Notes to Financial Statements

Showa Denko K.K. and Consolidated Subsidiaries

1. BASIS OF REPORTING AND FINANCIAL STATEMENTS

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

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

(a) Principles of Consolidation

The consolidated financial statements for the years ended December 31, 2019 and 2018 include the accounts of Showa Denko K.K. ("the Company") and its 61 and 58, respectively, significant subsidiaries (collectively "the Companies").

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

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

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

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

(b) Investments in Unconsolidated Subsidiaries and Affiliates

The Company applied the equity method of accounting for investments in 2 unconsolidated subsidiaries in 2019 and 2 that of in 2018, as well as 9 affiliates in 2019 and 9 that of in 2018.

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

(c) Translation of Foreign Currency Accounts

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

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

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

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

(d) Cash and Cash Equivalents

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

(e) Securities

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

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

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

(f) Allowance for Doubtful Accounts

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

(g) Inventories

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

(h) Property, Plant and Equipment

Property, plant and equipment is stated at cost, in principle.

Depreciation of property, plant and equipment is computed by the straight-line method.

(i) Intangible Assets

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

(j) Leased Assets

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

(k) Provision for Business Structure Improvement

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

(l) Provision for Bonuses

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

(m) Provision for Repairs

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

(n) Provision for Stock Payments

To provide for the Company's share payment to its Directors (excluding Outside Directors), Corporate Officers, and Councilors, the provision is provided based on the Director Share Payment Regulations.

(o) Accounting Policy for Retirement Benefits

(1) Method of attributing expected benefits to periods

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

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

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

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

(3) Application of a simplified method to small businesses

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

(p) Income Taxes

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

Application of the Consolidated Taxation System

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

(q) Derivative Financial Instruments and Hedge Accounting

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

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

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

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

(r) Reclassifications

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

3. ADDITIONAL INFORMATION

(a) Board Benefit Trust (BBT)

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

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

(1) Outline of the Transaction

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

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

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

(2) Residual Shares of the Company in the Trust

Residual shares of the Company in the trust have been recorded as treasury stock under net assets at the book value in the trust (excluding the amount of ancillary expenses). The book value and the number of such treasury stock were ¥324 million and 288,000 shares at the end of the fiscal year ended December 31, 2018, and ¥321 million (US$2,934 thousand) and 286,000 shares at the end of the fiscal year ended December 31, 2019, respectively.

4. CHANGES IN ACCOUNTING POLICIES

(a) New Accounting Standards Not Yet Applied

"Accounting Standard for Revenue Recognition" (ASBJ Statement No. 29, March 30, 2018. Accounting Standards Board of Japan) and "Implementation Guidance on Accounting Standard for Revenue Recognition" (ASBJ Guidance No. 30, March 30, 2018. Accounting Standards Board of Japan)

(1) Overview

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

(2) Scheduled Date of Application

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

(3) Impact of Application

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

(b) Changes in Presentation

Adoption of "Partial Amendments to Accounting Standard for Tax Effect Accounting"

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

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

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

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

The Companies' accounting records are maintained in yen. Yen amounts included in the financial statements are rounded to the nearest one million unit. Therefore, the total and subtotal amounts presented in the financial statements may not equal the exact sum of the individual balances. The U.S. dollar amounts appearing in the accompanying financial statements and notes thereto represent the arithmetical results of translating yen into U.S. dollars at the rate of ¥109.56 to US$1.00, the approximate rate of exchange as at December 31, 2019. The inclusion of such U.S. dollar amounts is solely for the convenience of readers; it does not carry with it any implication that yen amounts have been or could be converted into U.S. dollars at that rate.

6. CASH FLOW STATEMENTS

(a) Cash and Cash Equivalents

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

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

7. FINANCIAL INSTRUMENTS

(a) Overview

(1) Management policy relating to financial instruments

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

(2) Types of financial instruments and related risks

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

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

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

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

(3) Risk management relating to financial instruments

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

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

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

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

The maximum credit risk as of December 31, 2019 is disclosed as the balance sheet amount of financial instruments exposed to credit risk.

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

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

For marketable securities and investment securities, the Companies regularly review the fair value and issuers' financial conditions, and review the Companies' portfolio on an ongoing basis, except for held-to-maturity debt securities, according to market conditions and the business relationships with counterparties.

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

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

Notes to Financial Statements

Showa Denko K.K. and Consolidated Subsidiaries

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

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

Consolidated subsidiaries manage their liquidity risk through similar procedures.

(4) Supplemental explanation on fair value of financial instruments

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

(b) Fair Value of Financial Instruments

As at December 31, 2019 and 2018, book value, fair value, and difference were as follows.

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

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

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

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

*Derivative assets and liabilities are on a net basis.

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

Assets

Cash and deposits and Notes and accounts receivable-trade

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

Investment securities

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

Liabilities

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

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

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

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

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

The fair value is based on the market prices.

Derivative transactions

Refer to Note 9. DERIVATIVE FINANCIAL INSTRUMENTS.

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

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

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

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

Year ended December 31, 2019	Millions of yen			
	Due in 1 year or less	Due after 1 year through 5 years	Due after 5 years through 10 years	Due after 10 years
Cash and deposits	**¥122,086**	**¥—**	**¥—**	**¥—**
Notes and accounts receivable-trade	**170,293**	**—**	**—**	**—**
Total	**¥292,379**	**¥—**	**¥—**	**¥—**

Year ended December 31, 2018	Millions of yen			
	Due in 1 year or less	Due after 1 year through 5 years	Due after 5 years through 10 years	Due after 10 years
Cash and deposits	¥113,186	¥—	¥—	¥—
Notes and accounts receivable-trade	203,730	—	—	—
Total	¥316,916	¥—	¥—	¥—

Year ended December 31, 2019	Thousands of U.S. dollars			
	Due in 1 year or less	Due after 1 year through 5 years	Due after 5 years through 10 years	Due after 10 years
Cash and deposits	**$1,114,332**	**$—**	**$—**	**$—**
Notes and accounts receivable-trade	**1,554,334**	**—**	**—**	**—**
Total	**$2,668,666**	**$—**	**$—**	**$—**

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

Year ended December 31, 2019	Millions of yen					
	Due in 1 year or less	Due after 1 year through 2 years	Due after 2 years through 3 years	Due after 3 years through 4 years	Due after 4 years through 5 years	Due after 5 years
(1) Short-term debt	**¥52,720**	**¥ —**	**¥ —**	**¥ —**	**¥ —**	**¥ —**
(2) Long-term debt	**31,943**	**53,191**	**48,870**	**32,309**	**24,291**	**55,200**
Total	**¥84,663**	**¥53,191**	**¥48,870**	**¥32,309**	**¥24,291**	**¥55,200**

Year ended December 31, 2018	Millions of yen					
	Due in 1 year or less	Due after 1 year through 2 years	Due after 2 years through 3 years	Due after 3 years through 4 years	Due after 4 years through 5 years	Due after 5 years
(1) Short-term debt	¥ 81,747	¥ —	¥ —	¥ —	¥ —	¥ —
(2) Long-term debt	41,403	31,975	51,893	45,937	18,713	16,300
Total	¥123,150	¥ 31,975	¥ 51,893	¥ 45,937	¥ 18,713	¥ 16,300

Year ended December 31, 2019	Thousands of U.S. dollars					
	Due in 1 year or less	Due after 1 year through 2 years	Due after 2 years through 3 years	Due after 3 years through 4 years	Due after 4 years through 5 years	Due after 5 years
(1) Short-term debt	**$ 481,194**	**$ —**	**$ —**	**$ —**	**$ —**	**$ —**
(2) Long-term debt	**291,560**	**485,497**	**446,057**	**294,898**	**221,714**	**503,831**
Total	**$ 772,753**	**$ 485,497**	**$ 446,057**	**$ 294,898**	**$ 221,714**	**$ 503,831**

Notes to Financial Statements

Showa Denko K.K. and Consolidated Subsidiaries

8. SECURITIES

(a) Available-for-sale Securities

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

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

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

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

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

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

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

(c) Impairment of securities

For the years ended December 31, 2019 and 2018, the Companies recorded an impairment loss of ¥3 million (US$31 thousand) on available-for-sale securities and ¥2,581 million on available-for-sale securities with fair market values, respectively.

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

9. DERIVATIVE FINANCIAL INSTRUMENTS

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

	Millions of yen								Thousands of U.S. dollars			
	2019				2018				2019			
	Contract amount	Contract amount over 1 year	Fair value	Valuation gain (loss)	Contract amount	Contract amount over 1 year	Fair value	Valuation gain (loss)	Contract amount	Contract amount over 1 year	Fair value	Valuation gain (loss)
Currency related:												
Forward exchange contracts:												
Buying												
U.S. Dollar	¥ 184	¥ —	¥ 1	¥ 1	¥ —	¥ —	¥ —	¥ —	$1,676	$ —	$ 9	$ 9
Euro	2	—	0	0	6,344	—	9	9	14	—	0	0
Selling												
U.S. Dollar	¥ 198	¥ —	¥ (1)	¥ (1)	¥ 20	¥ —	¥ 0	¥ 0	$1,812	$ —	$ (5)	$ (5)
Euro	—	—	—	—	401	—	13	13	—	—	—	—
Swiss Franc	1,369	—	(16)	(16)	—	—	—	—	12,493	—	(142)	(142)

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

(b) Derivative Transactions to Which Hedge Accounting is Applied

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

Notes: 1. The main items hedged by forward exchange contracts are accounts payable for buying, accounts receivable for selling and long-term debt by interest rate swaps. The main items hedged by aluminum forward transactions are aluminum metal transactions.
2. Fair value calculation method:
The fair values of forward exchange contracts are stated by the forward exchange rates. The fair values of currency swaps are measured at the quoted price obtained from the financial institutions. The fair values of aluminum forward transactions are stated by forward quotations of the London Metal Exchange.
3. The fair values of forward exchange contracts and currency swaps that meet the allocation method criteria are reflected in the fair values of accounts receivable, accounts payable and debts of their hedged items.
4. The fair values of interest rate swaps that meet the special treatment criteria are reflected in the fair values of long-term debt of their hedged item.

10. EFFECT OF YEAR-END DATE ON FINANCIAL STATEMENTS

The year-end date of 2019, namely, December 31, 2019, was a bank holiday. Although notes receivable and payable maturing on this date were accordingly settled on January 6, 2020, the Companies accounted for those notes in their financial statements as if they had been settled on the maturity date.

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

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

Notes to Financial Statements

Showa Denko K.K. and Consolidated Subsidiaries

11. SHORT-TERM DEBT AND LONG-TERM DEBT

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

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

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

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

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

Years ending December 31	Millions of yen	Thousands of U.S. dollars
2021	¥ 53,191	$ 485,497
2022	48,870	446,057
2023	32,309	294,898
2024	24,291	221,714
2025 and thereafter	55,200	503,831
Total	¥213,861	$ 1,951,996

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

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

12. RETIREMENT BENEFITS

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

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

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

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

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

(3) Reconciliation of the ending balance of retirement benefit obligations and plan assets, and the net defined benefit liability and the net defined benefit asset for the years ended December 31, 2019 and 2018 was as follows:

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

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

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

(5) Remeasurements of defined benefit plans

The components of items (before tax) reported under remeasurements of defined benefit plans for the years ended December 31, 2019 and 2018 were as follows:

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

(6) Accumulated remeasurements of defined benefit plans

The components of items (before tax) reported under accumulated remeasurements of defined benefit plans for the years ended December 31, 2019 and 2018 were as follows:

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

(7) Matters regarding plan assets

(i) Major content of the plan assets

The percentages of major asset types that account for the total plan assets as of December 31, 2019 and 2018 were as follows:

	Ratio	
	2019	2018
Bonds	41 %	42 %
Stocks	37	35
General accounts of life insurance company	19	22
Cash and deposits	1	1
Other	2	—
Total	100 %	100 %

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

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

(8) Matters regarding the assumptions for actuarial calculations

Key assumptions for actuarial calculations as of December 31, 2019 and 2018 were as follows:

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

(b) Defined contribution pension plan

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

13. INCOME TAXES

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

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

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

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

14. IMPAIRMENT LOSS

As at December 31, 2019, major impairment losses on fixed assets were as follows:

Location	Major use	Asset category	Millions of yen	Thousands of U.S. dollars
Oyama City, Tochigi Prefecture, etc.	Production facilities for aluminum processed products	Land, etc.	**¥10,418**	**$ 95,089**
Isesaki City, Gunma Prefecture	Production facilities for polymer	Land, etc.	**2,812**	**25,666**
Oyama City, Tochigi Prefecture, etc.	Production facilities for aluminum beverage cans	Machinery and equipment, etc.	**804**	**7,338**
Kawasaki City, Kanagawa Prefecture	Welfare facilities	Land, etc.	**597**	**5,453**
Other			**1,031**	**9,409**
Total			**¥15,662**	**$142,956**

15. CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)

Reclassification adjustments and tax effects for components of other comprehensive income (loss) for the year ended December 31, 2019, were as follows:

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

16. LEASES

(a) Finance Leases as a Lessee

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

(1) Type of leased assets

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

b) Intangible fixed assets: Software

(2) Method of depreciation

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

(b) Operating Leases as a Lessee

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

Future minimum lease payments for the remaining lease periods:

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

(c) Operating Leases as a Lessor

As at December 31, 2019 and 2018, non-cancellable operating lease receivables for the remaining lease periods were as follows:

Future minimum lease receivables for the remaining lease periods:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	**2019**
Due within 1 year	**¥ 80**	¥ 80	**$ 733**
Due over 1 year	**364**	435	**3,325**
Total	**¥ 445**	¥ 514	**$ 4,058**

17. CONTINGENT LIABILITIES

As at December 31, 2019 and 2018, the Companies were guarantors for the borrowings below. The guarantees were principally for unconsolidated subsidiaries, affiliates and others.

	Millions of yen		Thousands of U.S. dollars
	2019	2018	**2019**
Guarantees	**¥ 867**	¥ 2,137	**$ 7,913**

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

18. NET ASSETS

The Corporation Law of Japan (the "Law") provides that the entire amount paid for new shares may be credited to the stated capital, with the provision that, by resolution of the Board of Directors, up to one-half of such amount paid for new shares may be credited to additional paid-in capital, which is included in capital surplus.

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

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

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

19. REVALUATION RESERVE FOR LAND

The Company and some of its consolidated subsidiaries revalued the land they own for business in accordance with the Law concerning the Revaluation of Land. The difference between the revalued amount and the book value, after the deduction of applicable tax, is stated as a land revaluation reserve. The revaluation was conducted using methods stipulated in the ordinance for enforcement of the law, specifically, the method in Item 4 of Article 2 (Reasonable Adjustment of the Appraised Value Relating to Land Price Tax), and the method in Item 5 of Article 2 (Estimation by Experts). The excess of the carrying amount of the revalued land over the market value as at December 31, 2019 was ¥61,231 million (US$558,879 thousand).

20. SELLING, GENERAL AND ADMINISTRATIVE EXPENSES

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

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

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

21. RESEARCH AND DEVELOPMENT

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

22. SEGMENT INFORMATION

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

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

Notes: 1. Adjustments are as follows:

(1) Elimination of intersegment transactions of ¥302 million (US$2,754 thousand) and total corporate expenses of ¥(8,061) million (US$(73,575) thousand) that were not allocated to any reportable segment were included in "Adjustments" for "Operating income" of ¥(7,759) million (US$(70,821) thousand). The total corporate expenses principally consist of the total corporate common research expenses that are not attributable to any reportable segment.

(2) Elimination of intersegment receivables and payables and assets of ¥(46,101) million (US$(420,787) thousand) and total corporate assets of ¥34,644 million (US$316,206 thousand) that were not allocated to any reportable segment were included in "Adjustments" for "Assets" of ¥(11,458) million (US$(104,580) thousand). The total corporate assets principally consist of surplus funds of the Companies under management (in the form of cash and deposits), deferred tax assets and assets related to the total corporate common research and development expenses.

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

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

Notes: 1. Adjustments are as follows:

(1) Elimination of intersegment transactions of ¥(83) million and total corporate expenses of ¥(10,317) million that were not allocated to any reportable segment were included in "Adjustments" for "Operating income" of ¥(10,400) million. The total corporate expenses principally consist of the total corporate common research expenses that are not attributable to any reportable segment.

(2) Elimination of intersegment receivables and payables and assets of ¥(67,798) million and total corporate assets of ¥24,392 million that were not allocated to any reportable segment were included in "Adjustments" for "Assets" of ¥(43,406) million. The total corporate assets principally consist of surplus funds of the Companies under management (in the form of cash and deposits), deferred tax assets and assets related to the total corporate common research and development expenses.

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

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

(b) Information about geographical areas

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

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

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

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

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

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

Notes to Financial Statements

Showa Denko K.K. and Consolidated Subsidiaries

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

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

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

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

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

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

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

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

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

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

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

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

23. SIGNIFICANT SUBSEQUENT EVENTS

Tender Offer for Shares in Hitachi Chemical Company, Ltd.

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

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

(1) Name

Hitachi Chemical Company, Ltd.

(2) Scope of Business

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

(3) Common Stock

¥15.5 billion (US$141 million)

(b) Purpose of the Tender Offer

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

(c) Outline of the Tender Offer

(1) Period of Tender Offer

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

(2) Settlement Commencement Date

April 28, 2020 (Tuesday)

(3) Tender Offer Price

¥4,630 (US$42.26) per share

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

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

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

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

(d) Fund Procurement

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

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