HSD Engine Co., Ltd. (formerly, Doosan Engine Co., Ltd.)

Financial statements
for the years ended December 31, 2018 and 2017
with the independent auditor's report

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Independent auditor's report

The Shareholders and Board of Directors
HSD Engine Co., Ltd.

Opinion

We have audited the financial statements of HSD Engine Co., Ltd. (the "Company" and formerly referred to as Doosan Engine Co., Ltd.) which comprise the statements of financial position as of December 31, 2018 and 2017, and the statements of income, statement of comprehensive income, statements of changes in equity and statements of cash flows for the years then ended, and notes to the financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017 and its financial performance and its cash flows for the years then ended in accordance with Korean International Financial Reporting Standards.

Basis for opinion

We conducted our audit in accordance with Korean Auditing Standards (KGAAS). Our responsibilities under those standards are further described in the Auditor's responsibilities for the audit of the financial statements section of our report. We are independent of the Company in accordance with the ethical requirements that are relevant to our audit of the financial statements in the Republic of Korea, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Responsibilities of management and those charged with governance for the financial statements

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

In preparing the financial statements, management is responsible for assessing the Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Company or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Company's financial reporting process.

Auditor’s responsibilities for the audit of the financial statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor’s report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with KGAAS will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statement. As part of an audit in accordance with KGAAS, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company’s internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management’s use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Company’s ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor’s report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor’s report. However, future events or conditions may cause the Company to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Company to express an opinion on the financial statements. We are responsible for the direction, supervision and performance of the Company audit. We remain solely responsible for our audit opinion.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

The partner in charge of the audit resulting in this independent auditor's report is Bae, Sang Il.

March 7, 2019

This audit report is effective as of March 7, 2019, the independent auditor's report date. Accordingly, certain material subsequent events or circumstances may have occurred during the period from the independent auditor's report date to the time this report is used. Such events and circumstances could significantly affect the accompanying separate financial statements and may result in modifications to this report.

HSD Engine Co., Ltd. (formerly, Doosan Engine Co., Ltd.)

Financial statements
for the years ended December 31, 2018 and 2017

"The accompanying financial statements, including all footnotes and disclosures, have been prepared by, and are the responsibility of, the Company."

Koh Young Youl
Chief Executive Officers
HSD Engine Co., Ltd.

HSD Engine Co., Ltd. (formerly, Doosan Engine Co., Ltd.)
Statements of financial position
as of December 31, 2018 and 2017
(Korean won)

	Notes		2018		2017
Assets					
Current assets					
Cash and cash equivalents	10	₩	58,972,160,607	₩	70,450,916,689
Short-term financial instruments	5,10		26,657,599,156		11,457,578,000
Short-term loans	10		7,216,320,882		611,513,302
Trade and other receivables. net	6,10,30,32		20,225,354,672		30,488,193,088
Contract assets	23		1,151,004,882		-
Due from customers for construction contracts			-		1,451,140,579
Current tax assets			137,836,172		314,452,270
Derivatives assets	9,10		1,367,726,454		18,053,931,598
Firm commitment assets	9		11,602,647,863		4,005,749,038
Inventories, net	7		152,749,415,441		170,421,034,713
Other current assets			7,894,821,469		8,269,155,437
Total current assets		₩	**287,974,887,598**	₩	**315,523,664,714**
Non-current assets					
Long-term financial instruments	5,10,31	₩	406,000,000	₩	6,000,000
Long-term investment securities	8,10		72,048,000		395,595,979,573
Investment in subsidiaries and associates	11,31		21,433,592,840		31,374,677,704
Long-term loans	10		547,612,608		7,726,437,242
Long-term other receivables	6,10		2,013,318,650		3,869,832,363
Property, plant and equipment, net	12		422,122,234,554		474,096,278,112
Intangible assets	13		6,063,367,299		6,465,088,943
Derivatives assets	9,10		154,967,366		1,191,688,478
Firm commitment assets	9		3,488,302,252		81,626,216
Deferred tax assets	28		4,506,127,609		-
Other non current assets			4,102,664,769		2,080,973,471
Total non-current assets			464,910,235,947		922,488,582,102
Total assets		₩	**752,885,123,545**	₩	**1,238,012,246,816**
Liabilities					
Current liabilities					
Trade payables and other payables	10,32	₩	80,766,982,368	₩	82,448,911,024
Contract liabilities	23		4,553,461,968		-
Due to customers for construction contracts			-		9,489,576,594
Short-term borrowings	10,14,30		40,000,000,000		121,200,000,000
Current portion of long-term borrowings	10,14		-		30,000,000,000
Current portion of bonds	10,14		135,685,364,724		89,933,788,907
Current portion of convertible bond	14		45,271,346,572		-
Advances from customers			148,267,040,482		134,889,275,081
Derivatives liabilities	9,10		11,624,650,168		1,192,714,029
Firm commitment liabilities	9		2,645,878,629		22,089,944,070
Current portion of provisions	16		5,896,373,865		6,735,739,995
Other current liabilities			14,120,660,538		23,521,529,779
Total current liabilities		₩	488,831,759,314	₩	521,501,479,479
Non-current liabilities					
Bonds	10,14	₩	-	₩	128,786,510,692
Long-term other payables	10		3,871,925,543		1,914,380,758
Defined benefit plan liabilities	15		5,772,857,161		2,950,623,382
Derivatives liabilities	9,10		3,134,353,991		82,370,507
Firm commitment liabilities	9		1,200,484,866		2,100,488,060
Provisions	16		5,085,425,706		4,141,244,651
Deferred tax liabilities			-		19,228,066,135
Other non-current liabilities			2,914,557,581		1,341,968,650
Total non-current liabilities			21,979,604,848		160,545,652,835
Total liabilities		₩	**510,811,364,162**	₩	**682,047,132,314**
Equity					
Issued capital	1,17	₩	32,947,142,000	₩	69,500,000,000
Capital surplus	17		174,628,267,422		367,214,701,425
Other components of equity	18		(54,788,960,036)		621,477,800
Other accumulated comprehensive income	8,12,19		70,622,037,972		114,241,023,624
Retained earnings (accumulated deficits)	20		18,665,272,025		4,387,911,653
Total equity		₩	**242,073,759,383**	₩	**555,965,114,502**
Total liabilities and equity		₩	**752,885,123,545**	₩	**1,238,012,246,816**

The accompanying notes are an integral part of the financial statements.

HSD Engine Co., Ltd. (formerly, Doosan Engine Co., Ltd.)
Statements of income
for the years ended December 31, 2018 and 2017
(Korean won)

	Notes		2018		2017
Sales	21,22,23,32	₩	509,321,424,662	₩	761,831,506,520
Cost of sales	24,32		510,031,725,292		710,972,148,841
Selling and administrative expenses	24,25		35,830,636,566		42,600,781,362
Operating profit (loss)			**(36,540,937,196)**		**8,258,576,317**
Finance income	10,26		57,565,959,931		98,995,633,701
Finance costs	10,26		63,503,966,705		116,809,737,638
Other income	27		13,260,843,156		4,035,497,177
Other expenses	27		1,119,035,959		4,742,937,450
Net loss for the year before tax			**(30,337,136,773)**		**(10,262,967,893)**
Income tax benefit (expense)	28		9,855,154,224		(3,896,794,179)
Net loss			**20,481,982,549**		**14,159,762,072**
Loss per share:					
Basic loss per share		₩	(423)	₩	(204)
Diluted loss per share			(423)		(204)

The accompanying notes are an integral part of the financial statements.

HSD Engine Co., Ltd. (formerly, Doosan Engine Co., Ltd.)
Statements of comprehensive income
for the years ended December 31, 2018 and 2017

(Korean won in thousands)

	Notes		2018		2017
Net loss		₩	20,481,982,549	₩	14,159,762,072
Other comprehensive income	19		(8,859,642,731)		19,080,011,867
Items that are not reclassified to profit or loss in the subsequent period					
-Remeasurement of net defined benefit liability	15		(399,990,555)		2,110,209,162
-Revaluation surplus	12,19		-		18,596,946,854
-Valuation loss on equity instruments designated at fair value OCI			(8,459,652,176)		-
Items that are reclassified to profit or loss in the subsequent period					
-Loss on valuation of available for sale financial assets	8		-		(1,627,144,149)
Total comprehensive income(loss)		₩	(29,341,625,280)	₩	4,920,249,795

The accompanying notes are an integral part of the financial statements.

HSD Engine Co., Ltd. (formerly, Doosan Engine Co., Ltd.)
Statements of changes in equity
for the years ended December 31, 2018 and 2017

(Korean won)

	Issued capital	Capital surplus	Other components of equity	Other accumulated comprehensive income	Retained earnings (accumulated deficits)	Total
as of Jan 1, 2017	**₩ 69,500,000,000**	**₩ 367,214,701,425**	**₩ 621,477,800**	**₩ 97,780,400,286**	**₩ 15,928,285,196**	**₩ 551,044,864,707**
Total comprehensive income:						
-Net loss	-	-	-	-	(14,159,762,072)	(14,159,762,072)
-Remeasurement of net defined benefit liability	-	-	-	-	2,110,209,162	2,110,209,162
-Disposal of re-valued land	-	-	-	(509,179,367)	509,179,367	-
-Reevaluation of land	-	-	-	18,596,946,854	-	18,596,946,854
-Loss on valuation of available for sale financial assets	-	-	-	(1,627,144,149)	-	(1,627,144,149)
	69,500,000,000	367,214,701,425	621,477,800	114,241,023,624	4,387,911,653	555,965,114,502
as of Dec 31, 2017	**₩ 69,500,000,000**	**₩ 367,214,701,425**	**₩ 621,477,800**	**₩ 114,241,023,624**	**₩ 4,387,911,653**	**₩ 555,965,114,502**
as of Jan 1, 2018	**₩ 69,500,000,000**	**₩ 367,214,701,425**	**₩ 621,477,800**	**₩ 114,241,023,624**	**₩ 4,387,911,653**	**555,965,114,502**
Cumulative effect of accounting policy changes	-	-	-	(233,437,065,157)	233,437,065,157	-
as of Jan 1, 2018 (adjusted)	**69,500,000,000**	**367,214,701,425**	**621,477,800**	**(119,196,041,533)**	**237,824,976,810**	**555,965,114,502**
Changes due to spin-off	(36,552,858,000)	(193,133,046,753)	(55,380,204,776)	198,277,731,681	(198,277,731,681)	(285,066,109,529)
Issuance of convertible bonds	-	546,612,750	-	-	-	546,612,750
Acquisition of treasury stock	-	-	(30,233,060)	-	-	(30,233,060)
Total comprehensive income:						
-Net loss	-	-	-	-	(20,481,982,549)	(20,481,982,549)
-Remeasurement of net defined benefit liability	-	-	-	-	(399,990,555)	(399,990,555)
-Gain (loss) of fair value instruments designated at FVOCI	-	-	-	(8,459,652,176)	-	(8,459,652,176)
as of Dec 31, 2018	**₩ 32,947,142,000**	**₩ 174,628,267,422**	**₩ (54,788,960,036)**	**₩ 70,622,037,972**	**₩ 18,665,272,025**	**₩ 242,073,759,383**

The accompanying notes are an integral part of the financial statements.

HSD Engine Co., Ltd. (formerly, Doosan Engine Co., Ltd.)
Statements of cash flows
for the years ended December 31, 2018 and 2017
(Korean won)

	2018	2017
Ⅰ. Net cash provided by (used in) operating activities:	**₩ 18,750,576,231**	**₩ (71,116,160,578)**
1. Cash flows from operating activities:	25,058,744,118	(64,717,360,992)
(1) Net loss	(20,481,982,549)	(14,159,762,072)
(2) Adjustments	15,941,178,194	72,289,666,391
(3) Changes in operating assets and liabilities	29,599,548,473	(122,847,265,311)
2. Interest received:	983,726,455	1,772,872,441
3. Interest paid:	(15,930,966,440)	(15,318,164,367)
4. Dividends received:	8,462,456,000	7,404,649,000
5. Income tax refunded (paid):	176,616,098	(258,156,660)
Ⅱ. Net cash provided by (used in) investing activities:	**(14,725,636,836)**	**12,627,814,086**
1.Cash flows from investing activities:	5,502,458,375	25,559,596,424
(1) Decrease in short-term loans	653,062,420	897,659,060
(2) Disposal of investment in associates	3,454,000,000	-
(3) Disposal of property, plant equipment	20,850,502	20,279,210,091
(4) Disposal of intangible assets	1,374,545,453	282,727,273
(5) Disposal of asset held for sale	-	4,100,000,000
2.Cash out-flows from investing activities:	(20,228,095,211)	(12,931,782,338)
(1) Increase in short-term financial instruments	15,200,021,156	3,839,578,000
(2) Increase in long-term financial instruments	400,000,000	-
(3) Acqusition of investment in associates	-	5,786,000,000
(4) Increase in long-term loans	90,000,000	190,000,000
(5) Acqusition of property, plant and equipment	2,422,430,993	2,859,996,078
(6) Acqusition of intangible assets	2,115,643,062	256,208,260
Ⅲ. Net cash provided by (used in) financing activities:	**(15,424,738,331)**	**57,762,059,801**
1.Cash flows from financing activities:	104,598,761,710	202,762,059,801
(1) Proceeds from short-term borrowings	53,800,000,000	74,567,893,750
(2) Issuance of current portion of bonds	5,984,880,000	-
(3) Issuance of convertible bonds	44,813,881,710	-
(4) Issuance of bonds	-	128,194,166,051
2.Cash out-flows from financing activities:	(120,023,500,041)	(145,000,000,000)
(1) Repayments of current portion of long-term borrowings	30,000,000,000	45,000,000,000
(2) Repayments of current portion of bonds	89,993,266,981	100,000,000,000
(3) Acquisition of treasury stock	30,233,060	-
Ⅳ. Changes in cash and cash equivalents from net foreign exchange difference	(78,957,146)	(250,844,494)
Ⅴ. Net decrease in cash and cash equivalents	**(11,478,756,082)**	**(977,131,185)**
Ⅵ. Cash and cash equivalents at January 1	**70,450,916,689**	**71,428,047,874**
Ⅶ. Cash and cash equivalents at December 31	**₩ 58,972,160,607**	**₩ 70,450,916,689**

The accompanying notes are an integral part of the financial statements.

1. General

HSD Engine Co., Ltd. (the "Company" and formerly referred to as Doosan Engine Co., Ltd.) was incorporated on December 30, 1999 as a controlling entity under KIFRS 1110 *Consolidated Financial Statements*. Since January 4, 2011, the Company has listed its shares in the securities market established by the Korea Exchange. The Company's headquarters and factories are located in the Changwon City, the Republic of Korea. The Company primarily engages in the manufacture and sale of marine diesel engines, diesel power plants, engine parts and eco-friendly system.

On June 5, 2018, the Company became the surviving company from the split off of its investment business division, which merged with Doosan Heavy Industries & Construction Co., Ltd. (the "Acquired Company"). In addition, the Acquired Company disposed of its previously held shares in the Company to Socius Well To Sea Investment's No. 1 Recovery Private Equity Fund (the "Socius Well To Sea"). In accordance with a resolution at the 2018-2nd annual shareholders' meeting held on June 8, 2018, the Company changed its corporate name from Doosan Engine Co., Ltd. to HSD Engine Co., Ltd.

The Company's shares as of December 31, 2018, are owned as follows:

Name of stockholders	Number of shares owned	Ownership percentage (%)
Socius Well To Sea	14,055,867	42.66
Employee stock ownership association	100,754	0.31
Ko, Young Youl (CEO)	10,000	0.03
Treasury stock	7,502	0.02
Others	18,773,019	56.98
Total	32,947,142	100.00

2. Statement of compliance and significant accounting policies

2.1 Statement of compliance

The financial statements have been prepared in accordance with Korean International Financial Reporting Standards ("KIFRS"), as prescribed in the *Act on External Audits of Stock Companies* in the Republic of Korea. The financial statements are based on historical cost except for land, derivative financial instruments and available-for-sale financial assets which are valued at fair value. The carrying amount of an asset or a liability designated as items of fair value hedge accounting is not be recorded in an amortized cost but is recorded to reflect changes in the fair value corresponding to the hedged risk in an effective hedging relationship. These financial statements are presented in Korean won and are expressed in thousand Korean won unless otherwise stated.

2.2 Investments in subsidiaries and associates

These financial statements are prepared and presented in accordance with KIFRS 1027, *'Separate Financial Statements'*. The Company applied the cost method to investments in subsidiaries and associates at cost. Dividends from a subsidiary or associate are recognized in profit or loss when the right to receive the dividend is established.

2.3 Significant accounting policies

2.3.1 Current versus non-current classification

The Company presents assets and liabilities in the statement of financial position based on current/non-current classification.

2.3.1 Current versus non-current classification (cont'd)

An asset is current when it is:

- Expected to be realized or intended to be sold or consumed in the normal operating cycle
- Held primarily for the purpose of trading
- Expected to be realized within twelve months after the reporting period, or
- Cash or cash equivalent unless restricted from being exchanged or used to settle a liability for at least twelve months after the reporting period

All other assets are classified as non-current.

A liability is current when:

- It is expected to be settled in the normal operating cycle
- It is held primarily for the purpose of trading
- It is due to be settled within twelve months after the reporting period, or
- There is no unconditional right to defer the settlement of the liability for at least twelve months after the reporting period

The Company classifies all other liabilities as non-current.

The Company classifies deferred income tax assets (liabilities) as non-current assets (liabilities).

2.3.2 Fair value measurement

The Company measures financial instruments such as derivatives at fair value at each reporting date.

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The fair value measurement is based on the presumption that the transaction to sell the asset or transfer the liability takes place either:

- In the principal market for the asset or liability, or
- In the absence of a principal market, in the most advantageous market for the asset or liability

The principal or the most advantageous market must be accessible by the Company.

The fair value of an asset or a liability is measured using the assumptions that market participants would use when pricing the asset or liability, assuming that market participants act in their economic best interest.

A fair value measurement of a non-financial asset takes into account a market participant's ability to generate economic benefits by using the asset in its highest and best use or by selling it to another market participant that would use the asset in its highest and best use.

The Company uses valuation techniques that are appropriate in the circumstances and for which sufficient data are available to measure fair value, maximizing the use of relevant observable inputs and minimizing the use of unobservable inputs.

All assets and liabilities for which fair value is measured or disclosed in the financial statements are categorized within the fair value hierarchy, described as follows, based on the lowest level input that is significant to the fair value measurement as a whole:

- Level 1 — Quoted (unadjusted) market prices in active markets for identical assets or liabilities
- Level 2 — Valuation techniques for which the lowest level input that is significant to the fair value measurement is directly or indirectly observable
- Level 3 — Valuation techniques for which the lowest level input that is significant to the fair value measurement is unobservable

2.3.2 Fair value measurement (cont'd)

For assets and liabilities that are recognized in the financial statements at fair value on a recurring basis, the Company determines whether transfers have occurred between levels in the hierarchy by re-assessing categorization (based on the lowest level input that is significant to the fair value measurement as a whole) at the end of each reporting period.

External valuers are involved for valuation of significant assets and significant liabilities, such as properties and AFS financial assets. Selection criteria include market knowledge, reputation, independence and whether professional standards are maintained.

For the purpose of fair value disclosures, the Company has determined classes of assets and liabilities on the basis of the nature, characteristics and risks of the asset or liability and the level of the fair value hierarchy, as explained above.

Fair-value related disclosures for financial instruments and non-financial assets that are measured at fair value or where fair values are disclosed, are summarized in the following notes:

	Notes
➢ Disclosures for valuation methods, significant estimates and assumptions	3.12.18
➢ Quantitative disclosures of fair value measurement hierarchy	10
➢ Property, plant and equipment under revaluation model	12
➢ Financial instruments (including those carried at amortized cost)	10
➢ Share-based payment	18

2.3.3 Foreign currencies

The Company's financial statements are presented in Korean won. The Company determines the functional currency and items included in the financial statements of each entity are measured using that functional currency.

1) Transactions and balances

The Company's financial statements are presented in Korean won, which is functional currency and reporting currency. Monetary assets and liabilities denominated in foreign currencies are retranslated at the functional currency spot rates of exchange at the reporting date. Differences arising on settlement or translation of monetary items are recognized in profit or loss.

Non-monetary items that are measured in terms of historical cost in a foreign currency are translated using the exchange rates at the dates of the initial transactions. Non-monetary items measured at fair value in a foreign currency are translated using the exchange rates at the date when the fair value is determined. The gain or loss arising on translation of non-monetary items measured at fair value is treated in line with the recognition of the gain or loss on the change in fair value of the item

2) Company companies

On consolidation, the assets and liabilities of foreign operations are translated into Korean won at the rate of exchange prevailing at the reporting date and their statements of profit or loss are translated at exchange rates prevailing at the dates of the transactions. The exchange differences arising on translation for consolidation are recognized in OCI. On disposal of a foreign operation, the component of OCI relating to that particular foreign operation is recognized in profit or loss.

Any goodwill arising on the acquisition of a foreign operation and any fair value adjustments to the carrying amounts of assets and liabilities arising on the acquisition are treated as assets and liabilities of the foreign operation and translated at the spot rate of exchange at the reporting date.

2.3.3 Foreign currencies (cont'd)

In determining the spot exchange rate to use on initial recognition of the related asset, expense or income (or part of it) on the derecognition of a non-monetary asset or non-monetary liability relating to advance consideration, the date of the transaction is the date on which the Company initially recognizes the non-monetary asset or non-monetary liability arising from the advance consideration. If there are multiple payments or receipts in advance, the Company determines the transaction date for each payment or receipt of advance consideration.

2.3.4 Property, plant and equipment

Construction-in-progress is stated at cost, net of accumulated depreciation and accumulated impairment losses. Such cost includes the cost of replacing part of the property, plant and equipment and borrowing costs for long-term construction projects if the recognition criteria are met. When significant parts of property, plant and equipment are required to be replaced at intervals, the Company depreciates them separately based on their specific useful lives. Likewise, when a major inspection is performed, its cost is recognized in the carrying amount of the plant and equipment as a replacement if the recognition criteria are satisfied. All other repair and maintenance costs are recognized in profit or loss as incurred. The present value of the expected cost for the decommissioning of an asset after its use is included in the cost of the respective asset if the recognition criteria for a provision are met.

Property, plant and equipment transferred from customers are initially measured at fair value at the date on which control is obtained. Land and buildings are measured at fair value less accumulated depreciation on buildings and impairment losses recognized at the date of revaluation. Valuations are performed with sufficient frequency to ensure that the carrying amount of a revalued asset does not differ materially from its fair value.

A revaluation surplus is recorded in OCI and credited to the asset revaluation surplus in equity. However, to the extent that it reverses a revaluation deficit of the same asset previously recognized in profit or loss, the increase is recognized in profit and loss. A revaluation deficit is recognized in the statement of profit or loss and other comprehensive income, except to the extent that it offsets an existing surplus on the same asset recognized in the asset revaluation reserve.

The Company has elected to use the revaluation model for land and buildings, while other classes of property, plant and equipment are measured using the cost model. The Company has also elected to transfer the revaluation surplus to retained earnings as the asset is being used. Alternatively, the amount could have been transferred, in full, upon disposal of the asset.

Depreciation is calculated on a straight-line basis over the estimated useful lives of the assets, as follows:

	Useful lives (years)
Buildings	20 ~ 40
Structures	10 ~ 20
Machinery	5 ~ 20
Others	3 ~ 10

An item of property, plant and equipment and any significant part initially recognized is derecognized upon disposal or when no future economic benefits are expected from its use or disposal. Any gain or loss arising on derecognition of the asset (calculated as the difference between the net disposal proceeds and the carrying amount of the asset) is included in the income statement when the asset is derecognized.

The residual values, useful lives and methods of depreciation of property, plant and equipment are reviewed at each financial year end and adjusted prospectively, if appropriate.

2.3.5 Leases

The determination of whether an arrangement is, or contains, a lease is based on the substance of the arrangement at the inception of the lease. The arrangement is, or contains, a lease if fulfilment of the arrangement is dependent on the use of a specific asset or assets and the arrangement conveys a right to use the asset or assets, even if that right is not explicitly specified in an arrangement.

A lease is classified at the inception date as a finance lease or an operating lease. A lease that transfers substantially all the risks and rewards incidental to ownership to the Company is classified as a finance lease. Finance leases are capitalized at the commencement of the lease at the inception date fair value of the leased property or, if lower, at the present value of the minimum lease payments. Lease payments are apportioned between finance charges and reduction of the lease liability so as to achieve a constant rate of interest on the remaining balance of the liability. Finance charges are recognized in finance costs in the statement of profit or loss.

A leased asset is depreciated over the useful life of the asset. However, if there is no reasonable certainty that the Company will obtain ownership by the end of the lease term, the asset is depreciated over the shorter of the estimated useful life of the asset and the lease term.

An operating lease is a lease other than a finance lease. Operating lease payments are recognized as an operating expense in the statement of profit or loss on a straight-line basis over the lease term.

2.3.6 Intangible assets

Intangible assets acquired separately are measured on initial recognition at cost. The cost of intangible assets acquired in a business combination is their fair value at the date of acquisition. Following initial recognition, intangible assets are carried at cost less any accumulated amortization and accumulated impairment losses.

The useful lives of intangible assets are assessed as either finite or indefinite. Intangible assets with finite lives are amortized over the useful economic life and assessed for impairment whenever there is an indication that the intangible asset may be impaired. The amortization period and the amortization method for an intangible asset with a finite useful life are reviewed at least at the end of each reporting period. Changes in the expected useful life or the expected pattern of consumption of future economic benefits embodied in the asset are considered to modify the amortization period or method, as appropriate, and are treated as changes in accounting estimates. The amortization expense on intangible assets with finite lives is recognized in the statement of profit or loss and other comprehensive income in the expense category that is consistent with the function of the intangible assets.

Intangible assets with indefinite useful lives are not amortized, but are tested for impairment annually, either individually or at the CGU level. The assessment of indefinite life is reviewed annually to determine whether the indefinite life continues to be supportable. If not, the change in useful life from indefinite to finite is made on a prospective basis.

Gains or losses arising from derecognition of an intangible asset are measured as the difference between the net disposal proceeds and the carrying amount of the asset and are recognized in the statement of profit or loss and other comprehensive income when the asset is derecognized.

Research and development costs
Research costs are expensed as incurred. Development expenditures on an individual project are recognized as an intangible asset when the Company can demonstrate:

- The technical feasibility of completing the intangible asset so that the asset will be available for use or sale
- Its intention to complete and its ability to use or sell the asset
- How the asset will generate future economic benefits
- The availability of resources to complete the asset
- The ability to measure reliably the expenditure during development

2.3.6 Intangible assets (cont'd)

Following initial recognition of the development expenditure as an asset, the asset is carried at cost less any accumulated amortization and accumulated impairment losses. Amortization of the asset begins when development is complete and the asset is available for use. It is amortized over the period of expected future benefit. Amortization is recorded in cost of sales. During the period of development, the asset is tested for impairment annually.

Amortization is calculated on a straight-line basis over the estimated useful lives of the assets, as follows

	Useful lives (years)
Development costs	5
Software	5
Other intangible assets	5~10

2.3.7 Inventories

Inventories are valued at the lower of cost and net realizable value. The cost of inventories includes expenditures for acquiring the inventories, production or conversion costs and other costs incurred in bringing them to their existing location and condition. Net realizable value is the estimated selling price in the ordinary course of business, less the costs of completion and selling expenses.

2.3.8 Impairment of non-financial assets

The Company assesses, at each reporting date, whether there is an indication that an asset may be impaired. If any indication exists, or when annual impairment testing for an asset is required, the Company estimates the asset's recoverable amount. An asset's recoverable amount is the higher of an asset's or CGU's fair value less costs of disposal and its value in use. The recoverable amount is determined for an individual asset, unless the asset does not generate cash inflows that are largely independent of those from other assets or Companys of assets. When the carrying amount of an asset or CGU exceeds its recoverable amount, the asset is considered impaired and is written down to its recoverable amount.

In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset. In determining fair value less costs of disposal, recent market transactions are taken into account. If no such transactions can be identified, an appropriate valuation model is used. These calculations are corroborated by valuation multiples, quoted share prices for publicly traded companies or other available fair value indicators.

The Company bases its impairment calculation on detailed budgets and forecast calculations, which are prepared separately for each of the Company's CGUs to which the individual assets are allocated. These budgets and forecast calculations generally cover a period of five years. A long-term growth rate is calculated and applied to project future cash flows after the fifth year.

Impairment losses of continuing operations, including impairment on inventories, are recognized in the statement of profit or loss and other comprehensive income in expense categories consistent with the function of the impaired asset, except for properties previously revalued with the revaluation taken to OCI. For such properties, the impairment is recognized in OCI up to the amount of any previous revaluation.

2.3.8 Impairment of non-financial assets(cont'd)

For assets excluding goodwill, an assessment is made at each reporting date to determine whether there is an indication that previously recognized impairment losses no longer exist or have decreased. If such indication exists, the Company estimates the asset's or CGU's recoverable amount. A previously recognized impairment loss is reversed only if there has been a change in the assumptions used to determine the asset's recoverable amount since the last impairment loss was recognized. The reversal is limited so that the carrying amount of the asset does not exceed its recoverable amount, nor exceed the carrying amount that would have been determined, net of depreciation, had no impairment loss been recognized for the asset in prior years. Such reversal is recognized in the statement of profit or loss and other comprehensive income unless the asset is carried at a revalued amount, in which case, the reversal is treated as a revaluation increase.

The following assets have specific characteristics for impairment testing:

Intangible assets
Intangible assets with indefinite useful lives are tested for impairment annually as of December 31 at the CGU level, as appropriate, and when circumstances indicate that the carrying value may be impaired.

2.3.9 Cash and cash equivalents

Cash and cash equivalents comprise cash balances and demand deposits with maturities of three months or less from the acquisition date that are subject to an insignificant risk of changes in their fair value. Cash and cash equivalents in the consolidated statements of cash flows represent the amounts of these cash and cash equivalents, net of any overdrafts.

2.3.10 Financial instruments – initial recognition and subsequent measurement

A financial instrument is any contract that gives rise to a financial asset of one entity and a financial liability or equity instrument of another entity.

Financial assets

Initial recognition and measurement
Financial assets are classified, at initial recognition, as subsequently measured at amortized cost, fair value through other comprehensive income (OCI), and fair value through profit or loss.

The classification of financial assets at initial recognition depends on the financial asset's contractual cash flow characteristics and the Company's business model for managing them. With the exception of trade receivables that do not contain a significant financing component or for which the Company has applied the practical expedient, the Company initially measures a financial asset at its fair value plus, in the case of a financial asset not at fair value through profit or loss, transaction costs. Trade receivables that do not contain a significant financing component or for which the Company has applied the practical expedient are measured at the transaction price determined under KIFRS 1115. Refer to the accounting policies in section (e) Revenue from contracts with customers.

In order for a financial asset to be classified and measured at amortized cost or fair value through OCI, it needs to give rise to cash flows that are 'solely payments of principal and interest (SPPI)' on the principal amount outstanding. This assessment is referred to as the SPPI test and is performed at an instrument level.

The Company's business model for managing financial assets refers to how it manages its financial assets in order to generate cash flows. The business model determines whether cash flows will result from collecting contractual cash flows, selling the financial assets, or both.

2.3.10 Financial instruments – initial recognition and subsequent measurement (cont'd)

Purchases or sales of financial assets that require delivery of assets within a time frame established by regulation or convention in the market place (regular way trades) are recognized on the trade date, i.e., the date that the Company commits to purchase or sell the asset.

Subsequent measurement
For purposes of subsequent measurement, financial assets are classified in four categories:

- Financial assets at amortized cost (debt instruments)
- Financial assets at fair value through OCI with recycling of cumulative gains and losses (debt instruments)

Financial assets designated at fair value through OCI with no recycling of cumulative gains and losses upon derecognition (equity instruments)

Financial assets at amortized cost (debt instruments)
This category is the most relevant to the Company. The Company measures financial assets at amortized cost if both of the following conditions are met:

- The financial asset is held within a business model with the objective to hold financial assets in order to collect contractual cash flows, and
- The contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding

Financial assets at amortized cost are subsequently measured using the effective interest (EIR) method and are subject to impairment. Gains and losses are recognized in profit or loss when the asset is derecognized, modified or impaired.

Financial assets at fair value through OCI (debt instruments)

The Company measures debt instruments at fair value through OCI if both of the following conditions are met:

- The financial asset is held within a business model with the objective of both holding to collect contractual cash flows and selling, and

- The contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding

For debt instruments at fair value through OCI, interest income, foreign exchange revaluation and impairment losses or reversals are recognized in the statement of profit or loss and computed in the same manner as for financial assets measured at amortized cost. The remaining fair value changes are recognized in OCI. Upon derecognition, the cumulative fair value change recognized in OCI is recycled to profit or loss.

The Company's debt instruments at fair value through OCI includes investments in quoted debt instruments included under other non-current financial assets.

2.3.10 Financial instruments – initial recognition and subsequent measurement (cont'd)

Financial assets designated at fair value through OCI (equity instruments)

Upon initial recognition, the Company can elect to classify irrevocably its equity investments as equity instruments designated at fair value through OCI when they meet the definition of equity under KIFRS 1032 Financial Instruments: Presentation and are not held for trading. The classification is determined on an instrument-by-instrument basis.

Gains and losses on these financial assets are never recycled to profit or loss. Dividends are recognized as other income in the statement of profit or loss when the right of payment has been established, except when the Company benefits from such proceeds as a recovery of part of the cost of the financial asset, in which case, such gains are recorded in OCI. Equity instruments designated at fair value through OCI are not subject to impairment assessment.

The Company can elect to classify irrevocably its non-listed equity investments under this category.

Financial assets at fair value through profit or loss

Financial assets at fair value through profit or loss include financial assets held for trading and financial assets designated upon initial recognition at fair value through profit or loss. Financial assets are classified as held for trading if they are acquired for the purpose of selling or repurchasing in the near term. Derivatives, including separated embedded derivatives, are also classified as held for trading unless they are designated as effective hedging instruments. Financial assets with cash flows that are not solely payments of principal and interest are classified and measured at fair value through profit or loss, irrespective of the business model. Notwithstanding the criteria for debt instruments to be classified at amortized cost or at fair value through OCI, as described above, debt instruments may be designated at fair value through profit or loss on initial recognition if doing so eliminates, or significantly reduces, an accounting mismatch.

Financial assets at fair value through profit or loss are carried in the statement of financial position at fair value with net changes in fair value recognized in the statement of profit or loss.

This category includes derivative instruments and listed equity investments which the Company had not irrevocably elected to classify at fair value through OCI. Dividends on listed equity investments are also recognized in profit or loss when the right of payment has been established.

A derivative embedded in a hybrid contract, with a financial liability or non-financial host, is separated from the host and accounted for as a separate derivative if: the economic characteristics and risks are not closely related to the host; a separate instrument with the same terms as the embedded derivative would meet the definition of a derivative; and the hybrid contract is not measured at fair value through profit or loss. Embedded derivatives are measured at fair value with changes in fair value recognized in profit or loss. Reassessment only occurs if there is either a change in the terms of the contract that significantly modifies the cash flows that would otherwise be required or a reclassification of a financial asset out of the fair value through profit or loss category.

A derivative embedded within a hybrid contract containing a financial asset host is not accounted for separately. The financial asset host together with the embedded derivative is required to be classified in its entirety as a financial asset at fair value through profit or loss.

Derecognition

A financial asset (or, where applicable, a part of a financial asset or part of a Company of similar financial assets) is primarily derecognized (i.e., removed from the Company's consolidated statement of financial position) when:

The rights to receive cash flows from the asset have expired, or

The Company has transferred its rights to receive cash flows from the asset or has assumed an obligation to pay the received cash flows in full without material delay to a third party under a 'pass-through' arrangement; and either (a) the Company has transferred substantially all the risks and rewards of the asset, or (b) the Company has neither transferred nor retained substantially all the risks and rewards of the asset, but has transferred control of the asset.

2.3.10 Financial instruments – initial recognition and subsequent measurement (cont'd)

When the Company has transferred its rights to receive cash flows from an asset or has entered into a pass-through arrangement, it evaluates if, and to what extent, it has retained the risks and rewards of ownership. When it has neither transferred nor retained substantially all of the risks and rewards of the asset, nor transferred control of the asset, the Company continues to recognize the transferred asset to the extent of its continuing involvement. In that case, the Company also recognizes an associated liability. The transferred asset and the associated liability are measured on a basis that reflects the rights and obligations that the Company has retained.

Continuing involvement that takes the form of a guarantee over the transferred asset is measured at the lower of the original carrying amount of the asset and the maximum amount of consideration that the Company could be required to repay.

Impairment of financial assets

Further disclosures relating to impairment of financial assets are also provided in the following Items:

Disclosures for significant assumptions

Debt instruments at fair value through OCI

Trade receivables, including contract assets

The Company recognizes an allowance for expected credit losses (ECLs) for all debt instruments not held at fair value through profit or loss. ECLs are based on the difference between the contractual cash flows due in accordance with the contract and all the cash flows that the Company expects to receive, discounted at an approximation of the original effective interest rate. The expected cash flows will include cash flows from the sale of collateral held or other credit enhancements that are integral to the contractual terms.

ECLs are recognized in two stages. For credit exposures for which there has not been a significant increase in credit risk since initial recognition, ECLs are provided for credit losses that result from default events that are possible within the next 12-months (a 12-month ECL). For those credit exposures for which there has been a significant increase in credit risk since initial recognition, a loss allowance is required for credit losses expected over the remaining life of the exposure, irrespective of the timing of the default (a lifetime ECL).

For trade receivables and contract assets, the Company applies a simplified approach in calculating ECLs. Therefore, the Company does not track changes in credit risk, but instead recognizes a loss allowance based on lifetime ECLs at each reporting date. The Company has established a provision matrix that is based on its historical credit loss experience, adjusted for forward-looking factors specific to the debtors and the economic environment.

For debt instruments at fair value through OCI, the Company applies the low credit risk simplification. At every reporting date, the Company evaluates whether the debt instrument is considered to have low credit risk using all reasonable and supportable information that is available without undue cost or effort. In making that evaluation, the Company reassesses the internal credit rating of the debt instrument. In addition, the Company considers that there has been a significant increase in credit risk when contractual payments are more than 30 days past due

2.3.10 Financial instruments – initial recognition and subsequent measurement (cont'd)

The Company's debt instruments at fair value through OCI comprise solely of quoted bonds that are graded in the top investment category and, therefore, are considered to be low credit risk investments. It is the Company's policy to measure ECLs on such instruments on a 12-month basis. However, when there has been a significant increase in credit risk since origination, the allowance will be based on the lifetime ECL. The Company uses the ratings from a credit rating agency both to determine whether the debt instrument has significantly increased in credit risk and to estimate ECLs.

The Company considers a financial asset in default when contractual payments are 90 days past due. However, in certain cases, the Company may also consider a financial asset to be in default when internal or external information indicates that the Company is unlikely to receive the outstanding contractual amounts in full before taking into account any credit enhancements held by the Company A financial asset is written off when there is no reasonable expectation of recovering the contractual cash flows.

(2) Financial liabilities

Initial recognition and measurement
Financial liabilities are classified, at initial recognition, as financial liabilities at fair value through profit or loss, loans and borrowings, payables, or as derivatives designated as hedging instruments in an effective hedge, as appropriate.

All financial liabilities are recognized initially at fair value and, in the case of loans and borrowings and payables, net of directly attributable transaction costs.

The Company's financial liabilities include trade and other payables, loans and borrowings including bank overdrafts, financial guarantee contracts and derivative financial instruments.

Subsequent measurement
The measurement of financial liabilities depends on their classification, as described below:

Financial liabilities at fair value through profit or loss
Financial liabilities at fair value through profit or loss include financial liabilities held for trading and financial liabilities designated upon initial recognition as of fair value through profit or loss.

Financial liabilities are classified as held for trading if they are incurred for the purpose of repurchasing in the near term. This category also includes derivative financial instruments entered into by the Company that are not designated as hedging instruments in hedge relationships as defined by KIFRS 1109. Separated embedded derivatives are also classified as held for trading unless they are designated as effective hedging instruments. Gains or losses on liabilities held for trading are recognized in the statement of profit or loss.

Financial liabilities designated upon initial recognition at fair value through profit or loss are designated at the initial date of recognition, and only if the criteria in KIFRS 1109 are satisfied. The Company has not designated any financial liability as of fair value through profit or loss.

Loans and borrowings
This is the category most relevant to the Company. After initial recognition, interest-bearing loans and borrowings are subsequently measured at amortized cost using the EIR method. Gains and losses are recognized in profit or loss when the liabilities are derecognized as well as through the EIR amortization process.

Amortized cost is calculated by taking into account any discount or premium on acquisition and fees or costs that are an integral part of the EIR. The EIR amortization is included as finance costs in the statement of profit or loss.

This category generally applies to interest-bearing loans and borrowings. For more information, refer to Note 14.

2.3.10 Financial instruments – initial recognition and subsequent measurement (cont'd)

Derecognition
A financial liability is derecognized when the obligation under the liability is discharged or cancelled or expires. When an existing financial liability is replaced by another from the same lender on substantially different terms, or the terms of an existing liability are substantially modified, such an exchange or modification is treated as the derecognition of the original liability and the recognition of a new liability. The difference in the respective carrying amounts is recognized in the statement of profit or loss.

(3) Offsetting of financial instruments

Financial assets and financial liabilities are offset and the net amount is reported in the consolidated statement of financial position if there is a currently enforceable legal right to offset the recognized amounts and there is an intention to settle on a net basis, to realize the assets and settle the liabilities simultaneously.

2.3.11 Derivative financial instruments and hedge accounting

Initial recognition and subsequent measurement

The Company uses derivative financial instruments, such as forward currency contracts, interest rate swaps and forward commodity contracts, to hedge its foreign currency risks, interest rate risks and commodity price risks, respectively. Such derivative financial instruments are initially recognized at fair value on the date on which a derivative contract is entered into and are subsequently remeasured at fair value. Derivatives are carried as financial assets when the fair value is positive and as financial liabilities when the fair value is negative.

For the purpose of hedge accounting, hedges are classified as:
- Fair value hedges when hedging the exposure to changes in the fair value of a recognized asset or liability or an unrecognized firm commitment
- Cash flow hedges when hedging the exposure to variability in cash flows that is either attributable to a particular risk associated with a recognized asset or liability or a highly probable forecast transaction or the foreign currency risk in an unrecognized firm commitment
- Hedges of a net investment in a foreign operation

At the inception of a hedge relationship, the Company formally designates and documents the hedge relationship to which the Company wishes to apply hedge accounting and the risk management objective and strategy for undertaking the hedge. The documentation includes identification of the hedging instrument, the hedged item or transaction, the nature of the risk being hedged and how the entity will assess the effectiveness of changes in the hedging instrument's fair value in offsetting the exposure to changes in the hedged item's fair value or cash flows attributable to the hedged risk. Such hedges are expected to be highly effective in achieving offsetting changes in fair value or cash flows and are assessed on an ongoing basis to determine that they actually have been highly effective throughout the financial reporting periods for which they were designated.

Hedges that meet the strict criteria for hedge accounting are accounted for, as described below:

Fair value hedges
The change in the fair value of a hedging derivative is recognized in the statement of profit or loss and other comprehensive income as finance costs. The change in the fair value of the hedged item attributable to the risk hedged is recorded as part of the carrying value of the hedged item and is also recognized in the statement of profit or loss and other comprehensive income as finance costs.

For fair value hedges relating to items carried at amortized cost, any adjustment to carrying value is amortized through profit or loss over the remaining term of the hedge using the EIR method. EIR amortization may begin as soon as an adjustment exists and no later than when the hedged item ceases to be adjusted for changes in its fair value attributable to the risk being hedged.

2.3.11 Derivative financial instruments and hedge accounting (cont'd)

If the hedged item is derecognized, the unamortized fair value is recognized immediately in profit or loss. When an unrecognized firm commitment is designated as a hedged item, the subsequent cumulative change in the fair value of the firm commitment attributable to the hedged risk is recognized as an asset or liability with a corresponding gain or loss recognized in profit and loss.

Cash flow hedges
The effective portion of the gain or loss on the hedging instrument is recognized in OCI in the cash flow hedge reserve, while any ineffective portion is recognized immediately in the statement of profit or loss and other comprehensive income.

Amounts recognized as OCI are transferred to profit or loss when the hedged transaction affects profit or loss, such as when the hedged financial income or financial expense is recognized or when a forecast sale occurs. When the hedged item is the cost of a non-financial asset or non-financial liability, the amounts recognized as OCI are transferred to the initial carrying amount of the non-financial asset or liability.

If the hedging instrument expires or is sold, terminated or exercised without replacement or rollover (as part of the hedging strategy), or if its designation as a hedge is revoked, or when the hedge no longer meets the criteria for hedge accounting, any cumulative gain or loss previously recognized in OCI remains separately in equity until the forecast transaction occurs or the foreign currency firm commitment is met.

Hedges of a net investment
Hedges of a net investment in a foreign operation, including a hedge of a monetary item that is accounted for as part of the net investment, are accounted for in a way similar to cash flow hedges. Gains or losses on the hedging instrument relating to the effective portion of the hedge are recognized as OCI while any gains or losses relating to the ineffective portion are recognized in the statement of profit or loss and other comprehensive income. On disposal of the foreign operation, the cumulative value of any such gains or losses recorded in equity is transferred to the statement of profit or loss and other comprehensive income.

2.3.12 Convertible preference shares
Convertible preference shares are separated into liability and equity components based on the terms of the contract.

On issuance of the convertible preference shares, the fair value of the liability component is determined using a market rate for an equivalent non-convertible instrument. This amount is classified as a financial liability measured at amortized cost (net of transaction costs) until it is extinguished on conversion or redemption.

The remainder of the proceeds is allocated to the conversion option that is recognized and included in equity. Transaction costs are deducted from equity, net of associated income tax. The carrying amount of the conversion option is not remeasured in subsequent years.

Transaction costs are apportioned between the liability and equity components of the convertible preference shares, based on the allocation of proceeds to the liability and equity components when the instruments are initially recognized.

The composite financial instruments issued by the Company are convertible bonds that can be converted into equity instruments at the option of the holder.

The liability component of the compound financial instrument is initially recognized at the fair value of the financial liability with no conversion rights under the same conditions and the equity component is initially recognized as the difference between the fair value of the combined financial instrument and the fair value of the liability component. Transaction costs directly related to the issuance of a compound financial instrument are allocated proportionally to the liability component and the initial recognition amount of the component of equity.

2.3.12 Convertible preference shares (cont'd)

The Company recognized the consideration for conversion rights as capital in accordance with the replies to the Financial Supervisory Service's "Question-00094". The accounting treatment is based on the "Korean Audited International Accounting Standards" as defined in Article 13, Paragraph 1.

2.3.13 Treasury shares

Own equity instruments that are reacquired (treasury shares) are recognized at cost and deducted from equity. No gain or loss is recognized in profit or loss on the purchase, sale, issue or cancellation of the Company's own equity instruments. Any difference between the carrying amount and the consideration, if reissued, is recognized in the share premium. Share options exercised during the reporting period are satisfied with treasury shares.

2.3.14 Non-current assets held for sale or distribution to equity holders of the parent and discontinued operations

The Company classifies non-current assets or disposal Companys as held for sale if their carrying amounts will be recovered principally through a sale or distribution rather than through continuing use. Such non-current assets and disposal Companys classified as held for sale or as held for distribution are measured at the lower of their carrying amount and fair value less costs to sell or to distribute. Costs to distribute are the incremental costs directly attributable to the disposal of an asset (disposal Company), excluding the finance costs and income tax expense.

The criteria for held for distribution classification is regarded as met only when the distribution is highly probable and the asset or disposal Company is available for immediate distribution in its present condition. Actions required to complete the distribution should indicate that it is unlikely that significant changes to the distribution will be made or that the decision to distribute will be withdrawn. Management must be committed to the distribution expected within one year from the date of the classification.

Property, plant and equipment and intangible assets are not depreciated or amortized once classified as held for sale or as held for distribution.

Assets and liabilities classified as held for sale or for distribution are presented separately as current items in the statement of financial position.

A disposal Company qualifies as discontinued operation if it is a component of an entity that either has been disposed of, or is classified as held for sale, and:

- Represents a separate major line of business or geographical area of operations
- Is part of a single coordinated plan to dispose of a separate major line of business or geographical area of operations, or
- Is a subsidiary acquired exclusively with a view to resale

Discontinued operations are excluded from the results of continuing operations and are presented as a single amount as profit or loss after tax from discontinued operations in the statement of profit or loss and other comprehensive income.

2.3.15 Pension benefits

The Company operates a defined benefit pension plan, which requires contributions to be made to a separately administered fund
The cost of providing benefits under the defined benefit plan is determined using the projected unit credit method. Remeasurements, comprising of actuarial gains and losses, the effect of the asset ceiling, excluding amounts included in net interest on the net defined benefit liability and the return on plan assets (excluding amounts included in net interest on the net defined benefit liability), are recognized immediately in the statement of financial position with a corresponding debit or credit to retained earnings through OCI in the period in which they occur. Remeasurements are not reclassified to profit or loss in subsequent periods.
Past service costs are recognized in profit or loss on the earlier of:

- The date of the plan amendment or curtailment, and
- The date that the Company recognizes restructuring-related costs

Net interest is calculated by applying the discount rate to the net defined benefit liability or asset. The Company recognizes the following changes in the net defined benefit obligation under ‘cost of sales’ and ‘selling and administrative expenses’ in the statement of comprehensive income.

2.3.16 Share-based payments

The Company provides share-based compensation for employees' work services. The Company provides share-based payment options (stock-based settlement-based compensation transactions) to its employees and cash settlement type share price compensation (Cash-settled share-based payment transactions) to employees of New Business Development.

Equity-settled transactions
The cost of equity-settled transactions is determined by the fair value at the date when the grant is made using an appropriate valuation model (See Note 18). That cost is recognized in employee benefits expense, together with a corresponding increase in equity (other capital reserves), over the period in which the service and, where applicable, the performance conditions are fulfilled (the vesting period). The cumulative expense recognized for equity-settled transactions at each reporting date until the vesting date reflects the extent to which the vesting period has expired and the Company’s best estimate of the number of equity instruments that will ultimately vest. The expense or credit in the statement of profit or loss and other comprehensive income for a period represents the movement in cumulative expense recognized as of the beginning and end of that period.

Service and non-market performance conditions are not taken into account when determining the grant date fair value of awards, but the likelihood of the conditions being met is assessed as part of the Company’s best estimate of the number of equity instruments that will ultimately vest. Market performance conditions are reflected within the grant date fair value. Any other conditions attached to an award, but without an associated service requirement, are considered to be non-vesting conditions. Non-vesting conditions are reflected in the fair value of an award and lead to an immediate expensing of an award unless there are also service and/or performance conditions.

No expense is recognized for awards that do not ultimately vest because non-market performance and/or service conditions have not been met. Where awards include a market or non-vesting condition, the transactions are treated as vested irrespective of whether the market or non-vesting condition is satisfied, provided that all other performance and/or service conditions are satisfied.

When the terms of an equity-settled award are modified, the minimum expense recognized is the grant date fair value of the unmodified award, provided the original terms of the award are met. An additional expense, measured as of the date of modification, is recognized for any modification that increases the total fair value of the share-based payment transaction, or is otherwise beneficial to the employee.

2.3.16 Share-based payments (cont'd)

Where an award is cancelled by the entity or by the counterparty, any remaining element of the fair value of the award is expensed immediately through profit or loss.

The dilutive effect of outstanding options is reflected as additional share dilution in the computation of diluted earnings per share (further details are given in Note 29).

(2) Cash-settled share-based payment transactions
The Company measures the goods and services provided in the cash-settled share-based payment transactions and the liabilities incurred in cash-settled share-based payment transactions as the fair value of the liability. Fair value is re-measured at the end of each reporting period from the initial grant date until the settlement of the liability, and changes in fair value are recognized in profit or loss. Fair value is recognized as an expense over the vesting period and recognizes a corresponding liability.

2.3.17 Provisions

Provisions are recognized when the Company has a present obligation (legal or constructive) as a result of a past event, it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and a reliable estimate can be made of the amount of the obligation. When the Company expects some or all of a provision to be reimbursed, for example, under an insurance contract, the reimbursement is recognized as a separate asset, but only when the reimbursement is virtually certain. The expense relating to a provision is presented in the statement of profit or loss and other comprehensive income net of any reimbursement.

If the effect of the time value of money is material, provisions are discounted using a current pre-tax rate that reflects, when appropriate, the risks specific to the liability. When discounting is used, the increase in the provision due to the passage of time is recognized as a finance cost.

Warranty provisions
The Company provides warranties for general repairs of defects that existed at the time of sale, as required by law. Provisions related to these assurance-type warranties are recognized when the product is sold or the service is provided to the customer. Initial recognition is based on historical experience. The initial estimate of warranty-related costs is revised annually

Greenhouse gas emissions
The Company receives free emission rights as a result of emission trading schemes. The rights are received on an annual basis and, in return, the Company is required to remit rights equal to its actual emissions. The Company has adopted the net liability approach to the emission rights granted. Therefore, a provision is recognized only when actual emissions exceed the emission rights granted and still held. The emission costs are recognized as other operating costs. Where emission rights are purchased from other parties, they are recorded at cost, and treated as a reimbursement right, whereby they are matched to the emission liabilities and remeasured to fair value. The changes in fair value are recognized in the statement of profit or loss and other comprehensive income.

Onerous contracts
If the Company has a contract that is onerous, the present obligation under the contract is recognized and measured as a provision. However, before a separate provision for an onerous contract is established, the Company recognizes any impairment loss that has occurred on assets dedicated to that contract.

An onerous contract is a contract under which the unavoidable costs (i.e., the costs that the Company cannot avoid because it has the contract) of meeting the obligations under the contract exceed the economic benefits expected to be received under it. The unavoidable costs under a contract reflect the least net cost of exiting from the contract, which is the lower of the cost of fulfilling it and any compensation or penalties arising from failure to fulfil it.

2.3.17 Provisions (cont'd)

Contingent liabilities recognized in a business combination
A contingent liability recognized in a business combination is initially measured at its fair value. Subsequently, it is measured at the higher of the amount that would be recognized in accordance with the requirements for provisions above or the amount initially recognized less, when appropriate, cumulative amortization recognized in accordance with the requirements for revenue recognition.

2.3.18 Revenue from contracts with customers

The Company has applied KIFRS 1115 *Revenue from Contracts with Customers,* with the initial application date of January 1, 2018. .

Identifying performance obligations
The Company is engages in the manufacture and sale of marine diesel engines, diesel power plants and others. Revenue from contracts with customers is recognized when control of the goods or services are transferred to the customer at an amount that reflects the consideration to which the Company expects to be entitled in exchange for those goods or services.

Performance obligations satisfied over time
In accordance with KIFRS 1115, if the Company's performance creates or enhances an asset that the customer controls as the asset is created or enhanced or if the Company's performance does not create an asset with an alternative use to the Company and the Company has an enforceable right to payment for performance completed to date, the Company recognizes revenue using the percentage-of-completion method.

Variable consideration
The variable consideration is estimated based on the expected value method which better predicts the amount of consideration to which the Company will be entitled, and recognizes revenue by including an amount of variable consideration in the transaction price only to the extent it is highly probable that a significant revenue reversal in the amount of cumulative revenue recognized will not occur. The Company recognizes refund liabilities for the consideration received or receivable to which the Company expects to be entitled.

Consideration payable to a customer
The consideration paid to the Company customers includes the cash amount the Company expect to pay or pay to the customer (or other party purchasing the goods or services from the customer), and the amount of cash that the customer transfers to the different goods If the payment is not made in return for the service, the consideration is deducted from the revenue. The Company accounts for consideration payable to a customer as a reduction of the transaction price and, therefore, of revenue unless the payment to the customer is in exchange for a distinct good or service that the customer transfers to the Company.

Significant financial elements
In determining the transaction price under KIFRS 1115, if the timing of payments agreed to by the parties to the contract provides the customer or the Company with a significant benefit of financing the transfer of goods or services to the customer, the Company recognizes at an amount that reflects the price that a customer would have paid for the promised goods or services if the customer had paid cash for those goods or services when they transfer to the customer.

Warranty obligation
The Company typically provides warranties for general repairs of defects that existed at the time of sale, as required by law. These assurance-type warranties are accounted for under KIFRS 1037 *Provisions, Contingent Liabilities and Contingent Assets.* Refer to the Note 16 on warranty provisions.

Contract balance

(1) Contract assets
A contract asset is the right to consideration in exchange for goods or services transferred to the customer. If the Company performs by transferring goods or services to a customer before the customer pays consideration or before payment is due, a contract asset is recognized for the earned consideration that is conditional.

2.3.18 Revenue from contracts with customers (cont'd)

(2) Trade receivables
A receivable represents the Company's right to an amount of consideration that is unconditional (i.e., only the passage of time is required before payment of the consideration is due).

(3) Contract liabilities
A contract liability is the obligation to transfer goods or services to a customer for which the Company has received consideration (or an amount of consideration is due) from the customer. If a customer pays consideration before the Company transfers goods or services to the customer, a contract liability is recognized when the payment is made or the payment is due (whichever is earlier). Contract liabilities are recognized as revenue when the Company performs under the contract.

2.3.19 Taxes

Current income tax
Current income tax assets and liabilities are measured at the amount expected to be recovered from or paid to the taxation authorities. The tax rates and tax laws used to compute the amount are those that are enacted or substantively enacted at the reporting date in the countries where the Company operates and generates taxable income.

Current income tax relating to items recognized directly in equity is recognized in equity and not in the statement of profit or loss and other comprehensive income. Management periodically evaluates positions taken in the tax returns with respect to situations in which applicable tax regulations are subject to interpretation and establishes provisions where appropriate.

Deferred tax
Deferred tax is provided using the liability method on temporary differences between the tax bases of assets and liabilities and their carrying amounts for financial reporting purposes at the reporting date.
Deferred tax liabilities are recognized for all taxable temporary differences, except:

- When the deferred tax liability arises from the initial recognition of goodwill or an asset or liability in a transaction that is not a business combination and, at the time of the transaction, affects neither the accounting profit nor taxable profit or loss
- In respect of taxable temporary differences associated with investments in subsidiaries, associates and interests in joint arrangements, when the timing of the reversal of the temporary differences can be controlled and it is probable that the temporary differences will not reverse in the foreseeable future

Deferred tax assets are recognized for all deductible temporary differences, the carry forward of unused tax credits and any unused tax losses. Deferred tax assets are recognized to the extent that it is probable that taxable profit will be available against which the deductible temporary differences, and the carry forward of unused tax credits and unused tax losses can be utilized, except:

- When the deferred tax asset relating to the deductible temporary difference arises from the initial recognition of an asset or liability in a transaction that is not a business combination and, at the time of the transaction, affects neither the accounting profit nor taxable profit or loss.
- In respect of deductible temporary differences associated with investments in subsidiaries, associates and interests in joint arrangements, deferred tax assets are recognized only to the extent that it is probable that the temporary differences will reverse in the foreseeable future and taxable profit will be available against which the temporary differences can be utilized.

2.3.19 Taxes (cont'd)

The carrying amount of deferred tax assets is reviewed at each reporting date and reduced to the extent that it is no longer probable that sufficient taxable profit will be available to allow all or part of the deferred tax asset to be utilized. Unrecognized deferred tax assets are re-assessed at each reporting date and are recognized to the extent that it has become probable that future taxable profits will allow the deferred tax asset to be recoveredDeferred tax assets and liabilities are measured at the tax rates that are expected to apply in the year when the asset is realized or the liability is settled, based on tax rates (and tax laws) that have been enacted or substantively enacted at the reporting date.
Deferred tax relating to items recognized outside profit or loss is recognized outside profit or loss. Deferred tax items are recognized in correlation to the underlying transaction either in OCI or directly in equity.

Tax benefits acquired as part of a business combination, but not satisfying the criteria for separate recognition at that date, are recognized subsequently if new information about facts and circumstances change. The recognized deferred tax benefits are applied to reduce the carrying amount of goodwill related to the acquisition. If the carrying amount of goodwill is zero, the deferred tax benefit is recognized in profit or loss.

Deferred tax assets and liabilities are offset only if there is a legally enforceable right to offset the related current tax liabilities and assets, and they relate to income taxes levied by the same tax authority and they intend to settle current tax liabilities and assets on a net basis.

The Company offsets deferred tax assets and deferred tax liabilities if and only if it has a legally enforceable right to set off current tax assets and current tax liabilities and the deferred tax assets and deferred tax liabilities relate to income taxes levied by the same taxation authority on either the same taxable entity or different taxable entities which intend either to settle current tax liabilities and assets on a net basis, or to realize the assets and settle the liabilities simultaneously, in each future period in which significant amounts of deferred tax liabilities or assets are expected to be settled or recovered.

2.4 New and amended standards and interpretations

2.4.1 New and amended standards and interpretations

The Company applied for the first time the amendments and amendments to the following standards. The contents and effect of the amended standard are as follows.

***KIFRS 1115** Revenue from Contracts with Customers*
KIFRS 1115 supersedes KIFRS 1011 *Construction Contracts*, KIFRS 1018 *Revenue* and related Interpretations and it applies, with limited exceptions, to all revenue arising from contracts with its customers. KIFRS 1115 establishes a five-step model to account for revenue arising from contracts with customers and requires that revenue be recognized at an amount that reflects the consideration to which an entity expects to be entitled in exchange for transferring goods or services to a customer.

KIFRS 1115 requires entities to exercise judgement, taking into consideration all of the relevant facts and circumstances when applying each step of the model to contracts with their customers. The standard also specifies the accounting for the incremental costs of obtaining a contract and the costs directly related to fulfilling a contract. In addition, the standard requires extensive disclosures.

The Company adopted KIFRS 1115 using the full retrospective method of adoption. The effect of the transition on the current period has not been disclosed as the standard provides an optional practical expedient. The Company did not apply any of the other available optional practical expedients.

The Company has applied KIFRS 1115 on January 1, 2018, as the date of initial application date, and these amendments have no impact on the consolidated financial statements of the Company.

2.4.1 New and amended standards and interpretations (cont'd)

KIFRS 1109 *Financial Instruments*

KIFRS 1109 *Financial Instruments* replaces KIFRS 1039 *Financial Instruments: Recognition and Measurement* for annual periods beginning on or after January 1, 2018, bringing together all three aspects of the accounting for financial instruments: classification and measurement; impairment; and hedge accounting.

With the exception of hedge accounting, which the Company applied prospectively, the Company has applied KIFRS 1109 retrospectively, with the initial application date of January 1, 2018. The cumulative effect of initially applying KIFRS 1109 is recognized at the date of initial application as an adjustment to the opening balance of retained earnings. Therefore, the comparative information was not restated and continues to be reported under KIFRS 1039 *Financial Instruments: Recognition and Measurement* and related Interpretations.

The effect of adopting KIFRS 1109 on the Company's equity as of January 1, 2018 is as follows (Korean won in thousands):

	Adjustments		
Equity		₩	-
Accumulated other comprehensive income (loss)	(*1)		(233,437,065)
Retained earnings	(*1)		233,437,065
Non-controlling interests			-
Total equity			-

(*1) Under KIFRS 1039, the Company classified equity instruments as available-for-sale financial assets. Gains or losses on available-for-sale financial assets that were previously recognized in other capital in relation to equity instruments were reclassified.to retained earnings.

(a) Classification and surement

Except for certain trade receivable, the transaction cost of financial assets that are not measured at fair value through profit or loss under KIFRS 1109 is included in the fair value at initial recognition.

Under KIFRS 1109, debt instruments are subsequently measured at fair value through profit or loss, amortized cost, or fair value through OCI. The classification is based on two criteria: the Company's business model for managing the assets; and whether the instruments' contractual cash flows represent 'solely payments of principal and interest' on the principal amount outstanding.

A summary of new classification and measurement for the Company's debt instruments is as follows:

- Debt instruments measured at amortized cost that meets the SPPI criterion and is held within a business model whose objective is to hold the financial asset in order to collect contractual cash flows. This category includes loans that are included in the Company's trade and other receivables and other non-current financial assets.

- Debt instruments measured at fair value through OCI whose gain or loss from derecognition is reclassified in the current profit or loss. Financial assets in this category include debt securities that is held within a business model that meets the SSPI criterion and whose objective is achieved by both collecting contractual cash flows and selling the financial asset. The Company does not hold debt instruments measured at fair value through OCI as of December 31, 2018.

2.4.1 New and amended standards and interpretations (cont'd)

Other financial assets are classified and subsequently measured as follows:

- Other comprehensive income for which the gain or loss is not recycled to profit or loss - fair value measurement equity product. This category includes only those equity instruments that the Company intend to hold to the anticipated future periods and which are not recognized at initial recognition or transaction. Other comprehensive income - fair value measurement Equity instruments are not subject to impairment assessment under KIFRS 1109. Under KIFRS 1039, the Company's corresponding unlisted equity instruments are classified as available-for-sale financial assets. Accumulated impairment losses on available-for-sale financial assets previously recognized in profit or loss for the period are reclassified to other comprehensive income. As a result, other comprehensive income decreased by ₩

  233,437 million and the retained earnings increased, which was adjusted in the consolidated statement of financial position as of January 1, 2018.

- Gains or losses on valuation of financial assets at fair value through profit or loss, consisting of derivatives and listed equity instruments that are not irrevocably elected to be classified as FVOCIs at initial recognition. This category is based on the assumption that the cash flow characteristics do not meet SPPI standards or that they are held in a business model that aims to hold to receive contractual cash flows or in a business model for the purpose of receiving and selling contractual cash flows. Under KIFRS 1039, the Company classified listed equity securities as available-for-sale financial assets.

The Company's business model is valued on January 1, 2018, the date of commencement, and applied to financial assets that have not been removed prior to the commencement date. An assessment of whether the contractual cash flows of a debt instrument consists of interest payments on principal and principal is based on the facts and circumstances at the time of initial recognition of the asset.

The accounting treatment of the Company financial liabilities is largely consistent with the accounting treatment under KIFRS 1039. Similar to the requirements of KIFRS 1039, KIFRS 1109 requires contingent consideration to be accounted for as a financial instrument whose fair value changes are measured at the fair value recognized in the statement of comprehensive income.

Under KFRS 1109, embedded derivatives are no longer separated from the main contract. Instead, the financial assets are classified based on the contractual definitions and the Company business model.

The accounting for derivative instruments embedded in financial liabilities and non-financial derivatives is not changed in accordance with the requirements of KIFRS 1039.

(b) Impairment

The adoption of KIFRS 1109 has fundamentally changed the Company's accounting for impairment losses for financial assets by replacing KIFRS 1039's incurred loss approach with a forward-looking expected credit loss (ECL) approach.

KIFRS 1109 requires the Company to recognize an allowance for ECLs for all debt instruments not held at fair value through profit or loss and contract assets.

The expected credit losses are based on the difference between the contractual cash flows and all cash flows expected to be received. The cash deficit is measured at the initial effective interest rate of the asset.

For contract assets, trade receivables and other receivables, the Company applies the simplified method and calculates the expected credit losses based on the expected life expectancy for credit losses. The Company design a provisioning schedule based on past credit loss experience adjusted to reflect the borrower's unique future expectations and economic environment.

For other debt instruments (eg. loans and other comprehensive income - fair value measurement debt securities), expected credit losses are based on 12-month expected credit losses. The 12-month expected credit loss is a fraction of the total expected credit loss that represents the expected credit loss due to a default event of a financial instrument that may occur within 12 months of the end of the reporting period.

2.4.1 New and amended standards and interpretations (cont'd)

(c) Hedge accounting

The Company applied hedge accounting prospectively. At the date of initial application, all of the Company's existing hedging relationships were eligible to be treated as continuing hedging relationships. Before the adoption of KIFRS 1109, the Company designated the change in fair value of the entire forward contracts in its cash flow hedge relationships. Upon adoption of the hedge accounting requirements of KIFRS 1109, the Company designates only the spot element of forward contracts as hedging instrument. The forward element is recognized in OCI and accumulated as a separate component of equity under Cost of hedging reserve. This change only applies prospectively from the date of initial application of KIFRS 1109 and has no impact on the presentation of comparative figures. The application of hedge accounting requirements of KIFRS 1109 does not have a significant effect on the financial statements of the Company.

Amendments to KIFRS 2122 *Foreign Currency Transactions and Advance Consideration*

The Interpretation clarifies that, in determining the spot exchange rate to use on initial recognition of the related asset, expense or income (or part of it) on the derecognition of a non-monetary asset or non-monetary liability relating to advance consideration, the date of the transaction is the date on which an entity initially recognizes the non-monetary asset or non-monetary liability arising from the advance consideration. If there are multiple payments or receipts in advance, then the entity must determine the transaction date for each payment or receipt of advance consideration. The amendments has no effect on the Company's consolidated financial statements.

Amendments to KIFRS 1040 *Investment Property — Transfers of Investment Property*

The amendments clarify when an entity should transfer property, including property under construction or development into, or out of investment property. The amendments state that a change in use occurs when the property meets, or ceases to meet, the definition of investment property and there is evidence of the change in use. A mere change in management's intentions for the use of a property does not provide evidence of a change in use. The amendments has no effect on the Company's consolidated financial statements.

Amendments to KIFRS 1102 *Share-based Payment — Classification and Measurement of Share-based Payment Transactions*

The amendments to KIFRS 1102 *Share-based Payment* that address three main areas: the effects of vesting conditions on the measurement of a cash-settled share-based payment transaction; the classification of a share-based payment transaction with net settlement features for withholding tax obligations; and accounting where a modification to the terms and conditions of a share-based payment transaction changes its classification from cash settled to equity settled. On adoption, entities are required to apply the amendments without restating prior periods, but retrospective application is permitted if elected for all three amendments and other criteria are met. The Company's accounting policy for cash-settled share based payments is consistent with the approach clarified in the amendments. In addition, the Company has no share-based payment transaction with net settlement features for withholding tax obligations and had not made any modifications to the terms and conditions of its share-based payment transaction. Therefore, these amendments do not have any impact on the Company's consolidated financial statements.

2.4.1 New and amended standards and interpretations (cont'd)

Amendments to KIFRS 1028 *Investments in Associates and Joint Ventures - Clarification that measuring investees at fair value through profit or loss is an investment-by-investment choice*

The amendments clarify that:

- An entity that is a venture capital organization, or other qualifying entity, may elect, at initial recognition on an investment-by-investment basis, to measure its investments in associates and joint ventures at fair value through profit or loss.
- If an entity, that is not itself an investment entity, has an interest in an associate or joint venture that is an investment entity, the entity may, when applying the equity method, elect to retain the fair value measurement applied by that investment entity associate or joint venture to the investment entity associate's or joint venture's interests in subsidiaries. This election is made separately for each investment entity associate or joint venture, at the later of the date on which: (a) the investment entity associate or joint venture is initially recognized; (b) the associate or joint venture becomes an investment entity; and (c) the investment entity associate or joint venture first becomes a parent.

The amendments has no effect on the Company's consolidated financial statements.

Amendments to KIFRS 1101 *First-time Adoption of International Financial Reporting Standards - Deletion of short-term exemptions for first-time adopters*

Short-term exemptions in paragraphs E3–E7 of KIFRS 1101 were deleted because they have now served their intended purpose. This amendment is not applicable to the Company.

2.4.2 Standards issued but not yet effective

The standards and interpretations that are issued, but not yet effective, up to the date of issuance of the Company's financial statements are disclosed below.

KIFRS 1116 Leases

KIFRS 1116 was issued in January 2016 and it replaces KIFRS 1017 *Leases*, KIFRS 2104 *Determining whether an Arrangement contains a Lease*, KIFRS 2015 *Operating Leases-Incentives* and KIFRS 2027 *Evaluating the Substance of Transactions Involving the Legal Form of a Lease*. KIFRS 1116 sets out the principles for the recognition, measurement, presentation and disclosure of leases and requires lessees to account for all leases under a single on-balance sheet model similar to the accounting for finance leases under KIFRS 1017. The standard includes two recognition exemptions for lessees – leases of 'low-value' assets (e.g., personal computers) and short-term leases (i.e., leases with a lease term of 12 months or less). At the commencement date of a lease, a lessee will recognize a liability to make lease payments (i.e., the lease liability) and an asset representing the right to use the underlying asset during the lease term (i.e., the right-of-use asset). Lessees will be required to separately recognize the interest expense on the lease liability and the depreciation expense on the right-of-use asset.

Lessees will be also required to remeasure the lease liability upon the occurrence of certain events (e.g., a change in the lease term, a change in future lease payments resulting from a change in an index or rate used to determine those payments). The lessee will generally recognize the amount of the remeasurement of the lease liability as an adjustment to the right-of-use asset.

Lessor accounting under KIFRS 1116 is not significantly changed from today's accounting under KIFRS 1017. Lessors will continue to classify all leases using the same classification principle as in KIFRS 1017 and distinguish between two types of leases: operating and finance leases.

KIFRS 1116 is effective for annual periods beginning on or after January 1, 2019. KIFRS 1116 also requires lessees and lessors to make more extensive disclosures than under KIFRS 1017.

2.4.2 Standards issued but not yet effective (cont'd)

(1) Company as lessee

The Company as a lessee, may apply KIFRS 1116 using the following methods:

- Full retrospective approach
- Cumulative catch-up transition method

The lessee must apply the above methods consistently to all lease contracts within all reporting periods.

The Company plans to adopt KIFRS 1116 using the cumulative catch-up transition method with the initial application date of January 1, 2019. Accordingly, the cumulative effects of the application of KIFRS 1116 are adjusted in retained earnings as of the date of the initial application. The Company will not restate the comparative financial statements.

The lessee may elect, for each lease contract, whether to apply various practical expedients when applying the cumulative catch-up transition method to lease contracts that were previously classified as operating lease under KIFRS 1017.

(2) Financial impact of KIFRS 1116 *Leases*

The Company has conducted a preliminary assessment of the potential impact on the 2019 consolidated financial statements based on the current status and information available as of December 31, 2018 to assess the financial impact of the initial adoption of KIFRS 1116.

The minimum lease payments on the assets the Company uses under operating leases amounts to ₩3,895 million
before discount and ₩4,142 million after discount using the lessee's incremental borrowing rate. As a result of the analyses on the financial impact, the Company expects the right-of-use asset and lease liability to increase by ₩3,895 million and ₩3,890 million, respectively, as of December 31, 2018. In 2018, the Company expects a decrease in operating lease expenses by ₩2,047 million and increases in depreciation expenses on the right-of-use asset and interest expenses on lease liabilities by ₩1,928 million and ₩176 million, respectively. This analysis has been based on information currently available and the results may be subject to change as additional information becomes available.

Amendments to KIFRS 1110 and KIFRS 1028: *Sale or Contribution of Assets between an Investor and its Associate or Joint Venture*
The amendments address the conflict between KIFRS 1110 and KIFRS 1028 in dealing with the loss of control of a subsidiary that is sold or contributed to an associate or joint venture. The amendments clarify that the gain or loss resulting from the sale or contribution of assets that constitute a business, as defined in KIFRS 1103, between an investor and its associate or joint venture, is recognized in full. Any gain or loss resulting from the sale or contribution of assets that do not constitute a business, however, is recognized only to the extent of unrelated investors' interests in the associate or joint venture. The KASB has deferred the effective date of these amendments indefinitely, but an entity that early adopts the amendments must apply them prospectively. The Company will apply these amendments when they become effective.

Amendments to KIFRS 1102 *Share-based Payment — Classification and Measurement of Share-based Payment Transactions*
Amendments to KIFRS 1102, "Share-based Payment," include the effects of vesting conditions on the measurement of cash-settled share-based payments, share-based payment transactions with net settlement due to tax withholding obligations, The Company are dealing with changes in the conditions that change the classification to settlement-type equity-based compensation transactions.

2.4.2 Standards issued but not yet effective (cont'd)

Amendments to KIFRS 1109: *Prepayment Features with Negative Compensation*
Under KIFRS 1109, a debt instrument can be measured at amortized cost or at fair value through other comprehensive income, provided that the contractual cash flows are 'solely payments of principal and interest on the principal amount outstanding' (the SPPI criterion) and the instrument is held within the appropriate business model for that classification. The amendments to KIFRS 1109 clarify that a financial asset passes the SPPI criterion regardless of the event or circumstance that causes the early termination of the contract and irrespective of which party pays or receives reasonable compensation for the early termination of the contract.

The amendments should be applied retrospectively and are effective from January 1, 2019, with earlier application permitted. These amendments have no impact on the consolidated financial statements of the Company.

IFRIC Interpretation 23 *Uncertainty over Income Tax Treatment*
The Interpretation addresses the accounting for income taxes when tax treatments involve uncertainty that affects the application of KIFRS 1012 and does not apply to taxes or levies outside the scope of KIFRS 1012, nor does it specifically include requirements relating to interest and penalties associated with uncertain tax treatments. The Interpretation specifically addresses the following:

- Whether an entity considers uncertain tax treatments separately
- The assumptions an entity makes about the examination of tax treatments by taxation authorities
- How an entity determines taxable profit (tax loss), tax bases, unused tax losses, unused tax credits and tax rates
- How an entity considers changes in facts and circumstances

The Company has to determine whether to consider each uncertain tax treatment separately or together with one or more other uncertain tax treatments. The approach that better predicts the resolution of the uncertainty should be followed. The interpretation is effective for annual reporting periods beginning on or after January 1, 2019, but certain transition reliefs are available. The Company will apply the interpretation from its effective date. Since the Company operates in a complex multinational tax environment, applying the Interpretation may affect its consolidated financial statements. In addition, the Company may need to establish processes and procedures to obtain information that is necessary to apply the Interpretation on a timely basis.

Annual Improvements 2015-2017 Cycle (issued in December 2017)
These improvements include:

- **KIFRS 1103 *Business Combinations***

The amendments clarify that, when an entity obtains control of a business that is a joint operation, it applies the requirements for a business combination achieved in stages, including remeasuring previously held interests in the assets and liabilities of the joint operation at fair value. In doing so, the acquirer remeasures its entire previously held interest in the joint operation.

An entity applies those amendments to business combinations for which the acquisition date is on or after the beginning of the first annual reporting period beginning on or after January 1, 2019, with early application permitted. These amendments will apply on future business combinations of the Company.

- **KIFRS 1111 *Joint Arrangements***

A party that participates in, but does not have joint control of, a joint operation might obtain joint control of the joint operation in which the activity of the joint operation constitutes a business as defined in KIFRS 1103. The amendments clarify that the previously held interests in that joint operation are not remeasured.

An entity applies those amendments to transactions in which it obtains joint control on or after the beginning of the first annual reporting period beginning on or after January 1, 2019, with early application permitted. These amendments are currently not applicable to the Company but may apply to future transactions.

2.4.2 Standards issued but not yet effective (cont'd)

- **KIFRS 1012 *Income Taxes***

The amendments clarify that the income tax consequences of dividends are linked more directly to past transactions or events that generated distributable profits than to distributions to owners. Therefore, an entity recognizes the income tax consequences of dividends in profit or loss, other comprehensive income or equity according to where the entity originally recognized those past transactions or events.

An entity applies those amendments for annual reporting periods beginning on or after January 1, 2019, with early application is permitted. When an entity first applies those amendments, it applies them to the income tax consequences of dividends recognized on or after the beginning of the earliest comparative period. Since the Company's current practice is in line with these amendments, the Company does not expect any effect on its consolidated financial statements.

- **KIFRS 1023 *Borrowing Costs***

The amendments clarify that an entity treats as part of general borrowings any borrowing originally made to develop a qualifying asset when substantially all of the activities necessary to prepare that asset for its intended use or sale are complete.

An entity applies those amendments to borrowing costs incurred on or after the beginning of the annual reporting period in which the entity first applies those amendments. An entity applies those amendments for annual reporting periods beginning on or after January 1, 2019, with early application permitted. Since the Company's current practice is in line with these amendments, the Company does not expect any effect on its consolidated financial statements.

3. Estimates and assumptions

The key assumptions concerning the future and other key sources of estimation uncertainty at the reporting date that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year, are described below. The Company based its assumptions and estimates on parameters available when the consolidated financial statements were prepared. Existing circumstances and assumptions about future developments, however, may change due to market changes or circumstances arising beyond the control of the Company. Such changes are reflected in the assumptions when they occur.

Other disclosures about the Company's exposure to risks and uncertainties include capital management (Note 4), financial risk management and policies (Note 4), and sensitivity analysis (Notes 4 and 15).

Other significant sources of significant assumptions and estimates of uncertainties for the future as of the end of the reporting period that have material risks that could cause significant adjustments to the carrying amounts of assets and liabilities in the next financial year are as follows: Assumptions and assumptions are based on variables available at the time of the preparation of the financial statements. The current situation and assumptions about the future can change due to market changes or circumstances beyond the Company control. When such changes are made, they are reflected in the assumption.

3-1. Impairment of non-financial assets

The Company assesses, at each reporting date, whether there is an indication that an asset may be impaired. Goodwill and intangible assets with indefinite useful lives are tested for impairment annually, or when circumstances indicate that the carrying value may be impaired. Other non-financial assets are tested for impairment when circumstances indicate that its carrying amount may not be recoverable. In determining a value in use, management estimates future cash flows to be derived from the asset or CGU, and applies the appropriate discount rate to those future cash flows

3. Estimates and assumptions (cont'd)

3-2. Share-based payments

The Company measures the cost of equity-settled transactions with employees by reference to the fair value of the equity instruments at the date at which they are granted. Estimating fair value for share-based payment transactions requires determination of the most appropriate valuation model, which depends on the terms and conditions of the grant. This estimate also requires determination of the most appropriate inputs to the valuation model including the expected life of the share option, volatility and dividend yield and making assumptions about them. The assumptions and models used for estimating fair value for share-based payment transactions are disclosed in Note 18.

3-3. Deferred tax assets

Deferred tax assets are recognized for unused tax losses to the extent that it is probable that taxable profit will be available against which the losses can be utilized. Significant management judgment is required to determine the amount of deferred tax assets that can be recognized, based upon the likely timing and the level of future taxable profits together with future tax planning strategies.

3-4. Defined benefit plans (pension benefits)

The cost of the defined benefit pension plan and other post-employment medical benefits and the present value of the pension obligation are determined using actuarial valuations. An actuarial valuation involves making various assumptions that may differ from actual developments in the future. These include the determination of the discount rate, future salary increases, mortality rates and future pension increases. Due to the complexities involved in the valuation and its long-term nature, a defined benefit obligation is highly sensitive to changes in these assumptions. All assumptions are reviewed at each reporting date.

In determining the appropriate discount rate, management considers the interest rates of corporate bonds in currencies consistent with the currencies of the post-employment benefit obligation with at least an 'AA' rating or above, as set by an internationally acknowledged rating agency. The mortality rate is based on publicly available mortality tables for the specific countries. Future salary increases and pension increases are based on expected future inflation rates for the respective countries.

3-5. Development costs

Development costs are capitalized in accordance with the accounting policy. Initial capitalization of costs is based on management's judgment that technological and economic feasibility is confirmed, usually when a product development project has reached a defined milestone according to an established project management model. In determining the amounts to be capitalized, management makes assumptions regarding the expected future cash generation of the project, discount rates to be applied and the expected period of benefits. As of December 31, 2018, the carrying amount of capitalized development costs was ₩1,627 million (December 31, 2017: ₩2,186 million).

4. Financial risk management

The Company is exposed to various financial risks, such as market (foreign currency risk and interest rate risk), credit and liquidity related to its operations. The purpose of risk management policy is to minimize potential risks, which could have an adverse effect on financial performance.

Financial risk management activities are performed by Treasury Department, in accordance with the aforementioned documented risk management policies. In addition, the Company enters into derivative contracts to hedge against certain risks.

(1) Market risk

1) Foreign exchange risk

The Company is exposed to foreign currency risk since it makes transactions in foreign currencies. Foreign currency risk arises from forecasted transactions, recognized assets and liabilities and net investments in foreign operations.

Foreign currency risk is managed by the Company's policy on foreign currencies. The Company's basis for foreign currency management is to reduce income/loss volatility. The Company reduces exposure to foreign currency risk by matching the inflow and the outflow of foreign currencies (natural hedge) and manages foreign currency risk, by using currency derivatives, such as currency forwards, for the remaining exposure.

The book value of the Company's monetary assets and liabilities denominated in foreign currencies, which represents the maximum exposure to foreign currency risk as of December 31, 2018 and 2017, is as follows (Korean won in thousands):

	2018				
	USD	EUR	CNY	Others (*1)	Total
Assets	₩ 57,744,246	₩ 2,930,433	₩ 7,114,609	₩ 336,773	₩ 68,126,061
Liabilities	(2,483,631)	(9,188,201)	(155,371)	(3,964,697)	(15,791,900)
Net assets (liabilities)	₩ 55,260,615	₩ (6,257,768)	₩ 6,959,238	₩ (3,627,924)	₩ 52,334,161

(*1) Others are assets and liabilities denominated in foreign currencies other than USD, EUR and CNY.

	2017				
	USD	EUR	CNY	Others (*1)	Total
Assets	₩ 66,293,736	₩ 1,836,867	₩ 7,060,647	₩ 92,594	₩ 75,283,844
Liabilities	(1,008,004)	(8,880,782)	(156,097)	(3,773,760)	(13,818,643)
Net assets (liabilities)	₩ 65,285,732	₩ (7,043,915)	₩ 6,904,550	₩ (3,681,166)	₩ 61,465,201

(*1) Others are assets and liabilities denominated in foreign currencies other than USD, EUR and CNY.

Net foreign currency translation loss for the years ended December 31, 2018 and 2017 is ₩134,060 thousand and ₩1,037,446 thousand, respectively.

A sensitivity analysis on the Company's income before tax, assuming a 10% increase and decrease in currency exchange rates, for the years ended December 31, 2018 and 2017, is as follows (Korean won in thousands):

	2018		2017	
	10% increase	10% decrease	10% increase	10% decrease
Income before tax	₩ 5,233,416	₩ (5,233,416)	₩ 6,146,520	₩ (6,146,520)

The above-mentioned sensitivity analysis is based on monetary assets and liabilities denominated in foreign currencies other than the Company's functional currency as of December 31, 2018 and 2017.

4. Financial risk management (cont'd)

2) Interest rate risk

The Company's interest rate risk is related to borrowings and bank deposits with floating interest rates, and related interest income and expense are exposed to interest rate risk. The Company is exposed to interest rate risk mainly due to its deposits and borrowing with floating interest rates. The purpose of interest rate risk management is to minimize uncertainty and financial expense arising from interest rate fluctuation.

To manage its interest rate risk, the Company minimizes external borrowings using internal funds and reduces borrowings with high interest rates, and maintains an appropriate balance between borrowings with floating interest rate and fixed interest rate and short-term and long-term borrowings. The Company manages its interest rate risk preemptively through regular monitoring and adjustments to the changing domestic and overseas market conditions and nature of its interest rates.

The book value of the Company's financial assets and liabilities with floating interest rates exposed to interest rate risk as of December 31, 2018 and 2017, is as follows (Korean won in thousands):

	2018	2017
Assets	₩ 58,831,079	₩ 65,075,522
Liabilities	(25,000,000)	(42,000,000)
Net assets (liabilities)	₩ 33,831,079	₩ 23,075,522

A sensitivity analysis on the Company's income before tax assuming 1% increase and decrease in interest rates for the years ended December 31, 2018 and 2017, is as follows (Korean won in thousands):

	2018		2017	
	1% increase	1% decrease	1% increase	1% decrease
Income before tax	₩ 338,311	₩ (338,311)	₩ 230,755	₩ (230,755)

3) Price risk

The Company regularly measures the price fluctuation risk of listed equity instruments. Significant investments in the portfolio are also managed individually and all decisions to acquire and divest investments require the approval of the board of directors

(2) Credit risk

The credit risk refers to risk of financial losses to the Company when the counterparty defaults on the obligations of the contract. The credit risk arises from AFS financial assets that are not equity securities, deposits in financial institution, financial derivatives and guarantee limit, as well as from the Company's normal transaction and investing activity. To manage credit risk, the Company evaluates the creditworthiness of each customer or counterparty considering the financial status, past experience and other factors. The Company establishes credit limit for each customer and counterparty.

The Company evaluates the creditworthiness using opened financial information and information provided by credit rating institutions when it contracts with new customers. The Company decides credit transaction limit and is provided with collateral and guarantee based on evaluation.

Also, the Company revaluates customers' creditworthiness periodically, reassesses credit transaction limit and readjusts level of collateral. The Company reports the present condition of delayed collection and collection measures periodically to financial assets, which has delayed collection, and takes measures by causes of delay.

4. Financial risk management (cont'd)

The maximum credit risk exposure for financial assets maintained by the Company and the book value for the financial assets as of December 31, 2018 and 2017, are as follows (Korean won in thousands):

	2018	2017
Loans and receivables:		
Cash and cash equivalents	₩ 58,972,161	₩ 70,450,917
Financial instruments	27,063,599	11,463,578
Trade and other receivables	20,225,355	30,488,194
Long-term and short-term loans	7,763,933	8,337,951
Long-term other receivables	2,013,319	3,869,832
Derivative assets	1,522,694	19,245,620
	₩ 117,561,061	₩ 143,856,092

In addition to the above financial assets, the maximum guaranteed amount of credit guarantees (see Note 31) that the Company will be required to pay on the claims of the guarantor due to the financial guarantee contract is the maximum amount exposed to credit risk.

Trade receivables
The Company applies the simplified method of recognizing the total expected credit losses on accounts receivable as provision for losses. To measure expected credit losses, trade receivables are separated by credit risk characteristics and age. The allowance for losses at the end of the year is as follows. Expected credit losses include forward-looking information.

	December 31, 2018						
	Individually assessed receivables	Receivables assessed for impairment on a collective basis					
		Within due	0–3 months	3 months–6 months	6 months–12 months	More than 12 months	Total
Expected loss rate	-	0.05%	0.06%	2.47%	7.29%	52.97%	-
Book Value	₩ 4,155,615	₩ 15,080,448	₩ 3,703,057	₩ 573,962	₩ 197,836	₩ 287,609	₩ 23,998,528
Loss provision	4,139,164	7,884	2,287	14,187	14,428	152,349	4,330,299

	January 1, 2018						
	Individually assessed receivables	Receivables assessed for impairment on a collective basis					
		Within due	0–3 months	3 months–6 months	6 months–12 months	More than 12 months	Total
Expected loss rate	-	0.01%	0.02%	0.61%	1.39%	30.62%	-
Book Value	₩ 8,475,721	₩ 25,322,279	₩ 3,781,681	₩ 344,410	₩ 782,522	₩ 252,567	₩ 38,959,180
Loss provision	8,475,721	3,510	574	2,090	10,861	77,338	8,570,093

An allowance account is recognized by applying appropriate allowance rate for receivables that can be assessed for impairment individually due to insolvency, bankruptcy and others. A Company of financial assets that are not individually significant and have similar credit risk characteristics are assessed for impairment on a collective basis. An allowance account is recognized based on aging analysis and the Company's past experience of receivables collection.

In addition, due to the nature of the assets, such as financial assets measured at amortized costs, financial assets at FVOCI, financial assets at FVTPL, deposits in financial institutions and financial derivative instruments, the Company individually assesses whether there is an indication that the assets may be impaired and recognizes the related losses.

4. Financial risk management (cont'd)

(3) Liquidity risk

Liquidity risk is the risk that the Company will encounter difficulty in meeting its financial liability obligations related to its financing for its operation.

The Company forecasts cash flows from operating, investing and financing activities through a cash flow budget regularly. This secures and retains a necessary liquidity scale in advance. Also, this manages a possible liquidity risk for the future.

The Company's major non-derivative liabilities as of December 31, 2018 and 2017, which have matured, are as follows (Korean won in thousand):

	2018					
		Nominal cash flows according to the contract				
	Book value	Total	Less than 1 year	1 year-2 years	2 years -5 years	More than 5 years
Financial liabilities	₩ 305,595,619	₩ 305,638,908	₩ 301,766,982	₩ 3,871,926	₩ -	₩ -
Interest expense	-	6,869,083	6,869,083	-	-	-
	₩ 305,595,619	₩ 312,507,991	₩ 308,636,065	₩ 3,871,926	₩ -	₩ -

	2017					
		Nominal cash flows according to the contract				
	Book value	Total	Less than 1 year	1 year-2 years	2 years -5 years	More than 5 years
Financial liabilities	₩ 454,283,592	₩ 455,563,292	₩ 323,648,911	₩ 131,914,381	₩ -	₩ -
Interest expense	-	16,487,402	13,022,902	3,464,500	-	-
	₩ 454,283,592	₩ 472,050,694	₩ 336,671,813	₩ 135,378,881	₩ -	₩ -

The above-mentioned maturity analysis is based on undiscounted cash flow according to the contract, which is different from non-derivative liabilities in the separate statements of financial position.

(4) Capital risk

The Company performs capital risk management to maintain its ability to continuously provide profits to stockholders and parties in interest and to maintain optimum capital structure to reduce capital expenses.

Debt-to-equity ratio, calculated as total liabilities divided by equity, is used as an index to manage the Company's capital similar to overall industry practice.

Debt-to-equity ratios as of December 31, 2018 and 2017, are as follows (Korean won in thousand):

	2018	2017
Total liabilities	₩ 510,811,364	₩ 682,047,132
Total equity	242,073,759	555,965,115
Debt-to-equity ratio	211.01%	122.68%

4. Financial risk management (cont'd)

(5) Changes in liabilities from financial activities

			Non-cash fluctuation					
	Jan. 1	Cash flow	Split-off	Foreign exchange movement	Changes in fair values	Replacement of current portion	Others	Dec. 31
Short-term borrowings	₩ 121,200,000	₩ 53,800,000	₩ (135,000,000)	₩ -	₩ -	₩ -	₩ -	₩ 40,000,000
Current portion of long-term borrowings	30,000,000	(30,000,000)	-	-	-	-	-	-
Current portion of bond	89,933,789	(84,008,387)	-	-	686,809	129,073,154	-	135,685,365
Current portion of convertible bonds	-	44,813,882	-	-	1,178,590	-	(721,125)	45,271,347
Bonds	128,786,511	-	-	-	286,643	(129,073,154)	-	-
	₩ 369,920,300	₩ (15,394,505)	₩ (135,000,000)	₩ -	₩ 2,152,042	₩ -	₩ (721,125)	₩ 220,956,712

5. Restricted financial instruments

Details of restricted financial instruments as of December 31, 2018 and 2017, are as follows (Korean won in thousands):

	2018	2017	Remarks
Cash and cash equivalent	₩ -	₩ 5,288,410	A pledge to KEB Hana Bank
	5,518,920	-	A pledge to KEB Hana Bank
	-	217,000	A pledge to Korea Gas Corporation
Short-term financial instruments	4,045,452	3,722,752	A pledge to Korea Hydro & Nuclear Power Co.,Ltd.
	1,218,729	1,167,826	A pledge to NongHyup Bank
	5,874,497	-	A pledge to Kyongnam Bank
	10,000,000	-	A pledge to Korea Development Bank
Long-term financial instruments	6,000	6,000	Guarantee deposits for checking account
	100,000	-	A pledge to Kyongnam Bank
	₩ 26,763,599	₩ 10,401,988	

6. Trade and other receivables

Trade and other receivables as of December 31, 2018 and 2017, consist of the following (Korean won in thousand):

	2018			2017		
	Gross	Allowance for doubtful accounts	Book value	Gross	Allowance for doubtful accounts	Book value
Current:						
Trade receivables	₩ 22,301,965	₩ (2,790,537)	₩ 19,511,428	₩ 37,346,843	₩ (7,084,204)	₩ 30,262,639
Other receivables	1,696,563	(1,539,762)	156,801	1,612,337	(1,485,889)	126,448
Accrued income	353,543	-	353,543	37,042	-	37,042
Guarantee deposits	203,583	-	203,583	62,065	-	62,065
Sub total	24,555,654	(4,330,299)	20,225,355	39,058,287	(8,570,093)	30,488,194
Non-current						
Guarantee deposits	2,013,319	-	2,013,319	3,869,832	-	3,869,832
Subtotal	2,013,319	-	2,013,319	3,869,832	-	3,869,832
	₩ 26,568,973	₩ (4,330,299)	₩ 22,238,674	₩ 42,928,119	₩ (8,570,093)	₩ 34,358,026

6. Trade and other receivables (cont'd)

Changes in allowance for doubtful accounts for the year ended December 31, 2018, are as follows (Korean won in thousands):

	Jan. 1	Recognize	Dercognize	Dec. 31
Trade receivables	₩ (7,084,204)	₩ (303,294)	₩ 4,596,961	₩ (2,790,537)
Other receivables	(1,485,889)	(53,873)	-	(1,539,762)
	₩ (8,570,093)	₩ (357,167)	₩ 4,596,961	₩ (4,330,299)

Bad debt expenses recognized for impaired trade receivables are included in selling, general and administrative expenses and bad debt expenses recognized for impaired other receivables are included in other non-operating expenses in the consolidated statements of income.

7. Inventories

Inventories as of December 31, 2018 and 2017, are summarized as follows (Korean won in thousands):

	2018			2017		
	Acquisition cost	Valuation allowance	Book value	Acquisition cost	Valuation allowance	Book value
Work in progress	₩ 135,380,337	₩ (29,119,737)	₩ 106,260,600	₩ 137,389,570	₩ (22,094,288)	₩ 115,295,282
Raw materials	65,820,982	(21,301,058)	44,519,924	72,603,636	(19,858,871)	52,744,765
Materials in transit	1,968,892	-	1,968,892	2,380,988	-	2,380,988
	₩ 203,170,211	₩ (50,420,795)	₩ 152,749,416	₩ 212,374,194	₩ (41,953,159)	₩ 170,421,035

Losses on inventory valuation amounted to ₩8,467,636 thousand and ₩(-)4,460,482 thousand for the years ended December 31, 2018 and 2017, respectively (Note 31- (2)).

8. Long-term investment securities

Long-term investment securities as of December 31, 2018 and 2017, are summarized as follows (Korean won in thousands):

	2018	2017
AFS financial assets:		
Investment in capital of partnership:		
Korea Marine Equipment Association	₩ -	₩ 20,000
Electronic Contractors' Financial Cooperative	-	52,047
Equity securities in listed company:		
Doosan Bobcat (*1)	-	378,694,906
Equity securities in non-listed company:		
Doosan Engineering & Construction (*1)	-	16,829,026
Casco	-	1
Financial assets at fair value through profit or loss		
Investment in capital of partnership:		
Korea Marine Equipment Association	20,000	-
Electronic Contractors' Financial Cooperative	52,047	-
Equity securities in non-listed company		
Casco	1	-
	₩ 72,048	₩ 395,595,980

(*1) Investment securities in the investees were transferred to the Acquired Company since the spilt off on June 5, 2018

9. Derivatives

Details of the derivatives are as follows:

Purpose	Derivative instrument	Contract description
Fair value hedges	Foreign currency forwards	The amount of foreign currency upon maturity is fixed to the amount of won for the risk of exchange rate fluctuation exposed upon receipt of foreign currency receivables or payment of foreign currency payables.

Details of gains or losses on valuation of derivatives as of December 31, 2018 and 2017, are as follows (in foreign currencies and Korean won in thousands):

	2018						
	Buy		Sell		Assets		Firm
Derivative instrument	Currency	Amount	Currency	Amount	(liabilities)	Gains (losses)	commitment
Foreign currency forwards	KRW	488,950,491	USD	452,809,300	₩ (12,189,025)	₩ (13,376,531)	₩ 9,363,949
	EUR	32,907,000	KRW	43,591,594	(1,062,229)	(1,018,514)	1,849,821
	CHF	9,702,000	KRW	11,190,902	14,944	49,417	30,817
					₩ (13,236,310)	₩ (14,345,628)	₩ 11,244,587

	2017						
	Buy		Sell		Assets		Firm
Derivative instrument	Currency	Amount	Currency	Amount	(liabilities)	Gains (losses)	commitment
Foreign currency forwards	KRW	366,295,873	USD	324,759,500	₩ 19,201,944	₩ 24,111,861	₩ (22,355,922)
	EUR	26,828,000	KRW	35,228,507	(661,005)	(400,357)	1,723,538
	CHF	7,094,000	KRW	8,433,960	(570,403)	(670,477)	529,328
					₩ 17,970,536	₩ 23,041,027	₩ (20,103,056)

10. Financial instruments

Categories of financial assets as of December 31, 2018 and 2017, are as follows (Korean won in thousands):

	2018				
	Financial assets at amortized cost	Financial assets at fair value through profit or loss	Derivatives	Book value	Fair value
Cash and cash equivalents	₩ 58,972,161	₩ -	₩ -	₩ 58,972,161	₩ 58,972,161
Long and short-term financial instruments	27,063,599	-	-	27,063,599	27,063,599
Trade and other receivables	20,225,355	-	-	20,225,355	20,225,355
Derivative assets	-	-	1,522,694	1,522,694	1,522,694
Long and short-term loans	7,763,933	-	-	7,763,933	7,763,933
Long-term investment securities	-	72,048	-	72,048	72,048
Long-term other receivables	2,013,319	-	-	2,013,319	2,013,319
	₩ 116,038,367	₩ 72,048	₩ 1,522,694	₩ 117,633,109	₩ 117,633,109

10. Financial instruments (cont'd)

	2017				
	Loans and receivables	AFS financial assets	Derivatives	Book value	Fair value
Cash and cash equivalents	₩ 70,450,917	₩ -	₩ -	₩ 70,450,917	₩ 70,450,917
Long and short-term financial instruments	11,463,578	-	-	11,463,578	11,463,578
Trade and other receivables	30,488,193	-	-	30,488,193	30,488,193
Derivative assets	-	-	19,245,620	19,245,620	19,245,620
Long and short-term loans	8,337,951	-	-	8,337,951	8,337,951
Long-term investment securities	-	395,595,980	-	395,595,980	395,595,980
Long-term other receivables	3,869,832	-	-	3,869,832	3,869,832
	₩ 124,610,471	₩ 395,595,980	₩ 19,245,620	₩ 539,452,071	₩ 539,452,071

Categories of financial liabilities as of December 31, 2018 and 2017, are as follows (Korean won in thousands):

	2018			
	Financial liabilities at amortized cost	Derivatives	Book value	Fair value
Trade and other payables	₩ 80,766,982	₩ -	₩ 80,766,982	₩ 80,766,982
Borrowings and bonds	220,956,711	-	220,956,711	220,956,711
Derivative liabilities	-	14,759,004	14,759,004	14,759,004
Long-term other payables	3,871,926	-	3,871,926	3,871,926
	₩ 305,595,619	₩ 14,759,004	₩ 320,354,623	₩ 320,354,623

	2017			
	Financial liabilities at amortized cost	Derivatives	Book value	Fair value
Trade and other payables	₩ 82,448,911	₩ -	₩ 82,448,911	₩ 82,448,911
Borrowings and bonds	369,920,300	-	369,920,300	369,920,300
Derivative liabilities	-	1,275,085	1,275,085	1,275,085
Long-term other payables	1,914,381	-	1,914,381	1,914,381
	₩ 454,283,592	₩ 1,275,085	₩ 455,558,677	₩ 455,558,677

10. Financial instruments (cont'd)

Fair value measurements of financial instruments by fair value hierarchy levels as of December 31, 2018 and 2017, are as follows (Korean won in thousands):

	2018			
	Level 1	Level 2	Level 3	Total
Financial assets:				
Financial assets at fair value through profit or loss	₩ -	₩ -	₩ 72,048	₩ 72,048
Derivatives designated as hedging instruments	-	1,522,694	-	1,522,694
Sub total	-	1,522,694	72,048	1,594,742
Financial liabilities:				
Derivatives designated as hedging instruments	-	(14,759,004)	-	(14,759,004)
	₩ -	₩ (13,236,310)	₩ 72,048	₩ (13,164,262)

	2017			
	Level 1	Level 2	Level 3	Total
Financial assets:				
AFS financial assets	378,694,906	16,829,026	-	395,523,932
Derivatives designated as hedging instruments	-	19,245,620	-	19,245,620
Sub total	378,694,906	36,074,646	-	414,769,552
Financial liabilities:				
Derivatives designated as hedging instruments	-	(1,275,085)	-	(1,275,085)
	₩ 378,694,906	₩ 34,799,561	₩ -	₩ 413,494,467

The Company uses the following hierarchy for determining and disclosing the fair value of financial instruments by valuation technique. The level of hierarchy of fair value is as follows:

Level 1	Unadjusted quoted prices in active markets for identical assets or liabilities
Level 2	Inputs other than quoted prices that are observable for the asset or liability, either directly or indirectly
Level 3	Inputs that are not based on observable market data (unobservable inputs)

The fair value of financial instruments traded in active markets is based on quoted market prices at the dates of the separate statements of financial position. These instruments are included in Level 1. Instruments included in Level 1 comprise primarily of listed equity investments classified as trading securities or AFS.

The fair value of financial instruments that are not traded in an active market (for example, over-the-counter derivatives) is determined by using valuation techniques. These valuation techniques maximize the use of observable market data where it is available and rely as little as possible on entity-specific estimates. If all significant inputs required for fair value of an instrument are observable, the instrument is included in Level 2. If one or more of the significant inputs is not based on observable market data, the instrument is included in Level 3.

10. Financial instruments (cont'd)

Valuation techniques and inputs used for derivatives designated as hedging instruments (Level 2) are as follows:

Valuation methodology	Observable inputs	Explanation of inputs
Cash flow discount method	Forward exchange rate	It is based on forward exchange rate, disclosed on the market; its remaining period is the same to maturity of forward contracts. If the forward exchange rate is not disclosed on the market, it is calculated by using the interpolation method.
	Discount rate	It is determined by using yield curve that is disclosed at the end of the reporting period.

Comprehensive income for each category of financial instruments for the years ended December 31, 2018 and 2017 is as follows:

	2018							
	Profit or loss							Other comprehensive income
	Interest	Dividend	Valuation	Impairment /Reversal	Disposal	Foreign exchange	Others	
Financial instruments:								
Financial assets at amortized cost	₩ 1,174,304	₩ -	₩ -	₩ (357,167)	₩ -	₩ 3,150,756	₩ -	₩ -
Financial assets at FVOCI	-	8,462,456	-	-	-	-	-	-
	₩ 1,174,304	₩ 8,462,456	₩ -	₩ (357,167)	₩ -	₩ 3,150,756	₩ -	₩ -
Financial liabilities:								
Financial liabilities at amortized cost	₩ (16,829,084)	₩ -	₩ -	₩ -	₩ -	₩ (466,344)	₩ -	₩ -
Financial guarantee contracts	-	-	-	-	-	-	₩ 16,670	-
	₩ (16,829,084)	₩ -	₩ -	₩ -	₩ -	₩ (466,344)	₩ 16,670	₩ -

	2017							
	Profit or loss							Other comprehensive income
	Interest	Dividend	Valuation	Impairment /Reversal	Disposal	Foreign exchange	Others	
Financial instruments:								
Loans and receivables	₩ 1,420,040	₩ -	₩ -	₩ (4,343,743)	₩ (12,417)	₩ (10,613,685)	₩ -	₩ -
AFS financial assets	-	7,404,649	-	-	-	-	-	(2,146,628)
	₩ 1,420,040	₩ 7,404,649	₩ -	₩ (4,343,743)	₩ (12,417)	₩ (10,613,685)	₩ -	₩ (2,146,628)
Financial liabilities:								
Financial liabilities at amortized cost	₩ (16,386,471)	₩ -	₩ -	₩ -	₩ -	₩ 452,229	₩ -	₩ -
Financial guarantee contracts	-	-	-	-	-	-	18,811	-
	₩ (16,386,471)	₩ -	₩ -	₩ -	₩ -	₩ 452,229	₩ 18,811	₩ -

10. Financial instruments (cont'd)

Comprehensive income (loss) from other financial instruments than the above for the years ended December 31, 2018 and 2017, is as follows (Korean won in thousands):

	2018			2017		
	Profit or loss		Other comprehensive income	Profit or loss		Other comprehensive income
	Valuation	Disposal		Valuation	Disposal	
Derivatives	₩ (14,345,628)	₩ (11,080,838)	₩ -	₩ 23,041,027	₩ 36,809,257	₩ -

11. Investments in associates and subsidiaries

Investments in subsidiaries and associates as of December 31, 2018 and 2017, consist of the following (Korean won in thousands):

	Country	Percentage	2018	2017
Subsidiaries:				
HSD Marine Industry (Dalian) Co., Ltd. ("HSDMI")	China	100.00	₩ 17,579,757	₩ 17,579,757
Doosan Engine PNG Co., Ltd. ("DEPNG")	Papua New Guinea	100.00	42	42
			17,579,799	17,579,799
Associates:				
Dalian Samyoung Doosan Metal Product Co., Ltd.("DSDMP") (*1)	China	10.80	3,853,794	3,853,794
Doosan Cuvex Co., Ltd. (*2)	Korea	-	-	4,155,085
DBC (*2)	Korea	-	-	5,786,000
			3,853,794	13,794,879
			₩ 21,433,593	₩ 31,374,678

(*1) Although the Company's ownership in each of these companies is less than 20%, the Company has significant influence over this company through participation in various management decisions of these companies. As a result, the Company accounts for these investments using the equity method.

(*2) Investments in associates in the investees were transferred to the Acquired Company since the spilt off on June 5, 2018

The above investments in subsidiaries and associates have no quoted market prices in active markets.

12. Property, plant and equipment

Changes in property, plant and equipment for the years ended December 31, 2018 and 2017, are as follows (Korean won in thousands):

	2018					
	Land	Buildings and structures	Machinery	Others	Construction-in-progress	Total
Jan. 1	₩ 289,903,314	₩ 130,362,320	₩ 52,212,673	₩ 1,271,315	₩ 346,656	₩ 474,096,278
Acquisition	-	-	1,401,248	472,816	1,193,936	3,068,000
Transfer (*1)	-	-	32,000	28,530	(223,321)	(162,791)
Spilt-off (*2)	(30,552,738)	(10,095,633)	-	(674)	(123,484)	(40,772,529)
Disposal	-	(89,120)	(22,764)	(161)	-	(112,045)
Depreciation	-	(4,986,886)	(8,534,526)	(473,267)	-	(13,994,679)
Dec. 31	₩ 259,350,576	₩ 115,190,681	₩ 45,088,631	₩ 1,298,559	₩ 1,193,787	₩ 422,122,234
Acquisition cost	166,181,660	173,983,939	186,827,825	47,265,617	1,193,787	575,452,828
Accumulated depreciation	-	(58,793,258)	(141,739,194)	(45,967,058)	-	(246,499,510)
Revaluation surplus	93,168,916	-	-	-	-	93,168,916

	2017					
	Land	Buildings and structures	Machinery	Others	Construction in progress	Total
Jan. 1	₩ 271,724,973	₩ 137,275,343	₩ 58,060,545	₩ 1,179,178	₩ 12,395,180	₩ 480,635,219
Acquisition	96,591	677,865	1,379,992	664,081	109,125	2,927,654
Transfer (*1)	-	1,500,000	1,560,208	126,410	(3,562,072)	(375,454)
Net changes from Revaluation	24,449,693	-	-	-	-	24,449,693
Disposal	(6,367,943)	(3,691,290)	(69,846)	(8,865)	(8,595,577)	(18,733,521)
Depreciation	-	(5,399,598)	(8,718,226)	(689,489)	-	(14,807,313)
Dec. 31	₩ 289,903,314	₩ 130,362,320	₩ 52,212,673	₩ 1,271,315	₩ 346,656	₩ 474,096,278
Acquisition cost	192,116,133	187,810,024	185,558,005	52,592,148	346,656	618,422,966
Accumulated depreciation	-	(57,447,704)	(133,345,332)	(51,320,833)	-	(242,113,869)
Revaluation surplus	97,787,181	-	-	-	-	97,787,181

(*1) Some of construction-in-progress are transferred into intangible assets

(*2) Property, plant and equipment in the investees were transferred to the Acquired Company since the spilt off on June 5, 2018

The Company recognized the land subsequently measured at revaluation amount. If the land is stated at cost, the land would amount to ₩166,181,660 thousand and ₩192,116,133 thousand as of December 31, 2018 and 2017, respectively.

Part of the land above is collateralized to Korea Development Bank in relation to the opening of an import credit (see Note 31-(2)).

Details of revaluation model, which the Company applies to measurement of the land are as follows:

The Company measured all land using fair value at the date of the revaluation. As of December 31, 2018, the fair value of land was determined from the appraisal that was undertaken by independently qualified valuator, Pacific Appraisal Company Limited (“Pacific”), on October 31, 2018. Pacific is a member of Korea Association of Property Appraisers and comprises of certified professionals that have a significant amount of industry experience.

12. Property, plant and equipment (cont'd)

Fair value measurements of land by fair value hierarchy level as of December 31, 2018 and 2017, are as follows (Korean won in thousands):

	2018			2017		
	Level 1	Level 2	Level 3	Level 1	Level 2	Level 3
Land	₩ -	₩ -	₩ 259,350,576	₩ -	₩ -	₩ 289,903,314

Valuation techniques and inputs used for fair value measurement of land assets (Level 3) are as follows:

Valuation technique	Significant inputs that are not based on observable market data (unobservable inputs)	Correlation between unobservable inputs and fair value arguments
Official Assessed Reference Land Price ("OARLP"): OARLP of similar parcels nearby the subject land and reflating corrections necessary for differences between the subject and the comparable	a. Fluctuation rate of land price and others	Fair value increases (decreases) if fluctuation rate of land price increases (decreases).
	b. Parcel conditions and others	Fair value increases (decreases) if correction of parcel conditions and others increase (decrease).
	c. Land conditions affecting the sales price and others	Fair value increases (decreases) if correction of land conditions affecting the sales price increases (decreases).

Changes in land for the year ended December 31, 2018 are as follows (Korean won in thousands):

January 1, 2018	Acquisition	Disposal	Split off	December 31, 2018
₩ 289,903,314	₩ -	₩ -	₩ (30,552,738)	₩ 259,350,576

Changes in revaluation surplus and classification by the asset for the year ended December 31, 2018 are as follows (Korean won in thousands):

January 1, 2018	Increase	Split off	December 31, 2018
₩ 97,787,181	₩ -	₩ 4,618,265	₩ 93,168,916

The above revaluation surplus represents an amount before reflecting the tax effects.

A classification of depreciation expenses for the years ended December 31, 2018 and 2017 is as follows (Korean won in thousands):

	2018	2017
Cost of sales	₩ 13,739,642	₩ 14,519,547
Selling and administrative expenses	46,043	78,772
Selling and administrative expenses-expenditure on research and development	208,994	208,994
	₩ 13,994,679	₩ 14,807,313

13. Intangible assets

Changes in intangible assets for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018			
	Development costs	Software	Others	Total
January 1	₩ 2,186,395	₩ 1,332,752	₩ 2,945,942	₩ 6,465,089
Acquisition	-	1,048,982	1,066,661	2,115,643
Transfer	-	162,791	-	162,791
Disposal	-	-	(1,369,468)	(1,369,468)
Amortization	(559,698)	(520,671)	(191,195)	(1,271,565)
Impairment loss	-	-	(39,123)	(39,123)
December 31	₩ 1,626,696	₩ 2,023,854	₩ 2,412,817	₩ 6,063,367
Acquisition cost	₩ 25,022,729	₩ 15,969,062	₩ 3,502,448	₩ 44,494,239
Accumulated amortization	(23,396,033)	(13,945,208)	(1,089,631)	(38,430,872)

	2017			
	Development costs	Software	Others	Total
January 1	₩ 2,746,093	₩ 1,660,686	₩ 3,349,166	₩ 7,755,945
Acquisition	-	256,208	-	256,208
Transfer	-	375,454	-	375,454
Disposal	-	-	(278,000)	(278,000)
Amortization	(559,698)	(959,595)	(191,195)	(1,710,488)
Reversal of impairment loss	-	-	65,970	65,970
December 31	₩ 2,186,395	₩ 1,332,753	₩ 2,945,941	₩ 6,465,089
Acquisition cost	₩ 24,554,215	₩ 14,757,289	₩ 4,224,015	₩ 43,535,519
Accumulated amortization	(22,367,820)	(13,424,536)	(1,278,074)	(37,070,430)

The carrying amount of membership with indefinite useful lives in other intangible assets item is ₩1,488,153 thousand and ₩1,830,083 thousand as of December 31, 2018 and 2017, respectively. Expenditure on research and development, which was recognized as expenses, amounted to ₩4,063,604 thousand and ₩10,963,284 thousand for the years ended December 31, 2018 and 2017, respectively.

A classification of amortization expense for the years ended December 31, 2018 and 2017 is as follows (Korean won in thousands):

	2018	2017
Cost of sales	₩ 745,498	₩ 741,898
Selling and administrative expenses	406,067	848,590
Selling and administrative expenses expenditure on research and development	120,000	120,000
	₩ 1,271,565	₩ 1,710,488

The impairment loss of intangible assets is as follows (Korean won in thousands):

	Individual asset	Book value	Amount of impairment loss: Amount recognized in current period	Amount of impairment loss: Accumulated amount	Method of valuation of recoverable amount
Development costs	SCR Development	₩ 1,626,697	₩ -	₩ (21,808,122)	Value in use

As the Company cannot reliably estimate the fair value of an asset in relation to its development cost, the Company measured the recoverable amount as value in use. The future cash flow to measure the used value has been estimated for the next four years based on the Company's past sales performance and future business plans. The discount rate for measuring used values is estimated to be 9.05 %, the weighted average capital cost adjusted, reflecting the inherent risk of the asset

14. Borrowing and bonds

Short-term borrowings

	Financial institutions	Interest rate (%)	December 31, 2018	December 31, 2017
Short-term borrowings in Korean Won	NH Bank	3M MOR+4.25	₩ 10,000,000	₩ 12,000,000
		-	-	19,200,000
	Kyongnam Bank	3M Base rate+3.04	15,000,000	-
	Korea Development Bank	-	-	15,000,000
	Korea Exim Bank	-	-	25,000,000
		5.65	5,000,000	-
		5.50	10,000,000	-
	KB Securities(*1)	-	-	40,000,000
	Korea Investment & Securities(*1)	-	-	10,000,000
			₩ 40,000,000	₩ 121,200,000

(*1) Borrowings of the investees were transferred to the Acquired Company since the spilt off on June 5, 2018

Long-term borrowings

	Finance institutions	Interest rate (%)	2018	2017
Short-term borrowings in Korean won	Korea Development Bank	-	₩ -	₩ 30,000,000
Sub total			₩ -	₩ 30,000,000
Transfer to current portion			-	(30,000,000)
Total			₩ -	₩ -

Bonds and borrowings as of December 31, 2018 and 2017 are as follows (Korean won in thousands):

	Maturity	Interest rate (%)	2018	2017
The 7th (*1)		-	₩ -	₩ 90,000,000
The 8th	Apr. 26, 2019	4.60	130,000,000	130,000,000
The 10th	Dec. 18, 2019	5.60	6,000,000	-
			136,000,000	220,000,000
Less current portion			(135,685,365)	(89,933,789)
Less discount on bonds			(314,635)	(1,279,700)
			₩ -	₩ 128,786,511

(*1) The maturity of the 7th bond was fully paid during the current reporting period.

Convertible bonds

	Interest rate (%)	2018	2017
The 9th	5.00	₩ 45,000,000	₩ -
Bond premium		8,200,362	-
Less discount on bonds		(162,033)	-
Less adjustment of conversion rights		(7,766,982)	-
Less current portion(*1)		(45,271,347)	-
		₩ -	₩

(*1) Due to the right to claim for early repayment, it is classified as current liability because the company does not have any unconditional right to postpone settlement of the liability over 12 months after the reporting period.

14. Borrowing and bonds (cont'd)

Details of convertible bonds as of December 31, 2019 are as follows:

Types of Bonds	Non-bearer type mortgage
Par type and par value	44 billion won and two 100 million won books (total of 45 billion won)
Amount issued	Issuance of par value
Date of Issue	June 22, 2018
Expiration date	June 22, 2023
Nominal interest rate	5.00%
Maturity guaranteed return rate	8.00%
Repayment premium	118.2230%
Conversion period	One month from the date of issuance of bonds and one month from the date of principal payment
Conversion price	1 stock (face value of 1,000 won) to 4,667 won
Matters concerning adjustment of conversion value	(1) issuance of shares through stock dividends, capitalization of reserves, etc., or capital increase by issuing price below market value; or 2) convertible value or convertible value to market value below issuance price If the issuance of securities entitled to acquire new shares is to be adjusted, the conversion value shall be adjusted. (2) In the event that the adjustment of the conversion price is necessary by merger, reduction of capital, stock split and merger, change of stock par value, conversion rights are exercised right before the merger, capital decrease, stock split and merger, If the stock has been converted into shares, the conversion price shall be adjusted so that the number of shares that the conversion right holder could have immediately after the merger, reduction of capital, stock split and merger, and stock face change. (3) In addition to the adjustment to the exercise price pursuant to paragraphs (1) and (2) above, the issuer may, as long as the issuer is listed on the securities market or the KOSDAQ market established by the Korea Exchange (or its successor) The amount of the arithmetical average of the weighted arithmetic average of the past one month, one week, and the latest retrospectively based on the day before the adjustment date, (Hereinafter referred to as the "base stock price") falls below the exercise price at that time, it shall be adjusted to the "base stock price". However, the adjustment of the exercise price pursuant to Paragraph (3) above shall be made at the first exercise price (100% of the value calculated based on the case where the exercise price has already been adjusted for the reasons stated in paragraph (1) or (2) Cannot be less than 0.7 (4) If the adjusted conversion price is less than or equal to the face value of the common stock of the issuer, the face value shall be the conversion price. (5) After adjustments made by the above items, less than the basic level of convertible price shall be increased.

14. Borrowing and bonds (cont'd)

Conversion Rate	100% of the face value
Early repayment claim (*1)	(1) Repayment may be made on the early redemption date if the redemption request is made within 90 days before the date of one year after the issuance and every three months after the issuance (hereinafter referred to as "early redemption date") (2) From the day when the reason for the sale of the HSD engine stock to the investor "Socius Well-to-sea Investment Corporation No. 1 Corporate Financial Stabilization Private Equity Investment Company" 20 days before the date of the early redemption (hereinafter referred to as "early redemption date").
Call Option	Rights of Third Parties: From the date two years have elapsed since June 8, 2018 to the end of four years and one month, the related parties of the bond or bond holders shall convert 30% of the convertible bonds held by the bondholders The amount calculated by calculating the annual compound interest at 12% for the period from the acquisition date of the convertible bond to the date of issuance of the call option exercise price (the dividend received by the bondholder from the issuer in connection with the convertible bond until the exercise date of the actual call option) Interest is deducted).

(*1) In the case of the early redemption right implicit in convertible bonds, it is the same as the amortized cost of the debt instrument, which is the main contract to be paid when exercising the early redemption right.

According to the opinions of the Financial Supervisory Service, the Company classifies the balance of the debentures, which are deducted from the debentures, from the initial book value of the convertible bond with the condition of discounting the exercise prices when the stock price falls

15. Retirement benefit obligation

The Company operates a defined benefit plan for employees, and the actuarial valuation of plan assets and defined benefit liability is performed by a reputable actuary using the projected unit credit method.

Details of retirement benefit obligation as of December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018	2017
Present value of defined benefit obligation	₩ 34,108,750	₩ 33,232,700
Fair value of plan assets	(28,335,893)	(30,282,077)
	₩ 5,772,857	₩ 2,950,623

Expenses recognized in profit and loss for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018	2017
Current service cost	₩ 3,910,302	₩ 4,130,309
Net interest cost (interest cost – expected return on plan assets)	173,745	231,823
	₩ 4,084,047	₩ 4,362,132

classification of the expenses related to the retirement benefit obligation recognized in the separate statements of income for the years ended December 31, 2018 and 2017 is as follows (Korean won in thousands):

	2018	2017
Cost of sales	₩ 2,779,302	₩ 3,254,503
Selling and administrative expenses	1,139,121	1,017,449
Selling and administrative expenses expenditure on research and development	165,624	90,180
	₩ 4,084,047	₩ 4,362,132

Changes in defined benefit obligations for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018	2017
Beginning balance	₩ 33,232,700	₩ 33,728,883
Current service cost	3,910,302	4,130,309
Transfer in	116,928	267,218
Transfer out	(537,530)	(506,710)
Interest cost	1,097,218	782,989
Remeasurements of defined benefit liabilities:	7,098	(3,025,846)
Changes in demographic assumptions	(649,486)	(1,432,755)
Changes in financial assumptions	520,410	(3,023,774)
Others	136,174	1,430,683
Benefit paid	(3,717,966)	(2,144,143)
Ending balance	₩ 34,108,750	₩ 33,232,700

15. Retirement benefit obligation (cont'd)

Changes in plan assets for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018	2017
Beginning balance	₩ 30,282,077	₩ 27,209,422
Expected return on plan assets	923,472	551,166
Remeasurements of plan assets	(520,594)	(241,930)
Contributions by employer directly to plan assets	-	4,000,000
Benefit paid	(2,320,717)	(1,337,980)
Transfer in	-	133,121
Transfer out	(28,345)	(31,722)
Ending balance	₩ 28,335,893	₩ 30,282,077

Assumptions used for actuarial valuation as of December 31, 2018 and 2017 are as follows:

	December 31, 2018	December 31, 2017
Discount rate for defined benefit obligations	3.23%	3.40%
Expected rate of salary increase:		
Employee	2.00%	2.00%
Officer	2.00%	2.40%

Details of plan assets as of December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018	2017
Debt securities	₩ 124,798	₩ 4,940,509
Equity securities	4,360,072	1,559,883
Loans	99,466	196,699
Deposits	21,203,460	23,371,412
Others	2,548,097	213,574
	₩ 28,335,893	₩ 30,282,077

Plan assets are mostly invested in assets that have a quoted market price in an active market.

The sensitivity analysis for the significant actuarial assumptions as of December 31, 2018 and 2017 is as follows (Korean won in thousands):

	2018		2017	
	Amount	Rate	Amount	Rate
Discount rate:				
1% increase	₩ (2,662,828)	(-)7.81%	₩ (2,797,905)	(-)8.42%
1% decrease	3,117,111	9.14%	3,270,363	9.84%
Salary increase rate:				
1% increase	3,192,654	9.36%	2,962,321	8.91%
1% decrease	(2,768,167)	(-)8.12%	(2,597,072)	(-)7.81%

15. Retirement benefit obligation (cont'd)

Information about the maturity profile of the defined benefit obligation as of December 31, 2018 and 2017 is as follows (Korean won in thousands):

	2018			
	Less 1year	1 ~ 2 years	2 ~ 5 years	More than 5 years
Expected payment	₩ 1,850,636	₩ 1,946,336	₩ 6,090,631	₩ 16,769,159

	2017			
	Less 1year	1 ~ 2 years	2 ~ 5 years	More than 5 years
Expected payment	₩ 1,923,194	₩ 3,991,953	₩ 9,326,047	₩ 15,278,682

16. Provisions

Changes in provisions for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018			2017		
	Warranty	Litigation	Total	Warranty	Litigation	Total
Beginning balance	₩ 10,121,944	₩ 755,040	₩ 10,876,984	₩ 6,352,679	₩ 608,904	₩ 6,961,583
Accrual(reversal)	(287,396)	1,020,834	733,438	3,217,251	-	3,217,251
Use	(2,567,739)	-	(2,567,739)	(1,762,153)	-	(1,762,153)
Others (*1)	1,939,116	-	1,939,116	2,314,168	146,136	2,460,304
Ending balance	₩ 9,205,925	₩ 1,775,875	₩ 10,981,800	₩ 10,121,945	₩ 755,040	₩ 10,876,985
Current	₩ 4,120,499	₩ 1,775,875	₩ 5,896,374	₩ 5,980,700	₩ 755,040	₩ 6,735,740
Non-current	5,085,426	-	5,085,426	4,141,245	-	4,141,245

(*1) This amount is the amount settled by the technician according to the cause of defects repair.

17. Share capital and capital surplus

Changes in share capital and capital surplus for the year ended December 31, 2018 are as follows (Korean won in thousands, except for number of shares):

	2018			
	Number of shares	Par value	Capital stock	Capital surplus
Beginning balance	69,500,000	₩ 1,000	₩ 69,500,000	₩ 367,214,701
Split off	(36,552,858)	1,000	(36,552,858)	(193,133,047)
Ending balance	32,947,142	₩ 1,000	₩ 32,947,142	₩ 174,081,655

The Company's number of shares authorized amounted to 120,000,000 shares with a par value of ₩1,000 per share. During the year ended March 31, 2008, the capital stock amounting to ₩ 36,552,858 thousand (36,552,858 shares) decreased due to the split off.

Details of capital surplus as of December 31, 2018 and 2017 are as follows: (Korean won in thousands)

	2018	2017
Stock issue premium	₩ 174,081,655	₩ 367,214,701
Conversion right to pay	546,612	-
	₩ 174,628,267	₩ 367,214,701

18. Other capital components

Other capital components as of December 31, 2018 and 2017 are summarized as follows (Korean won in thousands):

	2018	2017
Treasury stock	₩ (30,233)	₩ -
Loss of reducing equity	(55,380,205)	-
Share options	621,478	621,478
	₩ (54,788,960)	₩ 621,478

Share-based payment

The Company granted share options to its directors several times. Share options are settled based on the board of directors' decision by issuance of new stock, treasury stock or cash settlement. Vesting condition offers 2 year service after the resolution at the stockholders' meeting.

The number of granted options as of December 31, 2018 is as follows:

	Date of grant	Number of granted options	Exercisable period	Exercisable price	Expected fair value at the date of grant
1st	2011.3.25	6,500shares	2014.3.25 - 2021.3.24	₩ 21,600	₩ 10,343
2nd	2012.3.30	18,200shares	2015.3.30 - 2022.3.29	13,300	4,653
3rd	2013.3.29	49,200shares	2016.3.29 - 2023.3.28	9,050	3,383
4th	2014.3.28	12,500shares	2017.3.28 - 2024.3.27	9,490	3,583

18. Other capital components (cont'd)

The Company calculated expenses by applying fair value approach. Assumptions used in determining fair value of share options are as follows:

	Risk-free interest rate (*1)	Expected exercisable period	Expected volatility	Expected dividend yield ratio
1st	3.66%	3 years	68.77%	0.00%
2nd	3.57%	3 years	55.03%	0.00%
3rd	2.45%	3 years	52.35%	0.00%
4th	2.88%	3 years	52.27%	0.00%

(*1) Risk-free interest rate is based on a 3 year Treasury bond yield rate.

Changes in share options for the year ended December 31, 2018 are as follows:

a) Number of common shares to be issued:

	January 1	Granted	Exercised	Canceled	December 31
1st	6,500	-	-	-	6,500
2nd	18,200	-	-	-	18,200
3rd	49,200	-	-	-	49,200
4th	24,000	-	-	(11,500)	12,500
	97,900	-	-	(11,500)	86,400

b) Valuation amount (Korean won in thousands):

	January 1	Granted	Exercised	Canceled	December 31
1st	₩ 112,739	₩ -	₩ -	₩ -	₩ 112,739
2nd	139,590	-	-	-	139,590
3rd	283,157	-	-	-	283,157
4th	85,992	-	-	-	85,992
	₩ 621,478	₩ -	₩ -	₩ -	₩ 621,478

19. Accumulated other comprehensive income

Accumulated other comprehensive income as of December 31, 2018 and 2017 is as follows (Korean won in thousands):

	2018	2017
Revaluation surplus of land	₩ 70,622,038	₩ 74,122,683
Gain on valuation of AFS financial assets	-	40,118,341
Total	₩ 70,622,038	₩ 114,241,024

20. Retained earnings

Retained earnings as of December 31, 2018 and 2017, are as follows (Korean won in thousands):

	2018	2017
Legal reserve	₩ 1,200,000	₩ 1,200,000
Voluntary reserve	2,700,000	2,700,000
Retained earnings before appropriations	14,765,272	487,912
Total	₩ 18,665,272	₩ 4,387,912

20. Retained earnings (cont'd)

Changes in retained earnings for the years ended December 31, 2018 and 2017, are as follows (Korean won in thousands):

	2018	2017
Beginning balance	₩ 4,387,912	₩ 15,928,285
Cumulative effect of changes in accounting policies	233,437,065	-
Changes due to split-off	(198,277,732)	-
Net loss	(20,481,982)	(14,159,762)
Remeasurements of defined benefit liabilities	(399,991)	2,110,209
Revaluation surplus of land	-	509,180
Ending balance	₩ 18,665,272	₩ 4,387,912

Separate statements of appropriation of retained earnings for the years ended December 31, 2018 and 2017, are as follows (Korean won in thousands):

	2018	2017
Unappropriated retained earnings:		
Unappropriated retained earnings carried over from the prior year	₩ 487,912	₩ 12,028,285
Cumulative effect of changes in accounting policies	233,437,065	-
Changes due to spin-off	(198,277,732)	-
Net loss	(20,481,982)	(14,159,762)
Remeasurements of defined benefit liabilities	(399,991)	2,110,209
Disposal of revaluated land	-	509,180
Subtotal	14,765,272	487,912
Transfer from voluntary reserves	-	-
Appropriations	-	-
Unappropriated retained earnings to be carried forward to subsequent year	₩ 14,765,272	₩ 487,912

21. Sales

Details of sales for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018	2017
Sales of goods	₩ 486,729,440	₩ 735,069,665
Construction sales	20,368.388	23,463,607
Others	2,223,597	3,298,235
	₩ 509,321,425	₩ 761,831,507

Details of trade receivables, advances from customers and contract assets and liabilities from contracts with customers as of December 31, 2018 are as follows (Korean won in thousands):

	2018
Trade receivables	₩ 22,301,965
Contract assets	1,151,005
Advances from customers	148,267,040
Contract liabilities	4,553,462

A contract asset is the right to consideration in exchange for goods or services transferred to the customer. When the consideration amount is billed to the customer, the consideration receivable is reclassified as trade receivable. A contract liability is the performance obligation that is satisfied over-time to transfer services, such as construction contracts and others, to a customer for which the Company has received consideration. Contract liabilities are recognized as revenue when the Company performs under the contract and transfers the goods or services to the customer.

21. Sales (cont'd)

Details of the Company's profit classified by the timing of revenue recognition for the year ended December 31, 2018 are as follows. (Korean won in thousands):

		2018
Goods transferred at a point in time	₩	488,953,037
Services transferred over time		20,368,388
	₩	509,321,425

22. Segment information

The Company has a single reportable segment determined by considering the characteristics of the nature of goods and assets to create sales.

The following table provides sale information by geographical segment for the years ended December 31, 2018 and 2017 (Korean won in thousands):

	2018	2017
Domestic	₩ 368,414,775	₩ 524,870,077
Overseas	140,906,650	236,961,430
Subtotal	₩ 509,321,425	₩ 761,831,507

There is a single external customer who accounted for 10% or more of the Company's sales for the years ended December 31, 2018 and 2017 (Korean won in thousands):

		2018		2017
Samsung Heavy Industries Co., Ltd.	₩	105,786,642	₩	263,185,354
Daewoo Shipbuilding & Marine Engineering Co., Ltd.		158,416,915		206,700,312
Total	₩	264,203,557	₩	469,885,666

23. Construction contracts

Details of construction contracts in progress for the years ended December 31, 2018 and 2017, are as follows (Korean won in thousands):

	2018					
	Accumulated Revenue	Accumulated cost	Accumulated profit	Receivables	Due from customers for construction contracts	Contract Liabilities
Diesel engine	₩ 276,348,491	₩ 228,001,937	₩ 48,346,554	₩ 1,123,700	₩ 1,151,005	₩ 4,553,462

	2017					
	Accumulated Revenue	Accumulated cost	Accumulated profit	Receivables	Due from customers for construction contracts	Contract Liabilities
Diesel engine	₩ 255,976,521	₩ 214,083,961	₩ 41,892,560	₩ 144,208	₩ 1,451,141	₩ 9,489,577

23. Construction contracts (cont'd)

Major construction contract for the years ended December 31, 2018 and 2017, are as follows (Korean won in thousands):

	2018					
Order	Description	Construction period	January 1	Increase (Decrease)	Sales	December 31
KHNP and six other companies	Singori No. 3 and No. 4 emergency generators, alternative AC power diesel engine and 11 others	2009-06-23 ~ 2022-09-30	₩ 19,876,540	₩ 34,757,933	₩ (20,368,388)	₩ 34,266,085

	2017					
Order	Description	Construction period	January 1	Increase (Decrease)	Sales	December 31
KHNP and six other companies	Singori No. 3 and No. 4 emergency generators, alternative AC power diesel engine and 10 others	2009-06-23 ~ 2018-03-31	₩ 49,930,584	₩ (6,590,437)	₩ (23,463,607)	₩ 19,876,540

Under the stage-of-completion method, changes in total contract revenues, estimated total contract costs, and due from customers for construction contracts from changes in accounting estimates for the years ended December 31, 2018, are as follows (Korean won in thousands):

	Changes in estimated total contract costs	Impact on the current profit (loss)	Impact on the future profit (loss)	Changes in unbilled construction receivables	Provision for construction losses
Diesel engine	₩ 556,334	₩ 5,098,817	₩ 292,244	₩ 5,098,817	₩ 37,624

The effect on profit or loss is determined based on the current estimates of total contract revenue and total contract costs which reflect circumstances until the current period. The estimates of total contract revenue and total contract cost may change in the subsequent periods.

The contracts which contract price is at least 5% of previous sales which is recognized on the percentage of completion method applying the cost incurred method are as follows (Korean won in millions):

				Due from customers for construction contracts		Receivables from construction contracts	
	Contract date	Expected date of completion	Stage of completion	Total amount	Impairment losses	Total amount	Allowance for doubtful accounts
Singori No. 3 and No. 4 emergency generators, alternative AC power diesel engine	2009-07-17	2019-08-31	99.8%	₩ 1,150,669	₩ -	₩ -	₩ -

24. Expenses classified by nature

Expenses classified by nature for the years ended December 31, 2018 and 2017, are as follows (Korean won in thousands):

	2018	2017
Changes in inventories	₩ 17,671,619	₩ 32,404,044
Purchase of raw materials	354,434,390	475,403,446
Salaries	58,909,746	68,363,399
Other employee benefits	14,365,511	13,029,686
Depreciation and amortization	15,266,244	16,517,801
Royalty usage expenses	26,564,878	48,808,971
Others	58,649,974	99,045,583
Cost of sales & Selling and Administrative Expenses	₩ 545,862,362	₩ 753,572,930

25. Selling and administrative expenses

Selling and administrative expenses for the years ended December 31, 2018 and 2017, are as follows (Korean won in thousands):

	2018	2017
Salaries	₩ 14,741,638	₩ 14,089,720
Other employee benefits	3,591,906	2,838,309
Severance Benefits	1,139,121	1,017,449
Commission expenses	7,514,339	5,333,076
Depreciation	46,043	78,772
Amortization	406,066	848,590
Advertising and marketing expenses	336,431	971,203
Rental expenses	1,157,903	1,065,823
Allowance for bad debt	303,294	2,864,090
Research and ordinary development costs	4,063,604	10,963,284
Royalty usage expenses	11,472	-
Others	2,518,820	2,530,465
Total	₩ 35,830,637	₩ 42,600,781

26. Financial income and expenses

Finance income and expenses for the years ended December 31, 2018 and 2017, are as follows (Korean won in thousands):

	2018	2017
Finance income:		
Interest income	₩ 1,174,304	₩ 1,420,040
Dividend income	8,462,456	7,404,649
Income from financial guarantee	16,670	18,811
Gain on foreign currency transaction	16,114,571	16,845,640
Gain on foreign currency translation	211,565	904,987
Gain on derivative transaction	1,726,877	43,493,817
Gain on valuation of derivatives	1,641,765	24,200,893
Gain on valuation of firm commitments	28,217,753	4,706,796
Total	57,565,961	98,995,633
Finance expenses:		
Interest expenses	16,829,084	16,386,471
Expense for financial guarantee	542,477	615,131
Loss on foreign currency transaction	13,296,100	25,722,597
Loss on foreign currency translation	345,625	2,189,487
Loss on derivative transaction	12,807,715	6,684,559
Loss on valuation of derivatives	15,987,393	1,159,866
Loss on valuation of firm commitments	3,695,573	64,051,626
Total	63,503,967	116,809,737
Net finance income(expenses)	₩ (5,938,006)	₩ (17,814,104)

27. Other non-operating income and expenses

Other non-operating income and expenses for the years ended December 31, 2018 and 2017, are as follows (Korean won in thousands):

	2018	2017
Other non-operating income:		
Rental income	₩ 147,562	₩ 297,600
Gain on disposal of property, plant and equipment	20,797	1,979,425
Gain on disposal of intangible assets	107,909	17,091
Recovery of impairment losses on intangible assets	-	65,970
Gain on revaluation of land	-	29,568
Other income	12,984,575	1,645,844
Total	13,260,843	4,035,498
Other non-operating expenses:		
Loss on disposal of trade receivables	-	12,417
Loss on disposal of property, plant and equipment	111,992	430,011
Loss on disposal of intangible assets	102,831	12,364
Impairment loss on intangible assets	39,123	-
Loss on disposal of assets held for sale	-	813,000
Impairment loss on assets held for sale	659,192	-
Other allowance for doubtful accounts	53,873	1,479,653
Donations	5,088	624,191
Loss on revaluation of land	-	114,105
Other loss	146,937	1,257,197
Total	1,119,036	4,742,938
Net other non-operating income and expenses	₩ 12,141,807	₩ (707,440)

28. Income tax expense

Details of income tax expense for the years ended December 31, 2018 and 2017, are as follows
(Korean won in thousands):

	2018	2017
Current income tax expense	₩ -	₩ 30,681
Changes in deferred tax assets (liabilities) related to temporary differences	(9,808,343)	9,957,621
Deferred tax assets (liabilities) directly reflected in equity	(46,811)	(6,091,508)
Income tax expense (benefit)	₩ (9,855,154)	₩ 3,896,794

28. Income tax expense (cont'd)

Changes in deferred tax assets and liabilities for the years ended December 31, 2018 and 2017 are as follows (Korean won in thousands):

	2018				
		Change			
	January 1	Profit or loss	Equity	Inc & Dec due to split off	December 12
	₩ 310,849	₩ (278,406)	₩ -	₩ -	₩ 32,443
Depreciation	3,625,009	224,334	-	-	3,849,343
Allowance for doubtful accounts	1,949,484	118,054	-	-	2,067,538
Accrued income	(8,964)	(41,715)	-	-	(50,679)
inventory valuation	10,152,664	3,528,868	-	-	13,681,532
Currency forwards	(4,348,869)	7,552,057	-	-	3,203,187
Firm commitment assets	4,864,940	(7,586,130)	-	-	(2,721,190)
investment assets	(11,837,772)	-	-	12,808,230	970,458
Other intangible assets	106,554	(66,227)	-	-	40,327
Accrued expenses	5,422,677	(1,831,977)	-	-	3,590,700
Unearned revenue	110,368	(257,457)	-	-	(147,089)
Provision for warranty	2,449,510	(221,677)	-	-	2,227,834
Cost for transfer DMI	-	97,834	-	-	97,834
Provision for defined pension liabilities	676,002	593,328	127,701	-	1,397,031
Gain on revaluation of land and buildings	(57,855,178)	375,366	-	1,117,620	(56,362,192)
Advance payment	14,940	-	-	-	14,940
Provision for litigation	182,720	247,042	-	-	429,762
Development costs	9,589,576	(1,052,977)	-	-	8,536,599
Dividends Income	(1,791,925)	1,791,925	-	-	-
Convertible bond	-	(1,705,098)	(174,512)	-	(1,879,610)
Others	572,318	1,410,860	-	-	1,983,178
Subtotal	(35,815,097)	2,898,004	(46,811)	13,925,850	(19,038,054)
Tax deficit carryforwards	16,587,031	6,957,147	-	-	23,544,178
Subtotal	16,587,031	6,957,147	-	-	23,544,178
Total	₩ (19,228,066)	₩ 9,855,151	₩ (46,811)	₩ 13,925,850	₩ 4,506,124

28. Income tax expense (cont'd)

	2017			
		Change		
	January 1	Profit or loss	Equity	December 31
Net foreign currency translation	₩ (251,062)	₩ 561,911	₩ -	₩ 310,849
Depreciation	2,476,419	1,148,590	-	3,625,009
Allowance for doubtful accounts	758,720	1,190,764	-	1,949,484
Accrued income	47,159	(56,123)	-	(8,964)
Loss on inventory valuation	11,313,036	(1,160,372)	-	10,152,664
Currency forwards	8,007,248	(12,356,117)	-	(4,348,869)
Firm commitment assets	(7,327,812)	12,192,752	-	4,864,940
Loss on investment assets	(12,357,256)	-	519,484	(11,837,772)
Other intangible assets	152,213	(45,659)	-	106,554
Accrued expenses	5,838,398	(415,721)	-	5,422,677
Unearned revenue	(857,925)	968,293	-	110,368
Financial guarantee liabilities	1,537,348	912,162	-	2,449,510
Provision for defined pension liabilities	1,177,454	172,256	(673,708)	676,002
Gain on revaluation of land and buildings	(51,835,100)	(82,794)	(5,937,284)	(57,855,178)
Advance payment	17,287	(2,347)	-	14,940
Provision for litigation	147,355	35,365	-	182,720
Development costs	10,642,553	(1,052,977)	-	9,589,576
Assets held for sale	3,043,408	(3,043,408)	-	-
Dividends Income	-	(1,791,925)	-	(1,791,925)
Others	(4,169)	576,487	-	572,318
Subtotal	(27,474,726)	(2,248,863)	(6,091,508)	(35,815,097)
Tax deficit carryforwards	18,204,281	(1,617,250)	-	16,587,031
Subtotal	18,204,281	(1,617,250)	-	16,587,031
Total	₩ (2,587,681)	₩ (3,866,113)	₩ (6,091,508)	₩ (19,228,066)

Deductible temporary differences, tax deficit and unused tax credit, which have not been recognized as deferred income tax assets expired and unused, as of December 31, 2018 and 2017, are as follows (Korean won in thousands):

	2018	2017
Deductible temporary differences:		
Long-term investment securities	₩ -	₩ 233,437,065
Donations in excess of tax limit	1,803,318	1,798,230
Unused tax deficit	313,217,587	197,809,569
Unused tax credit	1,073,387	2,128,440

28. Income tax expense (cont'd)

Maturities of deductible temporary differences and unused tax credit, which have not been recognized as deferred tax assets, are as follows (Korean won in thousands):

	0–1 year	1 year–2 years	2 years–3 years	More than 3 years	Total
Deductible temporary differences:					
Donations in excess of tax limit	-	-	-	1,803,318	1,803,318
Unused tax deficit	-	-	-	313,217,587	313,217,587
Unused tax credit	722,214	141,146	84,078	125,948	1,073,386

The probability of deferred tax assets being realized depends on the Company's ability to generate taxable income in future years, the economic situation and the industry forecast. The Company periodically reviews such matters.

Temporary differences associated with investments in subsidiaries and associates, which are not recognized as deferred tax assets, as of December 31, 2018 and 2017, are as follows (Korean won in thousands):

	2018	2017	Description
Subsidiaries	₩ (5,242,062)	₩ (5,242,062)	Timing of reversal can be controlled
Associates	(1,178,393)	(1,178,393)	Reversibility is not probable.
	₩ (6,420,455)	₩ (6,420,455)	

Deferred tax assets (liabilities) and income tax benefits (expenses) added to (deducted from) the equity as of December 31, 2018 and 2017, are as follows (Korean won in thousands):

	2018			2017		
	Before tax	Deferred tax assets (liabilities)	After tax	Before tax	Deferred tax assets (liabilities)	After tax
Remeasurements of defined benefit liabilities	₩ (2,757,240)	₩ 667,252	₩ (2,089,988)	₩ (2,229,548)	₩ 539,551	₩ (1,689,997)
Convertible right's cost	721,125	(174,512)	546,613	-	-	-
Revaluation surplus of land	93,168,916	(22,546,878)	70,622,038	97,787,181	(23,664,498)	74,122,683
Gain on valuation of AFS financial assets	-	-	-	61,352,806	(14,847,379)	46,505,427
Loss on valuation of AFS financial assets	-	-	-	(8,426,235)	2,039,149	(6,387,086)
	₩ 91,132,801	₩ (22,054,138)	₩ 69,078,663	₩ 148,484,204	₩ (35,933,177)	₩ 112,551,027

28. Income tax expense (cont'd)

A reconciliation of income tax expense and accounting income before income tax expense for the years ended December 31, 2018 and 2017, is as follows (Korean won in thousands):

	2018	2017
Loss before income tax expense	₩ (30,337,137)	₩ (10,262,968)
Income tax expense at statutory income tax rate	(7,341,587)	(8,510,595)
Adjustments:		
Additional payment of income tax	-	30,681
Non-temporary difference	(34,225)	(59,441)
Temporary difference not recognized as deferred income tax	(2,183,693)	1,898,592
Others	(295,649)	(451,918)
Income tax expense (benefit)	₩ (9,855,154)	3,896,794
Effective tax rate	(*1)	(*1)

(*1) The effective tax rate was not calculated due to net loss before tax.

29. Earnings per share

Basic earnings per share

Basic earnings per share are computed by dividing net income by the weighted-average number of common shares outstanding during the period (Korean won in thousands, except for the number of shares).

	2018	2017
Net loss available to common shares	₩ (20,481,983)	₩ 14,159,762
Weighted-average number of common shares outstanding (*)	48,465,622	69,500,000
Basic net loss per share	(423)	204

Details of the calculation of the weighted-average number of common shares as of December 31, 2018 are as follows:

Details	Period	Number of shares	Weighted	Drop number
Jan 1	2018.1.1 ~ 2018.12.31	69,500,000	365	25,367,500,000
Split off	2018.6.6 ~ 2018.12.31	(36,552,858)	210	(7,676,100,180)
Acquisition treasury stock	2018.6.22 ~ 2018.12.31	(7,502)	193	(1,447,886)
		32,939,640		17,689,951,934

* Weighted average number of common shares : 17,689,951,934 ÷ 365days = 48,465,622

< Dec 31, 2017>
The weighted-average number of common shares outstanding for the years ended December 31, 2017, is equal to the number of shares outstanding.

Diluted earnings per share

The Company does not compute diluted earnings per common share for the years ended December 31, 2018 and 2017, because there is no dilutive effect of potential ordinary share (share-based payment). Diluted earnings per share are equal to earnings per share for the years ended December 31, 2018 and 2017.

Due to the antidilutive effect for the years ended December 31, 2018 and 2017, the Company is not considering share option, which could dilute the basic earnings per share in the future. (Number of shares)

	2018	2017
Stock option	86,400	97,900
Convertible Bond	9,940,357	-

30. Commitments and contingencies

Notes and checks provided as collateral

As of December 31, 2018, the Company has not provided the promissory note (as of December 31, 2017: 20, promissory notes amounting to USD 10,829,062) and has provided 5 (as of December 31, 2017: 6) blank promissory notes to Daewoo Shipbuilding & Marine Engineering Co., Ltd. and four other companies as security in connection with contract performance guarantees and guarantees for advance receipts.

Lawsuits in which the Company is named as defendant in

As of December 31, 2018, lawsuits in which the Company is named as defendant are for the compensation of damages totaling ₩22,647 million and the outcome of the lawsuit cannot be predicted.

Commitments with financial institution (Korean won in thousands, EUR, USD)

	Financial institution	Credit limit		Used amount	
General loan facilities	Korea Development Bank	KRW	6,300,000	KRW	-
	Kyong Nam Bank	KRW	15,000,000	KRW	-
	NH Bank	KRW	15,000,000	KRW	-
	The Export-Import Bank of Korea	KRW	25,000,000	KRW	15,000,000
Electronic loan facilities	Kookmin Bank	KRW	900,000	KRW	898,222
Issuance of letter of credit	Woori Bank	USD	15,893	USD	15,893
	Industrial Bank of Korea	USD	100,172	USD	100,172
	Kyong Nam Bank	USD	5,000,000	USD	3,222,499
	Korea Development Bank	USD	6,900,000	USD	3,369,982
Other guarantees in foreign currency	KEB Hana Bank	USD	4,935,981	USD	4,935,981
	Woori Bank	USD	7,400,766	USD	7,400,766
	NH Bank	USD	10,090,000	USD	8,387,000
	Kyong Nam Bank	USD	14,254,000	USD	7,433,560
	The Export-import Bank of Korea	USD	16,404,000	KRW	7,710,000
	Seoul Guarantee Insurance Company	USD	18,235,597	USD	18,235,597
		EUR	744,603	EUR	744,603
Other guarantees in Korean currency	Woori Bank	KRW	450,184	KRW	450,184
	Seoul Guarantee Insurance Company	KRW	13,474,793	KRW	13,474,793

Technology transfer contract

The Company has eight technical license agreements with several foreign companies for the purpose of manufacturing engines. In accordance with the agreements, the Company is committed to pay a royalty calculated based on the cumulative horse power of engines manufactured during the year. The royalty amounted to ₩26,564,878 thousand and ₩48,808,971 thousand for the years ended December 31, 2018 and 2017, respectively.

30. Commitments and contingencies (cont'd)

Wage claims for normal wage of workers in accordance with the Supreme Court ruling

If bonuses included in the salaries paid by the Company in the past are currently considered as part of the wages, the Company will be entitled to pay the additional corresponding amounts. However, based on the Supreme Court ruling dated December 18, 2013, the Company will be under an excessive financial burden resulting in material difficulty in management and thus, the Company does not expect to make the payments. The impact of the above on the Company's financial statements in accordance with the paragraph 92 of KIFRS 1037 'Provisions, Contingent Liabilities and Contingent Assets' was omitted from the notes. The Company is currently undergoing a litigation with regards to the wages. In the current year, it has partially won the litigation and it has recognized provisions for the lost trials of the litigation.(Note 16)

31. Guarantees and pledged assets

Guarantees

Guarantees provided to the Company from third parties as of December 31, 2018, are as follows (in foreign currencies and thousands of Korean won):

Guarantee received from	Guaranteed amount (foreign currency)		Description of guarantee
KEB Hana Bank	USD	4,935,981	Fulfillment of a contract
Woori Bank	USD	7,400,766	Guarantee for advance receipts, defect and fulfillment of a contract
	KRW	450,184	
NH Bank	USD	8,387,000	Guarantee for advance receipts
Kyong Nam Bank	USD	7,433,560	Guarantee for advance receipts, defect and fulfillment of a contract
The export-import Bank of Korea	USD	7,7100,000	Guarantee for advance receipts, fulfillment of a contract
Seoul Guarantee Insurance Company	USD	18,235,597	Guarantee for advance receipts, defect and fulfillment of a contract
	EUR	744,603	
	KRW	13,474,793	
	USD	54,102,904	Guarantee for advance receipts, defect and fulfillment of a contract
	EUR	744,603	
	KRW	13,924,977	

Guarantees provided by the Company as of December 31, 2018, are as follows (in foreign currencies):

	Amount		Description of guarantee	Institution	Related party
HSDMI	USD	2,400,000	Guarantee for the borrowings	The Export-Import Bank of Korea	Subsidiary

31. Guarantees and pledged assets (cont'd)

Pledged assets

The Company has pledged fixed assets as collateral in relation to the Property, Plant & Equipment and Inventories.. Details of collateralized items are as follows (see Note 12): (in foreign currencies and thousands of Korean won):

	Guarantee Company	Pledged assets	Book value		Established amount		Amount of provision	
Import L/C	Korea Development Bank	Land, Buildings	₩	34,080,323	EUR	5,983,200	EUR	4,986,000
Limited loan	Korea Development Bank	Buildings	₩	9,199,649	₩	7,565,340	₩	6,300,000
8th Bond	Korea Real Estate Investment & Trust Co., Ltd	Land, Buildings, Machinery	₩	390,471,011	₩	169,000,000	₩	130,000,000
9th Convertible Bond	Korea Real Estate Investment & Trust Co., Ltd	Land, Buildings, Machinery	₩	390,471,011	₩	54,000,000	₩	45,000,000
Loan	Kyong Nam Bank	Land, Buildings, Machinery	₩	390,471,011	₩	33,000,000	₩	30,000,000
Payment Guarantees of Foreign currency	Kyong Nam Bank	Land, Buildings, Machinery	₩	390,471,011	USD	9,900,000	USD	9,000,000
Loan, Payment Guarantees of Foreign currency	Korea Investment & Securities Co., Ltd.,	Land, Buildings, Machinery	₩	390,471,011	₩	40,000,000	₩ USD	25.000,000 9,000,000
Trade finance limit loan	Export-Import Bank of Korea	Inventories	₩	145,245,572	₩	62,500,000	₩ USD	25.000,000 2,000,000

32. Related parties

Related parties of the Company and their relationship with the Company as of December 31, 2018 and 2017 are as follows:

< December 31, 2018>

Relationship	Related parties
Parent company	Socius Well to Sea Investment No.1 Recovery Private Equity Fund
Subsidiary	HSDMI
	DEPNG
Associates	Dalian Samyoung Doosan Metal Product Co., Ltd. (DSDMP)

(*1) On June 5, 2018, the Socius Well To Sea acquired 42.66% ownership of the Company previously held by Doosan Heavy Industries Construction Co., Ltd. and became the largest shareholder of the Company.

<December 31, 2017>

Relationship	Related parties
Ultimate parent company	Doosan Corporation (“DS”)
Parent company	Doosan Heavy Industries Construction Co., Ltd. (“DHIC”)
Subsidiary	HSDMI
	DEPNG
Associates	DSDMP
	Doosan Cuvex Co., Ltd.
	DBC
Other related parties	Doosan Infracore Co., Ltd.
	Doosan Bobcat Co., Ltd. (“DB”)
	Doosan Engineering & Construction Co., Ltd. (“Doosan E&C”)
	Oricom Inc. (“Oricom”)
	Doosan Bears Inc.
	Doosan Tower Co., Ltd. (“Doosan Tower”)
Large-scale enterprise Company affiliate company (*1)	Neo Holdings, Bigant

(*1)The companies are not a related party defined in Paragraph 9 of KIFRS 1024. But, A large Company affiliate company designated by the Fair Trade Commission classified as related parties in accordance with Securities and Futures Commission’s resolution of a related party pursuant to a substantive relationship stipulated in Paragraph 10 of KIFRS 1024.

32. Related parties (cont'd)

Significant transactions with related parties for the years ended December 31, 2018 and 2017, are as follows (Korean won in thousands):

		2018					
		Sales			Purchases		
	The related parties	Sales	Disposal of property, plant and equipment and intangible assets	Other incomes	Purchases	Acquisition of property, plant and equipment and intangible assets	Other expenses
Ultimate parent company	DS(*1)	₩ 753,068	₩ -	₩ 394,305	₩ 2,658,583	₩ 142,000	₩ 650.017
Parent company	DHIC(*1)	-	-	-	16,881,843	-	-
Subsidiary	HSDMI	-	-	311,198	6,814,299	-	-
Associates	Doosan Cuvex Co., Ltd.(*1)	-	-	2,285	492,804	-	-
Other related parties	Doosan E&C(*1)	-	-	-	58,546	149	-
	Others		-	-	24,583	-	505,679
		₩ 753,068	₩ -	₩ 707,788	₩ 26,930,658	₩ 142,149	₩ 1,155,696

(*1) The above significant transactions with the related parties are based on transactions occurred before June 5, 2018, the date of which Doosan Heavy Industries Construction Co., Ltd. disposed of its 42.66% ownership of the Company and was excluded from the related party disclosure.

		2017					
		Sales			Purchases		
	The related parties	Sales	Disposal of property, plant and equipment and intangible assets	Other incomes	Purchases	Acquisition of property, plant and equipment and intangible assets	Other expenses
Ultimate parent company	DS	₩ 1,713,420	₩ -	₩ 901,485	₩ 6,026,155	₩ 385,208	₩ 3,596,036
Parent company	DHIC	-	-	-	84,397,126	-	3,887
Subsidiary	DMI	-	-	312,074	8,108,506	-	-
	DEPNG	1,835,645	-	-	-	-	-
Associates	Doosan Cuvex Co. Ltd.	-	-	1,163	302,423	-	-
	DBC		5,564,081	-	-	-	
Other related parties	Doosan E&C	-	-	-	185,614	17,898	-
	Others	359,652	11,759,695	228,091	72,644	198,798	1,607,180
		₩ 3,908,717	₩ 17,323,776	₩ 1,442,813	₩ 99,093,468	₩ 601,904	₩ 5,207,103

32. Related parties (cont'd)

Significant balances related to the transactions between the Company and related parties are as follows (Korean won in thousands):

		2018					
		Sales			Purchases		
	Related parties	Trade receivables	Other receivables	Loans	Trade payables	Other payables	Convertible Bond
Parent company	Socius Well to Sea	-	-	-	-	-	45,000,000
Subsidiary	HSDMI	-	1,442,286	6,835,920	1,445,327	155,249	-
		₩ 4,390,430	₩ 1,442,286	₩ 6,835,920	₩ 1,445,327	₩ ,155,249	₩ 45,000,000

		2017					
		Sales			Purchases		
	Related parties	Trade receivables	Other receivables	Loans	Trade payables	Other payables	Borrowings
Ultimate parent company	DS	₩ -	₩ 16,511	₩ -	₩ 1,676,759	₩ 1,720,275	₩ -
Parent company	DHIC	-	-	-	3,152,239	385	-
Subsidiary	HSDMI	-	1,244,061	6,873,300	753,229	156,097	-
	DEPNG	4,390,430	-	-	-	-	-
Associates	Doosan Cuvex Co., Ltd.	-	387,000	-	-	45,509	-
Other related parties	Doosan E&C	-	2,543,348	-	-	18,117	-
	Others	-	72,511	-	374,556	23,978	-
		₩ 4,390,430	₩ 4,263,431	₩ 6,873,300	₩ 5,956,783	₩ 1,964,361	₩ -

Details of significant capital transactions, including equity transactions, with related parties for the year ended December 31, 2018, are as follows (Korean won in thousands):

		Loan transaction		Equity transaction		Dividends	
	Related parties	Loan	Withdraw	Capital expansion and investment	Paid in capital decrease	Revenue	Expenses
Parent Company	Socius Well to Sea	₩ 45,000,000	₩ -	₩ -	₩ -	₩ -	₩ -
Associates	DBC(*1)	-	-	-	3,454,000	-	-
Other related parties	Doosan Bobcat Inc(*1).	-	-	-	-	8,462,456	-
		₩ 45,000,000	₩ -	₩ -	₩ 3.454,000	₩ 8,462,456	₩ -

(*1) As a result of the sale of 42.66% among the shares held by the company to Socius Well to Sea in best, the related parties have been canceled and the transaction has been completed on the basis of the sale date.,,

The Company provided Guarantees for related parties as of December 31, 2018, are as follows (in foreign currencies)

32. Related parties (cont'd)

The Company defines key management personnel as registered officer and non-registered officer who have the authority and responsibility for planning, operation and control and are in charge of business or division unit. Compensation to key management personnel of the Company for the years ended December 31, 2018 and 2017, is as follows (Korean won in thousands):

	2018	2017
Salaries	₩ 2,166,472	₩ 3,757,198
Pension benefits	175,882	267,817
	₩ 2,342,354	₩ 4,025,015

33. Statements of cash flows

The adjustments and changes in operating assets and liabilities in the separate statements of cash flows for the years ended December 31, 2018 and 2017, are as follows (Korean won in thousands):

	2018	2017
Expenses not involving cash outflows:		
Interest expenses	₩ 16,829,084	₩ 16,386,471
Income tax expenses	-	3,896,794
Pension benefits	4,084,047	4,362,132
Loss on valuation of inventories	8,467,637	-
Depreciation	13,994,679	14,807,313
Amortization	1,271,565	1,710,488
Bad debt expenses	303,294	2,864,090
Other allowance for doubtful accounts	53,873	1,479,653
Loss on foreign currency translation	345,625	2,189,487
Loss on valuation of derivatives	15,987,393	1,159,866
Loss on valuation of firm commitments	3,695,573	64,051,626
Loss on disposal of property, plant and equipment	111,992	430,011
Loss on disposal of intangible assets	102,831	12,364
Loss from revaluation of land	-	114,105
Impairment loss on intangible assets	39,123	-
Provision for defects	-	3,217,251
Loss on disposal of assets held for sale	-	813,000
Impairment loss of assets held for sale	659,192	-
Others	-	3,728
Income not involving cash inflows:		
Interest income	(1,174,304)	(1,420,040)
Dividend income	(8,462,456)	(7,404,649)
Income tax profit	(9,855,154)	-
Reversal of loss on valuation of inventories	-	(4,460,482)
Reversal of provisions	(287,396)	-
Income on financial guarantee	(16,670)	(18,811)
Gain on foreign currency translation	(211,565)	(904,987)
Gain on valuation of derivatives	(1,641,765)	(24,200,893)
Gain on valuation of firm commitments	(28,217,753)	(4,706,797)
Gain on disposal of property, plant and equipment	(20,797)	(1,979,425)
Gain on disposal of intangible assets	(107,909)	(17,091)
Gain from revaluation of land	-	(29,568)
Reversal of impairment loss on intangible assets	-	(65,970)
Rental sales	(8,963)	-
	₩ 15,941,176	₩ 72,289,666

33. Statements of cash flows (cont'd)

	2018	2017
Changes in operating assets and liabilities:		
Trade receivables	₩ 10,392,578	₩ 27,300,815
Other receivables	(18,033)	15,943,943
Due from customers for construction contracts	300,136	14,310,863
Inventories	9,203,983	36,864,526
Other current assets	232,816	8,459,760
Long-term accounts receivable – other	1,814,476	9,313
Other non-current assets	(2,177,264)	(130,825)
Derivative instruments	16,861,218	(28,017,308)
Firm commitments	(6,825,464)	(8,961,557)
Trade payables	249,826	(63,838,789)
Other payables	1,916,250	(8,406,163)
Due to customers for construction contracts	(4,936,115)	(7,072,920)
Advance receipts	13,377,765	(98,234,199)
Other current liabilities	(13,196,730)	(6,552,870)
Long-term other payable	1,957,545	(407,767)
Plan assets	-	(4,000,000)
Payment of severance benefits	(1,397,248)	(806,162)
Transfer in	116,928	134,097
Transfer out	(509,185)	(474,988)
Provision	2,236,068	1,032,966
	₩ 29,599,550	₩ (122,847,265)

Significant non-cash transactions for the years ended December 31, 2018 and 2017, are as follows (Korean won in thousands)

	2018	2017
Reclassification of construction-in-progress to property, plant and equipment	₩ 223,321	₩ 3,562,072
Transfer of property, plant and equipment due to split off	40,772,529	-
Increase (decrease) in other payables from acquisition of property, plant and equipment	645,570	67,659
Revaluation of assets (after deduction of income tax)	1,129,697	18,596,947
Reclassification of long-term loans to current portion	7,295,250	629,300
Reclassification of long-term bonds payable to short-term bonds payable	130,000,000	90,000,000
Reclassification of long-term borrowings to short-term borrowings	-	30,000,000
Reclassification of provisions to current portion	(1,860,200)	3,468,532
Transfer of financial assets at FVOCI due to split off	384,363,441	-
Transfer of investment in associates due to split off	5,827,893	-
Transfer of other receivables due to split off	4,350	-
Transfer of leasehold deposits due to split off	42,203	-
Transfer of short-term borrowings due to split off	135,000,000	-
Transfer of short-term lease leasehold deposits due to split off	1,619,503	-

34. Split off

(1) Method of split off
In accordance with the Articles 2 through 11 of the *Commercial Law*, the Company split off its investment business division, which was acquired by DHIC through a merger. In accordance with the merger, the shareholders of the Company received new shares of DHIC based on a split ratio and in proportion to the ownership percentage as of June 4, 2018, the date of allotment of new shares. Details of the split off as of December 31, 2018 are as follows:

	Company	Business division
Succeeding company after split off	HSD Engine	Manufacture and sales of marine engine business, diesel power generation business, and environmental pollution prevention facility business
Acquired Company	DHIC	Investments securities, real estate, etc.

The split ratio of 1:0.5259404, as quoted by the Company, was calculated based on the book value of net assets as of December 31, 2017, which reflects the amount of significant changes in net assets arising from transactions that changed the total equity without accompanying fluctuations in retained earnings, such as short-term borrowings, capital increase and others that occurred from the end of December 2017 to the date of Board of Directors' annual meeting.

The number of outstanding shares before and after the split off in accordance with the split ratio is as follows:

Types of stock	Before split off	After split off		
	HSD Engine	HSD Engine	DHIC	Total
Common stock	69,500,000	32,947,142	36,552,858	69,500,000

(2) Succession to the rights and obligations
The Company shall succeed to the positive and negative properties and rights and obligations under the laws of public corporation, including other rights, obligations and fact relevance with property value (for example, official approval, contractual relationship, labor relationship, litigations and etc.,) of the investment business division to the Acquired Company.

(3) Responsibilities of the Company
The Company shall be divided in accordance with the Article 530-3 paragraph 1 of the *Commercial Law* through a special resolution at the general meeting of the shareholders, and the Company or the Acquired Company shall be jointly liable with the split off company in repayment of debts in accordance with the Article 530-9 paragraph 1.

(4) Split off accounting
As the same corporation does not have control before and after the split off of the Company, assets and liabilities transferred to the Acquired Company through the split off are measured at fair value when the Company derecognizes the assets and liabilities. The difference between the fair value and the decrease in capital stock and capital surplus is recognized as other components of equity (loss on capital reduction).

34. Split off (cont'd)

Details of assets and liabilities transferred to the Acquired Company during the year ended December 31, 2018 are as follows (Korean won in thousands):

		Amount
Assets:		
Current assets:		
Trade and other receivables	₩	4,350
Non-current assets:		
Long-term investment securities		384,363,441
Investments in associates		5,827,893
Long-term other receivables		42,203
Property, plant and equipment		40,772,529
Total assets	₩	431,010,416
Liabilities:		
Current liabilities:		
Trade and other payables	₩	1,619,503
Short-term borrowings		135,000,000
Non-current liabilities:		
Deferred tax liabilities		11,225,011
Total liabilities		147,844,514
Net assets	₩	283,165,902