



Financial Section

Annual Report 2019

Year ended March 31, 2019

Consolidated Statements of Financial Position

Consolidated Statements of Profit or Loss and
Consolidated Statements of Comprehensive Income

Consolidated Statements of Changes in Equity

Consolidated Statements of Cash Flows

Consolidated Financial Statements
Consolidated Statements of Financial Position

		Millions of yen	
	Notes	As of March 31, 2018	As of March 31, 2019
Assets			
Current assets			
Cash and cash equivalents	7, 29, 32	192,361	191,478
Trade receivables	6, 8, 29, 32	159,338	165,865
Investments in securities and other financial assets	29, 33	20,797	27,477
Inventories	9	116,526	137,738
Income taxes receivable		424	308
Other current assets	3, 6	6,090	7,578
Subtotal		495,537	530,444
Assets held for sale	10	-	879
Total current assets		495,537	531,323
Non-current assets			
Property, plant and equipment	11	73,809	78,451
Intangible assets	12	16,951	18,281
Investments accounted for using the equity method	13	1,182	1,060
Trade receivables	6, 8, 29	896	1,792
Investments in securities and other financial assets	29, 33	12,926	11,201
Deferred tax assets	14	20,749	22,901
Other non-current assets	17	1,286	1,384
Total non-current assets		127,798	135,070
Total assets		623,335	666,394

	Notes	As of March 31, 2018	As of March 31, 2019
Liabilities			
Current liabilities			
Trade payables	15, 29, 32, 33	132,091	136,751
Other financial liabilities	29	18,642	16,540
Income taxes payable		5,037	7,463
Accrued expenses		25,409	25,769
Advances received	3	20,960	-
Contract liabilities	3, 6	-	23,716
Provisions	16	1,605	2,633
Other current liabilities		1,778	46
Total current liabilities		205,521	212,918
Non-current liabilities			
Other financial liabilities	17, 29	420	162
Retirement and severance benefits	17	23,177	24,083
Provisions	16	2,059	1,657
Deferred tax liabilities	14	821	903
Other non-current liabilities		844	907
Total non-current liabilities		27,320	27,712
Total liabilities		232,841	240,630
Equity			
Hitachi High-Technologies Corporation stockholders' equity			
Common stock	18	7,938	7,938
Capital surplus	18	35,662	35,662
Retained earnings	18	334,931	371,388
Accumulated other comprehensive income	18	11,894	10,417
Treasury stock, at cost	18	(362)	(368)
Total Hitachi High-Technologies Corporation stockholders' equity		390,063	425,037
Non-controlling interests		431	727
Total equity		390,494	425,764
Total liabilities and equity		623,335	666,394

Consolidated Statements of Profit or Loss and Consolidated Statements of Comprehensive Income
Consolidated Statements of Profit or Loss

Years ended March 31, 2018 and 2019

Millions of yen

	Notes	2018	2019
Revenues	6, 32	687,670	731,104
Cost of sales	21, 22	(523,244)	(546,341)
Gross profit		164,426	184,763
Selling, general and administrative expenses	20, 21, 22	(108,907)	(118,060)
Other income	24	1,198	1,431
Other expenses	21, 23, 24	(764)	(1,368)
Operating profit		55,953	66,767
Financial income	25	163	110
Financial expenses	25	(1,103)	(2,793)
Share of profits (losses) of investments accounted for using the equity method		222	143
EBIT (Earnings before interest and taxes)		55,236	64,226
Interest income	25	416	580
Interest expenses	25	(64)	(49)
Income before income taxes		55,588	64,758
Income taxes	14	(14,509)	(15,986)
Net income		41,079	48,771
Net income attributable to:			
Hitachi High-Technologies Corporation stockholders		40,882	48,417
Non-controlling interests		196	354
Total		41,079	48,771
Earnings per share attributable to Hitachi High-Technologies Corporation stockholders	26		(Yen)
Basic and diluted earnings per share attributable to Hitachi High-Technologies Corporation stockholders		297.27	352.06

Consolidated Statements of Comprehensive Income

Years ended March 31, 2018 and 2019

Millions of yen

	Notes	2018	2019
Net income		41,079	48,771
Other comprehensive income (OCI)			
Items not to be reclassified into net income			
Net changes in financial assets measured at fair value through OCI	27	1,523	(334)
Remeasurements of defined benefit plans	27	2,116	(193)
Total items not to be reclassified into net income		3,639	(527)
Items that can be reclassified into net income			
Foreign currency translation adjustments	27	126	(362)
Net changes in cash flow hedges	27	446	(279)
Share of OCI of investments accounted for using the equity method	27	(6)	17
Total items that can be reclassified into net income		567	(624)
Other comprehensive income (OCI)		4,206	(1,151)
Comprehensive income		45,285	47,620
Comprehensive income attributable to:			
Hitachi High-Technologies Corporation stockholders		45,067	47,282
Non-controlling interests		218	338
Total		45,285	47,620

Consolidated Statements of Changes in Equity

Millions of yen

	Notes	Common stock	Capital surplus	Retained earnings	Accumulated other comprehensive income		
					Net changes in financial assets measured at FVTOCI	Remeasurements of defined benefit plans	Foreign currency translation adjustments
As of April 1, 2017		7,938	35,662	303,136	3,681	3,191	3,726
Net income				40,882			
Other comprehensive income					1,523	2,116	99
Comprehensive income		-	-	40,882	1,523	2,116	99
Acquisition of treasury stock	18		(0)				
Disposal of treasury stock	18		0				
Dividends	19			(11,690)			
Transfer to non-financial assets	5						
Reclassified into retained earnings				2,603	(2,603)		
Total transactions with the owners		-	0	(9,087)	(2,603)	-	-
As of March 31, 2018		7,938	35,662	334,931	2,601	5,307	3,825
Accumulated effects by applying new accounting standards	3			75			
As of April 1, 2018		7,938	35,662	335,007	2,601	5,307	3,825
Net income				48,417			
Other comprehensive income					(334)	(193)	(329)
Comprehensive income		-	-	48,417	(334)	(193)	(329)
Acquisition of treasury stock	18		(0)				
Disposal of treasury stock	18		0				
Dividends	19			(12,377)			
Acquisition (disposal) of non-controlling interests							
Reclassified into retained earnings				341	(341)		
Total transactions with the owners		-	0	(12,036)	(341)	-	-
As of March 31, 2019		7,938	35,662	371,388	1,925	5,114	3,496

Millions of yen

	Notes	Accumulated other comprehensive income		Treasury stock, at cost	Total Hitachi High-Technologies Corporation stockholders' equity	Non-controlling interests	Total equity
		Net changes in cash flow hedges	Total accumulated other comprehensive income				
As of April 1, 2017		(66)	10,532	(356)	356,913	292	357,205
Net income			-		40,882	196	41,079
Other comprehensive income		446	4,184		4,184	21	4,206
Comprehensive income		446	4,184	-	45,067	218	45,285
Acquisition of treasury stock	18		-	(7)	(7)		(7)
Disposal of treasury stock	18		-	0	0		0
Dividends	19		-		(11,690)	(79)	(11,769)
Transfer to non-financial assets	5	(220)	(220)		(220)		(220)
Reclassified into retained earnings			(2,603)		-		-
Total transactions with the owners		(220)	(2,822)	(7)	(11,916)	(79)	(11,995)
As of March 31, 2018		161	11,894	(362)	390,063	431	390,494
Accumulated effects by applying new accounting standards	3		-		75		75
As of April 1, 2018		161	11,894	(362)	390,139	431	390,569
Net income			-		48,417	354	48,771
Other comprehensive income		(279)	(1,136)		(1,136)	(16)	(1,151)
Comprehensive income		(279)	(1,136)	-	47,282	338	47,620
Acquisition of treasury stock	18		-	(6)	(6)		(6)
Disposal of treasury stock	18		-	0	0		0
Dividends	19		-		(12,377)	(96)	(12,474)
Acquisition (disposal) of non-controlling interests			-		-	54	54
Reclassified into retained earnings			(341)		-		-
Total transactions with the owners		-	(341)	(6)	(12,383)	(42)	(12,425)
As of March 31, 2019		(119)	10,417	(368)	425,037	727	425,764

Consolidated Statements of Cash Flows

Years ended March 31, 2018 and 2019

Millions of yen

	Notes	2018	2019
Cash flows from operating activities:			
Net income		41,079	48,771
Adjustments to reconcile net income to net cash provided by operating activities			
Depreciation and amortization	11,12	11,830	13,154
Impairment losses	23	320	357
Reversal of impairment losses	24	-	(152)
Income taxes	14	14,509	15,986
Share of (profits) losses of investments accounted for using the equity method		(222)	(143)
Interest income	25	(416)	(580)
Dividends income	25	(156)	(108)
Interest expenses	25	64	49
(Profits) losses on sales of property, plant and equipment and intangible assets	24	(511)	751
Increase in trade receivables		(10,324)	(4,904)
Increase in inventories		(13,459)	(21,039)
Increase (decrease) in trade payables		9,287	4,476
Increase (decrease) in advances received	3	2,339	-
Contract liabilities	3	-	925
Decrease in retirement and severance benefits	17	(2,657)	(2,282)
Other		515	1,494
Subtotal		52,197	56,756
Interest received		401	554
Dividends received		416	431
Interest paid		(64)	(46)
Income taxes paid		(24,034)	(15,061)
Income taxes refund		305	139
Net cash provided by operating activities		29,221	42,773
Cash flows from investing activities:			
Payments into deposits and time deposits		(23,500)	(25,000)
Proceeds from withdrawal of deposits and time deposits		36,000	17,500
Purchase of property, plant and equipment	11	(13,016)	(17,698)
Purchase of intangible assets	12	(2,085)	(3,497)
Proceeds from sale of property, plant and equipment	11	1,086	130
Proceeds from sale of intangible assets	12	4	-
Purchase of investments in securities and other financial assets	29	(5,333)	(1,100)
Proceeds from sale and redemption of investments in securities and other financial assets	29	4,190	376
Purchase of investments in subsidiaries resulting in change in scope of consolidation	5	(10,209)	(1,361)
Other		(130)	24
Net cash provided by (used in) investing activities		(12,993)	(30,625)
Cash flows from financing activities:			
Proceeds from payments from non-controlling interests		-	54
Dividends paid to Hitachi High-Technologies Corporation stockholders	19	(11,686)	(12,378)
Dividends paid to non-controlling interests		(20)	(80)
Acquisition of common stock for treasury	18	(6)	(6)
Other		(1,030)	(122)
Net cash used in financing activities		(12,742)	(12,532)
Effect of exchange rate changes on cash and cash equivalents		(908)	(500)
Net increase in cash and cash equivalents		2,578	(883)
Cash and cash equivalents at beginning of year	7	189,783	192,361
Cash and cash equivalents at end of year	7	192,361	191,478

Notes to the Consolidated Financial Statements

1. Reporting Entity

Hitachi High-Technologies Corporation (the Company) is a corporation domiciled in Japan, whose shares are publicly listed. The registered address of its Head Office is 24-14, Nishi-shimbashi 1-chome, Minato-ku, Tokyo. The Company's consolidated financial statements for the year ended March 31, 2019, comprise those of the Company and its subsidiaries (the Group) and its interests in associates. The Group's businesses center on electronics and its reportable segments consist of Science & Medical Systems, Electronic Device Systems, Industrial Systems and Advanced Industrial Products.

2. Basis of Presentation

(1) Compliance with IFRS

As the Company meets the requirements of a "Specified Company applying Designated International Financial Reporting Standards" pursuant to Article 1-2 of the Ordinance on Terminology, Forms and Preparation Methods of Consolidated Financial Statements, the consolidated financial statements of the Group have been prepared in accordance with International Financial Reporting Standards (IFRS) issued by International Accounting Standards Board (IASB), as permitted by the provision of Article 93 of the Ordinance.

On June 21, 2019, Masahiro Miyazaki, Representative Executive Officer, President, and Chief Executive Officer, and Shinji Sakurai, Chief Financial Officer, Vice President, and Executive Officer approved these consolidated financial statements.

(2) Basis of Measurement

The Group's consolidated financial statements have been prepared on a historical cost basis, except for the financial instruments and the liabilities and assets associated with defined benefit plans stated in Note 3 *Summary of Significant Accounting Policies*.

(3) Presentation Currency

The consolidated financial statements are presented in Japanese yen as the Company's functional currency. The financial information in Japanese yen is rounded to the nearest million.

(4) Use of Estimates and Judgments

Management has made a number of judgments, estimates and assumptions relating to the application of accounting policies, reporting of revenues and expenses and assets and liabilities in the preparation of these IFRS-based consolidated financial statements. However, actual results could differ from those estimates.

Estimates and assumptions are continually evaluated. The effect of a revision in accounting estimates, is recognized in the reporting period in which the revision was made and in future periods.

The information regarding judgments used in applying accounting policies that could have a material effect on the Company's consolidated financial statements is included in the following notes:

- Note 3 (1) *Basis of Consolidation*
- Note 3 (5) *Financial Instruments* and Note 29 *Financial Instruments*
- Note 3 (16) *Revenue Recognition*

The information regarding uncertainties arising from assumptions and estimates that could result in material adjustments in the subsequent consolidated financial statements is included in the following notes:

- Note 3 (10) *Impairment of Non-financial Assets* and Note 23 *Impairment Losses*
- Note 3 (12) *Employee Benefits* and Note 17 *Retirement and Severance Benefits*
- Note 3 (13) *Provisions* and Note 16 *Provisions*
- Note 3 (14) *Contingencies* and Note 35 *Contingencies*
- Note 3 (17) *Income Taxes* and Note 14 *Deferred Taxes and Income Taxes*

3. Summary of Significant Accounting Policies

(1) Basis of Consolidation

(i) Subsidiaries

Subsidiaries are entities controlled by the Group. The Group has control over an entity if it has a power to investee, it is exposed, or has rights, to variable returns from its involvement with the investee and has the ability to affect those returns through its power over the investee. The Group consolidates subsidiaries from the date on which it acquires control until the date on which it loses control.

Changes in ownership interests in subsidiaries without a loss of control are accounted for as equity transactions. Changes in ownership interests in subsidiaries with a loss of control are accounted for by derecognizing assets and liabilities, non-controlling interests, equity and accumulated other comprehensive income attributable to the subsidiaries.

Subsidiaries' financial statements are adjusted, if necessary, when their accounting policies differ from those of the Group. All

intergroup balances, transactions, unrealized gains and losses are eliminated on consolidation.

Comprehensive income for subsidiaries is attributed to Hitachi High-Technologies Corporation stockholders' equity and non-controlling interests even if this results in the non-controlling interests having a deficit balance.

Hitachi High-Technologies (Shanghai) Co., Ltd. and ten other subsidiaries have fiscal years ending on December 31. A provisional account closing of accounts for these subsidiaries is performed in accordance with annual settlement of accounts as of the Company's fiscal year end. The closing dates of other subsidiaries are same as that of the Company.

(ii) Associates

Associates are entities over which the Group have significant influence but do not have control over the financial and operating policies of such entities. Significant influence is presumed to exist when the Group hold 20% to 50% of the voting power of another entity. Investments in associates are accounted for under the equity method from the date on which the Group obtains significant influence through the date on which it loses such influence.

The financial statements of associates are adjusted, if necessary, when their accounting policies differ from those of the Group.

Giesecke & Devrient K.K. and two other associates have fiscal years ending on December 31, Chorus Call Asia Corporation have fiscal years ending on November 30. A provisional account closing of accounts for these associates is performed in accordance with annual settlement of accounts as of the Company's fiscal year end. The closing dates of the remaining one is same as that of the Company.

(2) Business Combinations

Business combinations are accounted for using the acquisition method. For each specific business combination, the Group chooses how to measure investments in which it has non-controlling interests at fair value or by the appropriate share of identifiable net assets of the acquiree. The related acquisition costs are recognized in the period in which they are incurred.

(3) Foreign Currency Translation

(i) Foreign Currency Transactions

Each Group company determines its own functional currency and measures its transactions in that functional currency.

Foreign currency transactions are converted into the functional currency using the exchange rate prevailing at the transaction date or a rate that approximates such a rate. Monetary assets and liabilities denominated in foreign currencies are converted into the functional currency using the exchange rate at the end of the fiscal year. Foreign exchange gains and losses resulting from the currency conversion and settlement are recognized in profit or loss, except where gains and losses on assets or liabilities are recognized in other comprehensive income, foreign exchange effects relating to such assets or liabilities are also recognized in other comprehensive income.

(ii) Foreign Operations

Assets and liabilities of foreign operations are translated into Japanese yen using the exchange rate at the end of the reporting period, while revenue and expense items are translated using the average exchange rates during the period as long as there are no dramatic fluctuations in foreign exchange rates during the period. Translation differences arising from translations of the financial statements of foreign entities are recognized as other comprehensive income. Upon the full disposal of foreign operations or a partial disposal resulting in a loss of significant influence, any related cumulative gain or loss relating to those foreign operations is recognized as profit or loss.

(4) Cash and Cash Equivalents

Cash and cash equivalents consist of cash on hand, demand deposits, and short-term investments that are readily convertible to known amounts of cash and subject to insignificant risk of change in value and due within three months from the date of acquisition.

(5) Financial Instruments

From the beginning of the fiscal year ended March 31, 2019, the Company has adopted IFRS 9 "Financial Instruments" (IFRS 9) (revised in July 2014). IFRS 9 "Financial Instruments" (revised in July 2014) is an accounting standard that revises the classification and measurement of hedge accounting and financial instruments, and introduces an expected credit loss impairment model for financial assets. With the adoption of IFRS 9, the Company has changed and added some of the policies about impairment of non-derivative financial assets, derivative and hedge accounting. The outline of IFRS 9 "Financial Instruments" (revised in July 2014) after adoption of this accounting standard are as follows.

The adoption of this accounting standard has no significant impact on the financial position and business results of the Group.

(i) Non-Derivative Financial Assets

The Group recognizes financial assets measured at amortized cost on the date they arise and recognizes other financial assets on

the settlement date.

The classification and measurement model of non-derivative financial assets is summarized as follows:

Financial Assets Measured at Amortized Cost

Financial assets are subsequently measured at amortized cost when they meet the following requirements:

- The financial asset is held under a business model the objective of which is to hold the asset to collect contractual cash flows.
- The contractual terms of the financial asset provide cash flows on specified dates that are solely payments of principal and interest on the principal amount outstanding.

Financial assets measured at amortized cost are initially measured at fair value, including direct transaction costs. The carrying amount of financial assets measured at amortized cost is subsequently measured using the effective interest method.

Financial Assets Measured at Fair Value through Profit or Loss (FVTPL Financial Assets)

Financial assets not classified as financial assets measured at amortized cost and not designated as FVTOCI financial assets are classified as FVTPL financial assets.

FVTPL financial assets are measured at fair value when initially recognized and incurred transaction expenses are recognized in profit or loss. After initial recognition, these assets are measured at fair value and the subsequent changes in fair value are recognized in profit or loss.

Financial Assets Measured at Fair Value through Other Comprehensive Income (FVTOCI Financial Assets)

For equity instruments that the Group holds to maintain close business relations with investees, the Group chooses for each financial asset whether or not it can be irrevocably designated as a FVTOCI financial asset upon initial recognition.

FVTOCI financial assets are initially recognized at fair value, including transaction expenses. After initial recognition, they are measured at fair value, and subsequent changes in fair value are recognized as OCI. Amounts recognized as OCI that are derecognized as financial assets are transferred to retained earnings. Dividends are recognized in profit or loss.

Impairment of Financial Assets

On a regular basis, but no less frequently than at the end of each quarterly reporting period, the Company evaluates the allowance for doubtful receivables based on expected credit losses on financial assets measured at amortized cost, trade receivables, contract assets, and other receivables depending on whether the credit risk has increased significantly since initial recognition.

If the credit risk has increased significantly since initial recognition, the allowance for doubtful receivables is measured at the amount equal to the lifetime expected credit losses on the financial assets. If the credit risk has not increased significantly since initial recognition, the allowance for doubtful receivables is measured at the amount equal to 12-month expected credit losses. However, for trade receivables, and contract assets, allowance for doubtful receivables is always measured at the amount equal to the lifetime expected credit losses.

Whether credit risk has increased significantly is determined based on changes in the risk of default. Default is defined as the state in which a critical problem with debtor's payment of contractual cash flows has been identified and there are no reasonable expectations of recovering the financial asset in its entirety or a portion. To determine whether there have been any changes in the risk of default, negative evaluation by third party credit rating agencies, past due information and other factors are mainly taken into consideration.

Expected credit losses are measured by taking the probability weighted average of the discounted present values of differences between the total amount of the contractual cash flows and the total amount of cash flows expected to be received in the future from the financial assets.

If one or more events occur, such as overdue payments, extended payment terms, negative evaluation by third party credit rating agencies, and/or a deterioration in financial position and operating results, including capital deficit, the financial assets are individually assessed as credit-impaired financial assets and expected credit losses are measured based mainly on historical credit loss experience, future collectible amounts and other factors. The expected credit losses on the financial assets that are not credit-impaired are measured through collective assessment based mainly on provision rates depending on historical credit loss experience adjusted by the current and future economic situation and other factors, if necessary.

For the expected credit losses on financial assets measured at amortized cost, trade receivables, contract assets, and other receivables, the allowances for doubtful receivables are recorded directly or through bad debt provisions reduce the carrying amount. Changes in expected credit losses are recognized in profit or loss as impairment losses. For financial assets, after all means of collection have been exhausted and the potential for recovery is considered remote, it is determined that there are no longer any reasonable expectations of recovering the financial assets in their entirety or a portion and the carrying

amounts are generally written off.

Derecognition of Financial Assets

The Group derecognizes financial assets when contractual rights to cash flows from the financial assets expire or when the contractual rights to receive cash flows from the financial assets are transferred and the risks and economic rewards of owning the financial assets are almost all transferred.

(ii) Non-Derivative Financial Liabilities

The Group classifies all non-derivative financial liabilities as financial liabilities measured at amortized cost and initially recognizes them on the date they arise.

Financial liabilities measured at amortized cost are initially recognized at fair value, less transaction costs. They are subsequently measured at amortized cost based on the effective interest method.

Financial liabilities are derecognized when contractual obligations are redeemed, discharged, canceled, or expired.

(iii) Derivatives and Hedge Accounting

The Group uses forward exchange contracts to hedge changes in cash flow relating to future foreign currency denominated transactions. These contracts are designated as cash flow hedges where satisfying hedge accounting requirements and are initially recognized at fair value. They are subsequently measured at fair value and portions for which hedging is deemed effective against subsequent changes are recognized as OCI.

The Group documents risk management policies, including derivative usage objectives and strategies. In addition, a formal assessment is made at the hedge's inception and subsequently on a periodic basis, as to whether the derivative used in hedging activities is highly effective in offsetting changes in fair value or cash flows of the hedged items.

Hedge accounting is discontinued if a hedge does not meet hedge accounting requirements or the hedging instruments have expired, been sold, or terminated or if the hedge designation has been canceled. If an expected transaction is no longer likely to occur, amounts recognized as OCI are promptly transferred to profit or loss.

(iv) Offsetting Financial Assets and Liabilities

Financial assets and liabilities are offset and reported as a net amount when the Group currently has a legally enforceable right to set off the recognized amounts and intends to settle on a net basis or to realize the asset and settle the liability simultaneously.

(6) Inventories

The cost of inventories includes all costs of purchase, costs of conversion and other costs incurred in bringing the inventories to their present location and condition.

Inventories are measured at the lower of cost or net realizable value. Cost is mainly determined by the moving average method for finished goods and raw materials and by the specific identification method for work in process. Net realizable value is the estimated selling price in the ordinary course of business less the estimated costs of completion and the estimated costs necessary to sell.

(7) Property, Plant and Equipment

The Group uses the cost model to measure property, plant and equipment. They are stated at cost, less accumulated depreciation and accumulated impairment losses.

Acquisition cost includes direct costs of acquisition, costs of dismantling, removing and restoration of the assets.

Except for land and other assets that are not depreciated, property, plant and equipment are depreciated using the straight-line method over the following estimated useful lives for major classes of assets:

- | | |
|-------------------------------------|---------------|
| • Buildings and structures | 2 to 60 years |
| • Machinery, equipment and vehicles | 2 to 17 years |
| • Tools, furniture and fixtures | 2 to 20 years |

Estimated useful lives and the method of depreciation are reviewed at the fiscal year end. Changes in estimated useful lives or depreciation method are accounted for on a prospective basis as a change in accounting estimate.

(8) Intangible Assets

(i) Goodwill

Goodwill is stated at cost less any accumulated impairment losses, and is not amortized.

(ii) Intangible Assets

The Group applies the cost model to intangible assets and states such assets at cost less accumulated amortization and impairment losses.

Intangible assets acquired separately are measured at cost at initial recognition, and the costs of intangible assets acquired through business combinations are recognized at fair value at the acquisition date.

Intangible assets with finite useful lives are amortized generally using the straight-line method, while intangible assets with indefinite useful lives are not amortized. The estimated useful lives for major classes of assets are as follows:

- | | |
|------------|---------------|
| • Software | 2 to 5 years |
| • Other | 3 to 20 years |

Estimated useful lives and the method of amortization are reviewed at the fiscal year end. Changes in estimated useful lives or amortization method are accounted for on a prospective basis as a change in accounting estimate.

(9) Leases

(i) Lease Transactions

Whether an arrangement is or contains a lease is determined based on the nature of the arrangement. Leased assets are recognized when fulfillment of the contract is dependent on the use of certain assets or asset groups, with the arrangements providing rights to use the relevant assets.

(ii) Finance Leases

As Lessee

Leases for which all of the risks and economic rewards of ownership are transferred to the Group are classified as finance leases.

Lease assets and liabilities are initially recognized as the lower of the fair value or the present value of the minimum lease payments. After initial recognition, accounting is based on the accounting policies applied to the relevant assets and liabilities.

As Lessor

Leases for which all of the risks and economic value accompanying the asset ownership are transferred to the lessee are classified as finance leases.

Lease receivables are recognized at amounts equivalent to the net investments in the leased assets and included in trade receivables in the consolidated statements of financial position.

(iii) Operating Lease Transactions

Leases other than finance leases are classified as operating leases.

Operating lease payments are recognized in profit or loss on a straight-line basis throughout the lease terms.

(10) Impairment of Non-financial Assets

For each non-financial asset, the Group assesses whether there are any indications that assets may be impaired and tests for impairment when events or circumstances indicate such impairment. For goodwill and intangible assets with indefinite useful lives, the Group annually estimates recoverable amounts and tests for impairment regardless of whether or not there are indications of impairment.

The Group uses the higher of the fair value less costs of disposal or value in use as the recoverable amount of an asset or a cash generating unit. In estimating the value in use, estimated future cash flows are discounted to the present value, using pre-tax discount rates that reflect the time value of money and the inherent risks of the relevant assets and cash generating units. If the carrying amount of an asset or a cash generating unit exceeds the recoverable amount, the impairment loss of the asset is recognized in profit or loss.

For an asset other than goodwill, the recoverable amount is subsequently estimated when there is a significant change in facts and circumstances and there is an indication that an impairment loss previously recognized may no longer exist or has decreased. If the estimated recoverable amount exceeds the carrying amount, the impairment loss recognized previously is reversed to the extent of the carrying amount that would have been recorded, net of depreciation or amortization, if impairment had not been recognized previously.

(11) Assets Held for Sale

An asset or disposal group for which the value is expected to be recovered through a sale rather than through continuing use is classified as an asset or disposal group held for sale when the asset or disposal group could be sold immediately as is or it is highly probable that the asset or disposal group will soon be sold.

Assets held for sale are measured at the lower of the carrying amount or the fair value less costs to sell. There is no depreciation or amortization of assets after classification.

(12) Employee Benefits

(i) Retirement and Severance Benefits

Defined Benefit Plans

The Company and certain subsidiaries maintain defined benefit plans and / or severance lump-sum payment plans to provide retirement and severance benefits to employees.

For each plan, the Group uses the projected unit credit method to calculate the present value of defined benefit obligations and related retirement benefit costs. For a discount rate, a discount period is determined based on the period until the expected date of benefit payment in each fiscal year and the discount rate is determined by reference to market yields for the period corresponding to the discount period at the end of the fiscal year on high-quality corporate bonds.

Liabilities or assets for defined benefit plans are calculated by the present value of the defined benefit obligation, deducting the fair value of any plan assets.

Remeasurements of defined benefit plan liabilities or assets are recognized as other comprehensive income in the period in which incurred but are not subsequently transferred to profit or loss. Past service costs are recognized as profit or loss in the period when incurred.

Defined Contribution Plans

The Company and certain subsidiaries maintain defined contribution plans.

Under a defined contribution plan, the employer contributes certain amounts to another independent entity, and there is no legal or constructive obligation to pay more than the contributions.

Contributions to defined contribution plans are recognized in profit or loss during the periods in which employees provided the relevant service.

(ii) Short-Term Employee Benefits

Short-term employee benefits are recognized in profit or loss during the periods in which employees provided the relevant service.

When there is a legal and constructive obligation to pay bonuses and paid leave, and where it is possible to make reliable estimates, the payments based on such plans are recognized as estimated obligations.

(13) Provisions

The Company recognizes provisions when it has a present obligation (legal or constructive) as a result of past events, it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation, and the amount of the obligation can be reliably estimated.

When the time to settle an obligation is expected to be long, and thus the time value of money is material, the amount of a provision is measured at the present value of the amount of expenditures expected to be required to settle the obligation. The present value is calculated by using pre-tax discount rates that reflect the time value of money and the inherent risks of the relevant obligations.

See Note 16 *Provisions* for a discussion about the nature of the provisions and the amounts recognized by the Group.

(14) Contingencies

(i) Contingent Liabilities

The Group discloses contingent liabilities in Note 35 *Contingencies* if it has possible obligations at the fiscal year end, whose existence cannot be confirmed at that date, or if obligations do not meet the recognition criteria for provisions described above in Note 3(13) *Provisions*, excluding those where the possibility of an outflow of resources embodying economic benefits is remote.

The Group has concluded financial guarantee agreements that require it to make repayments to compensate for a loss incurred if a specified debtor defaults on a payment on the due date based on the terms of a debt instrument.

(ii) Contingent Assets

The Group discloses contingent assets in Note 35 *Contingencies* if an inflow of resources embodying economic benefits is probable, but not virtually certain at the fiscal year end.

(15) Capital

(i) Common Stock and Capital Surplus

The issue prices of equity instruments that the Company issues are recorded in common stock and capital surplus. The direct issuance costs are deducted from capital surplus.

(ii) Treasury Stock

Acquired treasury stock is recognized at cost and deducted from equity, while the difference between the carrying value of treasury stock and its value at the time of sale is recognized in capital surplus.

(16) Revenue Recognition

From the beginning of the fiscal year ended March 31, 2019, the Company has adopted IFRS 15 "Revenue from Contracts with Customers." IFRS 15 provides a comprehensive framework for recognizing revenue. In accordance with the five-step approach, revenue is measured based on changes in assets and liabilities arising from contracts with customers and recognized when control over goods or services is transferred to the customer.

Based on five-step approach, regarding certain transactions of goods sales, the Company had previously decided that significant risks and rewards will be transferred to customers at the time of acceptance by customers, however at IFRS 15, the Company accordingly implements revenue recognition following the determination that control of goods or services has been transferred to the customer in accordance with the agreed-upon specifications in the contract at the time of installation completion.

As a transitional measure upon the adoption of IFRS 15, the Company applies this standard retrospectively and recognizes the cumulative effect of the initial application as an adjustment to the beginning balance of retained earnings for the current fiscal year.

The impacts on the consolidated statements of financial position at the beginning and closing of the fiscal year ended March 31, 2019 are increases of ¥75 million and ¥100 million in "retained earnings", respectively, compared with adopting of the previous accounting standard.

Likewise, the impact on consolidated statements of profit or loss for the fiscal year ended March 31, 2019 is an increase of ¥36 million respectively in "revenue" and "income before income taxes".

In addition, due to the application of IFRS 15, if the Company performs by transferring goods or services to a customer before the customer pays consideration or before payment is due, the Company recognizes the contract amounted to ¥144 million as a contract asset, excluding any amounts presented as a receivable. And the Company discloses contract assets as other current assets. Advances received from customers, which were previously presented as Advances received, are disclosed as Contract liabilities.

The Company recognizes revenue in accordance with following five-step approach.

Step 1: Identify the contract(s) with a customer

Step 2: Identify the performance obligations in the contract

Step 3: Determine the transaction price

Step 4: Allocate the transaction price to the performance obligations in the contract

Step 5: Recognize revenue when (or as) the Company satisfies a performance obligation

The Company offers multiple solutions to meet its customers' needs which may involve the delivery or performance of multiple elements, such as goods or services. When the Company enters into multiple contracts for providing the goods or services, related contracts are combined based on interdependencies between each contract's consideration and the time the Company entered into such contracts, and the transaction price is allocated to each performance obligation on the basis of the relative stand-alone selling prices of each distinct good or service for the purpose of recognizing revenue.

In estimating the stand-alone selling price, the Company considers various factors such as market conditions, entity-specific factors and information about the customer or class of customer.

The transaction price is the amount of consideration to which the Company expects to be entitled in exchange for transferring promised goods or services to a customer. Variable consideration, such as discounts, is included in the transaction price only to the extent that it is highly probable that a significant reversal in the amount of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is subsequently resolved. The promised amount of consideration does not include a significant financing component.

For a performance obligation satisfied over time, the Company measures its progress towards complete satisfaction of that performance obligation on the basis of output or input methods in consideration of the nature of the goods and services for the purpose of recognizing revenue. When the Company cannot reasonably measure the progress, revenue is recognized only to the extent of the costs incurred.

The Company recognizes the incremental costs of obtaining a contract with a customer and the costs directly related to fulfilling a contract as an asset if those costs are expected to be recovered, and those assets are amortized based on the methods used to recognize revenue of the goods or services to which the assets relate. The Company recognizes the incremental costs of obtaining a contract as an expense when incurred if the amortization period of the assets is less than one year.

If the Group is a principal to a transaction, all of the revenue received from the customer is presented. If the Group participates in a transaction as an agent for a third party, the commission paid by the customer, excluding the payment collected for the third party, is presented as revenue.

The determination of whether the Group is a party or agent depends on such factors as whether the Company dominates goods or services specified before transferring goods or services to the customer, whether or not it has the primary responsibility for supplying the products and services and executing the order, whether it incurs inventory risks before or after the customer places an order, during shipment, or upon returns, or whether the Group has the right to directly or indirectly set prices.

(17) Income Taxes

Income taxes comprise current and deferred taxes that are recognized in profit or loss, except for taxes recognized in equity or directly in OCI and taxes related to business combinations.

Current income taxes are measured as amounts expected to be paid to or refunded from the taxation authorities. For the calculation of taxes, the Group uses the tax rates and tax laws that have been enacted or substantively enacted by the end of the fiscal year.

Deferred income taxes are calculated based on the temporary differences between the tax basis for assets and liabilities and the carrying amount at the fiscal year end. Deferred tax assets are recognized for deductible temporary differences, carryforward of unused tax credits and unused tax losses to the extent that it is probable that future taxable profit will be available against which they can be utilized. Deferred tax liabilities are recognized for taxable temporary differences.

The deferred tax assets or liabilities are not recognized for the following temporary differences:

- The initial recognition of goodwill
- The initial recognition of assets or liabilities in transactions that are not business combinations and at the time of transaction, affect neither accounting profit nor taxable profit or tax loss
- Taxable temporary differences arising from investments in subsidiaries and associates to the extent that the timing of the reversal of the temporary difference is controlled and that it is probable that the temporary difference will not reverse in the foreseeable future.
- Deductible temporary differences arising from investments in subsidiaries and associates to the extent that it is probable that the temporary difference will not reverse in the foreseeable future and that it is not probable that future taxable profits will be available against which they can be utilized

Deferred tax assets and liabilities are measured at the tax rates that are expected to apply to the fiscal year when those temporary differences are reversed, based on tax rates that have been enacted or substantively enacted by the end of the fiscal year.

Deferred tax assets and deferred tax liabilities are offset if there is a legally enforceable right to offset deferred tax assets and liabilities with current tax assets and liabilities, and where the same taxation authority imposes the same income tax on the same taxable entity or even on a different taxable entity, where these taxable entities intend to settle current tax assets and liabilities on a net basis or plan to realize these tax assets and liabilities simultaneously.

(18) Consumption Tax

Consumption tax collected and remitted to the taxation authorities is excluded from revenues, cost of sales and expenses.

(19) Earnings per Share

Basic earnings per share are calculated by dividing net income attributable to Hitachi High-Technologies Corporation stockholders by the weighted average number of ordinary shares outstanding during the period, excluding treasury stock.

Basic and diluted earnings per share are the same, as there are no shares with dilutive potential.

(20) New Accounting Standards not yet Adopted by the Group

The following table lists the principal new accounting standards and interpretations issued or amended prior to the approval date of the consolidated financial statements that have not been yet adopted as of the reporting date (March 31, 2019).

IFRSs	Title	Mandatory effective date (Fiscal year beginning on or after)	To be adopted by the Group	Description of new standards and amendments
IFRS 16	Leases	January 1, 2019	April 1, 2019	Changes in definitions and accounting treatment of leases

The new accounting standards to be adopted from the year ended March 31, 2020.

IFRS 16 (Leases)

IFRS 16 sets out the principles for the recognition, measurement, presentation and disclosure of leases, and lessees are required to account for all leases under a single on-balance sheet model. IFRS 16 is effective for annual reporting periods beginning on or after January 1, 2019, and the Company will adopt IFRS 16 on April 1, 2019. As a transitional measure upon the adoption of IFRS 16, the Company will apply this standard and a method of recognizing the cumulative effect of the initial application as an adjustment to the beginning balance of retained earnings at the date of initial application.

The Company's leases will consist mainly of the leasing of real estate, and the impact of adopting IFRS 16 on the consolidated statement of financial position at the beginning of the subsequent consolidated fiscal year will include an increase in assets of ¥6,570 million associated with the recognition of right-of-use assets, an increase in liabilities of ¥6,648 million associated with the recognition of lease liabilities, and a decrease in equity of ¥77 million associated with the recognition of an adjustment to the beginning balance of retained earnings at the date of initial application.

The impact on the consolidated statement of profit or loss will not be material. In addition, with respect to the consolidated statement of cash flows, while lease payments for operating leases were previously included in cash flows from operating activities, adjustments for depreciation expense for right-of-use assets will be included in cash flows from operating activities and payments of lease liabilities will be included in cash flows from financing activities as a result of adopting IFRS 16; therefore, compared with the previous accounting standard, cash flows from operating activities will increase while cash flows from financing activities will decrease.

4. Segment Information

(1) Overview of Reportable Segments

The Group's reportable segments are components for which separate financial information is available and which the Management Committee evaluates regularly in deciding how to allocate resources and in assessing performance.

The Group maintains business divisions at the head office in accordance with the nature of its products and services. Each business division formulates comprehensive internal and external strategies and operates worldwide.

Business segments are now classified into the following four segments: "Science & Medical Systems," "Electronic Device Systems," "Industrial Systems" and "Advanced Industrial Products."

The main products and services of each segment are as follows:

Science & Medical Systems

Manufacture, sales, installation and maintenance services of various analytical instruments including spectrophotometers, chromatographs, fluorescent X-ray analysis and thermal analysis systems, and electron microscopes, biotechnology products and clinical analyzers.

Electronic Device Systems

Manufacture, sales, installation and maintenance services of semiconductor-related manufacturing equipment such as etching systems, CD-Measurement SEMs, and inspection systems.

Industrial Systems

Sales of automated assembly systems for LIBs and other products, power generation and transformation facilities, digital solutions, videoconferencing systems, and telecommunications equipment. Manufacture, sales, installation and maintenance services of instruments and control systems, and related systems, railway inspection equipment, HD manufacturing equipment, factory automation equipment, and FPD manufacturing equipment.

Advanced Industrial Products

Sales of automated assembly systems in steel products, and non-ferrous metal products, components for circuits, plastics, cell materials and components, automotive components, silicon wafers, HDDs, optical telecommunications device materials and components, optical storage device materials and components, electronic components such as semiconductors, and oil products.

(2) Reportable Segment Information

The accounting methods applied to the business segments reported are generally the same as those described in Note 3 *Summary of Significant Accounting Policies*. Intersegment transactions are generally based on prevailing market prices. Segment income is measured by earnings before interest and taxes (EBIT).

Corporate property, plant and equipment and intangible assets cannot be allocated to particular reportable segments and are not included in the assets of those segments. The related depreciation and amortization are included in segment income because they constitute part of the corporate expenses allocated to each reportable segment.

Information relating to reportable segments is as follows:

Year ended March 31, 2018

Millions of yen

	Reportable segments					Others (Note 1)	Adjustment	Consolidated
	Science & Medical Systems	Electronic Device Systems	Industrial Systems	Advanced Industrial Products	Total			
Revenues								
External customers	187,569	135,452	73,453	289,361	685,835	813	1,022	687,670
Intersegment revenues	518	199	3,045	4,969	8,732	1,071	(9,802)	-
Total	188,087	135,651	76,498	294,330	694,566	1,884	(8,780)	687,670
Segment income (loss)								
EBIT	22,665	31,663	973	3,731	59,032	(1,059)	(2,738)	55,236
Interest income (Note 2)	251	-	-	-	251	-	165	416
Interest charges (Note 2)	-	(8)	(65)	(206)	(279)	(5)	221	(64)
Income before income taxes	22,916	31,656	908	3,525	59,005	(1,064)	(2,352)	55,588
Other income and expenses								
Depreciation and amortization	(5,450)	(4,376)	(1,168)	(815)	(11,808)	(22)	-	(11,830)
Impairment losses	-	-	(16)	(304)	(320)	-	-	(320)
Reversal of impairment losses	-	-	-	-	-	-	-	-
Share of profits of investments accounted for using the equity method (Note 3)	(89)	-	31	420	362	(6)	(134)	222
Segment assets	109,496	86,478	46,146	117,771	359,890	792	262,654	623,335
Other assets								
Investments accounted for using the equity method (Note 4)	718	-	98	98	914	137	131	1,182
Capital expenditures (Note 5)	6,645	6,795	1,083	771	15,294	29	(222)	15,102
Segment liabilities	31,895	28,348	27,582	74,398	162,224	46	70,571	232,841

Notes:

1. Others represent businesses segments not included in the reportable segments, and they include indirect-support businesses.
2. Interest income and charges incurred at each business segment are interests of intracompany loans payable. These interest income and charges are offset, and the net amount represented as either interest income or charges in accordance with the net amount since it is recognized on a net basis for internal management purposes. The adjustments for interest income and interest charges are mainly for the head office, which are not attributable to any business segments, and reversal of interests on intracompany loans payable.
3. For management purposes, share of profits of investments accounted for using the equity method is equivalent to the income before income taxes of equity method associates, and the difference between these amounts and the amounts shown on the consolidated financial statements is included in Adjustment.
4. For management purposes, investments accounted for using the equity method in each business segment are investments in equity method associates, and the difference between these amounts and the amounts shown on the consolidated financial statements is included in Adjustment.
5. Capital expenditure in Adjustments are corporate amounts not attributable to any business segments.

	Reportable segments					Others (Note 1)	Adjustment	Consolidated
	Science & Medical Systems	Electronic Device Systems	Industrial Systems	Advanced Industrial Products	Total			
Revenues								
External customers	204,684	147,116	80,296	297,891	729,987	1,009	109	731,104
Intersegment revenues	1,734	-	3,298	5,019	10,051	1,568	(11,619)	-
Total	206,418	147,116	83,594	302,910	740,038	2,576	(11,510)	731,104
Segment income (loss)								
EBIT	29,639	33,648	2,185	4,199	69,671	(969)	(4,476)	64,226
Interest income (Note 2)	270	-	-	-	270	-	310	580
Interest charges (Note 2)	-	(28)	(54)	(279)	(362)	(8)	321	(49)
Income before income taxes	29,909	33,620	2,130	3,920	69,579	(976)	(3,845)	64,758
Other income and expenses								
Depreciation and amortization	(6,068)	(5,099)	(1,124)	(839)	(13,130)	(24)	-	(13,154)
Impairment losses	(239)	(119)	-	-	(357)	-	-	(357)
Reversal of impairment losses	-	-	-	-	-	-	152	152
Share of profits of investments accounted for using the equity method (Note 3)	(140)	-	31	427	318	(40)	(136)	143
Segment assets	112,316	106,578	45,470	132,807	397,172	1,144	268,078	666,394
Other assets								
Investments accounted for using the equity method (Note 4)	551	-	98	139	789	137	134	1,060
Capital expenditures (Note 5)	6,333	11,235	1,201	2,571	21,340	76	(221)	21,195
Segment liabilities	30,292	33,297	25,827	79,769	169,186	131	71,313	240,630

Notes:

1. Others represent businesses segments not included in the reportable segments, and they include indirect-support businesses.
2. Interest income and charges incurred at each business segment are interests of intracompany loans payable. These interest income and charges are offset, and the net amount represented as either interest income or charges in accordance with the net amount since it is recognized on a net basis for internal management purposes. The adjustments for interest income and interest charges are mainly for the head office, which are not attributable to any business segments, and reversal of interests on intracompany loans payable.
3. For management purposes, share of profits of investments accounted for using the equity method is equivalent to the income before income taxes of equity method associates, and the difference between these amounts and the amounts shown on the consolidated financial statements is included in Adjustment.
4. For management purposes, investments accounted for using the equity method in each business segment are investments in equity method associates, and the difference between these amounts and the amounts shown on the consolidated financial statements is included in Adjustment.
5. Capital expenditure in Adjustments are corporate amounts not attributable to any business segments.

(3) Information about Differences between Totals of Reporting Segments and Consolidated Financial Statements and Main Details of Differences (Matters Relating to Adjustments)

Millions of yen

Revenues	For the year ended March 31, 2018	For the year ended March 31, 2019
Reportable segment total	694,566	740,038
Others (other business segment)	1,884	2,576
Intersegment transaction elimination	(9,802)	(11,619)
Other adjustments (see Note)	1,022	109
Consolidated financial statements	687,670	731,104

Note: Other adjustments are management accounting adjustments.

Millions of yen

Segment income (EBIT)	For the year ended March 31, 2018	For the year ended March 31, 2019
Reportable segment total	59,032	69,671
Others (other business segment)	(1,059)	(969)
Intersegment transaction elimination	104	(99)
Other adjustments (see Note)	(2,841)	(4,377)
Consolidated financial statements	55,236	64,226

Note: Other adjustments are mainly corporate profit or loss not attributable to any business segments.

Millions of yen

Assets	As of March 31, 2018	As of March 31, 2019
Reportable segment total	359,890	397,172
Others (other business segment)	792	1,144
Intersegment transaction elimination	(689)	(678)
Other adjustments (see Note)	263,343	268,757
Consolidated financial statements	623,335	666,394

Note: Other adjustments are mainly corporate assets not attributable to any business segments.

Millions of yen

Liabilities	As of March 31, 2018	As of March 31, 2019
Reportable segment total	162,224	169,186
Others (other business segment)	46	131
Intersegment transaction elimination	(603)	(493)
Other adjustments (see Note)	71,174	71,806
Consolidated financial statements	232,841	240,630

Note: Other adjustments are mainly corporate liabilities not attributable to any business segments.

(4) Product and Services Information

This is as disclosed in Note 4 (2) *Reportable Segment Information* and is not presented here.

(5) Geographical Information**(i) External Revenues**

Millions of yen

	For the year ended March 31, 2018	For the year ended March 31, 2019
Japan	267,128	283,028
North America	53,653	62,017
Europe	83,506	98,812
Asia	256,504	256,833
(China)	(88,895)	(93,804)
Others	26,879	30,414
Total	687,670	731,104

Note: Revenue information is based on customer location and classified by country or region.

(ii) Non-Current Assets

Non-current asset information is not presented as such assets are mostly located in Japan.

(6) Information about Major Customers

For the year ended March 31, 2018, two customer groups accounted for more than 10% of the Group's net sales, with sales for all segments to those customers amounting to ¥206,046 million. For the year ended March 31, 2019, two customer groups accounted for more than 10% of the Group's net sales, with sales for all segments to those customers amounting to ¥224,611 million.

5. Business Combination

As of March 31, 2018

On April 26, 2017, the Group concluded an acquisition agreement with Oxford Instruments plc (hereinafter, “OI”) based in the U.K. to acquire shares of the subsidiaries of OI and take over the business of the subsidiaries relating to a part of the industrial measuring equipment business, atomic spectrometric products (X-ray fluorescence analyzers, magnetic induction measurement instruments (contact gauges), laser induced breakdown spectrometers, optical emission spectrometers; hereinafter “targeted business”), and completed the acquisition of shares of the subsidiaries of OI and the transfer of business from the subsidiaries of OI on July 3, 2017.

(1) Reasons for the Stock Purchase and Business Acquisition

In the Scientific Systems Business, the Company’s core business, the Company has adopted the business vision of aiming to be global major player in scientific instruments markets based on its Mid-Term Management Strategy. With this in mind, the Company has been working to bolster its technologies, products and sales networks through alliances and M&A activities, in addition to in-house development.

OI is a global scientific analytical instruments company that was spun out from Oxford University. The Company has reached an agreement with OI to acquire the targeted business.

OI manufactures and markets an expansive lineup of atomic spectroscopy products, including both benchtop and handheld models. Notably, handheld models and other portable equipment are increasingly being used in a broad range of fields as on-site quality assurance tools. The Company’s Scientific Systems Business has strengths in benchtop atomic spectroscopy product models. Through the acquisition of the targeted business, the Company will bolster its lineup by bringing in OI’s handheld atomic spectroscopy product models, where OI is strong. This will enable the Company to address customer needs by supporting various sample types and measuring settings ranging from precision analysis in the laboratory to on-site analyses. In addition, The Company will incorporate the sales network established by OI worldwide into its organization, enabling it to strengthen its sales network further.

(2)Name of the acquired companies

Country	Former company name	New company name
U.K.	Materials Analysis Limited	Hitachi High-Tech Analytical Science Ltd.
Germany	Oxford Instruments Analytical GmbH	Hitachi High-Tech Analytical Science GmbH
Finland	Oxford Instruments Industrial Analysis Oy	Hitachi High-Tech Analytical Science Finland Oy
China	Oxford Instruments (Shanghai) Co. Limited	Hitachi High-Tech Analytical Science Shanghai Co., Limited
U.S.A.	Baker Avenue Services Inc.	Hitachi High-Tech Analytical Science America, Inc.

(3)Fair value of the consideration paid

Millions of yen

	Amount
Fair value of the consideration paid	11,306

Notes:

1. There is no contingent consideration.
2. The consideration paid has been calculated by making price adjustments for such items as net interest-bearing debt and working capital to the business valuation amount.

(4) Payment for the acquisition of shares of subsidiaries and the business transfer

Millions of yen

	Amount
Acquisition through cash and cash equivalents	10,988
Cash and cash equivalents of the acquired subsidiaries	(872)
Payment for the acquisition of shares of subsidiaries and the business transfer	10,116

(5) Fair values of assets acquired and liabilities assumed at the date of acquisition (Note 1)

Millions of yen

Account	Amount
Current assets	
Cash and cash equivalents	872
Trade receivables (Note 2)	1,070
Inventories	1,880
Others	250
Non-current assets	
Property, plant and equipment	341
Intangible assets	5,274
Total assets	9,687
Current liabilities	
Trade payables	381
Others	1,837
Non-current liabilities	
Others	815
Total liabilities	3,033
Total net assets	6,654

Notes:

1. The fair values of assets acquired and liabilities assumed at the acquisition date have been measured based on due diligence conducted by professional firms and corporate valuations by financial advisors. The above amounts have been translated at the exchange rate as of the acquisition date.
2. The contracted amount of receivables acquired was ¥1,131 million and the fair value was ¥1,070 million. Fair value includes the estimated contracted cash flow of ¥60 million, which is not expected to be recovered.

(6) Goodwill arising from the acquisition

Millions of yen

	Amount
Fair value of the consideration paid	11,306
Fair value of identifiable net assets acquired	6,654
Basis adjustment (Note 1)	(318)
Goodwill (Note 2)	4,334

Notes:

1. The Company uses forward exchange contracts to hedge against foreign exchange risks associated with the acquisition from OI. Hedge accounting has been applied to these forward exchange contracts as cash flow hedges, and the fair value of the hedging instrument at the date on which control was obtained of ¥318 million has been deducted from the initial recognition of goodwill arising in conjunction with this business combination.
2. The excess of the consideration transferred over the net amount of the identifiable assets acquired and liabilities assumed has been recognized as goodwill. Goodwill reflects the future excess earning power expected to be generated from business development going forward. This goodwill is not deductible for tax purposes.

(7) Acquisition-related costs

Acquisition-related costs of this business combination was ¥371 million, of which ¥182 million was recognized in the year ended March 31, 2017 and ¥189 million was recognized in the year ended March 31, 2018, respectively, under “selling, general and administrative expenses” in the Consolidated Statements of Profit or Loss.

(8) Impact on the Group’s business performance

In the Consolidated Statements of Profit or Loss for the year ended March 31, 2018, revenues from the acquired companies and the business transferred on and after the date on which control was obtained was ¥6,283 million, and a net loss of ¥534 million was recognized. Net income includes the amortization of intangible assets recognized at the date on which control was obtained.

(9) Ownership ratio

100% of the shares of subsidiaries of OI involved in the Subject Operations was acquired.

(10) Revenues and net income if the business combination had been conducted at the beginning of the year ended March 31, 2018

Revenues and net income for the year ended March 31, 2018 assuming that the acquisition of shares of OI and the business transfer had occurred at the beginning of the year ended March 31, 2018 have been omitted, due to its immateriality.

As of March 31, 2019

There is no significant Business Combination.

6. Revenues

(1) Disaggregation of revenue

The Company's revenue is recognized as mainly coming from contracts with customers. The Company's reporting segments are as follows, categorized by main product segments.

Millions of yen

Main Product Segments	For the year ended March 31, 2019
Science & Medical Systems	206,418
Electron Microscopes	34,276
Scientific Instruments	33,359
Medical Products	124,768
Biotechnology Products, Others	14,015
Electronic Device Systems	147,116
Process Equipment	68,604
Metrology & Inspection Equipment	77,974
Others	537
Industrial Systems	83,594
Social Infrastructure	32,161
Industrial Infrastructure	39,889
ICT Solutions	11,544
Advanced Industrial Products	302,910
Materials & Electronics	117,567
Automobiles & Mobility	82,616
Energy & Industry	56,455
Fuel & Chemicals, Others	46,272
Others & Adjustments	(8,933)
Total	731,104

(2) Information Relating to the Fulfillment of Contractual Obligations

Information relating to the fulfillment of contractual obligations that apply to the main products and services in each reporting segment is as follows.

Science & Medical Systems

This segment includes revenue from electron microscopes, scientific instruments, medical products, biotechnology products and others. Revenue from the sale of goods is recognized when the significant risks and effective control over the goods have been transferred. Specifically, revenue is recognized at such times as when goods are transferred to a customer, the date of shipment, the date of installation having completed, or the date of acceptance by the customer. Revenue from repairs and support services associated with the sale of products is recognized when services are provided. Revenue from maintenance or other fixed price service contracts is recognized evenly over the contractual period. Payment terms are general, and there are no material terms for transactions with deferred payments, etc.

Electronic Device Systems

This segment mainly includes revenue from semiconductor-related manufacturing equipment, metrology & inspection equipment and others. Revenue from the sale of goods is recognized when the significant risks and effective control over the goods have been transferred. Specifically, revenue is recognized at such times as when goods are transferred to a customer, the date of shipment, the date of installation having completed, or the date of acceptance by the customer. Revenue from repairs and support services associated with the sale of products is recognized when services are provided. Revenue from maintenance or other fixed price service contracts is recognized evenly over the contractual period. Payment for some contracts is based on milestones, and payment may be made prior to the fulfillment of contractual obligations. Payment terms are general, and there are no material terms for transactions with deferred payments, etc.

Industrial Systems

This segment includes revenue from social infrastructure, industrial infrastructure and ICT solutions. Revenue from the sale of goods is recognized when the significant risks and effective control over the goods have been transferred. Specifically, revenue is recognized at such times as when goods are transferred to a customer, the date of shipment, the date of installation having completed, or the date of acceptance by the customer. Revenue from repairs and support services associated with the sale of products is recognized when services are provided. Revenue from maintenance or other fixed price service contracts is recognized evenly over the contractual period. Contract work, etc. for this segment consists of the manufacture and provision of products to the customer over an extended period based on the customer's specifications. As contractual obligations are fulfilled over a certain period, revenue is recognized as and when costs are incurred. Payment for some contracts is based on milestones, and payment may be made prior to the fulfillment of contractual obligations. Payment terms are general, and there are no material terms for transactions with deferred payments, etc.

Advanced Industrial Products

This segment includes revenue from materials & electronics, automobiles & mobility, energy & industry, and fuel & chemicals and others. Revenue from the sale of goods is recognized when the significant risks and effective control over the goods have been transferred. Specifically, revenue is recognized at such times as when goods are transferred to a customer, the date of shipment, or the date of acceptance by the customer. Moreover, some transactions are carried out as an agent. Payment terms are general, and there are no material terms for transactions with deferred payments, etc.

(3) Information about contract balances

The beginning and closing balances relating to Trade receivables, Contract assets and Contract liabilities from contracts with customers for the fiscal year ended March 31, 2019 are as follows;

	Millions of yen	
	As of April 1, 2018	As of March 31, 2019
Trade receivables	158,764	165,133
Contract assets	108	144
Contract liabilities	20,960	23,716

Of the revenue recognized during the fiscal year ended March 31, 2019, the amount included in Contract liabilities at the beginning of the fiscal year was ¥18,747 million, and the amount related to performance obligations satisfied during the fiscal year ended March 31, 2018 was not material.

(4) Transaction price allocated to remaining performance obligations

The Company does not recognize significant transactions whose initial expected terms exceed one year. Accordingly, remaining performance obligations are excluded from this disclosure in accordance with a practical expedient.

And the consideration from contracts with customers does not include significant amount which is not included into transaction amount.

(5) Assets recognized from the costs incurred for obtaining or fulfilling contracts with customers

The Company recognizes the costs incurred for obtaining or fulfilling contracts with customers as an assets to the extent those costs are expected to be recovered. Such costs recognized as an asset as of March 31, 2019 were not material.

7. Cash and Cash Equivalents

Cash and cash equivalents are as follows:

Millions of yen

	As of March 31, 2018	As of March 31, 2019
Bank deposits with cash and deposits with maturities of less than three months	43,468	51,897
Deposits with maturities of less than three months	148,893	139,581
Cash and cash equivalents	192,361	191,478

8. Trade Receivables

The components of trade receivables are as follows:

Millions of yen

	As of March 31, 2018	As of March 31, 2019
Accounts receivable	139,019	146,424
Notes receivable	19,925	18,781
Finance lease receivables	1,470	2,524
Less: Allowance for doubtful receivables	(180)	(72)
Total	160,234	167,656
Current assets	159,338	165,865
Non-current assets	896	1,792

Credit risk management and the fair value of trade receivables are stated in Note 29 *Financial Instruments*.

9. Inventories

The components of inventories are as follows:

Millions of yen

	As of March 31, 2018	As of March 31, 2019
Merchandise and finished goods	54,130	66,426
Work in progress	56,332	63,079
Raw materials	6,064	8,234
Total	116,526	137,738

Inventories included in the cost of sales and recognized as an expense totaled ¥520,892 million and ¥544,828 million in the years ended March 31, 2018 and 2019, respectively.

The write-downs of inventories recognized as an expense are as follows:

Millions of yen

	For the year ended March 31, 2018	For the year ended March 31, 2019
Inventory write-downs	2,351	1,513

10. Assets Held-for-Sale

The components of assets held-for-sale are as follows:

Millions of yen

	As of March 31, 2018	As of March 31, 2019
Assets held-for-sale		
Buildings and structures	-	59
Machinery and vehicles	-	269
Land	-	551
Other assets	-	0
Total	-	879

As the Group decided to divest ¥610 million of buildings and structures, land and other assets not belonging to any of its business segment and ¥269 million of machinery and vehicles and other assets belonging to Industrial Systems segment, such assets were classified as assets held-for-sale as of March 31, 2019.

11. Property, Plant and Equipment

Changes in carrying amount of property, plant and equipment are as follows:

Millions of yen

	Buildings and structures	Machinery and vehicles	Tools, furniture and fixtures	Land	Construction in progress	Total
Carrying amount						
As of March 31, 2017	31,121	10,603	9,119	17,908	2,056	70,806
Acquisitions	501	152	835	-	11,327	12,815
Increase due to business combination	146	88	112	22	-	368
Sales or disposals	(107)	(233)	(59)	(4)	(30)	(432)
Transfers from construction in progress	1,494	4,789	4,118	111	(10,513)	-
Depreciation	(2,235)	(3,554)	(3,254)	-	-	(9,043)
Impairment losses	(3)	(70)	(5)	-	-	(78)
Currency translation effect	37	(117)	5	15	(17)	(78)
Other	(6)	35	(50)	(134)	(395)	(549)
As of March 31, 2018	30,947	11,695	10,821	17,918	2,429	73,809
Acquisitions	400	22	964	-	16,645	18,032
Increase due to business combination	-	2	0	-	-	2
Sales or disposals	(111)	(221)	(191)	-	(4)	(528)
Transfers from construction in progress	1,938	6,372	7,037	15	(15,362)	-
Depreciation	(2,576)	(3,832)	(3,757)	-	-	(10,165)
Impairment losses	-	(5)	(115)	-	-	(120)
Reversal of Impairment losses	-	-	-	152	-	152
Currency translation effect	(10)	105	(16)	(14)	9	74
Other	(198)	(144)	(48)	(551)	(1,864)	(2,805)
As of March 31, 2019	30,389	13,995	14,694	17,520	1,853	78,451

Acquisition cost, accumulated depreciation and accumulated impairment losses of property, plant and equipment are as follows:

Millions of yen

	Buildings and structures	Machinery and vehicles	Tools, furniture and fixtures	Land	Construction in progress	Total
Acquisition cost						
As of March 31, 2017	62,589	42,948	33,903	18,997	2,078	160,515
As of March 31, 2018	64,140	44,168	37,758	19,140	2,429	167,636
As of March 31, 2019	63,555	48,086	43,209	17,520	1,853	174,222
Accumulated depreciation and accumulated impairment losses						
As of March 31, 2017	(31,468)	(32,344)	(24,785)	(1,089)	(22)	(89,708)
As of March 31, 2018	(33,194)	(32,473)	(26,937)	(1,223)	-	(93,827)
As of March 31, 2019	(33,166)	(34,091)	(28,515)	-	-	(95,772)

Changes in presentation have been made effective the fiscal year beginning April 1, 2018 in order to improve usefulness of this Note by facilitating grasp of the relevance between presentation in consolidated financial statements and presentation in the Notes. In the above table, changes in carrying amount of property, plant and equipment are presented, and balances of acquisition cost, accumulated depreciation, accumulated impairment losses of property, plant and equipment at the end of each fiscal year are presented. As a result, the amounts for the previous fiscal year have been reclassified in order to reflect these changes in presentation.

There are no ownership restrictions on property, plant and equipment.

Amounts for property, plant and equipment under construction are presented in construction in progress.

Details on impairment losses are stated in Note 23 Impairment Losses.

Commitments relating to acquisitions of property, plant and equipment are presented in Note 34 Commitments.

Depreciation is recognized in cost of sales and in selling, general and administrative expenses.

The carrying amounts of lease assets included in property, plant and equipment are as follows:

Millions of yen

	Machinery and vehicles	Tools, furniture and fixtures
As of March 31, 2018	89	218
As of March 31, 2019	49	167

12. Intangible Assets

Changes in carrying amount of intangible assets are as follows:

Millions of yen

	Goodwill	Software	Other	Total
Carrying amount				
As of March 31, 2017	641	5,197	2,059	7,897
Purchases	-	757	176	933
Internal development	-	1,153	-	1,153
Increase due to business combination	5,149	-	4,683	9,832
Sales or disposals	-	(37)	(1)	(38)
Amortization	-	(1,963)	(823)	(2,787)
Impairment losses	(93)	(148)	-	(241)
Currency translation effect	120	(1)	85	203
Other	-	(1)	-	(1)
As of March 31, 2018	5,817	4,956	6,178	16,951
Purchases	-	2,468	513	2,981
Internal development	-	516	-	516
Increase due to business combination	585	-	888	1,473
Sales or disposals	-	(164)	(1)	(165)
Amortization	-	(1,953)	(1,035)	(2,989)
Impairment losses	(237)	-	-	(237)
Currency translation effect	(142)	1	(104)	(245)
Other	-	(2)	(2)	(4)
As of March 31, 2019	6,023	5,822	6,436	18,281

Acquisition cost, accumulated amortization and accumulated impairment losses of intangible assets are as follows:

Millions of yen

	Goodwill	Software	Other	Total
Acquisition cost				
As of March 31, 2017	4,491	23,205	6,668	34,364
As of March 31, 2018	9,760	24,805	11,674	46,239
As of March 31, 2019	10,476	27,360	19,019	56,855
Accumulated amortization and accumulated impairment losses				
As of March 31, 2017	(3,850)	(18,008)	(4,609)	(26,467)
As of March 31, 2018	(3,943)	(19,849)	(5,497)	(29,288)
As of March 31, 2019	(4,453)	(21,537)	(12,583)	(38,574)

Changes in presentation have been made effective the fiscal year beginning April 1, 2018 in order to improve usefulness of this Note by facilitating grasp of the relevance between presentation in consolidated financial statements and presentation in the Notes. In the above table, changes in carrying amount of intangible assets are presented, and balances of acquisition cost, accumulated amortization, accumulated impairment losses of intangible assets at the end of each fiscal year are presented. As a result, the amounts for the previous fiscal year have been reclassified in order to reflect these changes in presentation.

There are no ownership restrictions on intangible assets.

Details on impairment losses are stated in Note 23 *Impairment Losses*.

Amortization is recognized in the cost of sales and in selling, general and administrative expenses.

There are no significant intangible assets whose useful lives cannot be estimated.

The carrying amounts of internally generated intangible assets as of March 31, 2018 and 2019 were ¥2,939 million and ¥3,189 million, respectively, and recognized in the software account.

Among intangible assets of ¥18,281 million significant intangible assets resulted from the acquisition of shares of the subsidiaries of Oxford Instruments plc and taking over the business of the subsidiaries in the fiscal year ended March 31, 2018.

The carrying amounts of goodwill as of March 31, 2019 were ¥4,876 million.

The intangible assets related to such factors as technologies and customer relationship identified through the business combination, and the carrying amounts as of March 31, 2019 were ¥3,339 million.

Intangible assets are amortized using the straight-line method, and the remaining useful life is mainly eight years.

All significant goodwill in the Group is allocated to the Analytical Systems business of the Science & Medical Systems segment. The carrying amounts as of March 31, 2019 were ¥4,876 million.

Every year or when there are indications of impairment, the Company conducts the following impairment tests of cash generating units to which goodwill is allocated.

The recoverable amount for the Analytical Systems business, a cash generating unit, is calculated by the value in use, with the estimated future cash flows discounted to the present value, based on a three-year business plan that was prepared by reflecting past experiences and external information approved by management. Management assumes a future cash flow growth rate of zero beyond the three-year business plan. The discount rate before taxes is based on the weighted average cost of capital of other companies in the same industry, and this rate as of March 31, 2019 was 12.0%.

For goodwill, since the recoverable amount of cash generating unit is well above the carrying amount, even if key assumption is changed within a reasonable range, it is unlikely that the recoverable value of cash generating unit will be less than the carrying amount.

13. Investments Accounted for Using the Equity Method

The Group uses the equity method to account for its investments in the following associates.

Company name	Principal business	Segment	Ownership percentage (%)	
			As of March 31, 2018	As of March 31, 2019
Giesecke & Devrient K.K.	Selling and developing IC cards and other Giesecke & Devrient products in the Japanese market	Advanced Industrial Products	49.0	49.0
Chorus Call Asia Corporation	Providing video and audio conferencing services	Industrial Systems	49.0	49.0
NeU Corporation	Industrial application business of brain science	Other	38.1	38.1
MagArray, Inc.	Cancer diagnostic scan service using high sensitivity measurement technology	Science&Medical Systems	20.0	20.0
Changzhou KTH International Trading Co., Ltd.	Sales and service of industrial components utilizing parts for railway vehicles and related technologies in China	Advanced Industrial Products	-	49.0

Notes:

- Summary financial information is not presented because it is insignificant.
- Changzhou KTH International Trading Co., Ltd. is an affiliated company of Hitachi High-Technologies (Shanghai) Co., Ltd.

14. Deferred Taxes and Income Taxes

(1) Details of the main components and changes in deferred tax assets and deferred tax liabilities are as follows:

Millions of yen

	As of March 31, 2017	Recognized in profit or loss	Recognized in other comprehensive income	Change in scope of consolidation (see Note 1)	As of March 31, 2018
Deferred tax assets					
Inventories	3,660	226	-	(22)	3,863
Depreciation and amortization	2,931	459	-	10	3,399
Accrued expenses	5,380	132	-	(10)	5,502
Retirement and severance benefits (see Note 2)	11,124	(692)	(1,398)	(32)	9,002
Carryforward of unused tax losses	25	34	-	0	59
Other	2,828	(970)	(124)	(12)	1,723
Total deferred tax assets	25,948	(812)	(1,521)	(66)	23,548
Deferred tax liabilities					
Deferred profit on sale of properties	(545)	33	-	-	(512)
FVTOCI financial assets	(1,621)	-	536	2	(1,083)
Other	(999)	(221)	23	(829)	(2,025)
Total deferred tax liabilities	(3,164)	(188)	560	(827)	(3,620)

Notes: 1. Changes in foreign currency translation differences are included in the change in the scope of consolidation.

2. In the transition to defined contribution pension plans, the asset to be transitioned is recognized in retirement and severance benefits.

Millions of yen

	As of March 31, 2018	Recognized in profit or loss	Recognized in other comprehensive income	Change in scope of consolidation (see Note 1)	As of March 31, 2019
Deferred tax assets					
Inventories	3,863	386	-	11	4,260
Depreciation and amortization	3,399	(471)	-	(20)	2,909
Accrued expenses	5,502	334	-	4	5,840
Retirement and severance benefits	9,002	(783)	59	9	8,288
Carryforward of unused tax losses	59	24	-	(1)	81
Other	1,723	1,070	160	(10)	2,944
Total deferred tax assets	23,548	963	220	(6)	24,726
Deferred tax liabilities					
Deferred profit on sale of properties	(512)	37	-	-	(475)
FVTOCI financial assets	(1,083)	(8)	549	38	(504)
Other	(2,025)	544	(37)	(229)	(1,748)
Total deferred tax liabilities	(3,620)	572	511	(191)	(2,727)

Notes: 1. Changes in foreign currency translation differences are included in the change in the scope of consolidation.

In recognizing deferred tax assets, the Group considers whether it can use all or part of future deductible temporary differences or carryforward unused tax losses with respect to future taxable income. In evaluating the recoverability of deferred tax assets, the Group considers the planned reversal of deferred tax liabilities, expected future taxable income, and tax planning. For recognized deferred tax assets, the Group has determined that there is a high probability of materializing tax benefits based on historical taxable income levels and on future taxable income projections for the period in which it can recognize deferred tax assets. However, they would similarly be a decrease in deferred tax assets that the Group considers recognizable if future projected taxable income declines during the period in which deductions are possible.

Deferred tax assets and deferred tax liabilities in the consolidated statements of financial position are as follows:

Millions of yen

	As of March 31, 2018	As of March 31, 2019
Deferred tax assets	20,749	22,901
Deferred tax liabilities	(821)	(903)

(2) Future Deductible Temporary Differences and Carryforward of Unused Tax Losses for Unrecognized Deferred Tax Assets

Future deductible temporary differences and carryforward of unused tax losses for unrecognized deferred tax assets are as follows:

Millions of yen

	As of March 31, 2018	As of March 31, 2019
Future deductible temporary differences	10,930	11,907
Carryforward of unused tax losses	4,078	4,135
Total	15,008	16,042

The carryforward of unused tax losses for unrecognized deferred tax assets will expire as follows:

Millions of yen

	As of March 31, 2018	As of March 31, 2019
First year	-	-
Second year	-	-
Third year	18	68
Fourth year	418	1,332
Fifth and subsequent years	3,642	2,736
Total	4,078	4,135

(3) Temporary Differences Relating to Investments in Subsidiaries for Unrecognized Deferred Tax Liabilities

On March 31, 2018 and 2019, future taxable temporary differences relating to investments in subsidiaries with unrecognized deferred tax liabilities totaled ¥45,900 million and ¥50,206 million, respectively. Deferred tax liabilities are unrecognized because the Group can control the timing of temporary difference reversals and because there is a high possibility that temporary differences will not be eliminated in the foreseeable future.

(4) Income Taxes

Details of income taxes are as follows:

Millions of yen

	For the year ended March 31, 2018	For the year ended March 31, 2019
Current tax expense	13,510	17,522
Deferred tax expense		
Temporary differences and eliminations	1,147	(1,802)
Recoverability of deferred tax assets	(147)	266
Total deferred tax expenses	1,000	(1,536)
Income taxes	14,509	15,986

(5) Reconciliation of Effective Statutory Tax Rate

The reconciliation of the effective statutory tax rate with the actual tax rate is as follows:

	For the year ended March 31, 2018	For the year ended March 31, 2019
Effective statutory tax rate	30.9 %	30.6 %
Non-deductible costs	0.7 %	0.6 %
Tax credit	(6.7) %	(5.4) %
Different tax rates applied to foreign subsidiaries	(0.4) %	(2.4) %
Change in recoverable deferred tax assets	(0.3) %	0.4 %
Other	1.8 %	0.9 %
Actual tax rate	26.1 %	24.7 %

The Company is subject mainly to corporate, inhabitant, and enterprise taxes. The effective statutory tax rates calculated based on these taxes were 30.9% and 30.6% for the years ended March 31, 2018 and 2019, respectively. Foreign subsidiaries are subject to income taxes at their locations, while the Company and domestic subsidiaries have adopted the consolidated taxation system.

15. Trade Payables

Details of trade payables are as follows:

Millions of yen

	As of March 31, 2018	As of March 31, 2019
Accounts payable	119,332	121,689
Notes payable	12,760	15,062
Total	132,091	136,751

Liquidity risk management and the fair value of trade payables are stated in Note 29 *Financial Instruments*.

16. Provisions

Changes in the balance and components of provisions are as follows:

Millions of yen

	Asset retirement obligations	Product warranty provisions	Total
As of March 31, 2018	1,261	2,402	3,663
Additions	123	1,659	1,781
Provisions used	(0)	(1,158)	(1,159)
Provisions reversed	-	(99)	(99)
Interest cost for discount	32	-	32
Currency translation effects	8	63	71
As of March 31, 2019	1,424	2,866	4,290
Current liabilities	687	1,946	2,633
Non-current liabilities	737	920	1,657

(i) Asset Retirement Obligations

To settle the obligation of restoring and removing hazardous substances from plant facilities and premises that the Group uses, the Group recognizes the estimated amount based on the estimated future expenditures calculated based on estimates from third parties. These expenses are expected to be paid after one year or more, however, they may be affected by future business plans.

(ii) Product Warranty Provisions

To provide for the costs of after-sales service for the Group's products, the Group recognizes estimated service costs within the warranty period based on historical experience. These expenses are used over the warranty period (principally within three years).

17. Retirement and Severance Benefits

The Company and certain domestic subsidiaries have maintained defined benefit pension plans and severance lump-sum payment plans as defined benefit corporate pension plans and transitioned in part to a defined contribution pension plan on October 1, 2015. Some foreign subsidiaries have defined benefit pension plans, while some have defined contribution plans. Certain defined benefit corporate pension plans adopt cash-balance plans.

In the transition to defined contribution pension plans, the asset is scheduled to be transitioned for four years and the asset to be transitioned is recognized in other current liabilities and in other non-current liabilities in the consolidated statements of financial position, however, the transition of the asset has been completed for the fiscal year ended March 31, 2019.

In the consolidated statement of cash flows, the net amount of the decrease in retirement benefit and the increase or decrease in other financial liabilities related to the asset to be transitioned is recognized in decrease in retirement and severance benefits.

The benefits of defined benefit plans are predetermined based on conditions, such as points employees have gained in compensation for each year of service, the payment rate in retirement, years of service and average salaries in their final years of service before retirement. Some employees receive additional severance payments at the time of retirement.

Funded defined benefit plans are administrated by the fund that is a separate legal entity from the Company under the law. The pension fund board and trustee of the plan are required by law to act in the best interests of the plan participants, and are responsible for managing plan assets in accordance with the designated investment strategy.

Pursuant to the Japanese Defined Benefit Corporate Pension Plan Act, the Company endeavors to maintain the pension financing balance for future benefits by regularly reviewing the financial condition of the pension plan and recalculating contributions.

The Company has future obligations to make contributions as defined by the fund. The contribution amount is periodically reviewed to the extent legally allowed.

Severance lump-sum payment plans provide a lump-sum payment at the time of retirement, and the Company has an obligation to pay benefits directly to beneficiaries.

These defined benefit plans expose the Group to actuarial risks.

The Group plans to allocate ¥1,927 million in contributions for the fiscal year ended March 31, 2020.

Defined contribution plans require a fixed amount of contribution over a participation period and plan participants themselves are responsible for the management of plan assets. Benefits are paid by the trustees, and the Company's responsibility is limited to making contributions.

(1) Defined Benefit Plans
(i) Net Liabilities (Assets) of Defined Benefit Plans

Amounts recognized in the consolidated statements of financial position are as follows and the amounts recognized as defined benefit pension plans are presented in other non-current liabilities in the consolidated statements of financial position:

Millions of yen

	Present value of defined benefit plan obligations	Fair value of plan assets	Net defined benefit plan obligations (assets)
As of April 1, 2017	118,701	(92,778)	25,923
Amounts recognized in profit or loss			
Service cost	4,011	-	4,011
Interest cost (income)	888	(741)	147
Total	4,899	(741)	4,158
Amounts recognized in OCI			
Remeasurement			
Actuarial gains and losses arising from changes in demographic assumptions	220	-	220
Actuarial gains and losses arising from changes in financial assumptions	1,247	-	1,247
Actuarial gains and losses arising from actual adjustments	(160)	-	(160)
Return on plan assets (excluding interest income)	-	(4,820)	(4,820)
Total	1,307	(4,820)	(3,513)
Other			
Contributions by the employer	-	(1,757)	(1,757)
Benefits paid	(5,416)	3,663	(1,753)
Currency translation effects	(488)	402	(85)
Other	(0)	2	2
Total	(5,904)	2,311	(3,594)
As of March 31, 2018	119,002	(96,029)	22,973
Amounts recognized in profit or loss			
Service cost	4,067	-	4,067
Interest cost (income)	841	(729)	113
Gain on transition to defined contribution pension plans	(8)	-	(8)
Total	4,900	(729)	4,172
Amounts recognized in OCI			
Remeasurement			
Actuarial gains and losses arising from changes in demographic assumptions	771	-	771
Actuarial gains and losses arising from changes in financial assumptions	631	-	631
Actuarial gains and losses arising from actual adjustments	(1,218)	-	(1,218)
Return on plan assets (excluding interest income)	-	69	69
Total	184	69	252
Other			
Contributions by the employer	-	(2,085)	(2,085)
Benefits paid	(5,271)	3,825	(1,446)
Currency translation effects	339	(297)	43
Total	(4,931)	1,443	(3,488)
As of March 31, 2019	119,154	(95,245)	23,909

The Company's funding takes into account such factors as limits on tax deductions, the fund status of plan assets, and actuarial assumptions. Contributions to plan assets are intended to cover future benefits as well as those for service that has already been provided. In addition, the Company may contribute cash to a retirement allowance trust as a reserve for shortfalls in funding for benefit obligations at the end of the fiscal year.

Management of the Company's plan assets aims to secure the payment of benefits to beneficiaries (including future pension beneficiaries) and optimize the value of plan assets within acceptable range of risks. The Company's management of plan assets factors in risks and returns for investment assets and includes formulating a policy asset mix that is optimal for the future, selecting trustees, and monitoring asset allocation.

The Company periodically reviews the policy asset mix to accommodate changes in the market environment from initial assumptions and changes in the funded status.

The Company targets an asset allocation mix of 23% for equities, 35% for bonds, and 42% for other instruments.

(ii) Main Plan Asset Components

Details of the major components of plan assets are as follows:

Millions of yen

	As of March 31, 2018		
	With quoted market price in an active market	With no quoted market price in an active market	Total
Cash and cash equivalents	1,710	-	1,710
Equities	3,770	-	3,770
Bonds	1,206	1,945	3,151
Hedge funds	-	32,781	32,781
Private assets	-	12,795	12,795
Securitization products	-	1,071	1,071
Life insurance general accounts	-	1,643	1,643
Comingled funds (see Note)	-	37,789	37,789
Other	47	1,270	1,317
Total	6,734	89,295	96,029

Note: Commingled funds comprised 50% in listed equities, 20% in national government bonds, 14% in other bonds, and 16% in other assets.

Millions of yen

	As of March 31, 2019		
	With quoted market price in an active market	With no quoted market price in an active market	Total
Cash and cash equivalents	1,630	-	1,630
Equities	2,552	-	2,552
Bonds	1,964	3,167	5,131
Hedge funds	-	30,021	30,021
Private assets	-	18,454	18,454
Securitization products	-	188	188
Life insurance general accounts	-	1,664	1,664
Comingled funds (see Note)	-	33,175	33,175
Other	61	2,370	2,430
Total	6,207	89,039	95,245

Note: Commingled funds comprised 50% in listed equities, 22% in national government bonds, 18% in other bonds, and 10% in other assets.

(iii) Actuarial Assumptions

The major actuarial assumptions at the end of reporting periods are as follows:

	As of March 31, 2018	As of March 31, 2019
Discount rates	0.7%	0.7%

The weighted average duration of defined benefit plan obligations for the years ended March 31, 2018 and 2019 were 13.8 years and 13.9 years, respectively.

(iv) Sensitivity Analysis for Defined Benefit Plan Obligations

Based on the assumption that all other variables were held constant, the impacts on defined benefit plan obligations of a 0.5 percentage point increase or decrease in the discount rate as of March 31, 2018 and 2019 are as follows. In reality, changes in other assumptions may affect the outcome of the analysis.

Millions of yen

	For the year ended March 31, 2018		For the year ended March 31, 2019	
	0.5 percentage point increase	0.5 percentage point decrease	0.5 percentage point increase	0.5 percentage point decrease
Effects of changes in discount rate	(8,080)	7,553	(7,919)	8,732

(2) Defined Contribution Plans

The Company has recognized expenses (continuing operations) on defined contribution plans of ¥1,566 million and ¥1,754 million for the years ended March 31, 2018 and 2019, respectively.

18. Equity and Other Capital Items

(1) Changes in Total Number of Authorized Shares, Shares Issued, and Treasury Stock

	Number of shares	
	For the year ended March 31, 2018	For the year ended March 31, 2019
Number of authorized shares		
Balance at beginning of year	350,000,000	350,000,000
Changes	-	-
Balance at end of year	350,000,000	350,000,000
Total number of issued shares		
Balance at beginning of year	137,738,730	137,738,730
Changes	-	-
Balance at end of year	137,738,730	137,738,730
Number of treasury stock		
Balance at beginning of year	209,841	211,217
Changes (Note 3)	1,376	1,333
Balance at end of year	211,217	212,550

Notes:

1. The shares that the Company issues are ordinary shares with non-par value.
2. Issued shares are fully paid.
3. For the year ended March 31, 2018, the number of shares increased by 1,376, which consists of purchase of 1,426 shares and the sale of 50 shares.
For the year ended March 31, 2019, the number of shares increased by 1,333, which consists of purchase of 1,363 shares and the sale of 30 shares.

(2) Capital Surplus

The main component of capital surplus is legal reserve.

Legal Reserve

The Japanese Company Law (JCL) requires that at least half of paid-in capital be appropriated as common stock and the rest be appropriated as a legal reserve within capital surplus. Under the JCL, The legal reserve can be incorporated in common stock by resolution at a shareholders' meeting.

(3) Retained Earnings

Retained earnings comprise the following categories:

(i) Earned Reserves

The JCL requires that 10% of the retained earnings appropriated for dividends be retained until the total amount of earned reserves included in legal reserve and earned reserves reaches a quarter of the nominal value of common stock. The accumulated earned reserves can be appropriated for deficit disposition. In addition, earned reserves may be available for dividends by resolution at the shareholders' meeting.

(ii) Other Retained Earnings

Other retained earnings are earned and undistributed by the Group.

(4) Accumulated Other Comprehensive Income

(i) Net Changes in Financial Assets Measured at Fair Value through OCI

These are the differences between the acquisition cost and fair value of FVTOCI financial assets.

(ii) Remeasurement of Defined Benefit Plans

Actuarial gains and losses are the effects of differences between actuarial assumptions at the beginning of the year and what has actually occurred, and the effects of changes in actuarial assumptions.

(iii) Foreign Currency Translation Adjustments

These adjustments result from converting the financial statements of foreign operations into the Group's presentation currency.

(iv) Net Changes in Cash Flow Hedges

These are the portions deemed effective of net changes in the fair value of derivative financial instruments designated as cash flow hedges.

19. Dividends

(1) Dividend Payments

Decision	Share class	Appropriation from	Cash dividends (Millions of yen)	Cash dividends per share (Yen)	Record date	Effective date
The Board of Directors on May 24, 2017	Common stock	Retained earnings	6,189	45.00	March 31, 2017	June 2, 2017
The Board of Directors on October 25, 2017	Common stock	Retained earnings	5,501	40.00	September 30, 2017	November 30, 2017
The Board of Directors on May 23, 2018	Common stock	Retained earnings	6,189	45.00	March 31, 2018	June 1, 2018
The Board of Directors on October 25, 2018	Common stock	Retained earnings	6,189	45.00	September 30, 2018	November 30, 2018

(2) Dividends on common stock for which the record date falls in the fiscal year ended March 31, 2019, and the effective date falls in the following fiscal year are as follows:

Decision	Share class	Appropriation from	Cash dividends (Millions of yen)	Cash dividends per share (Yen)	Record date	Effective date
The Board of Directors on May 23, 2019	Common stock	Retained earnings	8,252	60.00	March 31, 2019	May 31, 2019

20. Selling, General and Administrative Expenses

Details of selling, general and administrative expenses are as follows:

Millions of yen

	For the year ended March 31, 2018	For the year ended March 31, 2019
Personnel expenses	(46,405)	(50,220)
Research and development expenses	(21,362)	(23,643)
Depreciation and amortization	(4,458)	(4,811)
Other	(36,683)	(39,386)
Total	(108,907)	(118,060)

21. Personnel Expenses

Details of personnel expenses are as follows:

Millions of yen

	For the year ended March 31, 2018	For the year ended March 31, 2019
Salaries	(65,328)	(69,093)
Employees' bonuses	(23,209)	(25,212)
Retirement benefit expenses	(5,724)	(5,926)
Legal and employee benefit expenses	(12,914)	(13,303)
Extra retirement payments	(688)	(516)
Total	(107,863)	(114,051)

Note: Personnel expenses are included in cost of sales, selling, general and administrative expenses, and other expenses.

22. Research and Development Expenses

Research and development expenses are as follows:

Millions of yen

	For the year ended March 31, 2018	For the year ended March 31, 2019
Research and development expenses	(26,693)	(30,797)

Note: Research and development expenses are included in cost of sales and in selling, general and administrative expenses.

23. Impairment Losses

The components of impairment losses by asset category are as follows:

Millions of yen

	For the year ended March 31, 2018	For the year ended March 31, 2019
Property, plant and equipment	(78)	(120)
Intangible assets	(241)	(237)
Total	(320)	(357)

Impairment losses are included in other expenses.

The component of impairment losses by reportable segment is described in Note 4 *Segment Information*.

Information on main impairment losses recognized for the fiscal years ended March 31, 2018 and 2019 is as follows:

For the year ended March 31, 2018, for the goodwill allocated to Industrial materials that belong to the Advanced Industrial Products Segment, impairment loss was recognized, as revenue that was originally projected is no longer expected. The recoverable amount of this asset was measured at the value in use. The value in use was calculated by discounting the estimated future cash flows by 16.0%.

For the year ended March 31, 2019, for the goodwill allocated to Scientific Systems Business that belong to the Science & Medical Systems Segment, impairment loss was recognized, as revenue that was originally projected is no longer expected. The recoverable amount of this asset was measured at the value in use. The value in use was calculated by discounting the estimated future cash flows by 8.0%.

24. Other Income and Expenses

The components of other income are as follows:

Millions of yen

	For the year ended March 31, 2018	For the year ended March 31, 2019
Reversal of allowance for doubtful receivables	14	3
Gain on sale of property, plant and equipment, intangible assets	805	60
Reversal of impairment losses on fixed assets	-	152
Other	379	1,216
Total	1,198	1,431

The components of other expenses are as follows:

Millions of yen

	For the year ended March 31, 2018	For the year ended March 31, 2019
Impairment losses (Note)	(320)	(357)
Loss on sale and disposal of property, plant and equipment, and intangible assets	(294)	(776)
Other	(150)	(234)
Total	(764)	(1,368)

Note: Details of impairment losses are described in Note 23 *Impairment Losses*.

25. Financial Income and Expenses

Interest income and interest charges are related to financial assets and liabilities measured at amortized cost.

The components of financial income, except interest income, are as follows:

Millions of yen

	For the year ended March 31, 2018	For the year ended March 31, 2019
Dividends income		
FVTOCI financial assets	156	108
Gain on sale of financial instruments		
FVTPL financial assets	7	2
Total	163	110

The components of financial expenses, except interest charges, are as follows:

Millions of yen

	For the year ended March 31, 2018	For the year ended March 31, 2019
Loss on valuation of financial instruments		
FVTPL financial assets	(30)	(1,048)
Foreign exchange losses	(735)	(1,147)
Other	(337)	(598)
Total	(1,103)	(2,793)

26. Earnings per Share

Basic earnings per share attributable to Hitachi High-Technologies Corporation stockholders are calculated based on the following information:

	For the year ended March 31, 2018	For the year ended March 31, 2019
Net income attributable to Hitachi High-Technologies Corporation stockholders (millions of yen)	40,882	48,417
Basic weighted average number of ordinary shares	137,528,268	137,526,915
Basic earnings per share attributable to Hitachi High-Technologies Corporation stockholders (yen)	297.27	352.06

Note: Basic and diluted earnings per share attributable to Hitachi High-Technologies Corporation stockholders are the same, as there were no dilutive potential ordinary shares.

27. Other Comprehensive Income

Amounts arising, reclassification adjustment, and tax effect for each component of OCI for the years ended March 31, 2018 and 2019 are as follows:

	Millions of yen	
	For the year ended March 31, 2018	For the year ended March 31, 2019
Items not to be reclassified into net income		
Net changes in financial assets measured at FVTOCI		
Amounts arising	2,148	(883)
Before tax effect adjustment	2,148	(883)
Tax effect	(625)	549
Net changes in financial assets measured at FVTOCI	1,523	(334)
Remeasurements of defined benefit plans		
Amounts arising	3,513	(252)
Before tax effect adjustment	3,513	(252)
Tax effect	(1,398)	59
Remeasurements of defined benefit plans	2,116	(193)
Total items not to be reclassified into net income	3,639	(527)
Items that can be reclassified into net income		
Foreign currency translation adjustments		
Amounts arising	126	(360)
Before tax effect adjustment	126	(360)
Tax effect	-	(2)
Foreign currency translation adjustments	126	(362)
Net changes in cash flow hedges		
Amounts arising	(40)	(820)
Reclassification adjustment	685	418
Before tax effect adjustment	645	(402)
Tax effect	(198)	123
Net changes in cash flow hedges	446	(279)
Share of OCI of investments accounted for using the equity method		
Amounts arising	(6)	17
Total items that can be reclassified into net income	567	(624)
OCI	4,206	(1,151)

28. Non-Cash Transactions

Details of significant non-cash transactions are as follows:

	Millions of yen	
	For the year ended March 31, 2018	For the year ended March 31, 2019
Property, plant and equipment acquired under finance leases	179	21

29. Financial Instruments

(1) Financial Risk Management Policy

The Group is exposed to financial risks (credit, liquidity, and market risks) in the course of business, and manages risks based on a specific policy to avoid or reduce such risks.

The Group uses derivative transactions to avoid the risk of cash flow fluctuations resulting from fluctuations in foreign exchange markets, and does not transact derivatives for speculative purposes.

(2) Credit Risk

The Group is exposed to customer credit risk for trade receivables acquired in the course of business. Investments in debt securities held for managing cash surplus and equity securities held for strategic purposes are exposed to credit risk of the issuers. Forward exchange contracts that the Group enters into to hedge against foreign-exchange market fluctuation risks are exposed to credit risk of the counterparty financial institutions.

In accordance with our business criteria, the Company decides whether or not to engage in transactions and determines credit limits and terms and conditions. The Company also undertakes conservation measures that include acquiring collateral. After receivables are recognized, operating and administrative divisions share information on the status of transactions in managing payments by due dates. The Company conducts periodic credit checks and reviews whether or not to continue transactions or assesses whether credit limits and terms and conditions are adequate. In principle, the Company limits investments of cash surpluses to bonds with issuer credit ratings of at least investment grade and to deposits with financial institutions. In principle, forward exchange contracts are entered into only with internationally recognized financial institutions with at least an A rating. The Company prevents a significant concentration of credit risk by engaging in transactions with multiple financial institutions. The Company periodically confirms its reasons for holding equities and other instruments held for policy purposes and evaluates issuers and their financial positions.

Except for guaranty obligations, the Group's maximum exposure to credit risk if collateral held and other credit enhancements are not included is equal to the financial assets' carrying amount after impairment in the consolidated statements of financial position. The maximum exposure to the credit risk from guaranty obligations is the guaranteed debt described in Note 35 *Contingencies*.

As of March 31, 2018 and 2019, the Group considers that unimpaired financial assets were all collectible.

The analyses of the aging of trade receivables that are past due but not impaired as of March 31, 2018 is as follows. The financial assets include amounts considered recoverable through credit insurance and collateral.

Millions of yen	
	As of March 31, 2018
Past due within 30 days	7,305
Past due between 31 and 90 days	2,423
Past due between 91 days and 1 year	555
Past due over 1 year	2
Total	10,285

Security deposits accepted as credit enhancements for trade receivables amounted to ¥2,373 million as of March 31, 2018, respectively.

The Group reviews the collectibility of trade receivables according to the credit positions of customers and recognizes an allowance for doubtful receivables. Changes in the allowance for the year ended March 31, 2018 are as follows:

Millions of yen	
	For the year ended March 31, 2018
Balance at beginning of year	139
Addition	47
Business combination	60
Provisions used	(6)
Provisions reversed	(61)
Currency translation effects	0
Balance at end of year	180

Trade receivables individually impaired after taking into account of customer financial positions, payment delays, and other factors amounted to ¥184 million as of March 31, 2018, respectively. The allowance for doubtful receivables was ¥167 million as of March 31, 2018, respectively.

The changes in the balance of allowance for doubtful receivables for trade receivables, and the changes in the gross carrying amounts of trade receivables corresponding to the allowance for doubtful receivables for the year ended March 31, 2019 are as follows.

Millions of yen						
Trade receivables	Allowance for doubtful receivables			Gross carrying amount		
	Collective assessment	Individual assessment	Total	Collective assessment	Individual assessment	Total
As of March 31, 2018	13	167	180	160,230	184	160,414
Accumulated effects by applying new accounting standards	-	-	-	-	-	-
As of April 1, 2018	13	167	180	160,230	184	160,414
Change, net	(5)	6	1	7,422	3	7,424
Credit-impairment (Note 1)	-	-	-	-	-	-
Write-off (Note 2)	-	(109)	(109)	-	(109)	(109)
Other (Note 3)	-	-	-	-	-	-
As of March 31, 2019	9	64	72	167,652	77	167,729

Notes:

1. The Company measures the allowance for doubtful receivables relating to credit-impaired financial assets based on individual assessment and, therefore, transfers them from collective assessment.
2. The Company generally writes off and derecognizes the corresponding carrying amount when it has no reasonable expectations of recovering the financial asset in its entirety or a portion.
3. Other mainly includes the impact of acquisitions and divestitures and currency translation effect.

Security deposits accepted as credit enhancements for trade receivables amounted to ¥2,430 million as of March 31, 2019, respectively.

(3) Liquidity Risk Management

Maintaining appropriate liquidity levels and efficiently and flexibly securing adequate funds for current and future business operations are important financial objectives for the Group's management. By efficiently managing working capital, the Group endeavors to optimize the effective use of capital in operations while improving Group cash management by centralizing such management within the Company.

(i) Non-Derivative Financial Liabilities

Details of the maturities of non-derivative financial liabilities are as follows:

As of March 31, 2018

Millions of yen

	Carrying amount	Contractual rights to cash flows	Due within 1 year	Due after 1 year and not later than 5 years	Due after 5 years
Trade payables	132,091	132,091	132,091	-	-
Other financial liabilities	18,852	18,852	18,433	412	8
Total	150,944	150,944	150,524	412	8

As of March 31, 2019

Millions of yen

	Carrying amount	Contractual rights to cash flows	Due within 1 year	Due after 1 year and not later than 5 years	Due after 5 years
Trade payables	136,751	136,751	136,498	253	-
Other financial liabilities	16,240	16,240	16,078	150	12
Total	152,991	152,991	152,576	404	12

Guarantee obligations not included in the above tables were ¥53 million and ¥31 million as of March 31, 2018 and 2019, respectively.

(ii) Derivatives

Details of the maturities derivatives are as follows:

As of March 31, 2018

Millions of yen

		Due within 1 year	Due after 1 year and not later than 5 years	Due after 5 years	Total
Forward exchange contracts	In	588	-	-	588
	Out	209	-	-	209
Option contracts	In	-	1,699	-	1,699
	Out	-	-	-	-

As of March 31, 2019

Millions of yen

		Due within 1 year	Due after 1 year and not later than 5 years	Due after 5 years	Total
Forward exchange contracts	In	184	-	-	184
	Out	462	36	-	498
Option contracts	In	-	998	-	998
	Out	-	-	-	-

(4) Market Risk Management

(i) Foreign Currency Fluctuation Risk

The Group holds assets and liabilities denominated in foreign currencies, and it is exposed to foreign currency fluctuation risk. The Group addresses this risk by appropriately measuring the net future cash flows per currency and entering into forward exchange contracts within that scope to fix future cash flows arising from assets, liabilities, commitments, and forecasted transactions denominated in foreign currencies. The terms of forward exchange contracts are largely within one year.

The Company enters into forward exchange contracts based on its risk management policy and other internal management rules. The chief financial officer receives periodic reports on forward exchange contract transactions, foreign currency denominated assets and liabilities, and commitment and forecasted transaction positions.

The Company's subsidiaries similarly enter into forward exchange contracts based on the risk management policy and other internal management rules. The Company's finance department receives periodic reports on the positions of these transactions, and checks that they are undertaken in keeping with internal management rules.

Foreign Exchange Sensitivity Analysis

The sensitivity analysis for currency exchange rates indicates the impact on income from continuing operations, before income taxes, and on other comprehensive income (before tax effect adjustment) of the Japanese yen appreciating 1% against other currencies as of March 31, 2018 and 2019, while all other variables are held constant, as follows:

	Millions of yen	
	For the year ended March 31, 2018	For the year ended March 31, 2019
Income before income taxes		
US dollar	(9)	(11)
Euro	(3)	(5)
RMB	(21)	(22)
Other	19	43
Other comprehensive income		
US dollar	81	132
Euro	10	13
RMB	8	(1)
Other	21	22

(ii) Share Price Fluctuation Risk

The Group holds equity instruments (including shares and investment) to develop its business, and is exposed to share price fluctuation risks. Management periodically confirms the market values of these equity instruments and the financial positions of their issuers.

Share Price Sensitivity Analysis

The sensitivity analysis for the Group's holdings of marketable equity instruments indicates the impact on other comprehensive income (before tax effect adjustment) of share prices rising 10%, while all other variables are held constant, as follows:

	Millions of yen	
	For the year ended March 31, 2018	For the year ended March 31, 2019
Other comprehensive income	665	539

(5) Fair Value

(i) Carrying Amounts and Fair Value of Financial Assets and Financial Liabilities

The carrying amounts and fair values of financial assets and financial liabilities are as follows:

Millions of yen

	As of March 31, 2018		As of March 31, 2019	
	Carrying amount	Fair value	Carrying amount	Fair value
Assets measured at amortized cost				
Current assets				
Cash and cash equivalents	192,361	192,361	191,478	191,478
Trade receivables	159,338	159,338	165,865	165,865
Investments in securities and other financial assets	20,209	20,209	27,293	27,293
Bank deposits with maturities exceeding three months	12,500	12,500	20,000	20,000
Other receivables	7,601	7,601	6,959	6,959
Loans	108	108	334	334
Non-current assets				
Trade receivables	896	896	1,792	1,792
Investments in securities and other financial assets	2,805	2,805	2,891	2,891
Investments in securities and other investments	2,331	2,331	2,688	2,688
Loans	474	474	203	203
Assets measured at fair value				
FVTPL financial assets				
Current assets				
Investments in securities and other financial assets	588	588	184	184
Other financial assets (derivatives)	588	588	184	184
Non-current assets				
Investments in securities and other financial assets	2,831	2,831	2,386	2,386
Other investments	1,132	1,132	1,388	1,388
Other financial assets (derivatives)	1,699	1,699	998	998
FVTOCI financial assets				
Non-current assets				
Investments in securities and other financial assets	7,291	7,291	5,924	5,924
Securities	7,291	7,291	5,924	5,924
Liabilities measured at amortized cost				
Current liabilities				
Trade payables	132,091	132,091	136,751	136,751
Other financial liabilities	18,433	18,433	16,078	16,078
Lease payables	118	118	120	120
Deposits	5,535	5,535	5,709	5,709
Other payables	12,780	12,780	10,249	10,249
Non-current liabilities				
Other financial liabilities	420	420	162	162
Lease payables	211	211	112	112
Other payables	209	209	51	51
Liabilities measured at fair value				
FVTPL financial liabilities				
Current liabilities				
Other financial liabilities (derivatives)	209	209	462	462

(ii) Fair Value Measurements

The following methods and assumptions are used to measure the fair value of financial assets and liabilities. In measuring the fair value of financial instruments, quoted market prices are used if available. If these prices are unavailable, management uses the discounted future cash flow method or other appropriate evaluation methods.

a) Cash and Cash Equivalents

The carrying amount approximates the fair value because of the short maturities of these instruments.

b) Trade Receivables and Payables

The carrying amount approximates the fair value because of the short settlement periods of these instruments.

c) Investments in Securities and Other Financial Assets and Other Financial Liabilities Measured at Amortized Cost

The carrying amounts of bank deposits with maturities exceeding three months, other receivables, deposits, other payables, and short-term loans approximate the fair value because of the short maturities of these instruments.

For securities, long-term loans, lease payables, long-term other payables, and other investments, the Company measures future cash flow at a discounted rate on the assumption that the contracts are newly executed.

d) Investments in Securities and Other Financial Assets Measured at Fair Value

These are described in (iii) Fair Value Hierarchy below.

(iii) Fair Value Hierarchy

Financial instruments are classified into the following fair value hierarchy:

Level 1: Quoted prices (unadjusted) for identical assets or liabilities in active markets

Level 2: Valuations measured by direct or indirect observable inputs other than Level 1

Level 3: Valuations measured by significant unobservable inputs

When several inputs are used for a fair value measurement, the level is determined based on the input with the lowest level in the fair value measurement as a whole. Transfers between fair value hierarchy levels are deemed arising at the beginning of each quarter.

Equity Securities

Equity securities are classified as Level 1 financial instruments, as they can be measured at fair market value. Equity securities classified as Level 1 are listed shares. If the significant indicators for measuring the fair value of unlisted shares and other similar financial instruments are unobservable, they are classified as Level 3 investments. The Group measures fair value by using price information supplied by financial institutions and other parties, similar company comparisons, the discounted cash flow method, the valuation models based on net assets, and other methods.

Derivatives

FVTPL financial assets and liabilities are measured based on forward exchange rates at the end of the fiscal year.

The Group classifies these instruments as Level 2, as it enters into foreign exchange contracts.

Derivative transactions except for foreign exchange contracts are classified as Level 3. The Group measures the fair value by discounted cash flow method.

Financial Assets and Liabilities Measured at Amortized Cost

The financial assets and liabilities measured at amortized cost are mainly classified as Level 2.

The financial assets and liabilities measured at fair value and classified by level are as follows:

As of March 31, 2018

Millions of yen

	Level 1	Level 2	Level 3	Total
FVTPL financial assets				
Investments in securities and other financial assets				
Other investments	-	-	1,132	1,132
Other financial assets (derivatives)	-	588	1,699	2,288
FVTOCI financial assets				
Investments in securities and other financial assets				
Securities	6,655	-	636	7,291
Total assets	6,655	588	3,467	10,710
FVTPL financial liabilities				
Other financial liabilities (derivatives)	-	209	-	209
Total liabilities	-	209	-	209

As of March 31, 2019

Millions of yen

	Level 1	Level 2	Level 3	Total
FVTPL financial assets				
Investments in securities and other financial assets				
Other investments	-	-	1,388	1,388
Other financial assets (derivatives)	-	184	998	1,182
FVTOCI financial assets				
Investments in securities and other financial assets				
Securities	5,391	-	533	5,924
Total assets	5,391	184	2,919	8,494
FVTPL financial liabilities				
Other financial liabilities (derivatives)	-	462	-	462
Total liabilities	-	462	-	462

Changes in Level 3 financial assets are as follows:

Millions of yen

	For the year ended March 31, 2018			For the year ended March 31, 2019		
	Investments in securities and other financial assets			Investments in securities and other financial assets		
	FVTPL financial assets	FVTOCI financial assets	Total	FVTPL financial assets	FVTOCI financial assets	Total
Balance at beginning of year	882	328	1,210	2,831	636	3,467
Total gain (loss) in profit or loss	(30)	(560)	(591)	(1,048)	(18)	(1,066)
Net profit or loss	(30)	-	(30)	(1,048)	-	(1,048)
OCI	-	(560)	(560)	-	(18)	(18)
Acquisitions	2,159	1,010	3,169	366	232	598
Sales or disposals	(178)	-	(178)	(93)	-	(93)
Currency translation effects	(1)	(26)	(27)	(2)	16	14
Other	-	(116)	(116)	332	(332)	-
Balance at end of year	2,831	636	3,467	2,386	533	2,919

The gain or loss recognized in net profit or loss is included in financial income or financial expenses in the consolidated statements of profit or loss. For the total gain (loss) in net profit or loss, losses of financial assets held at year-end were ¥30 million and ¥1,048 million in the years ended March 31, 2018 and 2019, respectively

The gain or loss recognized in other comprehensive income is included in net changes from financial assets measured at fair value through other comprehensive income in the consolidated statements of comprehensive income.

(6) FVTOCI Financial Assets

The Group classifies equity instruments held to maintain and strengthen business relations FVTOCI financial assets, in view of the holding purpose.

(i) Fair Values of Principal Equity Instruments

The fair values of principal FVTOCI financial assets are as follows:

As of March 31, 2018

Millions of yen	
Principal FVTOCI financial assets	Fair value
Shin-Etsu Chemical Co., Ltd.	1,531
Precision System Science Co., Ltd.	1,520
Komatsu Ltd.	1,426
Aica Kogyo Co., Ltd.	729
PT. SKY ENERGY INDONESIA	615
Dexerials Corporation	483
Enplas Corporation	117
Sanyo Special Steel Co., Ltd.	113

As of March 31, 2019

Millions of yen	
Principal FVTOCI financial assets	Fair value
Shin-Etsu Chemical Co., Ltd.	1,291
Komatsu Ltd.	1,031
Precision System Science Co., Ltd.	968
PT.SKY ENERGY INDONESIA	965
Aica Kogyo Co., Ltd.	683
Dexerials Corporation	321
Enplas Corporation	94
Sanyo Special Steel Co., Ltd.	36

(ii) Derecognition of FVTOCI Financial Assets

The Group sold some FVTOCI financial assets following reviews of business relationships or for other reasons. The FVTOCI financial assets that were derecognized for the years ended March 31, 2018 and 2019 are as follows:

Millions of yen		
	For the year ended March 31, 2018	For the year ended March 31, 2019
Fair value at time of sale	4,057	437
Accumulated gains at time of the recognition	3,764	372

Accordingly, the accumulated gains transferred from accumulated other comprehensive income to retained earnings were ¥2,603 million and ¥337 million in the years ended March 31, 2018 and 2019, respectively.

(iii) Dividend Income

Millions of yen

	For the year ended March 31, 2018	For the year ended March 31, 2019
Investments derecognized during year	60	4
Investments held at year-end	97	104
Total	156	108

(7) Derivatives and Hedge Accounting**(i) Cash Flow Hedges**

The Group uses forward exchange contracts to hedge cash flow fluctuations for forward exchange commitments and forecasted transactions, designating derivatives that satisfy hedge accounting requirements as cash flow hedges. Effective portions of fair value fluctuations of forward exchange contracts designated as cash flow hedges are recognized as OCI, while ineffective portions are recognized in profit or loss.

No amounts were recognized in profit or loss in the years ended March 31, 2018 and 2019, as the effects of hedges were either not effective or were excluded from the assessment of hedge effectiveness.

(ii) Derivatives Not Designated as Hedges

The Group uses forward exchange contracts to hedge against currency exchange risks associated with foreign currency denominated assets and liabilities. Hedge accounting is not adopted for these contracts, and all fair value changes are recognized in profit and loss.

(iii) Fair Value of Derivatives Designated as Hedging Instruments

The fair values of derivatives designated as hedging instruments as of March 31, 2018 are as follows:

Millions of yen

	As of March 31, 2018		
	Contract amount		Fair value
		Over 1 year	
Forward exchange contracts			
Selling			
US dollar	8,480	-	261
Euro	1,191	-	15
Other	3,770	-	(73)
Buying			
US dollar	84	-	3
Euro	133	-	(3)
Other	911	-	27
Total	14,569	-	230

The fair values of derivatives designated as hedging instruments as of March 31, 2019 are as follows:

Millions of yen

	As of March 31, 2019			
	Contract amount	Fair value		
		Over 1 year	Assets	Liabilities
Forward exchange contracts				
Selling				
US dollar	14,847	843	-	225
Euro	1,409	-	36	-
Other	2,427	-	0	36
Buying				
US dollar	1,826	-	53	0
Euro	61	-	-	1
Other	282	-	0	0
Total	20,853	843	89	261

The changes in the fair values of derivatives designated as hedging instruments as of March 31, 2019 are as follows:

Millions of yen

	April 1, 2018	Changes in fair value of hedging instruments recognized in other comprehensive income	Amount directly included in carrying amount of hedged assets or liabilities	Amount reclassified to profit or loss	Other	March 31, 2019
Foreign currency risk	230	(820)	-	418	-	(172)

(8) Capital Management

The Group manages its capital under the policy of maintaining appropriate levels of assets, liabilities and equity for current and future business operations, as well as optimizing the capital in its operations.

The Company uses the total Hitachi High-Technologies stockholders' equity ratio as an important indicator in capital management, sets targets in its mid-term management plan, and regularly monitors them. The total Hitachi High-Technologies stockholders' equity ratios at of March 31, 2018 and 2019 were 62.6% and 63.8%, respectively.

The Group is not subject to any capital requirements except for general rules, such as JCL.

30. Leases

(1) Lessee

The Company and certain subsidiaries use leased tools, furniture and fixtures under finance leases.

The following table shows the undiscounted amounts and present value of minimum lease payments under finance leases as of March 31, 2018 and 2019.

Millions of yen

	Future minimum lease payments		Present value of future minimum lease payments	
	As of March 31, 2018	As of March 31, 2019	As of March 31, 2018	As of March 31, 2019
Within 1 year	122	123	118	120
After 1 year and not later than 5 years	218	116	210	112
More than 5 years	0	0	0	0
Total	341	240	328	231
Finance charges	(12)	(8)	-	-
Present value of future minimum lease payments	328	231	328	231

The Company and certain subsidiaries use leased buildings and structures, machinery and vehicles under operating leases.

The following table shows the future minimum lease payments for non-cancelable operating leases as of March 31, 2018 and 2019.

Millions of yen

	As of March 31, 2018	As of March 31, 2019
Within 1 year	909	1,183
After 1 year and not later than 5 years	1,830	2,629
More than 5 years	481	1,100
Total	3,220	4,912

Minimum lease payments for operating leases recognized as expenses in the years ended March 31, 2018 and 2019 are as follows:

Millions of yen

	For the year ended March 31, 2018	For the year ended March 31, 2019
Minimum lease payments	5,582	5,988

Minimum lease payments are posted in cost of sales and selling, general and administrative expenses.

(2) Lessor

The Company and certain subsidiaries lease tools, furniture, and equipment under finance lease contracts.

The following table shows the future minimum lease payments receivable for finance leases as of March 31, 2018 and 2019.

Millions of yen

	As of March 31, 2018	As of March 31, 2019
Within 1 year	574	732
After 1 year and not later than 5 years	865	1,686
More than 5 years	31	105
Total	1,470	2,524

31. Major Subsidiaries

The Group's consolidated financial statements include the financial statements of the following principal subsidiaries.

Company name	Location	Principal businesses	Ownership (%)	
			As of March 31, 2018	As of March 31, 2019
Hitachi High-Tech Solutions Corporation	Chuo-ku, Tokyo	Industrial Systems	100.0	100.0
Hitachi High-Tech Materials Corporation	Minato-ku, Tokyo	Advanced Industrial Products	100.0	100.0
Hitachi High-Tech Fielding Corporation	Shinjuku-ku, Tokyo	Science & Medical Systems, Electronic Device Systems, and Industrial Systems	100.0	100.0
Hitachi High-Tech Fine Systems Corporation	Kamisato, Kodama-gun, Saitama Prefecture	Industrial Systems	100.0	100.0
Hitachi High-Tech Manufacturing & Service Corp.	Hitachinaka City, Ibaraki Prefecture	Science & Medical Systems and Electronic Device Systems	100.0	100.0
Hitachi High-Tech Science Corporation	Minato-ku, Tokyo	Science & Medical Systems	100.0	100.0
Hitachi High Technologies America, Inc.	U.S.A.	Science & Medical Systems, Electronic Device Systems, Industrial Systems, and Advanced Industrial Products	100.0	100.0
Hitachi High-Technologies Europe GmbH	Germany	Science & Medical Systems, Electronic Device Systems, Industrial Systems, and Advanced Industrial Products	100.0	100.0
Hitachi High-Technologies (Singapore) Pte. Ltd.	Singapore	Science & Medical Systems, Electronic Device Systems, Industrial Systems, and Advanced Industrial Products	100.0	100.0
Hitachi High-Technologies (Thailand) Ltd. (Note1)	Thailand	Industrial Systems and Advanced Industrial Products	100.0	100.0
Hitachi High-Technologies (Shanghai) Co., Ltd.	China	Science & Medical Systems, Electronic Device Systems, Industrial Systems, and Advanced Industrial Products	100.0	100.0
Hitachi High-Tech Diagnostics (Shanghai) Co., Ltd. (Note2)	China	Science & Medical Systems	77.0	77.0
Hitachi High-Technologies Hong Kong Limited	China	Industrial Systems and Advanced Industrial Products	100.0	100.0
Hitachi High-Technologies Korea Co., Ltd.	Korea	Science & Medical Systems, Electronic Device Systems, Industrial Systems, and Advanced Industrial Products	100.0	100.0
Hitachi High-Technologies Taiwan Corporation	Taiwan	Electronic Device Systems, Industrial Systems, and Advanced Industrial Products	100.0	100.0

Notes:

1. Hitachi High-Technologies(Thailand) Ltd. is a wholly owned subsidiary of Hitachi High-Technologies(Singapore)Pte. Ltd.
2. Hitachi High-Tech Diagnostics(Shanghai) Co., Ltd. is a wholly owned subsidiary of Hitachi High-Technologies (Shanghai) Co., Ltd.

32. Related Party

(1) Parent Company

Company name	Principal business	Location	Ownership (%)	
			As of March 31, 2018	As of March 31, 2019
Hitachi, Ltd.	Manufacturing and sales of electrical machinery and equipment	Chiyoda-ku, Tokyo	51.8	51.8

(2) Related Party Transactions

The Group's significant transactions (excluding those eliminated from the consolidated financial statements) with related parties are as follows:

(i) For the year ended March 31, 2018

Millions of yen

Category	Company name	Details of related party transactions	Transaction amount	Outstanding balances	
Parent company	Hitachi, Ltd.	Sales of railway related parts, information equipment and power-related parts, etc.	18,080	Trade receivables	9,024
				Advances received	487
		Proceeds of funds	20,847	Deposits (including for more than three months)	157,785

Notes:

1. Transaction amounts do not include consumption taxes. Outstanding balances include consumption taxes.
2. Deposits of funds and refunds are conducted daily. Transaction amounts represent amounts subtracted from the end of the previous fiscal year.

(ii) For the year ended March 31, 2019

Millions of yen

Category	Company name	Details of related party transactions	Transaction amount	Outstanding balances	
Parent company	Hitachi, Ltd.	Sales of railway related parts, information equipment and power-related parts, etc.	15,957	Trade receivables	8,386
				Advances received	1,348
		Deposits of funds	1,152	Deposits (including for more than three months)	158,937

Notes:

1. Transaction amounts do not include consumption taxes. Outstanding balances include consumption taxes.
2. Deposits of funds and refunds are conducted daily. Transaction amounts represent amounts subtracted from the end of the previous fiscal year.

(3) Compensation for Directors and Executive Officers

The compensation for directors and executive officers for the years ended March 31, 2018 and 2019 are as follows:

Millions of yen

	For the year ended March 31, 2018	For the year ended March 31, 2019
Short-term employee benefits	645	662

33. Collateral

Assets pledged as collateral and the secured liabilities are as follows:

Millions of yen

	As of March 31, 2018	As of March 31, 2019
Assets pledged as collateral		
Investments in securities and other financial assets	390	340
Secured liabilities		
Trade payables	141	-

Notes:

1. Assets pledged as collateral do not give assignees the right to sell or repledge the collateral.
2. Under assets pledged as collateral as of March 31, 2018, ¥334 million of investments in securities and other financial assets is measured at fair value and ¥419 million is the maximum guaranteed amount.
Under assets pledged as collateral as of March 31, 2019, ¥340 million of investments in securities and other financial assets is measured at fair value and ¥407 million is the maximum guaranteed amount.

34. Commitments

Commitments related to the acquisition of assets subsequent as of March 31, 2018 and 2019 are as follows:

Millions of yen

	As of March 31, 2018	As of March 31, 2019
Purchase of property, plant and equipment	2,118	1,239

35. Contingencies

(1) Contingent Liabilities

The Group provides the following guarantees to financial institutions with respect to the home loans of Group employees:

Millions of yen

	As of March 31, 2018	As of March 31, 2019
Employee guarantees	53	31
Total	53	31

(2) Contingent Assets

None

(3) Litigation

In November 2017, Mitsui Fudosan Residential Co., Ltd., allegedly having incurred the rebuilding costs, etc. of a condominium located in Yokohama(hereinafter referred to as the "Condominium") due to concerns about some defects regarding piling work for the Condominium which the Company undertook as a primary subcontractor, filed a lawsuit against three companies, i.e., the contractor of the Condominium, the Company and the secondary subcontractor of said piling work, claiming compensation for damages amounting to approximately ¥45.9 billion. In July 2018, Mitsui Fudosan Residential Co., Ltd., the plaintiff in this case, filed a petition to amend the claiming compensation to approximately ¥51.0 billion.

In connection with this lawsuit, in April 2018, Sumitomo Mitsui Construction Co., Ltd., the contractor of the Condominium, filed a lawsuit against two companies, i.e., the Company and the secondary subcontractor of said piling work, claiming compensation for damages amounting to approximately ¥49.6 billion. In July 2018, Sumitomo Mitsui Construction Co., Ltd., the plaintiff in this case, filed a petition to amend the claiming compensation to approximately ¥54.8 billion.

The Company, while intending to advocate our views over said claim, has no assurance that the Company will not incur any payment obligation.

36. Subsequent Events

None

Independent Auditor's Report

The Board of Directors
Hitachi High-Technologies Corporation

We have audited the accompanying consolidated financial statements of Hitachi High-Technologies Corporation and its consolidated subsidiaries, which comprise the consolidated statements of financial position as at March 31, 2019, and the consolidated statements of profit or loss, comprehensive income, changes in equity, and cash flows for the year then ended and notes to the consolidated financial statements.

Management's Responsibility for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with International Financial Reporting Standards, and for designing and operating such internal control as management determines is necessary to enable the preparation and fair presentation of the consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these consolidated financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in Japan. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. The purpose of an audit of the consolidated financial statements is not to express an opinion on the effectiveness of the entity's internal control, but in making these risk assessments the auditor considers internal controls relevant to the entity's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the consolidated financial position of Hitachi High-Technologies Corporation and its consolidated subsidiaries as at March 31, 2019, and their consolidated financial performance and cash flows for the year then ended in conformity with International Financial Reporting Standards.

Ernst & Young Shinohara LLC

June 21, 2019
Tokyo, Japan