SHOWA DENKO K.K.

February 17, 2021

2020 Consolidated Financial Results (Summary)

Ⅰ. Results for 2020

1. Summary

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

Items	2019 Jan.1 - Dec.31	2020 Jan.1 - Dec.31	Increase/ decrease
Net sales	906.5	973.7	67.2
Operating income	120.8	-19.4	-140.2
Net income attributable to owners of the parent	73.1	-76.3	-149.4
Net income attributable to owners of the parent per share	¥501.03	¥-523.06	¥-1,024.09
Stockholders' equity per share	¥3,423.25	¥2,782.79	¥-640.45
Annual dividend per share	¥130.00	¥65.00 (planned)	¥-65.00

Showa Denko K.K. made Hitachi Chemical Company, Ltd. a consolidated subsidiary, whose current name is Showa Denko Materials Co., Ltd. (Showa Denko Materials), and started on July 1, 2020 to incorporate Showa Denko Materials' sales figures and incomes/losses into its consolidated financial statements.

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

(Unit: billions of yen)

Segment		2019 Jan.1 - Dec.31	2020 Jan.1 - Dec.31	Increase/ decrease
Petrochemicals	Net Sales	250.7	193.4	-57.3
	Op. Income	17.2	4.9	-12.3
Chemicals	Net Sales	157.5	155.8	-1.7
	Op. Income	13.7	13.5	-0.2
Electronics	Net Sales	96.4	97.4	1.0
	Op. Income	4.9	9.1	4.3
Inorganics	Net Sales	230.1	82.9	-147.2
	Op. Income	89.3	-32.3	-121.6
Aluminum	Net Sales	97.5	80.2	-17.4
	Op. Income	1.7	0.4	-1.3
Showa Denko Materials	Net Sales	―	302.7	302.7
	Op. Income	―	-6.3	-6.3
Others	Net Sales	126.2	107.3	-18.9
	Op. Income	1.8	1.2	-0.6
Adjustments	Net Sales	-52.0	-46.0	6.0
	Op. Income	-7.8	-10.0	-2.2
Total	Net Sales	906.5	973.7	67.2
	Op. Income	120.8	-19.4	-140.2

Showa Denko K.K. started on July 1, 2020 to incorporate Showa Denko Materials' sales figures and incomes/losses into its financial statements as "Showa Denko Materials segment."

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

(Unit: billions of yen)

Segment		2020 CQ1 Jan.1 - Mar.31	2020 CQ2 Apr.1 - Jun.30	2020 CQ3 Jul.1 - Sept.30	2020 CQ4 Oct.1 - Dec.31
Petrochemicals	Net Sales	55.0	40.7	46.8	50.8
	Op. Income	-0.2	-3.5	5.0	3.6
Chemicals	Net Sales	36.3	35.7	41.0	42.8
	Op. Income	2.3	2.7	4.3	4.2
Electronics	Net Sales	23.6	21.0	24.1	28.7
	Op. Income	1.0	0.8	3.0	4.3
Inorganics	Net Sales	21.4	21.6	18.3	21.6
	Op. Income	0.8	-23.8	-3.3	-6.1
Aluminum	Net Sales	19.2	19.7	19.6	21.7
	Op. Income	0.0	-0.3	-0.1	0.7
Showa Denko Materials	Net Sales	―	―	144.8	157.9
	Op. Income	―	―	2.8	-9.1
Others	Net Sales	28.6	27.0	24.5	27.3
	Op. Income	0.2	0.3	0.1	0.6
Adjustments	Net Sales	-12.3	-10.8	-9.8	-13.1
	Op. Income	-1.7	-4.6	-1.4	-2.3
Total	Net Sales	171.7	154.9	309.4	337.7
	Op. Income	2.5	-28.3	10.4	-4.0

SHOWA DENKO K.K.

February 17, 2021

Ⅱ. Forecast for 2021

1. Summary

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

Items	2020	2021 Forecast	Increase/ decrease
Net sales	973.7	1,280.0	306.3
Operating income	-19.4	45.0	64.4
Net income attributable to owners of the parent	-76.3	-14.0	62.3
Net income attributable to owners of the parent per share	¥-523.06	¥-95.97	¥427.09
End of term dividends per share	¥65.00 (planned)	¥65.00	¥0.00

2. Net sales and Operating income by Segment

(Unit: billions of yen)

Segment		2020	2021 Forecast	Increase/ decrease
Petrochemicals	Net Sales	193.4	196.0	2.6
	Op. Income	4.9	11.5	6.6
Chemicals	Net Sales	155.8	166.0	10.2
	Op. Income	13.5	15.5	2.0
Electronics	Net Sales	97.4	110.0	12.6
	Op. Income	9.1	12.5	3.4
Inorganics	Net Sales	82.9	77.0	-5.9
	Op. Income	-32.3	3.0	35.3
Aluminum	Net Sales	80.2	58.0	-22.2
	Op. Income	0.4	3.5	3.1
Showa Denko Materials	Net Sales	302.7	610.0	307.3
	Op. Income	-6.3	10.0	16.3
Others	Net Sales	107.3	111.0	3.7
	Op. Income	1.2	1.0	-0.2
Adjustments	Net Sales	-46.0	-48.0	-2.0
	Op. Income	-10.0	-12.0	-2.0
Total	Net Sales	973.7	1,280.0	306.3
	Op. Income	-19.4	45.0	64.4

Showa Denko K.K. started on July 1, 2020 to incorporate Showa Denko Materials' sales figures and incomes/losses into its financial statements as "Showa Denko Materials segment."

Ⅲ. Cash flow

(Unit: billions of yen)

Cash flows from:	2019	2020	Increase/ decrease	2021 Forecast	Increase/ decrease
Operating activities	78.6	109.3	30.7	135.0	25.7
Investing activities	-48.2	-930.0	-881.9	-75.0	855.0
Free cash flow	30.4	-820.8	-851.2	60.0	880.8
Financing activities	-18.5	896.5	915.1	-60.0	-956.5
Other	-3.0	0.4	3.4	0.0	-0.4
Net increase in cash	8.9	76.2	67.3	0.0	-76.2

Ⅳ. Reference

(Unit: billions of yen, expect for Total number of employees, Exchange rate, and Domestic naphtha price)

Items	2019	2020	Increase/ decrease	2021 Forecast	Increase/ decrease
Capital expenditures	50.2	69.1	18.8	94.6	25.5
Depreciation and amortization	37.7	60.6	22.9	85.5	24.9
R&D expenditures	20.6	34.4	13.8	53.0	18.6
Gap between interest expense and interest & dividend income	0.3	-4.6	-4.9	-9.3	-4.7
Total number of employees	10,813	33,684	22,871	32,221	-1,463
Exchange rate (yen/US$)	109.1	106.8	Yen appriciated by 2.2	105.0	Yen appriciated by 1.8
Domestic naphtha price (yen/kl)	42,000	32,800	-9,200	33,200	400
Interest-bearing debt	303.2	1,060.1	757.0	1,030.0	-30.1
Total assets	1,076.4	2,203.6	1,127.2		

Showa Denko K.K. made Showa Denko Materials a consolidated subsidiary, considered June 30, 2020 as acquisition date, and started to incorporate Showa Denko Materials' financial results into its financial statements.
Showa Denko K.K. started to include leasing liabilities in interest-bearing debts in this third quarter, and retrospectively adjusted the balance of interest-bearing debts as of the end of 2019 in the same way.

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 influence of the coronavirus disease 2019 (COVID-19) on the world economy, the economic conditions, costs of naphtha and other raw materials, demand or market conditions for our products such as graphite electrodes and other commodities, and foreign exchange rates. We undertake no obligation to update the forward-looking statements unless required by law.

SHOWA DENKO K.K.

Consolidated Financial Statements

For the year ended December 31, 2020

Ⅰ. Consolidated Financial Results

Feb. 17th, 2021

(1) Results of operations:

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

	Results for the year ended December 31			
	2019	**2020**	Increase (Decrease)	**2020**
	¥	¥	%	$
Net sales	906,454	**973,700**	7.4	**9,407,728**
Operating income	120,798	**(19,449)**	(116.1)	**(187,914)**
Ordinary income	119,293	**(43,971)**	(136.9)	**(424,840)**
Net income attributable to owners of the parent	73,088	**(76,304)**	(204.4)	**(737,237)**
Net income attributable to owners of the parent per share: Basic	501.03	**(523.06)**	—	**(5.05)**
Net income attributable to owners of the parent per share: Diluted	—	—	—	—
	%	%		
Net income on equity	15.5	**(16.9)**		
Ordinary income on total assets	11.1	**(2.7)**		
Operating income to net sales	13.3	**(2.0)**		

Showa Denko K.K. made Hitachi Chemical Company, Ltd. a consolidated subsidiary, whose current name is Showa Denko Materials Co., Ltd. (Showa Denko Materials), and started on July 1, 2020 to incorporate Showa Denko Materials' sales figures and incomes/losses into its consolidated financial statements.

Notes

Important changes in accounting policies : not applicable

Comprehensive income:

Results for the year ended December 31,2020 ¥(70,188) million

Results for the year ended December 31,2019 ¥77,308 million

(2) Financial position:

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

	Dec. 31, 2019	**Dec. 31, 2020**	**Dec. 31, 2020**
	¥	¥	$
Total assets	1,076,381	**2,203,606**	**21,290,877**
Total equity	519,433	**718,080**	**6,937,973**
Total equity per share	3,423.25	**2,782.79**	**26.89**
	%	%	%
Stockholders' equity ratio	46.4	**18.4**	**18.4**

Showa Denko K.K. made Showa Denko Materials a consolidated subsidiary, considered June 30, 2020 as acquisition date, and started to incorporate Showa Denko Materials' sales figures and incomes/losses into its consolidated financial statements.

(3) Cash flows:

(¥ in millions, US$ in thousands)

	Results for the year ended December 31		
	2019	**2020**	**2020**
	¥	¥	$
Cash flows from operating activities	78,554	**109,286**	**1,055,905**
Cash flows from investing activities	(48,156)	**(930,047)**	**(8,985,966)**
Cash flows from financing activities	(18,546)	**896,521**	**8,662,036**
Cash and cash equivalents at end of the year	121,734	**197,928**	**1,912,344**

(4) Dividends:

	2019	**2020**	2021forecast
End of Q1 dividends per share (¥)	—	—	—
End of Q2 dividends per share (¥)	50	**0**	0
End of Q3 dividends per share (¥)	—	—	—
End of Term dividends per share (¥)	80.0	**65.0**	65.0
Total of dividend per share above (¥)	130.0	**65.0**	65.0
Total dividends (¥ in millions)	19,001	**9,500**	
	%	%	%
Payout ratio (consolidated)	25.9	**—**	—
Net assets dividend yield (consolidated)	4.0	**2.1**	—

Ⅱ. Forecast of performance for the year ending December 31, 2021

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

	1st half		fiscal year	
	¥	$	¥	$
Net sales	630,000	6,086,957	1,280,000	12,367,150
Operating income	11,000	106,280	45,000	434,783
Ordinary income	6,000	57,971	35,000	338,164
Net income attributable to owners of the parent	(16,000)	(154,589)	(14,000)	(135,266)
Net income attributable to owners of the parent per share: Basic	(109.68)	(1.06)	(95.97)	(0.93)

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

Notes

Yen amounts have been translated into U.S.dollars for convenience only, at the rate of ¥103.50 to US$1.00, the approximate rate of exchange as of Dectember 31, 2020.

[Business Results and Financial Conditions]

1. Analysis of business results

(1) Summary

With regard to the Japanese economy in 2020, consumer spending deteriorated rapidly due to the influence of the international pandemic of the coronavirus disease 2019 (COVID-19). Corporate earnings were greatly affected by a slowdown of the world economy caused by the pandemic of COVID-19, and there were also significant effect of a sudden slowdown in domestic consumer spending, a major reduction in export, a fast reduction in overseas production, and a sharp drop in crude-oil prices on corporate earnings. As a result, many companies showed serious deterioration in their business sentiment around the middle of the year. As countermeasures against such an economic downturn, the major powers including Japan, the United States, and the European Union took stimulative monetary and fiscal policies, and there were signs of partial economic recovery. Although business environment of the Showa Denko Group had some unclear factors including resurgence of the spread of COVID-19, uncertainty about economic policy of the new administration of the United States, and US-China trade friction, the semiconductor industry continued to do well, and the automobile industry showed sign of recovery in the second half of 2020.

Taking the current situation into consideration, and giving the highest priority to the preservation of safety and health of our stakeholders including customers, business acquaintances and employees, the Showa Denko Group is implementing various measures to prevent further spread of the infectious disease. To be specific, we have introduced telework, which have been implemented by employees belonging to major plants, divisions, and departments. Especially in the headquarters, since the spread of the infectious disease, we have been taking measures to minimize the percentage of attendance of employees by thoroughly reviewing contents of duties. We have also started to grant special leave to employees who is suspected to be infected with COVID-19, and have been asking employees to refrain from eating in a group. Thus, we are taking various measures to give the highest priority to keeping our employees' health and preventing the spread of COVID-19. At the same time, in our production bases, we have been making utmost efforts to fulfill our corporate social responsibility to continue providing our customers with products essential for infrastructural functions of society.

Medium-term business plan "The TOP 2021"

The Showa Denko Group set up its long-term vision and has been promoting its medium-term consolidated business plan "The TOP 2021" since January 2019. It is very important for the Showa Denko Group to enhance the value of the Group and satisfy all stakeholders including shareholders, customers, suppliers, local communities and employees in order that the Group continuously grows and becomes trusted and acclaimed by society. The Showa Denko Group defines this idea as the Group's business philosophy, thereby promoting management to maximize shareholders', customers' and social value.

In April 2020, the Showa Denko Group made then Hitachi Chemical Company, Ltd. a consolidated subsidiary through tender offer. World's industrial structure and competitive environment have been changing greatly, and the recent worldwide pandemic of COVID-19 will accelerate this change. In particular, it is expected that the spread of digitalization of social activities including the diffusion of telework and online businesses, acceleration of introduction of factory automation to production sites, and further strengthening of cyber security will be accelerated. To survive as a global-top-level functional chemical manufacturer while coping with such changes in business environment, the Showa Denko Group must evolve into the "One-stop Advanced Material Partner" for our customers which provides the customers with solutions beyond materials and components.

The Group will strengthen its earning power and reduce the range of fluctuation in income and enhance the value of the Group through successful execution of “The TOP 2021,” and aim to realize substantial business integration with Hitachi Chemical Company, Ltd. (changed its name into Showa Denko Materials Co., Ltd. on October 1, 2020) in July 2021 and integration of legal personalities in January 2023. On December 10, 2020, SDK announced “Long-term Vision (2021-2030) for Newly Integrated Company,” which aims to establish the basis of business growth far into the future through integration of SDK and Showa Denko Materials Co., Ltd. (SDMC).

For the detail of the long-term vision, please refer to “3. Management Policy, (1) Long-term Vision (2021-2030) for Newly Integrated Company.”

The Group recorded consolidated net sales of ¥973,700 million in 2020, up 7.4% from the previous year. Sales in the Inorganics segment significantly decreased due to a decrease in shipment volumes and reduction in prices of graphite electrodes resulting from worldwide decrease in production of steel. Sales in the Petrochemicals, Chemicals, Aluminum, and Others segments also decreased. However, sales in the Showa Denko Materials segment increased due to consolidation which started at the beginning of the third quarter of 2020. Sales in the Electronics segment slightly increased.

Operating income of the Group in 2020 significantly decreased, and the Group recorded operating loss of ¥19,449 million, a deterioration of ¥140,247 million from the previous year. In the Electronics segment, operating income increased due to an increase in shipment volumes of hard disk (HD) media and lithium-ion battery (LIB) materials. However, the Inorganics segment recorded a sharp decrease in operating income due to a decrease in shipment volumes of graphite electrodes and a drop in book value of inventory of graphite electrodes resulting from a decline in market prices of products and application of the lower of cost or market valuation accounting method. Operating income in the Petrochemicals segment also decreased due to a negative impact of the negative spread between purchase and shipment prices of raw naphtha inventory. Operating income in the Showa Denko Materials segment, which was newly consolidated, also decreased due to a reduction in the demand for cars resulting from the spread of COVID-19 and recording of other losses which amounted to about ¥28,000 million including amortization of goodwill. Chemicals, Aluminum and Others segments also recorded decreases in profit due to a reduction in shipment volumes of products. The Group recorded ordinary loss of ¥43,971 million, a deterioration of ¥163,264 million from the previous year due not only to the recording of operating loss but also to the recording of non-operating expenses of about ¥16,100 million which was incurred as temporary expenses pertaining to fund-raising for acquisition of shares in then Hitachi Chemical Company, Ltd.

The Group recorded net loss attributable to owners of the parent of ¥76,304 million in 2020, a significant deterioration of ¥149,392 million from the previous year, due partly to the posting of impairment loss of ¥16,602 million in the aluminum rolled products business and ceramics business, and posting of extraordinary loss of ¥5,142 million to cover expenses related to closure of a graphite electrode plant in Germany.

(Unit: millions of yen)

	2019 Jan.-Dec.	2020 Jan.-Dec.	Increase/decrease
Sales	906,454	973,700	67,246
Operating income	120,798	-19,449	-140,247
Ordinary income	119,293	-43,971	-163,264
Net income attributable to owners of the parent	73,088	-76,304	-149,392

(2) A breakdown of net sales and operating income by segment (January 1 - December 31, 2020)

[Petrochemicals segment]
In the Petrochemicals segment, sales decreased 22.9% from the previous year, to ¥193,385 million. In our olefin business, sales decreased due to a drop in market prices of products including ethylene and propylene resulting from a fall in prices of crude oil and raw naphtha and softening supply-demand balance in East Asia in the first quarter caused by a slowdown in the Chinese economy. Sales of organic chemicals decreased due to a reduction in shipment volumes of ethyl acetate and vinyl acetate resulting from the periodic shutdown maintenance of facilities to produce these products, in addition to the effect of a drop in market prices of organic chemicals. The demand for olefin products in East Asia has been recovering since the second quarter. The Petrochemicals segment recorded an operating income of ¥4,927 million, down 71.4% from the previous year due mainly to a remaining impact of the negative spread between purchase and shipment prices of raw naphtha inventory caused by a fall in raw naphtha price.

(Unit: millions of yen)

	2019 Jan.-Dec.	2020 Jan.-Dec.	Increase/decrease
Sales	250,678	193,385	-57,293
Operating income	17,201	4,927	-12,274

[Chemicals segment]
In the Chemicals segment, sales decreased 1.1% from the previous year, to ¥155,769 million. Sales of electronic chemicals increased due to an increase in shipment volumes resulting from a recovery of the semiconductor industry’s production. Sales of coating materials, which was newly consolidated in the second half of 2019, also increased. However, sales of basic chemicals decreased. Sales of liquefied ammonia and acrylonitrile decreased due to a decrease in shipment volumes caused by a decline in domestic demand resulting from the spread of COVID-19. Sales of chloroprene rubber decreased due to a decline in the amount of export. Sales of functional chemicals decreased due mainly to a fall in sales volumes in Japan and China. Sales of industrial gases decreased due to a decline in shipment volumes of carbonic acid gas for use in production of beverages. Operating income of the segment decreased 1.3% from the previous year, to ¥13,481 million.

(Unit: millions of yen)

	2019 Jan.-Dec.	2020 Jan.-Dec.	Increase/decrease
Sales	157,480	155,769	-1,711
Operating income	13,656	13,481	-175

[Electronics segment]

In the Electronics segment, sales increased 1.0% from the previous year, to ¥97,415 million. Sales of lithium-ion battery (LIB) materials increased due to an increase in shipment volumes of Showa Denko Packaging's aluminum laminate film (*SPALF*™) used as packaging material for LIBs. Sales of compound semiconductors increased due to an increase in export. Sales of HD media decreased due to a decrease in shipment volumes of media for PCs, despite an increase in shipment volumes of media for use in data centers. As for SiC epitaxial wafer business, sales increased due mainly to steady shipment volumes of wafers for use in railcars. Operating income of the segment increased 87.2% from the previous year, to ¥9,133 million.

(Unit: millions of yen)

	2019 Jan.-Dec.	2020 Jan.-Dec.	Increase/decrease
Sales	96,445	97,415	970
Operating income	4,880	9,133	4,253

[Inorganics segment]

In the Inorganics segment, sales decreased 64.0% from the previous year, to ¥82,899 million. Sales of graphite electrodes significantly decreased due to a further reduction in the Company's production and sales volumes of graphite electrodes aiming to respond to the weakening supply-demand situation of graphite electrodes in the market resulting from a global slowdown in steel production and partial-clearance of our customers' graphite-electrode inventory. Sales of ceramics decreased due to a fall in sales volumes of abrasives and other products resulting from a decrease in production of automobiles and steel. Operating income of the segment recorded a decrease due to a drop in book value of inventory of graphite electrodes resulting from a decline in market prices of products and application of the lower of cost or market valuation accounting method. As a result, the segment recorded operating loss of ¥32,300 million, a deterioration of ¥121,556 million from the previous year.

(Unit: millions of yen)

	2019 Jan.-Dec.	2020 Jan.-Dec.	Increase/decrease
Sales	230,135	82,899	-147,236
Operating income	89,256	-32,300	-121,556

[Aluminum segment]

In the Aluminum segment, sales decreased 17.8% from the previous year, to ¥80,185 million. Sales of rolled products decreased due to a decline in shipment volumes of high-purity aluminum foil for capacitors resulting from adjustment of production in customer industries for capacitors including the industrial equipment industry and the onboard equipment industry. Sales of aluminum specialty components decreased due mainly to a decline in sales volumes of those for use in the car industry resulting from a reduction in production of cars worldwide and those for use in office automation equipment and machine tools. Sales of aluminum cans decreased due to a reduction in the Group's domestic production capacity and, in the Vietnamese market, a significant fall in production of beer resulting from outing restrictions as a countermeasure against COVID-19. The segment recorded operating income of ¥421 million, down 75.9% from the previous year.

(Unit: millions of yen)

	2019 Jan.-Dec.	2020 Jan.-Dec.	Increase/decrease
Sales	97,542	80,185	-17,357
Operating income	1,746	421	-1,326

[Showa Denko Materials segment]
We started to consolidate Showa Denko Materials Co., Ltd. and its subsidiaries in the second quarter of 2020, and therefore, we created a new segment for reporting, and started to incorporate sales figures and operating income of the new segment into SDK's consolidated financial statements at the beginning of the third quarter. The Showa Denko Materials segment recorded net sales of ¥302,742 million in 2020. Sales of electronic materials including abrasives for chemical mechanical planarization of the surface of semiconductor chips (CMP slurry) and materials for circuit boards including copper clad laminates remained strong. However, sales of mobility components including molded resins remained sluggish. As a result, the segment recorded operating loss of ¥6,303 million. Operating loss of this segment includes amortization of the goodwill of the former Hitachi Chemical which was reckoned up as a result of acquisition of shares in former Hitachi Chemical and other losses amounting to about ¥28,000 million.

(Unit: millions of yen)

	2019 Jan.-Dec.	2020 Jan.-Dec.	Increase/decrease
Sales	—	302,742	302,742
Operating income	—	-6,303	-6,303

[Others segment]
In the Others segment, sales decreased 15.0% from the previous year, to ¥107,301 million. SHOKO CO., LTD.'s sales decreased due to a fall in market prices of products and reduced demand. Operating income of the segment decreased 34.1%, to ¥1,199 million.

(Unit: millions of yen)

	2019 Jan.-Dec.	2020 Jan.-Dec.	Increase/decrease
Sales	126,163	107,301	-18,862
Operating income	1,819	1,199	-620

(3) Major steps taken or decided in 2020
[General]
In April 2020, Showa Denko made then Hitachi Chemical Company, Ltd. a subsidiary through tender offer.
In October 2020, former Hitachi Chemical Company, Ltd. changed its firm name into Showa Denko Materials Co., Ltd.
For detail, please refer to our news releases announced on April 21 and June 23, 2020.

- Formulated "Long-term Vision (2021-2030) for Newly Integrated Company"

On December 10, 2020, Showa Denko announced "Long-term Vision (2021-2030) for Newly Integrated Company" under which the Company aims to establish a foundation for future growth through integration with Showa Denko Materials Co., Ltd. In the Long-term Vision, SDK defined its purpose as "Change society through the power of chemistry." To fulfill this purpose, SDK will aim to create functions required of the times as an advanced material partner, and contribute to a sustainable development of the global society. SDK also announced its ideal state as to become “a company that can win the global competition” and “a company that contributes to a sustainable global society,” and will strive to realize this ideal state. For the detail of the Long-term Vision including the newly integrated company’s strategy and numerical targets, please refer to “3. Management Policy, (1) Medium- to long-term business strategy, 1) Long-term Vision (2021-2030) for Newly Integrated Company.” SDK will aim to achieve substantial integration including that of the chain of command and corporate function in July 2021, and integration as a corporate entity in January 2023.

- Joined “The Valuable 500”

In September 2020, SDK signed a document to declare joining “The Valuable 500,” an international initiative to promote inclusion of persons with disabilities, because the Company endorsed the aim and activities of the initiative. The Valuable 500 was launched to promote inclusion of persons with disabilities under an idea that “inclusive business creates inclusive society.” The Valuable 500 aims to encourage business leaders to make their own companies’ businesses inclusive ones in order to let persons with disabilities demonstrate their potential to add value to businesses, society and economy. The Showa Denko Group will promote diversity and inclusion, aiming to let all employees shine in the company as a stage, regardless of whether each employee has been disabled or not. We will act to move people’s heart and society, and provide the world with surprises and excitements.

1. Under the slogan that “We change unique personality into power” which aims to promote inclusion of persons with disabilities, the Showa Denko Group will promote establishment of inclusive workplaces where each employee, whether with or without disabilities or medical conditions, can feel peace of mind and show what everybody can do.

2. We will provide differently abled employees with environment and opportunities that enable them to show what they can do, career vision that fit to their personalities, and support to realize these.

3. We will promote employment of persons with disabilities (inclusion of persons with disabilities) with specific targets.

The Showa Denko Group will continue promoting diversity and inclusion, aiming to become a corporate group that contributes to creation of sustainable society, and let “everybody in this organization have power to yield profit and create new value through cooperative work among diversified persons who make the most of each other’s uniqueness, values and ideas.”

- SDK’s used-plastic chemical recycling business was acclaimed for contribution to environmental protection

Since 2003, SDK’s Kawasaki Plant has been operating “plastic chemical recycling business,” a business to recycle used plastics as raw materials for chemicals under the provisions of Containers and Packaging Recycling Law. We gasify used plastics under high temperature, and decompose them to the level of molecules. Then gasified plastics are converted into hydrogen (low-carbon hydrogen) and carbon dioxide (CO_2). We use low-carbon hydrogen as raw material to produce ammonia, and CO_2 as raw material to produce dry ice and carbonated drinks. SDK is the only company in the world that has track record of long-term commercial operation of plastic chemical recycling through gasification. SDK gasifies about 60,000 tons of used plastics per year, and use the generated gases as materials to produce chemicals mentioned above. In addition, since 2015, SDK has been utilizing the generated gases in a project to provide fuel-cell cars and a hotel equipped with fuel cells with hydrogen gas. This project was accredited by the Ministry of the Environment as an officially entrusted project to demonstrate usability of hydrogen gas as an energy source. Thus, SDK has been contributing to implementation of projects to promote realization of low-carbon society. In February 2020, SDK's used-plastic chemical recycling business received "The Award from Chairman of the Japan Business Federation" as a part of Fujisankei Communications Group's 29th Grand Prize for the Global Environment Award*1 on the basis of the fact that the business promotes resource recycling on land and reduces marine pollution by plastic, while reducing CO_2 emissions by avoiding incineration of used plastic. In addition, in November 2020, the business received "The Grand Prize, Award from the Minister of Economy, Trade and Industry" as a part of Green Purchasing Network's*2 21st Green Purchasing Award*3 on the basis of the fact that the business effectively deals with plastic waste problem, global warming problem and construction of recycling-oriented society. In addition to this chemical recycling of used plastics, the Showa Denko Group is conducting various environment-friendly business, including the global supply of graphite electrodes for recycling of steel and production of aluminum through recycling of used aluminum cans (can-to-can recycling) as the first company in Japan to start an aluminum can recycling project. The Group will continue positively promoting environment friendly business activities.

*1. The Grand Prize for the Global Environment Award was established in 1992 by Fujisankei Communications Group with special cooperation from World Wide Fund for Nature (WWF) Japan. The award aims at encouraging the development of new technologies and products that will prevent global warming and promote a recycling-oriented society. It also aims at promoting environmental protection measures and enhancing global environment awareness. The award is granted to corporations recognized as having accomplished distinguished achievements in these areas.

*2. Out of recognition that green purchasing plays important role in formation of the market for environment-friendly products, promotes development of environment-friendly products and effectively contributes to construction of sustainable society, Green Purchasing Network was established in 1998 as a non-profit organization based on a mild network of companies, governmental bodies and private organizations who positively conduct green purchasing.

*3. Green Purchasing Award was organized by Green Purchasing Network as a program to commend parties that implements activities contributing to expansion of the market for green products and achievement of Sustainable Development Goals (SDGs), taking into consideration that SDGs include "Goal 12: Sustainable consumption and production."

- Introduced AI system to examine capital investment

SDK introduced an artificial-intelligence-based search system to look efficiently for information useful for capital investment evaluation from the company's knowledge databases. This new search engine uses an AI system named "KIBIT*" and searches the company's document database for knowledge useful for its internal examination and screening of investment plans. SDK started operation of the new system at the end of January 2020. KIBIT is an AI which simulates "tacit knowledge" held by experts and skilled workers. In order to search databases for cases appropriate to refer, this AI looks up not only key words but also structure of writing and the line of thought in documents on databases, including those in documents contained in attached files. This system enables us to extract cases of investment similar to newly suggested investment plans under screening not reliant on examiners' experiences. In a trial run of the new system conducted in SDK, we confirmed that the KIBIT-based system searched our document databases for similar cases of investment and judged degree of similarity within almost one tenth of the time needed by conventional search systems. In addition, the KIBIT-based system enables us to pick up many similar cases simultaneously, and make the most of our knowledge and know-how about facility-safety measures. SDK will put this new search system into regular use in its process to judge appropriateness of capital investment plans, and consider to extend the use of the news search system to cover search for similar cases of accidents and abnormalities in production fields.

*KIBIT: An artificial intelligence originally developed by FRONTEO, Inc. This AI is equipped with FRONTEO's original mechanical learning algorithm and powerful natural-language processing technology. It can learn deeply from small amount of teaching data, and conduct high precision analysis of database in a short time.

[Chemicals segment]

- Strengthened the business to supply high-purity gases for electronics in China

The market for semiconductors has been growing due to the spread of the 5th generation mobile communication systems (5G) and other information communication technologies. The Chinese market for semiconductors has been expanding very rapidly due to the Chinese government's policy to nurture the electronics industry. As in below, to cope with the growing demand for semiconductors in China, SDK has been positively taking various measures to expand its business to supply high-purity gases for electronics, which is used in the process to produce semiconductors. In January 2020, SDK decided to establish the second factory of Shanghai Showa Electronics Materials Co., Ltd. (SSE), which is a consolidated subsidiary of SDK, to produce high-purity nitrous oxide (N_2O) and high-purity octafluorocyclobutane (C_4F_8) gases and a dangerous goods warehouse to stock high-pressure gases. In November 2020, SDK established Chengdu Kemeite Showa Electronic Materials Co., Ltd. in Chengdu, China, jointly with Chengdu Kemeite Special Gas Co., Ltd. of China. The new company started its operation in January 2021, and it will mainly be in charge of the implementation of final process in the manufacturing process of high-purity CF_4 (tetrafluoromethane). In December 2020, Shanghai Showa Chemicals Co., Ltd. (SSC), a Chinese subsidiary of SDK, established a branch in Xi'an, Shaanxi Province, and started operation of the branch. The new branch is SSC's third business base in China to sell and distribute high-purity gases for electronics. In addition, SDK's subsidiary "Taiwan Showa Chemicals Manufacturing Co., Ltd." established a new facility to produce high-purity C_4F_8, which started operation in May 2020. We will continue to make "thorough customer orientation" and "local consumption of locally produced products" our basic policies, aiming to maximize customer experience. And we will expand our business to produce and sell high-purity gases for electronics by responding positively to the lasting vigorous demand for high-purity gases.

- Completed expansion of lines to produce vinyl ester resin and synthetic resin emulsion in Shanghai

In June 2020, SDK expanded production lines to produce vinyl ester resin (VE) and synthetic resin emulsion (EM) in the premises of Shanghai Showa Highpolymer Co., Ltd. (SSHP), a Chinese subsidiary of SDK, and has increased production of VE and EM there, aiming to expand the Showa Denko Group's functional resin business in China. The market for electronic parts such as liquid crystal displays (LCDs) and touch panels has been expanding due to the progress in telecommunication technologies including 5th Generation mobile communication system. As a result, the demand for VE, which is used in the process to produce electronic parts including LCDs and touch panels, has been rapidly increasing in China. In addition, since VE has excellent corrosion resistance and chemical resistance, the demand for VE for use as corrosion-resistant inner lining material has also been increasing. This use includes inner lining for desulfurization equipment increasingly introduced to thermal power plants to prevent air pollution, wastewater treatment equipment for electronic parts factories, garbage plants and storage tanks for chemicals. In China, regulation against volatile organic compound (VOC) as an environmental protection policy started in 2015, and, since then, there has been strict regulation for use of paints and adhesives containing organic solvents. As a result, switching over to aqueous paints and aqueous adhesives utilizing EM has been in progress, and therefore the demand for EM has been increasing.

- Started marketing of *PNVA*™ "GE191 Series" for use as binder to form heat-resisting ceramic layer in separators for LIBs

In October 2020, SDK started full-swing marketing of Poly-N-vinylacetamide (*PNVA*™) optimized for use as a binder to form heat-resisting ceramic layer in separators to be used in lithium-ion batteries (LIBs), under the trade name of "GE191 Series." *PNVA*™ is a water-soluble polymer synthesized through polymerization of N-vinylacetamide, and SDK is the only company in the world which produce N-vinylacetamide on a commercial basis. *PNVA*™ is designed to have many hydrogen bonds. It has heat-resisting property, and can make oxidized-metal particles disperse uniformly and stably. "GE191 Series" is a grade of *PNVA*™ that fulfills requirements for use as heat-resisting ceramic layer, and contributes to improvement in heat-resisting property and thinness of the layer. Thus GE191 Series is acclaimed as additive for separators in LIBs that can improve safety and durability of LIBs through improvement in heat-resisting property of coating layers in separators, and adopted for use in onboard LIBs. Global LIB market is expected to continue rapid growth due to the progress in 5G telecommunication technology and CASE (connected, autonomous/automated, shared, electric) related automotive technologies. SDK has many products that improve performance of LIBs including *PNVA*™, aqueous binder resin "*POLYSOL*™," pouch-type LIB packaging material "*SPALF*™," and additive for anode and cathode "*VGCF*™." Making the most of these products, SDK will aim to expand its LIB material business further through provision of optimum solutions that respond to the demands of customers.

[Electronics segment]

- Developed HAMR-technology-based HD media

SDK developed the technology of manufacturing media for next-generation hard disk drives (HDDs) based on the Heat Assisted Magnetic Recording (HAMR*) technology. Due to the rapid expansion of cloud service, video content, and image-sharing website, the world's data generation volume is growing rapidly. Thus, data centers need HDDs with larger storage capacity. While HD media record information through the polarity of magnetic particles, the speed of improving recording density has slowed down under conventional magnetic recording methods. As a result, there is a need for new recording methods, including HAMR. Also, there is a need for next-generation HD media corresponding to such new recording methods. To contribute toward commercialization of HAMR-based HDDs, SDK has successfully manufactured a new type of HD media. The new product has magnetic coercivity several times as high as the existing most-advanced HD media, while achieving low noise due to very small crystal grain size and optimized grain size distribution control. The new product embodies the highest levels in the industry in terms of read-write characteristics and durability. HD media are key parts for HDDs to determine their storage capacities. As the largest independent HD media supplier, SDK aims to quickly launch top-quality media based on innovative technologies. In accordance with its motto of "Best in Class," SDK will continue contributing to the increases in storage capacities of HDDs.

*HAMR represents a recording method in which magnetic film is locally heated at the time of recording. This technology has been developed to solve the "magnetic recording trilemma": difficulty in simultaneously meeting the three requirements of fine-particle structure, resistance to thermal fluctuation, and ease of magnetization. Compared with the recording density of approx. 1.14 Tb/in^2 for HD media based on conventional magnetic recording methods, it is said that HAMR-based HD media will achieve recording density of 5-6 Tb/in^2 in the future. Provided that the same number of disks are used, it is estimated that a 3.5-inch HDD will achieve storage capacity of approx. 70-80 TB per unit.

- DENSO adopted SDK's SiC epitaxial wafers for power devices as parts of next-generation boosting power modules for fuel cell EVs

Silicon carbide epitaxial wafers (SiC epi-wafers), which are main materials for power semiconductors, with a diameter of six inches (150mm) manufactured by SDK was adopted by DENSO Corporation as parts of next-generation boosting power modules for fuel cell electric vehicles. Due to their high quality, SDK's SiC epi-wafers, which were launched into the market in 2009, have been adopted by electronic device manufacturers as parts of various devices including power supply for servers of cloud computing systems, quick charging stands for EVs, and railcars. This time, DENSO adopted SDK's SiC epi-wafers as parts of the new power modules because DENSO recognized high value in SDK's SiC epi-wafers' track record of adoption by device manufacturers, its highest level homogeneity in properties, low density of surface defect, and low frequency of basal plane dislocation. When compared with the currently mainstream silicon-based semiconductors, SiC-based power semiconductors can operate under high-temperature, high-voltage, and high-current conditions, while substantially reducing energy loss. These features enable device manufacturers to produce smaller, lighter, and more energy-efficient power control modules. SiC power semiconductors are already used in on-board battery chargers and quick charging stands for EVs, and railcars. In addition, SiC power semiconductors are expected to be used in full scale as parts of power control units (PCUs) for EVs in and after 2025. Thus the demand for SiC-based power semiconductors is expected to grow further. As the largest independent manufacturer of SiC epitaxial wafers, and under a motto of "Best in Class," SDK will continue coping with rapid expansion of the market for SiC epitaxial wafers and providing the market with high-performance and highly-reliable products, thereby contributing to the spread of SiC-based devices.

- Decided to install equipment to mass-produce *SPALF*™ packaging material for large onboard LIBs

Showa Denko Packaging Co., Ltd. (SPA), a consolidated subsidiary of SDK, has developed a new product to be added to the lineup of *SPALF*™ aluminum laminate film which is used as packaging material for pouch-type lithium-ion batteries (LIBs), and decided to install equipment to mass-produce the new product. This new product is specialized for large-sized LIBs, which are mainly used for cars. Operation of the new production equipment is scheduled to be started in March, 2021. *SPALF*™ is laminated composite film consisting of resin films and aluminum foil, and is mainly used as packaging material for pouch-type LIBs. Pouch-type LIBs have outstanding flexibility in shaping. In recent years, pouch-type LIBs have begun to be widely used in large-sized equipment including EVs because pouch-type LIBs' high quality has been widely recognized and there has been considerable progress in verification of pouch-type LIBs' safety. Since development of EVs is in progress not only in China but also in Europe, the demand for pouch-type LIBs has been increasing. The global demand for LIBs (in electrical capacitance) is expected to increase 30% a year until 2025*. The Showa Denko Group produces and sells various LIB materials with distinguishing advantages, such as *SPALF*™, *VGCF*™ additives for anode/cathode materials, and *POLYSOL*™ aqueous binding resin. By increasing sales of these LIB materials, the Group will aim to contribute to the growth of LIB market and improvement in functions of LIBs, and make the Group's LIB materials business grow to be established as a KOSEIHA Business in the field of advanced battery materials.

*SDK's estimate

[Inorganics segment]

- About closing of a graphite electrode production site in Germany

In June 2020, the Showa Denko Group completed labor-management consultations concerning planned closure of a production site in Meitingen, Germany, under the jurisdiction of consolidated subsidiaries SHOWA DENKO CARBON Products Germany GmbH & Co. KG and SHOWA DENKO CARBON Germany GmbH. The Meitingen site is currently producing connecting pins* for graphite electrodes. When the site is closed, the Showa Denko Group's connecting pin production will be concentrated at Omachi Plant in Japan. When production at Meitingen is stopped, the Showa Denko Group's global graphite electrode production capacity will decrease by 40,000 t/y, to 210,000 t/y. The Group has the leading share in the global ultrahigh power (UHP) graphite electrode market. However, electric steelmakers are continuing to adjust their inventory of graphite electrodes since the second half of 2019. Thus, our operating rates have fallen in the European market, where economic slowdown is noticeable. In addition, we have started temporary idling for a limited period at SHOWA DENKO CARBON Austria GmbH's Steeg site. These two actions will result in a rebalancing of capacity in Europe in line with projected graphite electrode demand. SDK will continue taking various measures to achieve "Value in Use No. 1" for customers and to further increase competitiveness and profitability.

*A connecting pin is used for connecting rods of graphite electrodes.

[Aluminum segment]

- Announced execution of master agreement regarding series of transactions to effect, among other matters, the succession of the aluminum can and aluminum rolling businesses through company splits (simplified absorption-type company splits), and result in certain consolidated subsidiary ceasing to be a consolidated subsidiary of SDK

SDK decided to execute a master agreement with a special-purpose company formed by funds managed by affiliates of Apollo Global Management, Inc. (collectively, hereinafter referred to as "Apollo"), regarding a series of transactions, including the succession of the aluminum can business of the Company to Showa Aluminum Can Corp., which is a wholly owned consolidated subsidiary of the Company, and the succession of the aluminum rolling business to Showa Denko Sakai Aluminum Corp., which is a wholly owned non-consolidated subsidiary of the Company, by company splits (absorption-type company split), with tentative effective dates of June 1 2021 and August 2 2021, respectively.

In light of the rapidly changing business environment, the Company has been examining the optimal allocation of management resources and portfolio management to realize sustainable growth. After careful consideration of all available options, the Company reached the conclusion that the expansion of the aluminum can business and the aluminum rolling business would be best achieved through business partners that have specialized knowledge and management resources to enable future growth of these businesses together with the employees engaged in the respective business. Taking these factors into consideration, the Company decided to execute the transactions set forth in the Master Agreement with Apollo, which is one of the world's leading alternative investment managers and has a wealth of experience supporting aluminum-related industries for more than 20 years.

[Showa Denko Materials segment]

- Showa Denko Materials launched mass production of 5G-compatible printed wiring board material "MCL-HS200" with low transmission loss and low warpage properties

In March 2020, Showa Denko Materials Co., Ltd. (SDMC), a consolidated subsidiary of SDK, launched mass production of "MCL-HS200," an advanced functional laminate material for printed wiring boards, with low transmission loss and low warpage properties required for semiconductor packaging substrates used in such fields as fifth-generation mobile communications systems (5G), advanced driver-assistance systems (ADAS)*[1], and artificial intelligence (AI).

With technological innovations like the Internet of Things (IoT) for electronics-related products, ADAS, and AI making strides in recent years, 5G networks providing high speed, high capacity, low latency, and multiple connections have become indispensable for the widespread use of these technologies. Demand for 5G is also rising as people around the world spend more time working remotely amid the coronavirus pandemic. Applications such as 5G and ADAS require higher frequency bands than electric signals used by fourth-generation mobile communications systems (4G), but with electric signals suffering significant attenuation (transmission loss) at higher frequencies, lower transmission loss is required for high frequency circuit boards. Reducing signal delay is also an important requirement. Furthermore, as devices mounted on smartphones, etc. become smaller and more functionally sophisticated, demand is growing for thinner circuit boards that also minimize warpage caused by semiconductor packaging. However, creating a material capable of not only reducing transmission loss and signal delay but also minimizing warpage presented a difficult challenge.

By applying low polarity resin materials and low dielectric glass cloth, SDMC achieved lower transmission loss properties (low dielectric loss tangent) and lower dielectric constant*[2], reducing signal delay. In addition, SDMC attained superior low warpage properties required for thinner modules by using low coefficient of thermal expansion (CTE) resins and increasing the filler content. SDMC combined its low CTE technology for semiconductor packaging substrates and low dielectric constant technology for multilayer substrate materials designed for high-speed communications, which successfully developed a material with high-dimensional properties of low CTE 10ppm/℃ and low dielectric constant (Dk) 3.4 (10 GHz).

SDMC is currently pursuing the development of even thinner and lower dielectric constant materials. SDMC will continue to contribute to more advanced functional printed wiring boards through our superior technologies and new product development.

*1. Advanced driver-assistance systems (ADAS) are systems to prevent accidents by detecting the vehicle's surroundings through sensors mounted on its front, sides and rear.

*2. Dielectric constant is the value representing the degree of electronic polarization of a substance in an electric field that exerts force on a charged object, expressed as the ratio of the dielectric constants of two substances.

- SDMC to boost its production capacity for CMP slurries, laminate materials for printed wiring boards, and photosensitive solder resists in Taiwan, and a new CMP slurry factory will also be built in South Korea to meet growing demand

In December 2020, Showa Denko Materials Co., Ltd. (SDMC), a consolidated subsidiary of SDK, announced the decision to boost its production capacity for polishing materials for flattening semiconductor circuits (CMP slurry), laminate materials for printed wiring boards (prepreg), and photosensitive solder resists in its consolidated subsidiary Showa Denko Semiconductor Materials (Taiwan) Co., Ltd. (SDSMT) in Taiwan, and to build a new factory for CMP slurries in its consolidated subsidiary Showa Denko Electronic Materials (Korea) Co., Ltd. (SDMKR) in South Korea. SDMC will invest a total of approximately 20 billion yen in these projects. SDMKR's new factory is scheduled to start operation in October 2021, while SDSMT will begin expanding its production capacity for CMP slurries in January 2022 and mass-producing prepregs and photosensitive solder resists in January 2023, thereby responding to the ever-increasing demand for these materials in the future.

(4) Projections for 2021

a) Overall performance forecast

In 2021, Japanese economy is expected to continue gradual recovery. Consumer spending is expected to show recovery due to the effect of policies to prevent recurrence of the spread of COVID-19 including vaccination and stimulative economic measures, and the effect of recovery in overseas economies including Chinese economy which showed early recovery. Though corporate earnings are showing sign of improvement, business environment is expected to remain harsh due to the effect of COVID-19 on socioeconomic activities and fluctuation in the financial market. Overseas economies are expected to show gradual recovery, though European and U.S. economies are still stagnant due to the global pandemic of COVID-19. The US economy will continue showing gradual recovery. However, the European economy will continue showing bearish tendency due partly to possible negative impact of the Brexit. The Chinese economy is expected to show recovery stronger than that in 2020, though US-China trade friction may continue to negatively affect the Chinese economy. In ASEAN countries, though there is partial bottoming out, harsh economic condition is expected to continue. The semiconductor industry has been showing strong recovery since the second half of 2019, and is expected to continue prosperous. The demand for petrochemical products will remain strong, and we expect the demand for graphite electrodes will recover due to an increase in steel production resulting from an economic recovery in the world. There will be downward risk factors for the Japanese and global economies including the effect of possible further spread of COVID-19 on the global economy, the effect of US administration's policies on international trade including that of trade friction between China and the U.S., and the possible wide fluctuations in exchange rates and market prices of natural resources. SDK will continue watching these risk factors carefully.

Under these circumstances, the Showa Denko Group will promote management to maximize shareholders', customers' and social value on the basis of its business philosophy. The Group will strengthen its earning power and reduce the range of fluctuation in income through steady promotion of "The TOP 2021," enhance the value of the Group, realize substantial integration of SDK and Showa Denko Materials as early as possible, and establish a stable foundation which will continuously support the Group's growth far into the future.

The Group's performance forecast for 2021 is as follows.

(Unit: millions of yen)

	Results for the term ended Dec. 31, 2020	Forecast for the term ending Dec.31, 2021	Increase/ decrease	Rate of change (%)
Net sales	973,700	1,280,000	306,300	31.5%
Operating income	-19,449	45,000	64,449	—
Ordinary income	-43,971	35,000	78,971	—
Net income attributable to owners of the parent	-76,304	-14,000	62,304	—

The above numbers have been incorporating sales and incomes of SDMC since the third quarter of 2020.

The above forecast is based on the assumption that the exchange rates and the naphtha price will be ¥105.0/$, ¥125.0/€ and ¥33,200/KL for 2021, respectively.

b) Net sales and operating income by business segment

[Net sales]

(Unit: millions of yen)

	Results for the term ended Dec. 31, 2020	Forecast for the term ending Dec. 31, 2021	Increase/ decrease
Petrochemicals	193,385	196,000	2,615
Chemicals	155,769	166,000	10,231
Electronics	97,415	110,000	12,585
Inorganics	82,899	77,000	-5,899
Aluminum	80,185	58,000	-22,185
Showa Denko Materials	302,742	610,000	307,258
Others	107,301	111,000	3,699
Adjustments	-45,996	-48,000	-2,004
Total	973,700	1,280,000	306,300

[Operating income]

(Unit: millions of yen)

	Results for the term ended Dec. 31, 2020	Forecast for the term ending Dec. 31, 2021	Increase/ decrease
Petrochemicals	4,927	11,500	6,573
Chemicals	13,481	15,500	2,019
Electronics	9,133	12,500	3,367
Inorganics	-32,300	3,000	35,300
Aluminum	421	3,500	3,079
Showa Denko Materials	-6,303	10,000	16,303
Others	1,199	1,000	-199
Adjustments	-10,006	-12,000	-1,994
Total	-19,449	45,000	64,449

The above forecast is based on the information available as of February 17, 2021 and our assumptions as of the same date about risk factors that could affect our future performance. Actual results may differ materially due to a variety of reasons. We have been incorporating sales and incomes of SDMC since the third quarter of 2020.

2. Financial conditions for the January 1 – December 31, 2020 period

(1) Assets, liabilities and net assets

Consolidation of former Hitachi Chemical Company, Ltd. (currently Showa Denko Materials Co., Ltd.) and its subsidiaries had significant impact on total assets and liabilities. Total assets at the end of the year amounted to ¥2,203,606 million, an increase of ¥1,127,224 million from the level at December 31, 2019. Total assets increased due mainly to the increase in cash, deposits, accounts receivable-trade, inventories, tangible fixed assets, and intangible fixed assets. Total liabilities increased ¥928, 577 million, to 1,485,526 million, due mainly to the increase in accounts payable-trade, and the increase in interest-bearing debt resulting from acquisition of shares in former Hitachi Chemical Company, Ltd. Interest-bearing debt increased ¥756,954 million, to ¥1,060,146 million. Net assets at the end of the year amounted to ¥718,080 million, up ¥198,647 million, due mainly to an increase in non-controlling interests resulting from issuance of preferred stocks accompanying acquisition of shares in former Hitachi Chemical Company, Ltd., despite a decrease in retained earnings resulting from posting of net loss attributable to owners of the parent and the payment of dividends for 2019.

Note: We started to include lease liabilities in interest-bearing debts in this third quarter, and retrospectively adjusted the balance of interest bearing debts as of the end of 2019 in the same way. SDK made former Hitachi Chemical Company, Ltd. a consolidated subsidiary through tender offer, considered June 30, 2020 as acquisition date, and consolidated former Hitachi Chemical's financial results into SDK's consolidated financial statements. For the impact of this consolidation on SDK's consolidated balance sheet, please refer to SDK's consolidated financial statements for the first half of 2020.

(2) Cash flows in 2020

Net cash provided by operating activities increased ¥30,733 million from the previous year, to ¥109,286 million, due partly to a decrease in inventories. Net cash used in investing activities increased ¥881,891 million, to an expenditure of ¥930,047 million, due partly to the expenditure resulting from acquisition of shares in a subsidiary accompanying an expansion of the bounds of consolidation. As a result, free cash flow ended in an expenditure of ¥820,761 million, a decrease in proceeds of ¥851,159 million. Net cash provided by financial activities increased ¥915,067 million from the previous year, to the proceeds of ¥896,521 million due partly to an increase in proceeds resulting from an increase in long-term debt. As a result, cash and cash equivalents at December 31, 2020 increased ¥76,194 million from the end of the previous year, to ¥197,928 million, including the effect of exchange rate fluctuations.

(3) Cash flow projections for 2021

Cash flows from operating activities will increase. As for net cash used in investing activities, payment will decrease from that in 2020 due to the non-existence of an expenditure accompanying acquisition of shares in a subsidiary which was incurred in 2020. Thus, free cash flow in 2021 is expected to increase in the proceeds by around ¥880,800 million from an expenditure of ¥820,761 million in 2020, to the net proceeds of ¥60,000 million due to the above mentioned non-existence of an expenditure accompanying acquisition of shares in a subsidiary. Interest bearing debt at the end of 2021 will be ¥1,030,000 million, down around ¥30,000 million from that at the end of 2020.

(4) Trends in cash flow indexes

	2017	2018	2019	2020
Equity ratio	34.3%	41.5%	46.4%	18.4%
Equity ratio on a market value basis	66.8%	44.3%	39.3%	14.5%
Debt maturity (years)	5.2	1.9	3.8	9.2
Interest coverage ratio	23.8	35.1	33.8	20.3

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

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

3. Management Policy

Medium- to long-term business strategy

Medium-term business plan “The TOP 2021” (announced in December 2018)

Since 2019, the Showa Denko Group has been promoting medium-term consolidated business plan “The TOP 2021.” In order to make the Showa Denko Group continuously grow, trusted and acclaimed by society, it is very important for the Group to enhance the value of the Group and satisfy all stakeholders including shareholders, customers, suppliers, local communities, and employees. The Showa Denko Group defines this idea as the Group’s business philosophy, thereby promoting management to maximize shareholders’, customers’ and social value.

The Group will strengthen its earning power and reduce the range of fluctuation in income and enhance the value of the Group through successful execution of “The TOP 2021,” and aim to realize substantial business integration with Hitachi Chemical Company, Ltd. (changed its name into Showa Denko Materials Co., Ltd. on October 1, 2020) in July 2021 and integration of legal personalities in January 2023. On December 10, 2020, SDK announced “Long-term Vision (2021-2030) for Newly Integrated Company,” which aims to establish the basis of business growth far into the future through integration of SDK and Showa Denko Materials Co., Ltd. (SDMC).

Thorough integration with SDMC, SDK will realize short- to medium-term synergy, expand businesses that promise growth through fusion of technologies of the two companies and innovation, and improve the Group’s profitability further.

The two companies are committed to providing new functions and value as an integrated company (the Company) in the chemicals industry where intensification of global competition and changes in market structure are expected to go forward, thereby contributing to the realization of a sustainable society.

(1) Long-term Vision for Newly Integrated Company

1) Purpose and ideal state

In terms of purpose, the Newly Integrated Company will seek to “change society through the power of chemistry.” This includes contributing to the sustainable development of global society by creating functions required of the times as an advanced material partner. In addition, the Company will strive to become “a company that can win the global competition” and “a company that contributes to a sustainable global society,” which are the two things the Company aims to achieve in terms of its ideal state in order to fulfill its purpose.

The Showa Denko Group (the Group) will provide one-stop solutions and new functions to its customers and contribute to a sustainable society as a whole as a “global top-level functional chemical manufacturer” that will realize a breakthrough by fusing SDK’s midstream materials technologies, SDMC’s downstream application technologies and both companies’ evaluation and analysis technologies.

2) Portfolio management

To realize its ideal state, the Showa Denko Group will leverage its highly complementary business portfolio built through the integration of the two entities. The Group will continue to provide new functions to the market and realize continuous growth by having its four business categories – “Core Growth” business, “Next-Generation” business, “Stable Earnings” business and “Fundamental Technologies/Materials” business – each plays a different role with a competitive advantage commensurate with their respective roles.

“Core Growth” business	Electronics, Mobility Business that possesses overwhelming scale/top-share products in growing markets and which will sustain the Group’s future growth
“Next Generation” business	Life Science Business in an advantageous position that can lead to future growth in promising markets, and that will be developed into a next-generation pillar
“Stable Earnings” business	Carbon, Petrochemicals Device Solutions, Industrial Gases, Basic Chemicals, Aluminum Rolled Products, Aluminum Cans, Coating Materials, Electronics Materials, Energy Business which earns a stable profit and generates investment capital with competitiveness/high share in markets where competitive landscape is stabilizing
“Fundamental Technologies/Materials” business	Ceramics, Functional Chemicals, Aluminum Specialty Components Technology platform business to support innovation of other businesses with a wide range of inorganics, organics and aluminum technologies that support the competitiveness of the other three business categories

In particular, by continuing to refine the wide range of technologies and materials offered by the “Fundamental Technologies/Materials” business and materials across a variety of businesses, the Group will expand its presence in new and promising future markets.

3) “Core Growth”/”Next-Generation” businesses

The “Core Growth” and “Next-Generation” businesses will drive the Showa Denko Group’s future growth. Among “Core Growth” and “Next-Generation” businesses, the Showa Denko Group has positioned the following five businesses as “growth businesses” that will drive the Group’s growth over the medium- to long-term.

Electronics	Semiconductor wafer process business, semiconductor packaging process business
Mobility	Multi materials/resin molded automotive module business, heat management (power module) business
Life Science	Regenerative medicine business

Cumulative sales for the above five growth businesses totaled approximately ¥230 billion in 2020, and the Group will seek to expand business scale to ¥600 billion by 2030 while achieving CAGR of 10% through innovations including technological synergies. In addition, it will generate ¥18 billion and ¥48 billion in operating income in 2025 and 2030, respectively, through innovations that includes synergies across these five businesses.

4) Technology fusion through integration

As a hybrid advanced material company combining midstream materials technology and downstream application technology, the Showa Denko Group will realize innovations centered on its growth businesses by integrating the technologies of both companies after integration. In addition to strengthening and creating businesses through the ongoing provision of a wide range of functions to the market through the fusion of three chemical technologies, namely “chemistry to synthesize,” which encompasses SDK’s midstream materials, “chemistry to formulate,” which constitutes SDMC’s downstream applications, and “chemistry to think,” which includes both companies’ evaluation/simulation technologies, structure analysis and computational science, the

Group will continue to enhance its technology through its businesses, and with this virtuous cycle achieve self-directed portfolio reform and sustained high growth.

5) Contribution to SDGs

The Showa Denko Group has established and follows Our Code of Conduct, which defines what each and every employee should do for the sustainable development of the international community and the Group itself. In addition, the Group will pursue business activities in accordance with the 17 Sustainable Development Goals (SDGs), will contribute to SDGs through various technologies and businesses, and further strengthen ESG efforts.

(2) Long-term numerical targets

1) Thinking behind long-term numerical targets

Showa Denko's business philosophy aims to enhance value provided by the Group with the aim of satisfying all stakeholders, such as employees who drive value creation, shareholders, customers, and business partners.

＜Showa Denko Group 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.

In "The Long-term Vision (2021-2030) for Newly Integrated Company" announced on December 10, 2020, Showa Denko has set EBITDA margin, net D/E ratio, and other indicators as long-term numerical targets for the newly integrated company, and is committed to their achievement.

2) Long-term numerical targets

	2020 results (Annualized basis)*	2021 forecast	2025	2030
TSR (%)**	Aim to be among Top 25% in chemicals industry over the Medium- to long-term			
Sales (Trillion yen)	1.25	1.28	1.6	1.8~1.9
EBITDA (Billion yen)	89.7	165.1	320.0	—
EBITDA margin (%)	7.2%	12.9%	20%	—
ROE (%)	-20.3%	-3.7%	15%	—
Net D/E ratio (Times)	1.84	1.96	Close to 1.0	—

*Annualized figures are the combined figures of actual results and Showa Denko Materials' institutional accounting figures for Jan. 2020-Jun. 2020, including amortization of goodwill and other assets equivalent to that in the second half of 2020.

**TSR: Total Shareholders Return

3) Profit improvement drivers through 2025

Although SDK's 2020 EBITDA margin was 7.2% (annualized basis), from 2021 onwards, the Company will raise EBITDA margin to 15% by 2025 through business growth centered on Electronics and Mobility, aforementioned innovation initiatives, and structural reforms. In addition to these efforts, it aims to achieve EBITDA margin of 20% that factors in recovery from the impact of COVID-19 and market fluctuations. Even if market conditions deviate from expectations, the company will recover through business restructuring and additional structural reforms to achieve EBITDA margin of 20%.

4) Shareholder return policy

In regards to distribution of cash generated through future business growth, the Showa

Denko Group will factor in the situation after integration, and for the time being, strive to pay out dividend as stably as possible, while prioritizing growth investment for profit growth and bringing net D/E ratio close to 1.0 times. In addition, the company will aim for total return ratio of 30% over the medium- to long-term.

5) Thinking behind compensation system

To ensure that the Showa Denko Group's management team is committed to collectively achieving Group objectives and enhancing corporate value, Showa Denko intends to link a portion of executive compensation to management indicators. Although specific indicators and weighting for each item are under consideration, the company anticipates linking compensation to KPIs such as TSR, EBITDA margin, ROE and net D/E ratio.

(3) Short- to medium-term synergy

In order to realize continuous growth of the Showa Denko Group, it is important for the Group to carefully select its business portfolio and maximize organizational productivity. As part of these efforts, the company will steadily restructure its business portfolio, improve profit structure, streamline assets, and fully integrate organizations over the short- to medium-term between now and 2023. For the detail of the synergy, please refer to the news release announced on December 10, 2020.

The Showa Denko Group is making steady progress on PMI toward integration, with the milestone of integration as a corporate entity in January 2023, following substantive integration in July 2021 (unification of chain of command/integration of corporate functions) and integration of head offices in October of the same year.

4. Our view on selection of accounting standard

The Showa Denko Group intends to execute its consolidated financial statements in accordance with Japanese standards for the moment, after careful consideration to comparability among consolidated financial statements of different terms or different companies. As for application of International Financial Reporting Standards (IFRS), we will continue carefully observing circumstances in and outside Japan and deal with the standards appropriately.

Consolidated Balance Sheets

(¥ in millions, US$ in thousands)

	Dec. 31, 2019	Dec. 31, 2020	Dec. 31, 2020
Assets	¥	¥	$
Current assets			
Cash and deposits	122,086	198,982	1,922,535
Notes and accounts receivable-trade	170,293	271,628	2,624,429
Merchandise and finished goods	70,140	93,947	907,702
Work in process	30,979	28,383	274,236
Raw materials and supplies	72,548	67,877	655,820
Other	31,765	62,917	607,893
Allowance for doubtful accounts	(754)	(1,092)	(10,546)
Total current assets	497,057	722,644	6,982,068
Noncurrent assets			
Property, plant and equipment			
Buildings and structures, net	77,123	142,300	1,374,880
Machinery, equipment and vehicles, net	140,349	222,036	2,145,272
Tools, furniture and fixtures, net	7,498	29,601	285,998
Land	223,997	264,589	2,556,419
Leased assets	5,408	29,613	286,116
Construction in progress	18,794	38,980	376,619
Total property, plant and equipment	473,168	727,119	7,025,305
Intangible assets			
Goodwill	3,346	359,200	3,470,529
Customer related assets	1,631	152,564	1,474,053
Other	17,673	86,679	837,481
Total intangible assets	22,650	598,443	5,782,063
Investments and other assets			
Investment securities	71,786	106,408	1,028,101
Net defined benefit asset	244	21,184	204,676
Deferred tax assets	3,381	15,883	153,458
Other	16,221	19,671	190,058
Allowance for doubtful accounts	(8,125)	(7,747)	(74,851)
Total investments and other assets	83,506	155,399	1,501,442
Total noncurrent assets	579,325	1,480,962	14,308,809
Total assets	1,076,381	2,203,606	21,290,877
Liabilities			
Current liabilities			
Notes and accounts payable-trade	117,510	164,356	1,587,982
Short-term loans payable	52,720	62,645	605,267
Current portion of long-term loans payable	31,943	31,387	303,257
Commercial papers	—	10,000	96,618
Current portion of bonds	—	25,000	241,546
Provision for repairs	644	28	271
Provision for bonuses	3,050	8,815	85,171
Provision for stock payment	—	13	129
Provision for business structure improvement	1,686	1,748	16,887
Other	55,323	108,078	1,044,234
Total current liabilities	262,875	412,071	3,981,361
Noncurrent liabilities			
Bonds payable	62,000	66,929	646,657
Long-term loans payable	151,861	839,436	8,110,493
Deferred tax liabilities	7,950	63,372	612,287
Deferred tax liabilities for land revaluation	32,150	30,241	292,185
Provision for repairs	2,021	3,168	30,612
Provision for stock payment	200	204	1,967
Provision for business structure improvement	824	654	6,318
Net defined benefit liability	9,969	24,750	239,129
Other	27,099	44,701	431,895
Total noncurrent liabilities	294,074	1,073,455	10,371,543
Total liabilities	556,949	1,485,526	14,352,904
Net assets			
Shareholders' equity			
Capital stock	140,564	140,564	1,358,102
Capital surplus	78,912	78,190	755,455
Retained earnings	249,246	165,572	1,599,733
Treasury stock	(11,664)	(11,657)	(112,626)
Total shareholders' equity	457,057	372,669	3,600,664
Accumulated other comprehensive income			
Valuation difference on available-for-sale securities	9,789	3,728	36,024
Deferred gains or losses on hedges	433	908	8,773
Revaluation reserve for land	33,060	29,034	280,524
Foreign currency translation adjustment	4,140	(506)	(4,892)
Remeasurements of defined benefit plans	(5,114)	128	1,236
Total accumulated other comprehensive income	42,309	33,292	321,665
Non-controlling interests	20,067	312,119	3,015,644
Total net assets	519,433	718,080	6,937,973
Total liabilities and net assets	1,076,381	2,203,606	21,290,877

Consolidated Statements of Income

(¥ in millions, US$ in thousands)

	Results for the year ended Dec.31 2019 and 2020		
	2019	2020	2020
	¥	¥	$
Net sales	906,454	973,700	9,407,728
Cost of sales	671,157	814,378	7,868,386
Gross profit	235,297	159,322	1,539,342
Selling, general and administrative expenses	114,499	178,771	1,727,256
Operating income (loss)	120,798	(19,449)	(187,914)
Non-operating income			
Interest income	1,112	882	8,519
Dividends income	1,456	1,523	14,718
Equity in earnings of affiliates	748	1,245	12,029
Rent income on noncurrent assets	1,351	1,522	14,702
Subsidy income	65	1,388	13,413
Miscellaneous income	1,465	2,082	20,113
Total non-operating income	6,196	8,642	83,495
Non-operating expenses			
Interest expenses	2,255	6,986	67,493
Financing expenses	—	16,075	155,314
Miscellaneous expenses	5,445	10,103	97,614
Total non-operating expenses	7,701	33,164	320,421
Ordinary income (loss)	119,293	(43,971)	(424,840)
Extraordinary income			
Gain on sales of noncurrent assets	701	2,974	28,738
Gain on sales of investment securities	1,743	4,959	47,917
Other	486	497	4,798
Total extraordinary income	2,930	8,430	81,453
Extraordinary loss			
Loss on sales and retirement of noncurrent assets	5,156	2,956	28,564
Business structuring expenses	1,686	5,908	57,081
Impairment loss	15,662	16,602	160,410
Other	1,836	7,253	70,078
Total extraordinary losses	24,340	32,720	316,134
Profit (loss) before income taxes	97,883	(68,260)	(659,521)
Income taxes	22,582	(3,160)	(30,527)
Net income (loss)	75,300	(65,101)	(628,994)
Net income attributable to non-controlling interests	2,212	11,203	108,243
Net income (loss) attributable to owners of the parent	73,088	(76,304)	(737,237)

Consolidated Statements of Comprehensive Income

(¥ in millions, US$ in thousands)

	Results for the year ended Dec.31 2019 and 2020		
	2019	2020	2020
	¥	¥	$
Net income (loss)	75,300	(65,101)	(628,994)
Other comprehensive income:			
Valuation difference on available-for-sale securities	2,333	(6,101)	(58,950)
Deferred gains or losses on hedges	(406)	474	4,581
Foreign currency translation adjustments	(2,992)	(4,770)	(46,090)
Remeasurements of defined benefit plans, net of tax	3,131	5,257	50,792
Share of other comprehensive income of entities accounted for using equity method	(59)	54	518
Total other comprehensive income	2,007	(5,087)	(49,150)
Comprehensive income	77,308	(70,188)	(678,143)
(Comprehensive income attributable to)			
Comprehensive income attributable to owners of the parent	75,187	(81,294)	(785,454)
Comprehensive income attributable to non-controlling interests	2,121	11,107	107,311

Consolidated Statements of Changes in Net Assets

For the year ended December 31, 2019 (¥ in millions)

	Shareholders' equity					Valuation and translation adjustments							
	Capital stock	Capital surplus	Retained earnings	Treasury stock	Total shareholders' equity	Valuation difference on available-for-sale securities	Deferred gains or losses on hedges	Revaluation reserve for land	Foreign currency translation adjustment	Remeasurements of defined benefit plans	Total valuation and translation adjustments	Non-controlling interests	Total net assets
Balance at December 31, 2018	140,564	78,911	197,717	(11,659)	405,532	7,489	836	33,281	7,069	(8,244)	40,431	19,377	465,340
Changes of items during the period													
Dividends from surplus			(21,924)		(21,924)								(21,924)
Net income			73,088		73,088								73,088
Purchase of treasury stock				(8)	(8)								(8)
Disposal of treasury stock		0		3	3								3
Increase by increase of consolidated subsidiaries			448		448								448
Decrease by increase of consolidated subsidiaries			(367)		(367)								(367)
Change in treasury shares of parent arising from transactions with non-controlling shareholders		1			1								1
Changes in liabilities for written put options over non-controlling interests													-
Change due to merger													-
Reversal of revaluation reserve for land			285		285								285
Net changes of items other than shareholders' equity						2,301	(404)	(221)	(2,929)	3,130	1,878	690	2,568
Total changes of items during the period	-	1	51,529	(5)	51,525	2,301	(404)	(221)	(2,929)	3,130	1,878	690	54,093
Balance at December 31, 2019	140,564	78,912	249,246	(11,664)	457,057	9,789	433	33,060	4,140	(5,114)	42,309	20,067	519,433

For the year ended December 31, 2020 (¥ in millions)

	Shareholders' equity					Total accumulated other comprehensive income							
	Capital stock	Capital surplus	Retained earnings	Treasury stock	Total shareholders' equity	Valuation difference on available-for-sale securities	Deferred gains or losses on hedges	Revaluation reserve for land	Foreign currency translation adjustment	Remeasurements of defined benefit plans	Total valuation and translation adjustments	Non-controlling interests	Total net assets
Balance at December 31, 2019	140,564	78,912	249,246	(11,664)	457,057	9,789	433	33,060	4,140	(5,114)	42,309	20,067	519,433
Changes of items during the period													
Dividends from surplus			(11,693)		(11,693)								(11,693)
Net income			(76,304)		(76,304)								(76,304)
Purchase of treasury stock				(3)	(3)								(3)
Disposal of treasury stock		(0)		11	11								11
Increase by increase of consolidated subsidiaries													-
Decrease by increase of consolidated subsidiaries													-
Change in treasury shares of parent arising from transactions with non-controlling shareholders		(1,392)			(1,392)								(1,392)
Changes in liabilities for written put options over non-controlling interests		660			660								660
Change due to merger		10			10								10
Reversal of revaluation reserve for land			4,323		4,323								4,323
Others													-
Net changes of items other than shareholders' equity						(6,061)	475	(4,026)	(4,646)	5,241	(9,017)	292,052	283,036
Total changes of items during the period	-	(722)	(83,674)	8	(84,389)	(6,061)	475	(4,026)	(4,646)	5,241	(9,017)	292,052	198,647
Balance at December 31, 2020	140,564	78,190	165,572	(11,657)	372,669	3,728	908	29,034	(506)	128	33,292	312,119	718,080

For the year ended December 31, 2020 (US$ in thousands)

	Shareholders' equity					Total accumulated other comprehensive income							
	Capital stock	Capital surplus	Retained earnings	Treasury stock	Total shareholders' equity	Valuation difference on available-for-sale securities	Deferred gains or losses on hedges	Revaluation reserve for land	Foreign currency translation adjustment	Remeasurements of defined benefit plans	Total valuation and translation adjustments	Non-controlling interests	Total net assets
Balance at December 31, 2019	1,358,102	762,435	2,408,175	(112,699)	4,416,012	94,584	4,182	319,424	39,998	(49,406)	408,783	193,881	5,018,675
Changes of items during the period													
Dividends from surplus			(112,975)		(112,975)								(112,975)
Net income			(737,237)		(737,237)								(737,237)
Purchase of treasury stock				(32)	(32)								(32)
Disposal of treasury stock		(4)		106	102								102
Increase by increase of consolidated subsidiaries													-
Decrease by increase of consolidated subsidiaries													-
Change in treasury shares of parent arising from transactions with non-controlling shareholders		(13,449)			(13,449)								(13,449)
Changes in liabilities for written put options over non-controlling interests		6,377			6,377								6,377
Change due to merger		97			97								97
Reversal of revaluation reserve for land			41,770		41,770								41,770
Net changes of items other than shareholders' equity						(58,560)	4,592	(38,901)	(44,890)	50,642	(87,118)	2,821,763	2,734,646
Total changes of items during the period	-	(6,980)	(808,441)	73	(815,348)	(58,560)	4,592	(38,901)	(44,890)	50,642	(87,118)	2,821,763	1,919,298
Balance at December 31, 2020	1,358,102	755,455	1,599,733	(112,626)	3,600,664	36,024	8,773	280,524	(4,892)	1,236	321,665	3,015,644	6,937,973

Consolidated Statements of Cash Flows

(¥ in millions, US$ in thousands)

	Results for the year (Jan. 1-Dec. 31)		
	2019	2020	2020
	¥	¥	$
Net cash provided by (used in) operating activities			
Income before income taxes and minority interests	97,883	(68,260)	(659,521)
Depreciation and amortization	37,704	68,643	663,218
Impairment loss	15,662	16,602	160,410
Amortization of goodwill	98	9,322	90,064
Increase (decrease) in allowance for doubtful accounts	(700)	(791)	(7,646)
Increase (decrease) in provision for business structure improvement	(494)	(179)	(1,730)
Increase (decrease) in net defined benefit liability	(11,757)	2,431	23,488
Interest and dividends income	(2,568)	(2,405)	(23,237)
Interest expenses	2,255	6,986	67,493
Financing expenses	-	16,075	155,314
Equity in (earnings) losses of affiliates	(748)	(1,245)	(12,029)
Loss (gain) on sales and valuation of investment securities	(1,735)	(2,619)	(25,305)
Loss on retirement of noncurrent assets	5,070	2,627	25,380
Loss (gain) on sales of noncurrent assets	(615)	(2,645)	(25,554)
Decrease (increase) in notes and accounts receivable-trade	33,489	14,879	143,754
Decrease (increase) in inventories	(21,585)	70,713	683,218
Increase (decrease) in notes and accounts payable-trade	(21,898)	(22,744)	(219,748)
Other, net	(25,591)	20,150	194,700
Subtotal	104,472	127,540	1,232,270
Interest and dividends income received	3,431	6,546	63,248
Interest expenses paid	(2,326)	(5,371)	(51,893)
Income taxes paid	(27,022)	(19,429)	(187,719)
Net cash provided by (used in) operating activities	78,554	109,286	1,055,905
Net cash provided by (used in) investing activities			
Payments into time deposits	(53)	(885)	(8,553)
Proceeds from withdrawal of time deposits	53	1,144	11,058
Purchase of property, plant and equipment	(40,708)	(64,500)	(623,184)
Proceeds from sales of property, plant and equipment	1,251	7,723	74,623
Purchase of investment securities	(864)	(286)	(2,761)
Proceeds from sales of investment securities	5,677	22,697	219,298
Purchase of investments in subsidiaries resulting in change in scope of consolidation	(4,851)	(890,230)	(8,601,256)
Proceeds from sales of investments in subsidiaries resulting in change in scope of consolidation	529	-	-
Net decrease (increase) in short-term loans receivable	450	67	650
Payments of long-term loans receivable	(558)	(630)	(6,084)
Collection of long-term loans receivable	289	275	2,658
Other, net	(9,369)	(5,425)	(52,414)
Net cash provided by (used in) investing activities	(48,156)	(930,047)	(8,985,966)
Net increase (decrease) in short-term loans payable	(9,545)	(19,226)	(185,759)
Net increase (decrease) in commercial papers	(20,000)	10,000	96,618
Proceeds from long-term loans payable	64,396	702,163	6,784,181
Repayment of long-term loans payable	(47,206)	(44,134)	(426,418)
Proceeds from issuance of bonds	20,000	-	-
Proceeds from issuance of common stock	-	268,503	2,594,227
Purchase of treasury shares	(9)	(3)	(32)
Proceeds from sales of treasury shares	0	18	172
Cash dividends paid	(21,861)	(11,674)	(112,794)
Cash dividends paid to non controlling shareholders	(1,329)	(1,397)	(13,501)
Purchase of investments in subsidiaries without change in scope of consolidation	-	(1,987)	(19,200)
Other, net	(2,992)	(5,740)	(55,459)
Net cash provided by (used in) financing activities	(18,546)	896,521	8,662,036
Effect of exchange rate change on cash and cash equivalents	(2,388)	434	4,194
Net increase (decrease) in cash and cash equivalents	9,464	76,194	736,169
Cash and cash equivalents at beginning of period	112,835	121,734	1,176,175
Increase in cash and cash equivalents from newly consolidated subsidiary	310	-	-
Decrease in cash and cash equivalents resulting from exclusion of subsidiaries from consolidation	(875)	-	-
Cash and cash equivalents at end of period	121,734	197,928	1,912,344

(Reference)

SEGMENT INFORMATION

(a) The operations of the Companies for the year ended December 31, 2019 and 2020 were summarized by business segment as follows:

Year ended December 31, 2019	Millions of yen								
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum		Others	Elimination	Consolidated
Sales									
Outside customers	¥240,923	¥140,158	¥95,702	¥221,453	¥90,500		¥117,717	¥–	¥906,454
Inter-segment	9,755	17,322	743	8,682	7,042		8,446	(51,989)	–
Total	250,678	157,480	96,445	230,135	97,542		126,163	(51,989)	906,454
Operating income (loss)	¥17,201	¥13,656	¥4,880	¥89,256	¥1,746		¥1,819	(¥7,759)	¥120,798

Year ended December 31, 2020	Millions of yen								
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Showa Denko Materials	Others	Elimination	Consolidated
Sales									
Outside customers	¥184,173	¥139,517	¥96,296	¥77,158	¥73,559	¥302,687	¥100,310	¥–	¥973,700
Inter-segment	9,213	16,251	1,119	5,741	6,626	55	6,991	(45,996)	–
Total	193,385	155,769	97,415	82,899	80,185	302,742	107,301	(45,996)	973,700
Operating income (loss)	¥4,927	¥13,481	¥9,133	(¥32,300)	¥421	(¥6,303)	¥1,199	(¥10,006)	(¥19,449)

Year ended December 31, 2020	Thousands of U.S. dollars								
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Showa Denko Materials	Others	Elimination	Consolidated
Sales									
Outside customers	$1,779,446	$1,347,994	$930,396	$745,485	$710,718	$2,924,512	$969,176	$–	$9,407,728
Inter-segment	89,010	157,017	10,812	55,467	64,019	531	67,548	(444,405)	–
Total	1,868,456	1,505,012	941,208	800,953	774,737	2,925,043	1,036,725	(444,405)	9,407,728
Operating income (loss)	$47,603	$130,249	$88,239	($312,080)	$4,065	($60,897)	$11,587	($96,680)	($187,914)

(b) The operations of the Companies for the year ended December 31, 2019 and 2020 were summarized by geographic area as follows:

Year ended December 31, 2019	Millions of yen				
	Japan	China	Asia(exc. China)	Others	Total
Sales	¥508,672	¥77,681	¥147,989	¥172,111	¥906,454
	Japan	Asia	Others	Total	
Tangible fixed assets	¥366,375	¥37,980	¥68,813	¥473,168	

Year ended December 31, 2020	Millions of yen				
	Japan	China	Asia(exc. China)	Others	Total
Sales	¥530,804	¥119,360	¥211,674	¥111,862	¥973,700
	Japan	Asia	Others	Total	
Tangible fixed assets	¥495,516	¥143,439	¥88,164	¥727,119	

Year ended December 31, 2020	Thousands of U.S. dollars				
	Japan	China	Asia(exc. China)	Others	Total
Sales	$5,128,538	$1,153,240	$2,045,162	$1,080,788	$9,407,728
	Japan	Asia	Others	Total	
Tangible fixed assets	$4,787,596	$1,385,880	$851,829	$7,025,305	

(c) The impairment loss and the (negative) goodwill of the Companies for the year ended December 31, 2019 and 2020 were summarized by business segment as follows:

Year ended December 31, 2019	Millions of yen								
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Showa Denko Materials	Others	Elimination	Total
Impairment loss	¥2	¥2,871	¥272	¥179	¥11,447	—	¥892	—	¥15,662
Goodwill									
Amortization	—	145	44	8	270	—	27	—	496
Unamortized balance	—	3,241	199	29	1,960	—	94	—	5,524
Negative goodwill									
Amortization	—	308	33	—	54	—	4	—	398
Unamortized balance	—	1,472	260	—	432	—	13	—	2,178

Year ended December 31, 2020	Millions of yen								
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Showa Denko Materials	Others	Elimination	Total
Impairment loss	¥93	¥2	¥244	¥9,049	¥8,802	¥288	¥66	—	¥18,545
Goodwill									
Amortization	—	248	44	8	265	9,128	26	—	9,719
Unamortized balance	—	3,123	155	21	1,618	355,995	68	—	360,980
Negative goodwill									
Amortization	—	308	33	—	54	—	4	—	398
Unamortized balance	—	1,164	228	—	379	—	10	—	1,780

Year ended December 31, 2020	Thousands of U.S. dollars								
	Petrochemicals	Chemicals	Electronics	Inorganics	Aluminum	Showa Denko Materials	Others	Elimination	Total
Impairment loss	$902	$22	$2,355	$87,433	$85,044	$2,783	$638	$—	$179,177
Goodwill									
Amortization	—	2,393	428	81	2,556	88,194	254	—	93,906
Unamortized balance	—	30,169	1,498	203	15,628	3,439,569	659	—	3,487,727
Negative goodwill									
Amortization	—	2,975	314	—	518	—	35	—	3,842
Unamortized balance	—	11,248	2,199	—	3,658	—	92	—	17,198