. By accident type, cases of being caught in/between machines, collisions and falls showed a tendency to increase. Deeming this as a serious problem, in addition to conventional measures we are urgently implementing more measures to prevent the occurrence and recurrence of such accidents by reviewing our safety activities, finding out unidentified risks and providing safety education based on the lessons learned from past accidents.

2. Employees' physical health and mental health

Results of the KPI

As for the government's program to recognize companies with outstanding health and productivity management, Showa Denko has been certified as such since 2017. In 2020, however, we were not named among the 500 Certified Health & Productivity Outstanding Organizations.

Results of the employees' health survey and checkups conducted in 2019

- Rate of employees with BMI between 18.5 and less than 25.0: 64.1% (Target for 2021: 70% or more)
- Conducted a survey on Group employees' vibrancy to understand the present situation and set a benchmark*2

Toward the future

- In order to reduce the frequency of industrial accidents, we will promote risk reduction activities, the inherent safety of equipment and the establishment of a foundation for education.
- We will introduce a health management and productivity platform as early as possible, encourage employees to change their behavior to improve their lifestyle, and work to increase the number of "vibrant employees" by holding health events and enhancing health guidance. We will also introduce a system to manage employees who return to work after taking leave, grasp the number of employees who take days off and leave due to non-occupational injuries/(mental) illnesses, enhance measures to support the return to work of these employees, and improve workplace environments. Through these measures we aim to be named among the 500 Certified Health & Productivity Outstanding Organizations again.

*1 Active Safety activities: Activities in which we analyze past incidents and disasters and summarize the lessons learned from them in the "Active Safety checklist," and then make use of the list to identify related risks and as an educational material to prevent the recurrence of similar incidents.

*2 Survey on Group employees' vibrancy: Sompo Health Support Inc. developed the Work Limitations Questionnaire Japanese Version (WLQ-J) based on the questionnaire form developed by Tufts University of the United States. We used this questionnaire form to survey the impact of health problems on productivity, such as restrictions on employees' work and decrease in their productivity.

Core Task 3: Establishment of Sustainable Methods for Human Resource Development and Improvement in Working Environment

Development of human resources

Basic ideas and policies

The Showa Denko Group deems it important to globally employ human resources and develop them into individuals who can demonstrate their abilities for the entire Group, so that it can globally expand its business and innovate each of its businesses and technologies.

Training system

Showa Denko annually provides individual employees with the training that is suitable for their current roles and expected careers based on a level-specific training system that focuses on business literacy and career development. We also offer correspondence courses and e-learning programs to support employees' self-development.

In addition, we have a program to develop business and corporate reform leaders, in which candidates for the Showa Denko Group's future top management receive training in a step-by-step manner. Specifically, we have been offering the Management Leader Course (MLC) as a selective training course for assistant departmental managers and section managers since 2001, and the Rising Stars Initiatives (RSI) as a selective training course for acting section managers since 2015.

Moreover, in 2019, we launched the Showa Denko Global Executive Development Program (SGED) for the globalization of human resources, in which excellent human resources selected from Group companies in Japan and abroad receive education as the next generation of business executives. We are also proactively globalizing Japanese human resources. Specifically, we provide them with opportunities to conduct research or acquire an MBA at overseas universities, receive practical training at overseas subsidiaries to become facilitators for the globalization of our organizations in Japan, receive training before being transferred to our bases outside Japan, and obtain language training with financial support.

Personnel system

Showa Denko is operating a personnel system that values growth and development. Known as the "MB-OJT system," it incorporates OJT elements into the conventional management-by-objectives (MBO) framework.

In the face-to-face discussion between employees and their supervisors called "commu-cussion," employees and supervisors develop a shared understanding of the employee's targets and performance appraisals and discuss what has and what has not been achieved as well as what lessons were learned for the future. This helps individual employees to achieve self-growth and development.

Materiality KPIs and results

By 2030:

(1) Increase the number of participants in MLC and RSI training for the next generation of leaders in Japan to at least 20 annually (MLC and RSI training will be provided alternately each year)

(2) Increase the percentage of non-Japanese participants in the Group's managerial human resource development program to that equivalent to the Group's overseas sales ratio (at least 200 people over a decade from 2020 to 2029)

(3) Achieve a proportion of female managers that is 10% of the total number of managers (section managers and those in higher positions) in Japan (on an unconsolidated basis)

1. The next generation of leaders development in Japan

We will provide MLC and RSI training alternately each year.

We launched the fourth round of RSI training in September 2019, in which 20 employees selected from acting section managers and those in equivalent positions participated. As the first (kickoff) session of the training, which lasted about eight months, participants went to a two-night, three-day team-building camp on an uninhabited island located in Suo-Oshima Town in Yamaguchi Prefecture. Subsequent sessions comprise an MBA program in which the participants learn about management strategies and marketing research, work on specific themes in four teams, and finally make presentations to the management team.

2. Development of excellent non-Japanese human resources

We will introduce a global and fair personnel system and disclose the number of employees promoted under it. We will also continue implementing the newly launched SGED. Among 13 members selected as participants in the first round of the training (from March 2019), four were national staff from overseas Showa Denko Group companies. For the education, directors and those in equivalent positions from business divisions other than those to which the participants belonged were selected to serve as mentors, who helped the participants acquire broader knowledge beyond the scope of their career experiences.

3. Empowerment of female employees

We aim to increase the proportion of women to 30% or more of the total number of career-track employees, and continuously hold career support seminars for mid-level career-track female employees. Moreover, we are improving the work environment to enable female employees to achieve compatibility between their work and life events, such as marriage, childbirth and childcare.

- Proportion of female managers (on an unconsolidated basis)

2018	2019
4.60%	4.90%

Toward the future

- We will establish pre-SGED measures at each Group company to increase the proportion of non-Japanese employees selected to be participants in SGED.
- We will build a system to efficiently grasp information concerning the Group's human resources for systematic human resource development.
- We will further empower female employees to acquire "Eruboshi" certification as a company that promotes women's empowerment.

Creating a comfortable workplace

Basic ideas and policies

As a precondition for the Showa Denko Group's growth, we think it is necessary to ensure that employees who are "core players for value creation" can work with vigor and in harmony with society. Accordingly, we are striving to provide employees with workplaces where they can work with satisfaction, and improve working conditions to help them maintain their work-life balance.

Materiality KPIs

(1) Renovate aged welfare facilities in Japan in a sequential manner to provide employees with safe and clean workplaces
(2) Continue to maintain employees' annual paid leave utilization rate at more than 70% (on an unconsolidated basis)
(3) Increase the percentage of "vibrant employees" in the employee satisfaction survey* by 5% per survey in and after 2020

* Employee awareness survey to quantify situations concerning employees and their organizations conducted targeting Showa Denko Group employees, including some working outside Japan.
"Vibrant employees" is used as a major indicator in the survey and refers to those who have positive views on "employee engagement" (commitment to the organization and voluntary efforts) as well as on the working environment (assignment of the right people to the right places and comfortable workplaces)
The survey was conducted twice (in 2014 and 2017) and will be conducted again in 2020.

Results of the KPIs

- Employees' annual paid leave utilization rate (on an unconsolidated basis)

2018	2019
70.1%	74.1%

- In the previous employee satisfaction survey conducted in 2017, an analysis of the survey results for each Group organization revealed problems regarding communication between managers and their subordinates in particular at our manufacturing sites. Accordingly, in 2019, we held a workshop at 10 sites in Japan for managers responsible for face-to-face discussions with subordinates under the MB-OJT system to enhance mutual communication.

Toward the future

We will implement the following measures in consideration of the on-site situation at each of our sites.

- Allocate a budget for the renovation of welfare facilities and make renovations
- Encourage employees to take their annual paid leave in a planned manner
- Encourage employees to take their annual paid leave through labor-management activities
- Urge employees who have taken only a few annual days off to take more
- Continue to hold the communication workshop

Promotion of Diversity and Inclusion

Basic ideas and policies

The Showa Denko Group is striving to promote diversity and inclusion (D&I) so that diverse* human resources can make use of their unique features, value and ideas and collaborate to make the Group and its employees an organization and individuals, respectively, that can continue making profit and creating new value.

* Diverse: Diversity in nationality, race, gender, age, disability, religion, background, sexual orientation and others

Activities for reforming the corporate culture

Commendations by the CEO for outstanding D&I promotion activities

Since 2014, we have been annually holding a program in which the CEO directly gives commendations to outstanding D&I promotion activities conducted at our sites and Group companies. Through this program, we have nurtured a culture of mutual praise and fostered sharing of the best practices within the Company, thereby enhancing our organizational competitiveness.



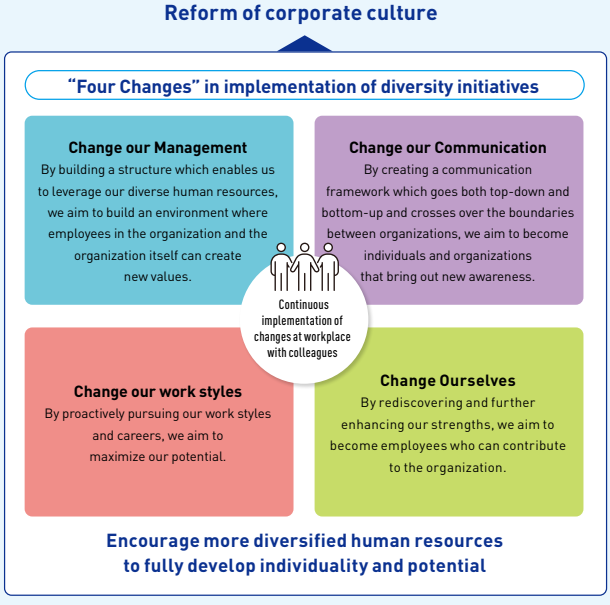
As a result of fostering diversity over many years, the number of initiatives intended to enhance organizational competitiveness beyond simply making effective use of diverse human resources increased among entries for the 2019 program.



"Imagine SDK 2025"

In order to nurture a corporate culture that encourages employees to be committed to fostering growth and changes, since 2015, we have been holding the "Imagine SDK2025" dialogue, in which middle-rank managers participate to articulate the Group's future vision.

Each participant in the dialogue subsequently promotes reforms at their respective workplace and expands the activity to achieve their own vision for the Group.



Employment of people with disabilities

We are proactively employing people with physical, intellectual, mental and developmental disorders toward the goal of disability inclusion.

In 2014, we established a model workplace for the employment of people with disabilities within the head office of Showa Denko K.K. Since then, we have continuously been working to provide each disabled employee with an environment, workplace and career development opportunities suitable for their individual character. By sharing the know-how across the Group, people with disabilities are now accepted as interns and employed at our sites and Group companies.

Note: For details about the employment rate of people with disabilities, please see page 18.

Management's Discussion and Analysis

Note: The U.S. dollar amounts appearing on the following pages 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.

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 6.9%, 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

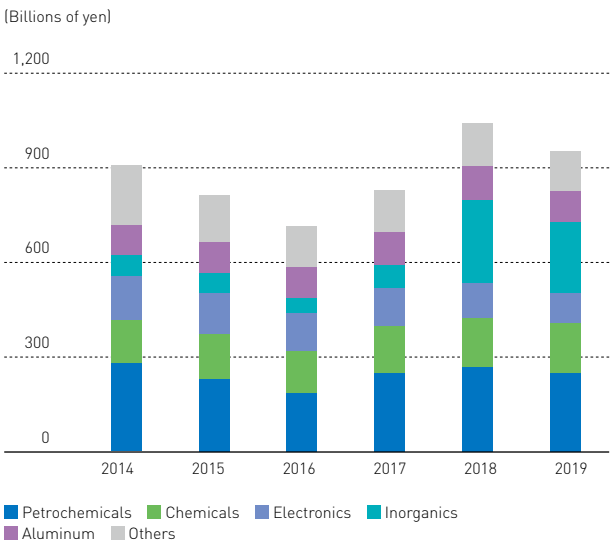
Petrochemicals segment

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).

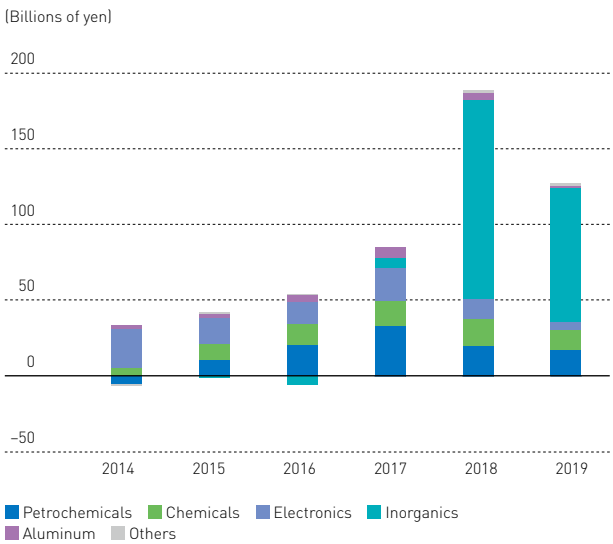
Chemicals segment

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).

Net sales by segment



Operating income by segment



Changing the segmentation: 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 is 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 is based on the new segmentation.

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 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).

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 the 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. This resulted 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 the 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

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$7 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 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, and 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 JSC 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 non-controlling 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).

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
ASSETS	**2019**	2018	**2019**
Current assets			
Cash and deposits	¥ 122,086	¥ 113,186	$ 1,114,332
Notes and accounts receivable	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	17,632	14,732	160,934
Total current assets	497,057	496,533	4,536,845
Property, plant and equipment			
Land	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	71,786	71,886	655,220
Long-term loans	334	71	3,049
Net defined benefit asset	244	249	2,227
Deferred tax assets	3,381	4,574	30,857
Other	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

LIABILITIES AND NET ASSETS	Millions of yen		Thousands of U.S. dollars
	2019	2018	**2019**
Current liabilities			
Short-term debt	¥ 52,720	¥ 81,747	$ 481,194
Current portion of long-term debt	31,943	41,403	291,560
Notes and accounts payable	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	—	5	—
Provision for business structure improvement	1,686	129	15,389
Other current liabilities	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	213,861	164,818	1,951,996
Deferred tax liabilities	7,950	6,027	72,563
Provision for repairs	2,021	1,102	18,448
Provision for stock payments	200	156	1,823
Provision for business structure improvement	824	2,876	7,521
Net defined benefit liability	9,969	22,018	90,990
Deferred tax liabilities for land revaluation	32,150	32,324	293,449
Other non-current liabilities	27,099	18,248	247,345
Total non-current liabilities	294,074	247,569	2,684,135
Contingent liabilities			
Net assets			
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	33,060	33,281	301,756
Foreign currency translation adjustments	4,140	7,069	37,786
Remeasurements of defined benefit plans	(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
	2019	2018	**2019**
Net sales	¥906,454	¥992,136	$8,273,583
Cost of sales	671,157	705,003	6,125,928
Gross profit	235,297	287,133	2,147,655
Selling, general and administrative expenses	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	1,743	1,521	15,911
Loss on valuation of investment securities	(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	(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			
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
	2019	2018	**2019**
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.

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
	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)	¥ 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

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	Remeasurements of defined benefit plans	Noncontrolling 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										
	Number of shares of capital stock	Capital stock	Capital surplus	Retained earnings	Treasury stock	Valuation difference on available-for-sale securities	Deferred gains or losses on hedges	Revaluation reserve for land	Foreign currency translation adjustments	Remeasurements of defined benefit plans	Noncontrolling 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

Consolidated Statements of Cash Flows

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

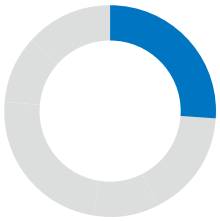
	Millions of yen		Thousands of U.S. dollars
	2019	2018	**2019**
Cash flows from operating activities			
Income before income taxes and non-controlling interests	¥ 97,883	¥145,509	$ 893,415
Adjustments for:			
Depreciation and amortization	37,704	39,459	344,141
Impairment loss	15,662	22,573	142,956
Amortization 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	¥121,734	¥112,835	$1,111,118

Introduction of Businesses of the Group



Petrochemicals Segment

Petrochemicals Division



Consolidated sales ratio by segment **26.1%**

(Billions of yen)

	2019	2018	Increase/ decrease	% Increase/ decrease
Sales	¥250.7	¥268.9	−18.2	−6.8%
Operating Income	17.2	20.3	−3.1	−15.4%

The Petrochemicals Division consists of the Olefins Department and the Organic Chemicals Department.

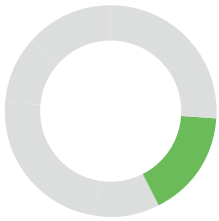
The Oita Complex is the main manufacturing base of the Division and is equipped with a naphtha cracker. As its feature, the Complex has a well-balanced demand structure. The basic materials manufactured by Showa Denko within the Complex are supplied to the plastics, synthetic rubber, and styrene monomer plants that are operated by other companies within the premises as well as to the plant of acetyl derivatives operated by Showa Denko itself. The Division is efficiently integrating new and old cracker equipment and diversifying materials ahead of competitors to enhance its competitiveness.

The Olefins Department provides basic petrochemical products, while the Organic Chemicals Department is expanding its business by using Showa Denko's advanced catalyst technologies for acetyl derivatives.



Chemicals Segment

Industrial Gases Division / Basic Chemicals Division / Electronic Chemicals Division / Functional Chemicals Division / Coating Materials Department



Consolidated sales ratio by segment **16.4%**

(Billions of yen)

	2019	2018	Increase/ decrease	% Increase/ decrease
Sales	¥157.5	¥156.5	0.9	0.6%
Operating Income	13.7	17.4	−3.7	−21.5%

The Industrial Gases Division supplies oxygen, nitrogen, argon and other gases separated from air and also supplies compressed hydrogen, CO_2, dry ice and other industrial gases.

The Basic Chemicals Division consists of the Industrial Chemicals Department and the Organic Industrial Chemicals Department.

The Industrial Chemicals Department supplies ammonia, caustic soda, hydrochloric acid and other industrial chemicals and the Organic Industrial Chemicals Department supplies products such as acrylonitrile, amino acids and chloroprene rubber.

The Electronic Chemicals Division provides semiconductor manufacturers in Japan and overseas with high-purity gases and solvents as well as noxious-GHG removal equipment for use in semiconductor, LCD panel and other electronics manufacturing processes.

The Functional Chemicals Division consists of the Functional Polymers Department and the Specialty Chemicals Department. The Functional Polymers Department provides various types of plastics 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).

The Coating Materials Department, organized in July 2019, provides nonstick coating chemicals, which are used on cookware, home electric appliances, automobiles, industrial equipment and others to protect them against scorching and prevent unwanted substances from sticking to the surface.



Electronics Segment

Device Solutions Division / Electronics Materials Division / Advanced Battery Materials Division



Consolidated sales ratio by segment **10.1%**

(Billions of yen)

	2019	2018	Increase/ decrease	% Increase/ decrease
Sales	¥96.4	¥111.9	−15.5	−13.8%
Operating Income	4.9	13.6	−8.7	−64.0%

The Device Solutions Division provides hard disks (HD), which are highly functional storage media, and SiC epitaxial wafers for power devices.

In particular, for the HD business, the Division has seven bases around the world, including three in Japan, and provides world-class high-quality products for use by data centers and enterprise users, for which the market is expected to grow due to the spread of cloud computing and the progress of AI-based big data analysis.

The Electronics Materials Division supplies compound semiconductors, such as ultra-bright and high-output LED chips, and rare earth magnetic alloys for high-performance motors.

The Advanced Battery Materials Division provides lithium-ion battery materials and fuel cell battery components such as VGCF™ and SPALF™ .

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



Inorganics Segment

Ceramics Division / Carbon Division



Consolidated sales ratio by segment **24.0%**

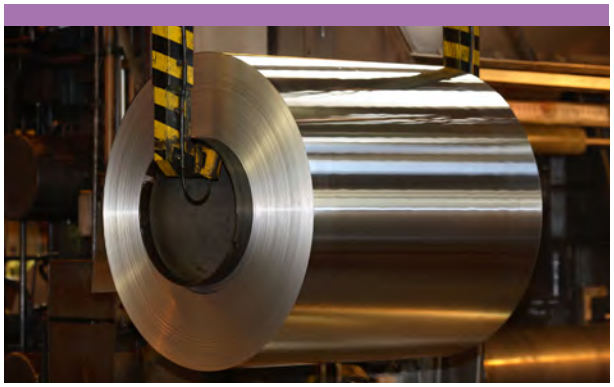
(Billions of yen)

	2019	2018	Increase/ decrease	% Increase/ decrease
Sales	¥230.1	¥266.1	−36.0	−13.5%
Operating Income	89.3	132.4	−43.2	−32.6%

Capitalizing on its 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 in which fused alumina, silicon carbide, and boron nitride are used. As for ultrafine titanium oxide, which is used to manufacture multilayer ceramic capacitors (MLCCs) to be mounted on a range of electronic devices, the Division is expanding sales for use in high-end products.

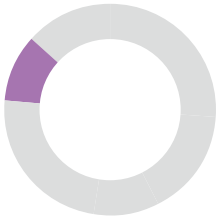
The Carbon Division supplies graphite electrodes for electric steelmaking furnaces. These electrodes are indispensable for the recycling of iron and steel. Showa Denko's graphite electrodes are highly acclaimed by customers around the world. The Division integrated the graphite electrode business of German company SGL GE in 2017 to gain the world's No. 1 market share. The Division will enhance the development and marketing of volume zone products for the remarkably growing markets of emerging countries while providing advanced markets with high-end products.

Introduction of Businesses of the Group



Aluminum Segment

Aluminum Rolled Products Division /
Aluminum Specialty Components Division / Aluminum Can Division



Consolidated sales ratio by segment **10.2%**

(Billions of yen)

	2019	2018	Increase/ decrease	% Increase/ decrease
Sales	¥97.5	¥108.3	−10.7	−9.9%
Operating Income	1.7	4.9	−3.2	−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 automobile-related devices.

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 in-vehicle air conditioners.

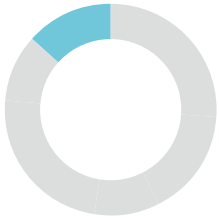
The Division also supplies a range of heat exchangers for home electric appliances and industrial equipment worldwide and is engaged in the development and manufacture of power semiconductor cooling devices used in hybrid cars, electric vehicles, and solar power generation equipment.

The Showa Denko Group became the first enterprise 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 the pressing of can bodies and can ends and the printing of their labels.



Others Segment

Related Businesses



Consolidated sales ratio by segment **13.2%**

(Billions of yen)

	2019	2018	Increase/ decrease	% Increase/ decrease
Sales	¥126.2	¥137.3	−11.2	−8.1%
Operating Income	1.8	1.7	0.1	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 example, sound-insulating reproof dual-layer pipe (Showa Sound Insulating FDP), produced and sold by Showa Denko Kenzai K.K., and E-POLE, produced and marketed by Showa Denko Aluminum Trading K.K.

Stock Information

(As of June 30, 2020)

Stock information

Authorized number of shares	330,000,000
Number of Shares Outstanding	149,711,292
Number of Shareholders	88,527

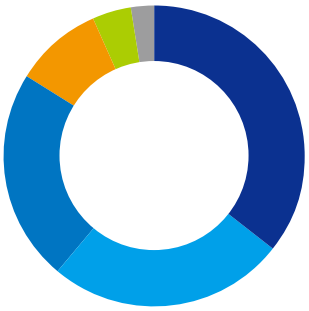
Note: SDK consolidated every 10 shares of its common stock into one share on July 1, 2016.

Shareholders (top 10)

Shareholder	Stake in Showa Denko	
	Number of shares held (in thousands)	Rate of shareholding (%)
The Master Trust Bank of Japan Ltd. (Trust Account)	10,587	7.24
KOREA SECURITIES DEPOSITORY – SAMSUNG	7,016	4.80
Japan Trustee Services Bank, Ltd. (Trust Account)	5,127	3.51
Fukoku Mutual Life Insurance Company	4,517	3.09
Japan Trustee Services Bank, Ltd. (Trust Account 7)	3,226	2.21
Mizuho Securities Co., Ltd.	3,162	2.16
The Dai-ichi Life Insurance Company, Limited	3,150	2.16
Japan Trustee Services Bank, Ltd. (Trust Account 5)	3,064	2.10
Meiji Yasuda Life Insurance Company	2,645	1.81
JPMorgan Securities Japan Co., Ltd.	2,431	1.66

Note: Each rate of shareholding was calculated after deducting the number of treasury shares (3,551 thousand) from the number of shares outstanding.

Shareholders by sector



- Financial firms ..... 53,440 thousand 35.70%
- Individuals ..... 38,245 thousand 25.54%
- Foreign corporate entities, etc. ..... 34,049 thousand 22.74%
- Securities firms ..... 14,127 thousand 9.44%
- Japanese corporate entities ..... 6,299 thousand 4.21%
- Treasury shares ..... 3,551 thousand 2.37%

ESG indexes adopting Showa Denko

FTSE4Good

FTSE Blossom Japan

2020 MSCI ESG Leaders Indexes Constituent

2020 CONSTITUENT MSCI JAPAN EMPOWERING WOMEN INDEX (WIN)

2020 CONSTITUENT MSCI JAPAN ESG SELECT LEADERS INDEX

S&P/JPX Carbon Efficient Index

2020 Sompo Sustainability

- FTSE Russell (the trading name of FTSE International Limited and Frank Russell Company) confirms that Showa Denko has been independently assessed according to the FTSE4Good criteria, and has satisfied the requirements to become a constituent of the FTSE4Good Index Series. Created by the global index provider FTSE Russell, the FTSE4Good Index Series is designed to measure the performance of companies demonstrating strong Environmental, Social and Governance (ESG) practices. The FTSE4Good indices are used by a wide variety of market participants to create and assess responsible investment funds and other products.
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Corporate Data

(As of December 31, 2019)

Company Name Showa Denko K.K.

Formed June 1, 1939

Capital ¥140,564 million

Employees (consolidated) 10,813

Parent 3,437

Consolidated subsidiaries 61

Equity method applied 9

Head Office

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