SHOWA DENKO K.K.

Aug. 8, 2018

First Half, 2018 Consolidated Financial Results (Summary)

Ⅰ. First Half 2018 Results

1. Summary

(Unit: billions of yen, except for Net income attributable to owners of the parent per share and Net assets per share)

Items	1st half, 2017 (Jan.-Jun.)	1st half, 2018 (Jan.-Jun.)	Increase/ decrease
Net Sales	372.2	455.8	83.7
Operating Income	35.0	78.1	43.1
Net income attributable to owners of the parent	7.8	58.1	50.3
Net income attributable to owners of the parent per share	¥54.98	¥398.56	¥343.58
Net assets per share	¥2,124.14	¥2,815.31	¥691.17

2. Net Sales and Operating Income by Segment

(Unit: billions of yen)

Segment		1st half, 2017 (Jan.-Jun.)	1st half, 2018 (Jan.-Jun.)	Increase/ decrease	CQ1, 2018 (Jan. - Mar.)	CQ2, 2018 (Apr. - Jun.)
Net Sales	Petrochemicals	123.9	115.4	-8.5	53.8	61.6
	Chemicals	70.1	74.6	4.5	36.0	38.6
	Electronics	63.0	54.3	-8.6	27.7	26.6
	Inorganics	26.6	116.5	89.9	51.4	65.0
	Aluminum	50.9	53.3	2.4	24.8	28.4
	Others	65.0	69.6	4.6	34.3	35.3
	Adjustments	-27.3	-27.9	-0.6	-13.4	-14.5
	Total	372.2	455.8	83.7	214.7	241.2
Operating Income	Petrochemicals	16.2	7.4	-8.7	3.3	4.1
	Chemicals	6.9	7.8	0.9	3.6	4.1
	Electronics	12.1	5.6	-6.5	2.9	2.8
	Inorganics	0.1	58.3	58.2	24.9	33.4
	Aluminum	3.2	2.7	-0.6	1.3	1.4
	Others	0.1	1.3	1.2	0.8	0.5
	Adjustments	-3.6	-5.0	-1.4	-2.5	-2.5
	Total	35.0	78.1	43.1	34.4	43.7

3. Cash Flow

(Unit: billions of yen)

Cash Flows from:	1st half, 2017 (Jan.-Jun.)	1st half, 2018 (Jan.-Jun.)	Increase/ decrease	2018 Revised forecast (Jan.-Dec.)
Operating Activities	43.0	52.2	9.2	120.0
Investing Activities	-11.3	-25.5	-14.2	-60.0
Free Cash Flow	31.7	26.7	-5.0	60.0
Financing Activities	-16.2	-12.9	3.3	-38.0
Others	-0.2	-1.9	-1.7	-2.0
Net increase in Cash	15.3	11.9	-3.3	20.0

announced on Aug. 8, 2018

4. Reference

(Unit: billions of yen)

Items	1st half, 2017 (Jan.-Jun.)	1st half, 2018 (Jan.-Jun.)	Increase/ decrease	
Capital expenditures	17.4	20.7	3.3	
Depreciation and amortization	18.7	19.8	1.1	
R&D expenditures	9.0	10.3	1.3	
Gap between interest/dividend income and interest expense	-0.6	-0.5	0.1	
Total number of employees	10,097	10,589	492	
Exchange rate (yen/US$)	112.4	108.7	3.7	Yen appreciated
Domestic naphtha price (yen/kl)	40,500	48,300	7,800	

Items	Dec. 31, 2017	Jun. 30, 2018	Increase/ decrease
Total assets	1,024.7	1,055.8	31.1
Interest-bearing debt	346.7	321.1	-25.6

SHOWA DENKO K.K.

Ⅱ. Forecast for 2018

1. Summary

(Unit: billions of yen, except for Net income attributable to owners of the parent per share and Cash dividends per share)

Items	2017	2018 Revised forecast *	Increase/ decrease
Net Sales	780.4	985.0	204.6
Operating Income	77.8	170.0	92.2
Net income attributable to owners of the parent	33.5	115.0	81.5
Net income attributable to owners of the parent per share	¥234.84	¥781.27	¥546.43
Cash dividends per share **	¥50.00	¥90.00	-

* announced on Aug 8, 2018

**2017: SDK resolved payment of dividends of Yen 30 per share based on the record date of May 11, 2017 at the extraordinary general meeting of shareholders held on June 27, 2017, and paid dividends on the next day. The table above does not include this amount.

2. Net sales and Operating Income by Segment

(Unit: billions of yen)

Segment		2017	2018 Revised forecast *	Increase/ decrease
Net Sales	Petrochemicals	251.1	258.0	6.9
	Chemicals	148.8	159.0	10.2
	Electronics	123.1	114.0	-9.1
	Inorganics	73.4	255.0	181.6
	Aluminum	105.4	113.0	7.6
	Others	133.6	141.0	7.4
	Adjustments	-55.1	-55.0	0.1
	Total	780.4	985.0	204.6
Operating Income	Petrochemicals	33.4	20.0	-13.4
	Chemicals	16.5	18.0	1.5
	Electronics	21.9	15.0	-6.9
	Inorganics	7.1	118.0	110.9
	Aluminum	6.7	6.0	-0.7
	Others	0.6	3.0	2.4
	Adjustments	-8.4	-10.0	-1.6
	Total	77.8	170.0	92.2

Ⅲ. Reference

(Unit: billions of yen)

Items	2017	2018 Revised forecast *	Increase/ decrease	
Capital expenditures	41.3	44.6	3.3	
Depreciation and amortization	38.5	39.4	0.9	
R&D expenditures	18.5	20.3	1.8	
Gap between interest / dividend income and interest expense	-1.2	-1.2	0.0	
Interest-bearing debt	346.7	300.0	-46.7	
Total number of employees	10,864	10,725	-139	
Exchange rate (yen/US$)	(1st half) 112.4 (2nd half) 112.0	(1st half) 108.7 (2nd half) 105.0	(1st half) 3.7 (2nd half) 7.0	Yen appreciated Yen appreciated
Domestic naphtha price (yen/kl)	(1st half) 40,500 (2nd half) 40,350	(1st half) 48,300 (2nd half) 48,600	(1st half) 7,800 (2nd half) 8,250	

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

SHOWA DENKO K.K.

Consolidated Financial Statements

For the first half year (January 1 to June 30, 2018)

Ⅰ. Consolidated Financial Results

Aug. 8th, 2018

(1) Results of operations:

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

	Results for the first half year (Jan.1–Jun.30)			
	2017	2018	Increase (Decrease)	2018
	¥	¥	%	$
Net sales	372,193	455,845	22.5	4,123,797
Operating income	35,027	78,084	122.9	706,388
Ordinary income	22,238	77,791	249.8	703,734
Net income attributable to owners of the parent	7,837	58,132	641.8	525,887
Net income attributable to owners of the parent per share: Basic	54.98	398.56	—	3.61
Net income attributable to owners of the parent per share: Diluted	—	—	—	—

Notes

Important changes in accounting policies : not applicable

Comprehensive income :

Results for the year ended January 1 to June 30, 2018 ¥53,264 million

Results for the year ended January 1 to June 30, 2017 ¥11,743 million

(2) Financial position:

(¥ in millions, US$ in thousands, except for stockholders' equity ratio)

	Dec.31, 2017	Jun.30, 2018	Jun.30, 2018
	¥	¥	$
Total assets	1,024,727	1,055,807	9,551,358
Total equity	364,997	435,566	3,940,351
	%	%	%
Stockholders' equity ratio	34.0	39.6	39.6

(3) Dividends:

	2017	2018 Forecast
Q1 dividends per share (¥)	—	—
Q2 dividends per share (¥)	0.00	20.00
Q3 dividends per share (¥)	—	—
End of Term dividends per share (¥)	50.00	70.00
Annual dividends per share (¥)	50.00	90.00

The Company resolved payment of dividends of ¥30 per share based on the record date of May 11, 2017 at the extraordinary general meeting of shareholders held on June 27, 2017, and paid dividends on the next day. The table above does not include this amount.

Ⅱ. Forecast of performance for the year ending December 31, 2018

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

	fiscal year	
	¥	$
Net sales	985,000	8,910,802
Operating income	170,000	1,537,905
Ordinary income	167,000	1,510,765
Net income attributable to owners of the parent	115,000	1,040,347
Net income attributable to owners of the parent per share: Basic	781.27	7.07

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

Note

Yen amounts have been translated into U.S.dollars for convenience only, at the rate of ¥110.54 to US$1.00, the approximate rate of exchange as of June 30, 2018.

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

(1) Summary
During the first half of 2018 (January 1 – June 30), the Japanese economy continued to recover gradually. Consumer spending showed signs of recovery against the background of good employment situation. Production increased due partly to strong exports, and corporate earnings continued to improve. Yen appreciated against dollar in March and April. However, a scenario for normalization of US monetary policy was clarified, and, the yen's appreciation started to be reversed. As for overseas economies, the US economy continued to recover. The European economy recovered gradually. The Chinese economy showed signs of recovery. The economies of ASEAN countries also showed signs of gradual recovery. The economies of resource producing countries and emerging countries including Russia and Brazil bottomed out and showed signs of improvement. On the other hand, mood of uncertainty over future prospects for global economy has been enhanced by global issues such as the trade friction between U.S. and China and Brexit issue.

In the petrochemicals industry, domestic plants to produce ethylene and its derivatives maintained high operating rates due to heavy demand from East Asia including China. In the electronics parts/materials industry, production of semiconductors and display panels increased both at home and abroad.

Under these circumstances, the Showa Denko Group has been focusing on achievement of targets of its medium-term business plan "Project 2020+," for which 2018 is the final year. In order to achieve continuous growth of the Group, we will expand and strengthen our "individualized businesses," reform our business structure, and strengthen our revenue base, thereby enhancing our corporate value.

The Group recorded consolidated net sales of ¥455,845 million in the first half of 2018, up 22.5% from the same period of the previous year. In the Petrochemicals segment, sales decreased due to a decrease in production resulting from large-scale periodic shutdown maintenance of ethylene production facilities. Though the sales in the Electronics segment decreased, the sales in the Inorganics segment considerably increased due partly to the realization of the effect of the business integration in our graphite electrode business, which took place in the second half of 2017, and the rises in the market prices of graphite electrodes. Sales in the Chemicals, Aluminum, and Others segments also increased due to higher shipment volumes.

Operating income of the Group substantially increased by 122.9%, to ¥78,084 million. Though the Petrochemicals, Electronics, and Aluminum segments recorded lower income, the Inorganics segment recorded considerably higher income due to the effect of the business integration in our graphite electrode business and the rises in the market prices of graphite electrodes. The Chemicals and Others segments also recorded higher income. The Group recorded ordinary income of ¥77,791 million, up 249.8%.

The Group recorded net income attributable to owners of the parent of ¥58,132 million in the first half of 2018, up 641.8% from the same period of the previous year, due partly to a decrease in extraordinary losses, despite an increase in corporate tax and other expenses.

(Unit: millions of yen)

	1H 2017	1H 2018	Increase/decrease
Sales	372,193	455,845	83,652
Operating income	35,027	78,084	43,057
Ordinary income	22,238	77,791	55,553
Net income attributable to owners of the parent	7,837	58,132	50,295

(2) A breakdown of net sales and operating income by segment (January 1 - June 30, 2018)

[Petrochemicals segment]
In the Petrochemicals segment, sales decreased 6.9%, to ¥115,411 million. Production of ethylene and propylene in the first half of 2018 decreased from the same period of the previous year due to the periodic shutdown maintenance of ethylene production facilities (from early March to late April), which is conducted once in every four years. Sales of olefins decreased due to a decrease in sales volumes resulting from this periodic shutdown maintenance. Sales of organic chemicals increased due to a rise in prices of products including ethyl acetate and vinyl acetate. Operating income of the segment decreased 54.1%, to ¥7,412 million.

(Unit: millions of yen)

	1H 2017	1H 2018	Increase/decrease
Sales	123,924	115,411	-8,513
Operating income	16,157	7,412	-8,745

[Chemicals segment]
In the Chemicals segment, sales increased 6.4%, to ¥ 74,620 million. Production of liquefied ammonia in the first half of 2018 increased from the same period of the previous year. Production of high-purity gases for electronics also increased. In the basic chemicals business, sales of liquefied ammonia and chloroprene rubber were about the same level as those in the first half of the previous year. However, sales of acrylonitrile and caustic soda increased due to a rise in market prices. Sales of functional chemicals increased due to a rise in sales prices of products reflecting a rise in prices of raw materials. Sales of electronic chemicals increased due to higher shipment volumes of high-purity gases for electronics caused by an increase in production in the semiconductor and display panel industries. Sales of industrial gases increased due to higher shipment volumes of carbon dioxide and dry ice. Operating income of the segment increased 12.5%, to ¥7,751 million.

(Unit: millions of yen)

	1H 2017	1H 2018	Increase/decrease
Sales	70,116	74,620	4,504
Operating income	6,891	7,751	860

[Electronics segment]
In the Electronics segment, sales decreased 13.7% to ¥54,348 million. Production of HD media in the first half of 2018 decreased from the same period of the previous year due mainly to a weakness in shipment volumes of HD media for use in mobile PCs, because the first half of 2018 was the period of transition in which we shifted from production of

traditional media to next-generation media with double storage capacity, though the demand for HD media for use in servers for data centers remained strong. Thus the sales of HD media decreased, reflecting a decrease in sales volumes. Sales of rare earth magnetic alloys and compound semiconductors increased due to higher shipment volumes. Sales of lithium ion battery (LIB) materials increased due to higher shipment volumes to China. Operating income of the segment decreased 53.7%, to ¥5,628 million.

(Unit: millions of yen)

	1H 2017	1H 2018	Increase/decrease
Sales	62,971	54,348	-8,622
Operating income	12,144	5,628	-6,516

[Inorganics segment]
In the Inorganics segment, sales increased 338.1%, to ¥116,458 million. Production of graphite electrodes in the first half of 2018 increased from the same period of the previous year due to an improvement in the situation of electric steel industry as the customer. Sales of graphite electrodes significantly increased due to consolidation of SHOWA DENKO CARBON Holding GmbH in the second half of 2017, in addition to a rise in sales prices of graphite electrodes in the global market caused by the increase in production of electric steel in China resulting from enforcement of stricter environmental policy, and the tight supply-demand situation resulting from an increase in electric steel production in global scale, especially in the US market. Sales of ceramics decreased due mainly to a fall in shipment volumes of general-purpose alumina caused by SDK's withdrawal from PT. Indonesia Chemical Alumina, despite an increase in shipment volumes of abrasives and fine ceramics for electronics. The segment recorded operating income of ¥58,326 million, an improvement of ¥58,183 million.

(Unit: millions of yen)

	1H 2017	1H 2018	Increase/decrease
Sales	26,585	116,458	89,874
Operating income	143	58,326	58,183

[Aluminum segment]
In the Aluminum segment, sales increased 4.7%, to ¥53,279 million. Production of high-purity foil for aluminum electrolytic capacitors in the first half of 2018 increased from the same period of the previous year. Sales of rolled products increased due to higher shipment volumes of high-purity foil for aluminum electrolytic capacitors for use in industrial equipment and automotive applications. Sales of aluminum specialty components increased due to a rise in product prices caused by a rise in the price of aluminum ingot. Sales of aluminum cans slightly decreased due to lower shipment volumes to the domestic market. Operating income of the segment decreased 17.5%, to ¥2,669 million due partly to a rise in the price of aluminum ingot.

(Unit: millions of yen)

	1H 2017	1H 2018	Increase/decrease
Sales	50,880	53,279	2,400
Operating income	3,237	2,669	-568

[Others segment]
In the Others segment, sales increased 7.0%, to ¥69,623 million. Shoko Co., Ltd.'s sales increased. Sales of SiC epitaxial-wafers for power devices also increased due to an

increase in shipment volumes. Operating income of the segment increased 1,772.3%, to ¥1,316 million.

(Unit: millions of yen)

	1H 2017	1H 2018	Increase/decrease
Sales	65,038	69,623	4,585
Operating income	70	1,316	1,245

(3) Major steps taken or decided in the first half of 2018

[General]

- Received “Top 100 Global Innovators” award, 3 years in a row

In January 2018, SDK received “The Clarivate Analytics 2017 Top 100 Global Innovators” award. Clarivate Analytics, formerly the Intellectual Property & Science business of Thomson Reuters, selected the top 100 global innovation-leading companies and organizations by utilizing strict and objective data compiled from its value-added patent citation database which is the world’s largest one in this category, its intellectual property intelligence platform, and the company’s original basis for evaluation. In the screening process of the award, Clarivate Analytics used scientific and objective methodology involving four main criteria of “patent volume,” “application-to-grant success,” “globalization” and “citation influence.” The Showa Denko Group has designated its intellectual property strategy as an important part of its overall business strategies. The Group will continue promoting its intellectual property strategy through close integration with business and R&D strategies.

- Incorporated into 3 ESG investment indexes for 2 straight years

In July 2018, SDK was incorporated continuously for two straight years into three ESG indexes for investment: “FTSE Blossom Japan Index” provided by FTSE International Limited and Frank Russel Company (FTSE Russel, a member of London Stock Exchange Group); “MSCI Japan ESG Select Leaders Index” and “MSCI Japan Empowering Women Index” provided by MSCI Incorporated (MSCI). FTSE and MSCI are world-famous index providers. Government Pension Investment Fund (GPIF) selected these three stock price indexes and started full-scale “ESG conscious investment” in 2017. FTSE Blossom Japan Index is designed to provide market participants with a tool to identify and measure the performance of Japanese companies that demonstrate strong environment, social and governance (ESG) practices. MSCI Japan ESG Select Leaders Index is constructed using the MSCI Japan IMI Top 500 Index (parent index) and targets best ESG performers among issues included in the parent index. MSCI Japan Empowering Women Index evaluates companies promoting and maintaining gender diversity. In addition to these three ESG indexes, SDK has been included in the “Morningstar Socially Responsible Investment Index (MS-SRI),” which is provided by Morningstar Japan K.K., for five consecutive years and the “SNAM Sustainability Index,” which is provided by Sompo Japan Nipponkoa Asset Management Co., Ltd. (SNAM), for seven consecutive years.

- Offered treasury stock through International Offering

On March 6, 2018, SDK’s Board of Directors resolved that the Company would offer 6 million shares of its treasury stock through an international offering, and the offer price of those shares was determined at ¥4,544 per share on the same day. SDK completed delivery of those shares to investors on March 23, 2018. SDK received about ¥26 billion through this transaction, and the purposes for which SDK will spend this amount are as follows:

1) SDK will spend about ¥16 billion by the end of this year for repayment of a bank loan which the Company borrowed in order to acquire SGL GE Holding GmbH in October

2017, and for investment to realize synergistic effects of the business integration between the two companies.

2) SDK will spend about ¥5 billion by the end of 2019 for investment at home and abroad to expand production capacities of its plants to produce high-purity gases for electronics
3) SDK will spend about ¥2 billon by the end of this year for investment in Vietnam and Thailand to expand/establish facilities to produce aluminum cans.
4) SDK will spend about ¥3 billion by the end of 2019 for investment to strengthen foundation of the LIB material business and to expand the capacity to produce SiC epitaxial wafer.

Through the fund-raising of this time, SDK will promote strategy for each business, aiming to establish and strengthen "individualized businesses," improve the business portfolio, and increase the ratio of overseas sales, and will strengthen the Company's financial standing.

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

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

[Petrochemicals segment]

- Completed expansion of n-propyl acetate plant

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

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

A joint project of SDK and JXTG Nippon Oil & Energy Corporation (JXTG Energy) to strengthen cooperation between oil refinery and petrochemical complex in Oita complex area (Oita City, Oita Prefecture) has been adopted as a subject for the “2018 Subsidy Program to Support Projects to Enhance Resilience of Oil Supply System” (a program to subsidize projects to strengthen business bases of petroleum complexes among programs to enhance productivity and resilience of petroleum complexes) to which Consortium for Resilient Oil Supply System (CROS) organized public invitation. Details of the project are “increasing the number of propylene rectifying towers” and “establishment of an ethane holder.” By interchanging and utilizing products through pipelines, the two parties gain advantages. “Subsidy Program to Support Projects to Enhance Resilience of Oil Supply System” is institutionalized by the Agency of Natural Resources and Energy. The program aims to improve productivity of Japanese petroleum complexes which form the core of oil products supply system, secure business bases of those complexes which are essential for the sustainability of domestic oil supply network, and establish sustainable and stable oil products supply system in Japan. Through this joint project, SDK and JXTG Energy will make the most of strong points of facilities in the oil refinery and the petrochemical complex in Oita complex area, and make these complexes prosper with global competitiveness.

[Chemicals segment]

- Expanded high-purity hydrogen bromide plant

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

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

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

- Started to supply low-carbon hydrogen made from used plastics to Hotel’s fuel cell

SDK started to supply “low-carbon” hydrogen gas made from used plastics (low-carbon hydrogen) at its Kawasaki Plant to KAWASAKI KING SKYFRONT TOKYU REI HOTEL, which started business on June 1, 2018, as energy source for fuel cells. This is the first case in the world to introduce low-carbon hydrogen gas made from used plastics into fuel cells set up in a hotel. KAWASAKI KING SKYFRONT TOKYU REI HOTEL uses low-carbon hydrogen as energy source to be converted into electricity and heat through large-sized fuel cells. In 2003, SDK’s Kawasaki Plant introduced a method to extract hydrogen, which is used as raw material to produce ammonia, from used plastics. SDK will continue contributing to creation of sustainable society through development of environment-friendly products and production processes.

[Electronics segment]

- LIB material "*VGCF*™" received a Grand Prize in "Low CO_2 Kawasaki Brand '17"

In February 2018, SDK's *VGCF*™, carbon-nanofiber additive to cathodes and anodes of lithium ion batteries (LIBs) to improve electrical conductivity, received a Grand Prize in the Product and Technology Category of "Low CO_2 Kawasaki Brand '17." SDK manufactures *VGCF*™ in its Kawasaki Plant. "Low CO_2 Kawasaki Brand" is awarded to products and technologies born in Kawasaki that emit less CO_2 than conventional ones throughout their life cycles from procurement of raw materials to disposal and recycling. *VGCF*™, which is an additive to cathodes and anodes of LIBs, forms electrical conducting paths between electrode materials, taking advantage of its particles' long and narrow shape. Through formation of these electrical conducting paths, *VGVF*™ gives LIBs longer life and larger current-carrying capacity per one cycle of charge and discharge. Thus *VGCF*™ reduces frequency of battery replacement, and reduces CO_2 emission throughout the life cycle of an LIB by about 45% from that of an LIB without *VGCF*™. The Showa Denko Group will continue developing products that reduce environmental burden, and contributing to society through its business activities.

- Established a subsidiary to sell advanced battery materials in China

In April 2018, SDK established a wholly owned subsidiary "Showa Denko Battery Materials (Shanghai) Co., Ltd." (SDBM) to sell battery materials, aiming to strengthen its battery materials business in China. The market for lithium-ion batteries (LIBs) is rapidly expanding not only due to the spread of mobile electronic devices including smartphones but also due to the diffusion of on-board use of LIBs for "New Energy Vehicles" (NEVs) following the popularization of environmental awareness in global scale. Especially in China, the national policy to promote NEVs has been boosting production and sales of electric vehicles (EVs) and plug-in hybrid electric vehicles (PHEVs) for both personal and commercial use. Under these circumstances, many LIB manufacturers are actively conducting capital investment in China. Until establishment of SDBM, SDK had been conducting business activities to sell LIB materials in China through Showa Denko (Shanghai) Co., Ltd., a management company which has been acting as regional headquarters. This time, however, SDK judged that it is necessary for the Showa Denko Group to establish a new company in order to secure quickness in decision making, strengthen relationships with major LIB manufacturers, and gather detailed information under immediate supervision of Advanced Battery Materials Division of the Company, thereby appropriately taking business opportunities in the rapidly growing LIB market in China. From now on, we give the new company a status as the center of our battery materials business in China, and will aim to expand the business further.

[Inorganics segment]

- Decided to transfer shares in Indonesia Chemical Alumina to ANTAM

SDK reached basic agreement with PT ANTAM Tbk (ANTAM) on the sale of SDK's whole shares in PT. INDONESIA CHEMICAL ALUMINA (ICA) to ANTAM, in which SDK had a 20% stake. SDK resolved at its Board of Directors meeting held on May 29, 2018 to sell the Company's whole shares in ICA to ANTAM. With regard to ICA, SDK had already recorded about ¥10.0 billion as loss on investment to companies under the application of equity method and about ¥6.7 billion as extraordinary losses concerning SDK's suretyship obligation and loans to ICA in SDK's financial results for the first half of 2017.

[Aluminum segment]

- Showa Aluminum Can completed second production base in Vietnam

  Showa Aluminum Can Corporation (SAC), a consolidated subsidiary of SDK, completed construction of its subsidiary's new factory to produce aluminum cans in Quang Nam Province, which is in the suburbs of Da Nang City in mid Vietnam, and had a ceremony for the completion of the new factory on June 8, 2018. The new factory is Hanacans Joint Stock Company's second production base in Vietnam, and its production line has annual production capacity of 700 million can bodies. Hanacans, which is a Vietnamese subsidiary of SAC, is now also working to increase the capacity of the lines to produce can ends set at its factory in Bach Nin Province in the suburbs of Hanoi. When this work is finished in the coming October, Hanacans' two factories' total capacity to produce can bodies and can ends will be that for 2 billion cans a year. Since its acquisition of Hanacans in 2014, SAC has been introducing its leading-edge production technologies and quality control system into Hanacans, and successfully increasing Hanacans' sales in Vietnam centering on northern part of the country. SAC will pursue further increase in its aluminum can sales in mid Vietnam through its effort to make Hanacans' new aluminum can factory the one that quickly and timely offers the best quality products in the region which meet needs of the market.

- Strengthened R&D function for aluminum alloy materials

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

[Others Segment]

- Decided to additionally expand capacity for producing high-grade SiC epitaxial wafers for power devices

  In April 2018, SDK expanded its capacity for producing high-quality-grade silicon carbide (SiC) epitaxial wafers for power devices, which had already been marketed under the trade name of "High-Grade Epi" (HGE), from former 3,000 wafers* per month to 5,000 wafers per month, and started production with expanded facilities. In addition to the traditional use as power sources, SiC-based power devices are now replacing conventional silicon-based power devices for on-board use such as inverter modules for railcars, on-board battery chargers and rapid charging stations for EVs, in parallel with rapid expansion of the EV market. SDK's SiC epitaxial wafer "HGE" has been acclaimed by power semiconductor manufacturers for the lowest incidence of crystal defects and the highest homogeneity of wafers in the world. SDK has already started to re-expand its capacity to produce HGE from 5,000 wafers per month to 7,000 wafers per month by this September. Furthermore, in order to respond to the strong demand for HGE caused by rapid expansion of the market for SiC-based power devices, SDK decided in July 2018 to start the third expansion of HGE production lines in the last two years, which is to be finished by February 2019. After this expansion, SDK's capacity to produce HGE will be 9,000 wafers per month. SDK will continue improving the quality of its SiC epitaxial wafer products and supplying them to the rapidly growing SiC power semiconductor market in a timely and stable manner, while securing top-level market share.

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

2. Financial conditions for the January 1 - June 30, 2018 period (as compared with the conditions at December 31, 2017)

a) Situation of assets, liabilities and net assets

Total assets at June 30, 2018 amounted to ¥1,055,807 million, an increase of ¥31,080 million from the level at December 31, 2017. Total assets increased due partly to increases in notes and accounts receivable-trade and inventories. Total liabilities decreased ¥39,490 million, to ¥620,241 million, due partly to a decrease in Interest-bearing debts, despite an increase in notes and accounts payable-trade. Net assets at June 30, 2018 increased ¥70,570 million, to ¥435,566 million, due partly to the posting of net income attributable to owners of the parent and an increase in capital surplus resulting from the sale of treasury stock.

b) Situation of cash flows

Net cash provided by operating activities during the first half of 2018 amounted to ¥52,176 million, an increase of ¥9,211 million from the same period of the previous year, due partly to the increase in the income before income taxes and minority interests. Net cash used in investing activities increased ¥14,217 million from the same period of the previous year, to ¥25,525 million, due partly to the decrease in proceeds from withdrawal of time deposits. Thus free cash flow ended up in in the proceeds of ¥26,651 million, a decline in proceeds of ¥5,006 million. Cash flows from financing activities ended up in the expenditure of ¥12,881 million, a decrease in expenditure of ¥3,328 million from the same period of the previous year, due partly to the increase in the proceeds resulting from the sales of treasury stock, despite a reduction in interest-bearing debts. As a result, after the effects of exchange rate fluctuations are taken into account, cash and cash equivalents at the end of the first half year period increased ¥11,921 million from the level at December 31, 2017, to ¥88,754 million.

3. Performance forecast

The Company announced revised forecast of consolidated financial results today (August 8, 2018). Revised forecast of consolidated financial results for full-year 2018 (January 1 – December 31) is as in the table given below:

(Unit: millions of yen)

	Net sales	Operating income	Ordinary income	Net income attributable to owners of the parent
Forecast for full-year 2018	985,000	170,000	167,000	115,000

The forecast stated above is based on the revised assumption that the exchange rate and the naphtha price for the second half of 2018 will be as follows.

Exchange rate: ¥105/$ (Forecast at the beginning of the year: ¥110/$)
Naphtha price: ¥48,600/KL (Forecast at the beginning of the year: ¥41,600/KL)

Consolidated Balance Sheets

(¥ in millions, US$ in thousands)

	Dec. 31, 2017	Jun. 30, 2018	Jun. 30, 2018
Assets	¥	¥	$
Current assets			
Cash and deposits	77,248	89,278	807,650
Notes and accounts receivable-trade	176,021	186,073	1,683,309
Merchandise and finished goods	54,903	59,722	540,273
Work in process	15,829	20,258	183,263
Raw materials and supplies	44,181	47,757	432,031
Other	40,009	43,306	391,765
Allowance for doubtful accounts	(2,849)	(2,338)	(21,147)
Total current assets	405,341	444,055	4,017,145
Noncurrent assets			
Property, plant and equipment			
Buildings and structures, net	85,547	84,574	765,099
Machinery, equipment and vehicles, net	151,634	153,291	1,386,750
Land	245,062	244,911	2,215,585
Other, net	23,657	19,985	180,794
Total property, plant and equipment	505,900	502,761	4,548,228
Intangible assets			
Other	12,432	13,264	119,992
Total intangible assets	12,432	13,264	119,992
Investments and other assets			
Investment securities	89,167	84,985	768,814
Other	22,117	20,831	188,446
Allowance for doubtful accounts	(10,229)	(10,089)	(91,267)
Total investments and other assets	101,054	95,727	865,994
Total noncurrent assets	619,386	611,752	5,534,213
Total assets	1,024,727	1,055,807	9,551,358
Liabilities			
Current liabilities			
Notes and accounts payable-trade	120,762	132,065	1,194,730
Short-term loans payable	86,699	77,545	701,513
Current portion of long-term loans payable	57,432	39,141	354,090
Commercial papers	5,000	12,000	108,558
Provision	7,234	3,626	32,803
Income taxes payable	7,374	11,080	100,237
Other	89,164	67,578	611,349
Total current liabilities	373,666	343,037	3,103,281
Noncurrent liabilities			
Bonds payable	42,000	42,000	379,953
Long-term loans payable	155,594	150,412	1,360,705
Provision	6,427	6,165	55,775
Net defined benefit liability	18,966	16,650	150,623
Other	63,076	61,977	560,671
Total noncurrent liabilities	286,064	277,204	2,507,726
Total liabilities	659,730	620,241	5,611,007
Net assets			
Shareholders' equity			
Capital stock	140,564	140,564	1,271,608
Capital surplus	61,663	78,911	713,868
Retained earnings	96,142	147,142	1,331,123
Treasury stock	(10,503)	(1,651)	(14,939)
Total shareholders' equity	287,866	364,965	3,301,659
Accumulated other comprehensive income			
Valuation difference on available-for-sale securities	16,547	14,963	135,365
Deferred gains or losses on hedges	3,781	2,245	20,310
Revaluation reserve for land	29,541	29,532	267,160
Foreign currency translation adjustment	15,452	10,362	93,739
Remeasurements of defined benefit plans	(4,716)	(3,924)	(35,501)
Total accumulated other comprehensive income	60,606	53,178	481,072
Non-controlling interests	16,524	17,423	157,621
Total net assets	364,997	435,566	3,940,351
Total liabilities and net assets	1,024,727	1,055,807	9,551,358

Consolidated Statements of Income

(¥ in millions, US$ in thousands)

	Results for the first half year (Jan.1-Jun.30)		
	2017	2018	2018
	¥	¥	$
Net sales	372,193	455,845	4,123,797
Cost of sales	289,896	324,889	2,939,108
Gross profit	82,297	130,956	1,184,689
Selling, general and administrative expenses	47,270	52,871	478,301
Operating income	35,027	78,084	706,388
Non-operating income			
Interest income	279	377	3,408
Dividends income	561	703	6,361
Equity in earnings of affiliates	—	594	5,376
Miscellaneous income	1,539	1,779	16,094
Total non-operating income	2,378	3,453	31,239
Non-operating expenses			
Interest expenses	1,454	1,561	14,126
Equity in losses of affiliates	8,728	—	—
Miscellaneous expenses	4,985	2,185	19,767
Total non-operating expenses	15,167	3,746	33,892
Ordinary income	22,238	77,791	703,734
Extraordinary income			
Gain on sales of investment securities	165	281	2,538
Gain on liquidation of subsidiaries	—	151	1,365
Other	65	89	809
Total extraordinary income	230	521	4,713
Extraordinary loss			
Loss on sales and retirement of noncurrent assets	1,176	1,663	15,043
Provision of allowance for doubtful accounts	2,162	—	—
Provision for loss on guarantees	4,026	—	—
Other	2,274	356	3,225
Total extraordinary losses	9,638	2,019	18,267
Profit before income taxes	12,831	76,293	690,180
Income taxes	4,184	15,254	137,991
Net income	8,647	61,039	552,189
Net income attributable to non-controlling interests	810	2,907	26,301
Net income attributable to owners of the parent	7,837	58,132	525,887

Consolidated Statements of Comprehensive Income

(¥ in millions, US$ in thousands)

	Results for the first half year (Jan. 1-Jun. 30)		
	2017	2018	2018
	¥	¥	$
Profit	8,647	61,039	552,189
Other comprehensive income:			
Valuation difference on available-for-sale securities	3,222	(1,607)	(14,538)
Deferred gains or losses on hedges	1,210	(1,536)	(13,894)
Foreign currency translation adjustments	(1,974)	(5,418)	(49,016)
Remeasurements of defined benefit plans, net of tax	617	777	7,031
Share of other comprehensive income of entities accounted for using equity method	22	9	82
Total other comprehensive income	3,096	(7,775)	(70,335)
Comprehensive income	11,743	53,264	481,854
(Comprehensive income attributable to)			
Comprehensive income attributable to owners of the parent	10,789	50,712	458,769
Comprehensive income attributable to non-controlling interests	954	2,552	23,085

Consolidated Statements of Cash Flows

(¥ in millions, US$ in thousands)

	Results for the first half year (Jan. 1-Jun. 30)		
	2017	2018	2018
	¥	¥	$
Net cash provided by (used in) operating activities			
Income before income taxes and minority interests	12,831	76,293	690,180
Depreciation and amortization	18,692	19,753	178,696
Impairment loss	1,349	59	537
Amortization of negative goodwill	(4)	(8)	(76)
Increase (decrease) in net defined benefit liability	(1,634)	(1,905)	(17,230)
Interest and dividends income	(839)	(1,080)	(9,769)
Interest expenses	1,454	1,561	14,126
Equity in (earnings) losses of affiliates	8,728	(594)	(5,376)
Loss (gain) on sales and valuation of investment securities	(142)	(258)	(2,332)
Loss on retirement of noncurrent assets	1,161	1,637	14,813
Loss (gain) on sales of noncurrent assets	(46)	(46)	(417)
Decrease (increase) in notes and accounts receivable-trade	4,470	(11,682)	(105,680)
Decrease (increase) in inventories	(3,354)	(14,465)	(130,857)
Increase (decrease) in notes and accounts payable-trade	(2,086)	12,785	115,656
Other, net	4,405	(24,923)	(225,470)
Subtotal	44,984	57,127	516,803
Interest and dividends income received	2,347	2,153	19,481
Interest expenses paid	(1,354)	(1,576)	(14,255)
Income taxes paid	(3,012)	(5,529)	(50,018)
Net cash provided by (used in) operating activities	42,965	52,176	472,010
Net cash provided by (used in) investing activities			
Payments into time deposits	(9,528)	(131)	(1,187)
Proceeds from withdrawal of time deposits	19,195	3	27
Purchase of property, plant and equipment	(19,260)	(20,944)	(189,466)
Proceeds from sales of property, plant and equipment	135	134	1,208
Purchase of investment securities	(1,121)	(670)	(6,063)
Proceeds from sales of investment securities	674	2,452	22,186
Net decrease (increase) in short-term loans receivable	(66)	(95)	(858)
Payments of long-term loans receivable	(91)	(465)	(4,204)
Collection of long-term loans receivable	134	113	1,019
Other, net	(1,378)	(5,922)	(53,572)
Net cash provided by (used in) investing activities	(11,308)	(25,525)	(230,911)
Net increase (decrease) in short-term loans payable	429	(8,533)	(77,198)
Net increase (decrease) in commercial papers	12,000	7,000	63,325
Proceeds from long-term loans payable	6,396	12,584	113,840
Repayment of long-term loans payable	(19,127)	(35,513)	(321,269)
Redemption of bonds	(10,000)	-	-
Purchase of treasury shares	(3)	(9)	(77)
Proceeds from sales of treasury shares	-	26,104	236,149
Cash dividends paid	(3,800)	(7,108)	(64,298)
Cash dividends paid to non controlling shareholders	(1,275)	(2,045)	(18,501)
Other, net	(829)	(5,361)	(48,499)
Net cash provided by (used in) financing activities	(16,209)	(12,881)	(116,528)
Effect of exchange rate change on cash and cash equivalents	(183)	(1,850)	(16,732)
Net increase (decrease) in cash and cash equivalents	15,266	11,921	107,839
Cash and cash equivalents at beginning of period	56,186	76,833	695,074
Increase in cash and cash equivalents from newly consolidated subsidiary	696	-	-
Cash and cash equivalents at end of period	72,147	88,754	802,913

(Reference)

SEGMENT INFORMATION

Information about sales and operating income:

6 months ended June 30, 2017

	Millions of yen							
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Elimination	Consolidated
Sales								
Outside customers	¥119,107	¥61,519	¥61,378	¥22,448	¥46,543	¥61,198	¥–	¥372,193
Inter-segment	4,817	8,597	1,593	4,137	4,337	3,840	(27,321)	–
Total	123,924	70,116	62,971	26,585	50,880	65,038	(27,321)	372,193
Operating income (loss)	¥16,157	¥6,891	¥12,144	¥143	¥3,237	¥70	(¥3,614)	¥35,027

6 months ended June 30, 2018

	Millions of yen							
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Elimination	Consolidated
Sales								
Outside customers	¥110,373	¥65,993	¥53,465	¥112,410	¥48,674	¥64,928	¥–	¥455,845
Inter-segment	5,037	8,627	883	4,048	4,605	4,695	(27,896)	–
Total	115,411	74,620	54,348	116,458	53,279	69,623	(27,896)	455,845
Operating income (loss)	¥7,412	¥7,751	¥5,628	¥58,326	¥2,669	¥1,316	(¥5,018)	¥78,084

6 months ended June 30, 2018

	Thousands of U.S. dollars							
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Others	Elimination	Consolidated
Sales								
Outside customers	$998,493	$597,005	$483,675	$1,016,921	$440,332	$587,372	$–	$4,123,797
Inter-segment	45,571	78,046	7,988	36,620	41,659	42,475	(252,359)	–
Total	1,044,064	675,051	491,663	1,053,542	481,991	629,847	(252,359)	4,123,797
Operating income (loss)	$67,054	$70,124	$50,910	$527,648	$24,145	$11,901	($45,393)	$706,388